

October 2011

# BUSINESS SYSTEMS MODERNIZATION

## Internal Revenue Service's Fiscal Year 2011 Expenditure Plan

U.S. Government Accountability Office

GAO 90

YEARS

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ACCOUNTABILITY ★ INTEGRITY ★ RELIABILITY

## Why GAO Did This Study

The Internal Revenue Service's (IRS) Business Systems Modernization (BSM) program is a multi-billion dollar, high-risk, highly complex effort that involves the development and delivery of a number of modernized systems that are intended to replace the agency's aging business and tax processing systems. As required, IRS submitted its fiscal year 2011 expenditure plan in May 2011 to the House and Senate appropriations committees, requesting approximately \$352 million from the BSM account.

In response to a mandate, GAO's objectives in reviewing the expenditure plan were to (1) determine whether it satisfies the applicable statutory conditions, (2) determine IRS's progress in implementing prior expenditure plan review recommendations, and (3) provide additional observations about the plan and the BSM program. To accomplish the objectives, GAO analyzed the plan, reviewed related documentation, and interviewed IRS officials.

## What GAO Recommends

GAO's recommendations include reclassifying activities with discrete work and accordingly reporting on associated performance data in future expenditure plans, and consistent with best practices, scrutinizing any remaining LOE work exceeding 15 percent of the program's budget. In comments on a draft of this report, IRS noted disagreement over certain aspects of GAO's views on LOE work but stated that it will collaborate with GAO to ensure that this work is clearly expressed in the expenditure plan.

View [GAO-12-26](#). For more information, contact David A. Powner at (202) 512-9286 or [pownerd@gao.gov](mailto:pownerd@gao.gov).

# BUSINESS SYSTEMS MODERNIZATION

## Internal Revenue Service's Fiscal Year 2011 Expenditure Plan

### What GAO Found

IRS's expenditure plan satisfies each of the six applicable statutory conditions, which include meeting the Office of Management and Budget's (OMB) capital planning and investment control review requirements, and complying with federal systems acquisition requirements and management practices (as encompassed by the Software Engineering Institute's Capability Maturity Model Integration).

IRS has addressed four of GAO's five outstanding recommendations from prior expenditure plan reviews. For example, IRS has developed high-level plans for the second phase of its Customer Account Data Engine (CADE) 2 program, IRS's new effort to replace its legacy systems for storing, managing, and accessing individual taxpayer accounts. However, steps remain to fully implement the recommendation to ensure that expenditure plans include a quantitative measure of progress in meeting project scope expectations. IRS expects to include this metric in its fiscal year 2012 expenditure plan.

GAO has the following four observations about the expenditure plan and the BSM program:

- GAO's analysis of reported project costs and completion dates shows that 11 of the 12 project milestones planned for completion between January 2010 and May 2011 were completed early, under budget, or within 10 percent of cost and schedule estimates, and 1 milestone was completed on schedule but significantly over cost. Specifically, a milestone for the Modernized e-File project was completed more than 70 percent over estimated costs. According to IRS, several factors contributed to the overrun, including the need to implement unplanned requirements for disaster recovery.
- For fiscal year 2011 IRS requested about \$174 million, or about 49 percent of the total BSM request for level of effort (LOE) work—that is, tasks of a general or supportive nature, such as program management, which do not result in clear products. According to best practices, if more than 15 percent of a program's budget is classified as LOE, this amount should be scrutinized. One factor contributing to the large percentage is that IRS's definition of LOE differs from the commonly accepted definition in that it includes some work that results in clear products. By categorizing such tasks as LOE in the expenditure plan, IRS is (1) presenting an inaccurate picture of the work it is performing and the manner in which it is being managed, and (2) providing Congress with less insight into its performance in implementing the BSM program.
- CADE 2 risk management and preliminary cost estimating processes are generally consistent with best practices; however, IRS will be challenged in completing one of the two key projects for the first phase by January 2012, as planned. According to IRS officials, IRS is still on track for delivering this project by January 2012 as planned. However, the agency is considering phasing its implementation to reduce the impact on filing season operations.
- Due, in part, to the fact that IRS has not yet fully implemented key components of its comprehensive information security program, IRS continues to have information security weaknesses. Although not all these weaknesses pertain to BSM specifically, IRS's information security program encompasses all agency systems, and therefore the program weaknesses affect the modernization environment.

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# Contents

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Letter		1
	Conclusions	5
	Recommendations for Executive Action	6
	Agency Comments	6
Appendix I	Briefing Slides from the July 20, 2011, Briefing to the Senate and House Appropriations Subcommittee Staffs	8
Appendix II	Comments from the Internal Revenue Service	63
Appendix III	GAO Contact and Staff Acknowledgments	65

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## Abbreviations

AMS	Accounts Management Services
BSM	Business Systems Modernization
CADE	Customer Account Data Engine
CIO	Chief Information Officer
CMMI	Capability Maturity Model Integration
EA	enterprise architecture
IRS	Internal Revenue Service
IT	information technology
LOE	level of effort
MeF	Modernized e-File
MITS	Modernization and Information Technology Services
OMB	Office of Management and Budget
SEI	Software Engineering Institute
TIGTA	Treasury Inspector General for Tax Administration

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G A O

Accountability \* Integrity \* Reliability

United States Government Accountability Office  
Washington, DC 20548

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October 6, 2011

The Honorable Richard J. Durbin  
Chairman  
The Honorable Jerry Moran  
Ranking Member  
Subcommittee on Financial Services and  
General Government  
Committee on Appropriations  
United States Senate

The Honorable Jo Ann Emerson  
Chairwoman  
The Honorable José E. Serrano  
Ranking Member  
Subcommittee on Financial Services and  
General Government  
Committee on Appropriations  
House of Representatives

As required by the Consolidated Appropriations Act, 2010, the Internal Revenue Service (IRS) submitted its fiscal year 2011 expenditure plan in May 2011<sup>1</sup> to the House and Senate appropriations committees, requesting approximately \$352 million from the Business Systems Modernization (BSM) account, which funds IRS's efforts to modernize its business and tax processing systems.<sup>2</sup> The statute also requires GAO to review the expenditure plan. Our objectives in reviewing the plan were to (1) determine whether the plan satisfies the applicable statutory

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<sup>1</sup>The expenditure plan was prepared in October 2010; however, IRS revised its request for the BSM program following the enactment of the fiscal year 2011 funding in April.

<sup>2</sup>BSM funds (except labor costs) are unavailable until IRS submits a modernization expenditure plan to the congressional appropriations committees. See the *Consolidated Appropriations Act, 2010*, Pub. L. No. 111-117, div. C, title I, 123 Stat. 3034, 3164 (Dec. 16, 2009), under the authority and conditions of which the *Full-Year Continuing Appropriations Act, 2011*, Pub. L. No. 112-10, Division B, title I, Sec. 1101(a)(6), 125 Stat. 38, 102-103 (April 15, 2011), appropriates funds for the IRS for fiscal year 2011.

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conditions,<sup>3</sup> (2) determine IRS's progress in implementing outstanding recommendations from our prior year expenditure plan reviews, and (3) provide any other observations about the plan and IRS's BSM program.

This report transmits the information we provided to congressional appropriations subcommittee staffs during our July 20, 2011, briefing and provides the recommendations that we made to the Commissioner of Internal Revenue. The full briefing materials, including our scope and methodology, are included as appendix I.

We conducted this performance audit from May 2011 to July 2011 in Washington, D.C., 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.

In summary, we made the following major points:

- *IRS's fiscal year 2011 plan satisfies each of the six statutory conditions.* These conditions include meeting OMB's capital planning and investment control review requirements, and complying with federal systems acquisition requirements and management practices.<sup>4</sup>
- *IRS has implemented four of our five outstanding recommendations from prior expenditure plan reviews.* For example, the agency

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<sup>3</sup>This plan must (1) meet the Office of Management and Budget's (OMB) capital planning and investment control review requirements; (2) comply with IRS's enterprise architecture; (3) conform with IRS's enterprise life cycle methodology; (4) comply with federal acquisition rules, requirements, guidelines, and systems acquisition management practices; (5) be approved by IRS, the Department of the Treasury, and OMB; and (6) be reviewed by GAO. These conditions for BSM funding availability have been in effect for several years, including the immediately preceding fiscal year. At the time of this report, the latest appropriation was provided under Pub. L. No. 112-10, Division B, title I, Sec. 1101(a)(6), 125 Stat. 38, 102-103 (April 15, 2011); see Pub. L. No. 111-117, div. C, title I, 123 Stat. 3034, 3164, (Dec. 16, 2009).

<sup>4</sup>For this condition, we did not determine whether the expenditure plan comports with the Federal Acquisition Regulation or other federal requirements beyond those encompassed by the Software Engineering Institute's Capability Maturity Model Integration (CMMI).

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developed high-level plans for the second phase of the Customer Account Data Engine (CADE) 2, IRS's new effort to replace its legacy systems for storing, managing, and accessing individual taxpayer accounts. However, steps remain to implement our recommendation to ensure that expenditure plans include a quantitative measure of progress in meeting project scope expectations. IRS expects to include this metric in its fiscal year 2012 expenditure plan.

- *Of 12 project milestones<sup>5</sup> scheduled for completion between January 2010 and May 2011, 11 were completed within 10 percent of cost and schedule estimates, under budget, or early, and 1 was completed on schedule but significantly over cost.* For example, both the logical and physical design of CADE 2 were completed as budgeted and earlier than planned. However, a release of Modernized e-File, IRS's system intended to provide a single standard for filing electronic tax returns, was more than 70 percent over estimated costs at the completion of its deployment milestone. According to IRS, several factors contributed to the overrun, including the need to implement unplanned requirements for disaster recovery.
- *A large percentage of requested BSM funding is categorized as level of effort (LOE) work.* For fiscal year 2011 IRS requested about \$174 million, or about 49 percent of the total BSM request, for LOE work—that is, tasks of a general or supportive nature, such as program management, which do not result in clear products. According to best practices, if more than 15 percent of a program's budget is classified as LOE, this amount should be scrutinized. One factor contributing to the large percentage of requested LOE funding in the BSM expenditure plan is that IRS's definition of LOE differs from the commonly accepted definition in that it includes some work that results in clear work products. By categorizing such tasks as LOE in the expenditure plan, IRS is (1) presenting an inaccurate picture of the work it is performing and the manner in which it is being managed,

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<sup>5</sup>IRS's guidance defines milestones as management decision points reviewing updated cost, progress, and risk information to make continuation decisions. The milestones are: 1- project initiation (vision and strategy), 2- conceptual design or business architecture, 3- system logical design/system architecture, 4- development, test, and integration, 5- system deployment and transition to support and operations. The development, test, and integration phase is sometimes split into two phases, each corresponding to a different milestone: 4a- completion of system physical design and 4b- development, test, and integration.

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and (2) providing Congress with less insight into its performance in implementing the BSM program.

- *CADE 2 risk management and preliminary cost estimating processes are generally consistent with best practices; however, IRS will be challenged in completing one of the two key projects by January 2012, as planned. In addition, IRS has developed a baseline estimate for the first phase of the CADE 2 program. We recently reported that IRS processes for managing risk and estimating preliminary costs for the CADE 2 program were generally consistent with best practices and made recommendations for improving the credibility of the cost estimate.<sup>6</sup> We also reported that the schedule for delivering the first phase, consisting of the Daily Processing and Database Implementation projects, was ambitious. IRS officials acknowledged this and took actions to address this schedule challenge. A recent independent assessment of the first phase of CADE 2 confirmed that IRS would be challenged in delivering the Database Implementation project on schedule. According to the Deputy Chief Information Officer for Strategy and Modernization and the Program Director for CADE 2, IRS is still on track for delivering the database by January 2012 as planned. However, the agency is considering phasing its implementation to reduce the impact on filing season operations. IRS also updated its cost estimate for the first phase of the CADE 2 program, estimating that the phase will cost \$241 million to complete.<sup>7</sup> According to the Deputy Chief Information Officer for Strategy and Modernization, this estimate will serve as the baseline for the phase.*
- *Information security weaknesses continue to affect IRS's modernization environment. In March 2011,<sup>8</sup> we reported that due, in part, to the fact that IRS has not yet fully implemented key components of its comprehensive information security program, 65 out of the 88 previously reported information security weaknesses*

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<sup>6</sup>GAO, *Taxpayer Account Strategy: IRS Should Finish Defining Benefits and Improve Cost Estimates*, [GAO-11-168](#) (Washington, D.C.: Mar. 24, 2011).

<sup>7</sup>According to IRS, this amount represents an increase of \$132 million from the preliminary estimate issued in July 2009. The preliminary estimate, however, was a rough-order-of-magnitude estimate that was not informed by the detailed design information for the Database Implementation and Daily Processing projects that has been developed since.

<sup>8</sup>GAO, *Information Security: IRS Needs to Enhance Internal Control over Financial Reporting and Taxpayer Data*, [GAO-11-308](#) (Washington, D.C.: Mar. 15, 2011).

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remained unresolved and new weaknesses were identified. Although not all these weaknesses pertain to BSM specifically, IRS's information security program encompasses all agency systems, and therefore the program weaknesses affect the modernization environment. We recommended that IRS take eight actions to fully implement key components of its comprehensive information security program. In June 2011, IRS provided us with the status of actions taken and activities planned to address these recommendations. We have not yet determined their effectiveness in addressing our recommendations.

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## Conclusions

IRS's fiscal year 2011 expenditure plan satisfies all six statutory conditions. Further, IRS has made progress in addressing most of the outstanding recommendations from our prior expenditure plan reviews. However, IRS is still working to include a quantitative measure of progress in meeting scope expectations in the plan, a recommendation we made over 4 years ago. Until IRS fully implements this recommendation, Congress may not have the information it needs to effectively assess the implementation of the BSM effort.

During fiscal year 2010, IRS successfully completed 11 out of 12 project milestones within 10 percent of cost and schedule, under budget, or early. However, one milestone was completed more than 70 percent over cost due to unplanned requirements. Further, IRS has categorized a large amount—about 50 percent—of the funding requested in the expenditure plan as level of effort, including for work that does not appear to be appropriately characterized as such. By not ensuring that all funding is appropriately categorized, IRS is presenting an inaccurate picture of the work it is performing and the manner in which it is being managed and providing Congress with less insight into its performance in implementing the BSM program.

IRS has also taken key steps to ensure that its CADE 2 program is being successfully managed. However, the program's schedule is ambitious, and this has been corroborated by a recent independent assessment. IRS officials have stated they are still on track for completing planned work on schedule but are taking steps to reduce risks.

Finally, weaknesses in information security continue to affect IRS's modernization environment, largely because the agency has not fully implemented key components of a comprehensive information security program. Both we and the Treasury Inspector General for Tax



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Administration have reported on these weaknesses, and full implementation of outstanding recommendations will be needed for IRS to ensure the security of its systems and the information they contain.

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## Recommendations for Executive Action

To more accurately represent the work IRS is performing and provide Congress greater insight into the agency's performance in implementing BSM, we recommend that the Commissioner of Internal Revenue direct the Chief Technology Officer to take the following three actions:

1. Modify IRS's definition of level of effort work to be consistent with the commonly accepted definition.
2. Reclassify activities involving discrete work and accordingly report on associated performance data in future expenditure plans.
3. Consistent with best practices, scrutinize any remaining LOE work exceeding 15 percent of the program's budget to look for opportunities to reduce the amount.

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## Agency Comments and Our Evaluation

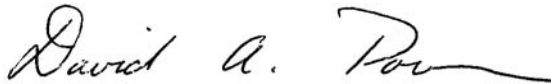
IRS's Commissioner provided written comments on a draft of this report (reprinted in app. II). He stated that he appreciated that the report recognized that the expenditure plan satisfied each of the six applicable statutory conditions, and that IRS valued GAO's feedback, having implemented four of the five outstanding recommendations. He further stated that IRS plans to implement the final recommendation--including a quantitative measure of progress in meeting scope--in the fiscal year 2012 expenditure plan.

The Commissioner also stated that while IRS staff had expressed disagreement over certain aspects of our feedback on cost estimation, the agency would continue to engage in constructive dialog to ensure that the level of effort it puts into specific deliverables is clearly expressed in the expenditure plan. We look forward to working with IRS as it addresses the representation of LOE within the expenditure plan. Regarding information security, the Commissioner stated that IRS has made substantial progress in the resolution of identified concerns over the past year.

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We are sending copies of this report to the Chairs and Ranking Members of the Senate and House committees and subcommittees that have appropriations, authorization, and oversight responsibilities for IRS. We are also sending copies to the Commissioner of Internal Revenue, the Secretary of the Treasury, the Chairman of the IRS Oversight Board, and the Director of OMB. In addition, the report will be available at no charge on the GAO website at <http://www.gao.gov>.

Should you and your offices have questions on matters discussed in this report, please contact me at (202) 512-9286 or at [pownerd@gao.gov](mailto:pownerd@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.

A handwritten signature in black ink that reads "David A. Powner". The signature is written in a cursive style with a long horizontal flourish at the end.

David. A. Powner  
Director, Information Technology  
Management Issues

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# Appendix I: Briefing Slides from the July 20, 2011, Briefing to the Senate and House Appropriations Subcommittee Staffs

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## **Review of IRS's Fiscal Year 2011 Business Systems Modernization Expenditure Plan**

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Briefing for Staff Members of the

Subcommittee on Financial Services and General Government, Committee on Appropriations, U.S. Senate

and the

Subcommittee on Financial Services and General Government, Committee on Appropriations, House of Representatives

July 20, 2011



## Contents

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Introduction and Objectives

Scope and Methodology

Results in Brief

Background

Results

Conclusions

Recommendations for Executive Action

Appendixes

I—Description of Business Systems Modernization Projects and Program-Level Initiatives

II—Additional Detail on IRS's Fiscal Year 2011 Business Systems Modernization Expenditure Plan

III—IRS Reported Cost and Schedule Variance for Project Milestones



## Introduction and Objectives

The Internal Revenue Service's (IRS) Business Systems Modernization (BSM) program is a multi-billion-dollar, high-risk, highly complex effort that involves the development and delivery of a number of modernized tax administration and internal management systems, as well as core infrastructure projects, that are intended to replace the agency's aging business and tax processing systems and provide improved and expanded service to taxpayers and internal business efficiencies for IRS. IRS's history of modernization spans several decades, and BSM, initiated in fiscal year 1999, is IRS's most recent modernization effort.

In 2008, prompted by several challenges confronting its Customer Account Data Engine (CADE) program—intended to replace legacy systems for storing, managing, and accessing taxpayer accounts<sup>1</sup>—the IRS Commissioner initiated a study of IRS's information technology (IT) systems modernization efforts from an overall portfolio perspective, which included operations of existing systems, new system developments, and information security. The results of the study led to the decision to refocus modernization efforts on the completion of the modernized taxpayer account database. IRS expects the resulting strategy, generally referred to as CADE 2, to deliver key benefits beginning in filing season 2012. Specifically, through CADE 2, IRS expects to (1) accelerate delivery of a relational taxpayer account database from at least 7 years under the initial approach to approximately 2 years, and (2) more quickly move to a single tax processing environment (instead of the two environments that currently exist). IRS has reported that CADE 2 is central to its vision for ongoing improvements to its tax administration systems, and it is expected that CADE 2 will result in faster refunds, improved customer service, elimination of notices based on out-of-date information, faster resolution of taxpayer account issues, and faster updates for Web-based tools and services for individual taxpayers. In addition to CADE 2, the fiscal year 2011 BSM request includes funding for CADE, Modernized e-File (MeF)—an electronic tax return filing system—and funding for IT infrastructure, architecture and integration, and program management activities.

<sup>1</sup>Among other things, the approach to develop the system was more complex and taking longer than initially anticipated.



## Introduction and Objectives

The Full-Year Continuing Appropriations Act, 2011,<sup>2</sup> provides appropriations for IRS for fiscal year 2011, including for BSM. The act prohibits IRS from obligating funds (excluding labor costs) for the BSM program until IRS submits a modernization expenditure plan to the congressional appropriations committees.<sup>3</sup>

This plan must

- meet the capital planning and investment control review requirements established by the Office of Management and Budget (OMB);
- comply with IRS's enterprise architecture (EA);<sup>4</sup>
- conform with IRS's enterprise life cycle methodology;<sup>5</sup>
- comply with federal acquisition rules, requirements, guidelines, and systems acquisition management practices;
- be approved by IRS, the Department of the Treasury, and OMB; and
- be reviewed by GAO.

Since mid-1999, IRS has submitted a series of expenditure plans for BSM appropriations. To date, IRS has received about \$3.1 billion for the BSM effort.

<sup>2</sup>Consolidated Appropriations Act, 2010, Pub. L. No. 111-117, div. C, title I, 123 Stat. 3034, 3164 (Dec. 16, 2009), under the authority and conditions of which the Full-Year Continuing Appropriations Act, 2011, Pub. L. No. 112-10, Division B, title I, Sec. 1101(a)(6), 125 Stat. 38, 102-103 (April 15, 2011), appropriates funds for the IRS for fiscal year 2011. Therefore, the statutory conditions that applied in fiscal year 2010 to IRS's expenditure plan continue to apply during fiscal year 2011.

<sup>3</sup>These funds support IRS's efforts to modernize its business systems. Other system efforts, including the maintenance of both BSM and non-BSM applications, are typically supported by funding that is not subject to the BSM program statutory conditions.

<sup>4</sup>An EA is an institutional blueprint that defines how an enterprise operates today, in both business and technology terms, and how it intends to operate in the future. An EA also includes a road map for transitioning between these environments.

<sup>5</sup>IRS refers to its life cycle management program as the enterprise life cycle.



## Introduction and Objectives

On May 10, 2011, IRS submitted its fiscal year 2011 expenditure plan to the Senate and House of Representatives Committees on Appropriations, seeking release of approximately \$352 million from the BSM account.<sup>6</sup>

As agreed with IRS's appropriations subcommittees, our objectives were to

- determine whether IRS's fiscal year 2011 expenditure plan satisfies the applicable statutory conditions;
- provide an update on IRS's progress in implementing our prior expenditure plan review recommendations; and
- provide any other observations about the expenditure plan and IRS's BSM program.

<sup>6</sup>The expenditure plan was prepared in October 2010; however, IRS revised its request for the BSM program following enactment of the fiscal year 2011 funding.



## Scope and Methodology

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To accomplish our objectives, we

- reviewed the fiscal year 2011 expenditure plan submitted by IRS in May 2011;
- analyzed the plan for compliance with the applicable statutory conditions;
- interviewed IRS program and project management officials to corroborate our understanding of the plan and other BSM activities;
- analyzed documentation on IRS's recent efforts to implement the outstanding recommendations from our prior expenditure plan reviews;
- reviewed and analyzed modernization program reviews and project management briefings and related documentation to assess program and project status and associated issues and risks;
- we did not verify the cost and schedule data for the project milestones we tracked, but we corroborated the data reported in the expenditure plan with data found in program governance documents, including project control reports, meeting minutes, and milestone exit decision memos;
- reviewed program management reports to assess the progress IRS has made in completing actions and implementing program management improvements; and
- reviewed related reports by the Treasury Inspector General for Tax Administration (TIGTA).

From these efforts, we believe the information we obtained is sufficiently reliable for this report.





## Scope and Methodology

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We conducted this performance audit from May 2011 to July 2011 in Washington, D.C., 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.



## Results in Brief

IRS's fiscal year 2011 expenditure plan satisfies all six statutory conditions.

IRS has implemented four of our five outstanding recommendations from prior expenditure plan reviews. For example, the agency developed high-level plans for the second phase of CADE 2. However, steps remain to implement our recommendation to ensure that expenditure plans include a quantitative measure of progress in meeting project scope expectations. IRS expects to include this metric in its fiscal year 2012 expenditure plan.

We have four observations related to the BSM program and fiscal year 2011 expenditure plan:

- *Of 12 project milestones<sup>7</sup> scheduled for completion between January 2010 and May 2011, 11 were completed within 10 percent of cost and schedule estimates, under budget, or early, and 1 was completed on schedule but significantly over cost.* For example, both the logical and physical design of CADE 2 were completed as budgeted and earlier than planned. However, a release of MeF was more than 70 percent over estimated costs at the completion of its deployment milestone. According to IRS, several factors contributed to the overrun, including the need to implement unplanned requirements for disaster recovery.

<sup>7</sup>IRS's guidance defines milestones as management decision points reviewing updated cost, progress, and risk information to make continuation decisions. Milestone 1- project initiation (vision and strategy), 2- conceptual design or business architecture, 3- system logical design/system architecture, 4- development, test, and integration, 5- system deployment and transition to support and operations. The development, test, and integration phase is sometimes split into two phases, each corresponding to a different milestone: 4a- completion of system physical design and 4b- development, test, and integration.



## Results in Brief

- *A large percentage of requested BSM funding is categorized as level of effort work.* IRS is requesting about \$174 million, or 49 percent of the total BSM request, for level of effort (LOE) work—that is, work consisting of tasks of a general or supportive nature, such as program management, which does not result in clear work products. We have previously reported that if more than 15 percent of a program's budget is classified as level of effort, best practices call for this amount to be scrutinized. One factor contributing to the large percentage of funding for LOE work requested in the BSM expenditure plan is that IRS's definition of LOE differs from the commonly accepted definition in that it includes discrete work, i.e., work that results in clear work products. By categorizing discrete work as LOE in the expenditure plan, IRS is (1) presenting an inaccurate picture of the work it is performing and the manner in which it is being managed, and (2) providing Congress with less insight into its performance in implementing the BSM program.



## Results in Brief

- *CADE 2 risk management and preliminary cost estimating processes are generally consistent with best practices; however, IRS will be challenged in completing one of two key projects by January 2012 as planned. In addition, IRS has developed a baseline estimate for the first phase of the CADE 2 program. We recently reported that IRS processes for managing risk and estimating preliminary costs for the CADE 2 program were generally consistent with best practices and made recommendations for improving the credibility of the cost estimate.<sup>8</sup> We also reported that the schedule for delivering the first phase, consisting of the Daily Processing and Database Implementation projects, was ambitious. IRS officials acknowledged this and took actions to address this schedule challenge. A recent independent assessment of the first phase of CADE 2 confirmed that IRS would be challenged in delivering the Database Implementation project on schedule. According to the Deputy Chief Information Officer for Strategy and Modernization and the Program Director for CADE 2, IRS is still on track for delivering the database by January 2012 as planned. However, the agency is considering phasing its implementation to reduce the impact on filing season operations. IRS also updated its cost estimate for the first phase of the CADE 2 program, estimating it will cost \$241 million to complete. According to the Deputy Chief Information Officer for Strategy and Modernization, this estimate will serve as the baseline for the phase.*

<sup>8</sup>GAO, *Taxpayer Account Strategy: IRS Should Finish Defining Benefits and Improve Cost Estimates*, GAO-11-168 (Washington, D.C.: Mar. 24, 2011).



## Results in Brief

- *Information security weaknesses continue to affect IRS's modernization environment.* In March 2011,<sup>9</sup> we reported that the 65 out of the 88 previously reported information security weaknesses which remained unresolved, and new weaknesses identified were due, in part, to the fact that IRS has not yet fully implemented key components of its comprehensive information security program. Although not all these weaknesses pertain to BSM specifically, IRS's information security program encompasses all agency systems, and therefore the program weaknesses affect the modernization environment. We recommended that IRS take eight actions to fully implement key components of its comprehensive information security program. In June 2011, IRS provided us with the status of actions taken and activities planned to address these recommendations. We have not yet determined their effectiveness in addressing our recommendations. In a separate review, the Treasury Inspector General for Tax Administration also found that IRS prematurely reported resolution of six vulnerabilities related to the current CADE system before effective corrective actions were taken.

<sup>9</sup>GAO, *Information Security: IRS Needs to Enhance Internal Control over Financial Reporting and Taxpayer Data*, GAO-11-308 (Washington, D.C.: Mar. 15, 2011).



## Results in Brief

To more accurately represent the work IRS is performing and provide Congress greater insight into the agency's performance in implementing BSM, we recommend that the Commissioner of Internal Revenue direct the Chief Technology Officer take the following three actions:

- (1) modify IRS's definition of level of effort work to be consistent with the commonly accepted definition;
- (2) reclassify activities involving discrete work and accordingly report on associated performance data in future expenditure plans; and
- (3) consistent with best practices, scrutinize any remaining LOE work exceeding 15 percent of the program's budget to look for opportunities to reduce the amount.

In e-mail comments on a draft of these briefing slides, IRS officials, including the Deputy Chief Information Officer for Strategy and Modernization, agreed with our recommendation to accurately represent the work IRS is performing and provide Congress with ongoing insight into the agency's performance in implementing BSM. However, the agency stated it did not agree with the actions we specified it take to implement our recommendation: IRS did not specifically address reasons for this disagreement. Nevertheless, IRS stated it would like to work with us on how to best implement our recommendation to ensure an adequate level of insight into implementation of the BSM program.



## Background

Since 1999, we have reviewed and reported on numerous BSM expenditure plans. In particular, we have reported on program management capabilities and controls that are critical to the effective management of the BSM program. They include

- cost and schedule estimates: IRS did not have effective procedures for validating contractor-developed cost and schedule estimates;<sup>10</sup>
- requirements development and management: IRS did not have adequate policies and procedures in place to guide its system modernization projects in developing and managing requirements;<sup>11</sup>
- post-implementation reviews: post-implementation reviews conducted were incomplete and did not follow IRS procedures;<sup>12</sup>
- quantitative measures of progress in scope: IRS expenditure plans did not have a quantitative measure of progress in meeting project scope expectations;<sup>13</sup> and
- conditional milestone exits: IRS did not have documented procedures for determining when projects were allowed to proceed to the next milestone with outstanding issues remaining to be addressed (i.e., conditional milestone exits).<sup>14</sup>

Over the years, we have made recommendations aimed at strengthening IRS's program management controls and capabilities, and IRS has worked to address them.

<sup>10</sup>GAO, *Business Systems Modernization: IRS Has Made Significant Progress in Improving Its Management Controls, but Risks Remain*, GAO-03-768 (Washington, D.C.: June 27, 2003).

<sup>11</sup>GAO, *Business Systems Modernization: IRS Needs to Complete Recent Efforts to Develop Policies and Procedures to Guide Requirements Development and Management*, GAO-06-310 (Washington, D.C.: Mar. 20, 2006).

<sup>12</sup>GAO, *Business Systems Modernization: IRS's Fiscal Year 2004 Expenditure Plan*, GAO-05-46 (Washington, D.C.: Nov. 17, 2004).

<sup>13</sup>GAO, *Business Systems Modernization: Internal Revenue Service's Fiscal Year 2007 Expenditure Plan*, GAO-07-247 (Washington, D.C.: Feb. 15, 2007).

<sup>14</sup>GAO, *Business Systems Modernization: Internal Revenue Service's Fiscal Year 2009 Expenditure Plan*, GAO-09-281 (Washington, D.C.: Mar. 11, 2009).



## Background

IRS's Modernization and Information Technology Services (MITS) organization has primary responsibility for managing and delivering the BSM program. It is headed by a Chief Technology Officer<sup>15</sup> who is supported by, among others, the Deputy Chief Information Officer (CIO) for Strategy/Modernization and the Deputy CIO for Operations. MITS is comprised of nine Associate CIO-level organizations, including the following, which are involved in the BSM program.

- *Applications Development*, which is responsible for building, testing, delivering and maintaining integrated information applications systems (i.e., software solutions) to support modernized systems and the production environment;
- *Enterprise Services*, which is responsible defining the current and target EAs and developing a transition strategy to move the agency toward the target environment;
- *Strategy and Planning*, which is responsible for collaborating with IT leadership to provide policy, direction, and administration of essential programs, including strategy and capital planning, strategic planning and performance measurement, financial management services, vendor and contract management, requirements and demand management, and risk management; and
- *Modernization Program Management*, which is responsible for overseeing the implementation of CADE 2.

<sup>15</sup>IRS's Chief Technology Officer, who was appointed in November 2008, reports to the Deputy Commissioner for Operations Support.





## Background

IRS's fiscal year 2011 expenditure plan describes the agency's efforts to develop modernized systems and supporting infrastructure.<sup>16</sup> They include

- continuing ongoing program-level initiatives (e.g., architecture and integration and program management) and core infrastructure projects (e.g., infrastructure shared services), and
- continuing segments of three tax administration projects.

Key tax administration projects include

- MeF, which is to provide a single standard filing structure for all types of IRS tax returns;
- Current CADE,<sup>17</sup> which was intended to provide the modernized database foundation to replace the existing Individual Master File processing system. In fiscal year 2011, the system is expected to continue with daily processing of tax returns for approximately 40 million taxpayers and implementing new tax law changes; and
- CADE 2, which is intended to provide the modernized database foundation and leverage applications, database structures, files, and business logic from both current CADE and Individual Master File<sup>18</sup> to provide a daily processing capability for moving all individual taxpayer accounts to a faster refund cycle and address IRS's long-term modernization plans and goals.

Details on these and other BSM projects and program-level initiatives identified in the fiscal year 2011 plan are provided in appendix I. Table 1 below shows a financial summary of the plan. Further details on the plan are provided in appendix II.

<sup>16</sup>Efforts to maintain and enhance non-BSM systems are funded from a different appropriation not subject to the BSM expenditure plan appropriations restriction.

<sup>17</sup>Current CADE refers to the prime contract development efforts that began in 2002 to replace the legacy Individual Master File and to date have resulted in a series of five releases and sub-releases. Up until the time IRS starting defining CADE 2, it was referred to as CADE.

<sup>18</sup>IRS officials have stated that the agency does not yet have any plans for modernizing the Business Master File, which stores tax data and related information on business taxpayers. However, IRS officials have told us that they expect to be able to replicate the CADE 2 approach to modernize the Business Master File.



Background

Table 1: Summary of IRS's Fiscal Year 2011 BSM Expenditure Plan

	Amount (in thousands)
<b>Tax administration projects</b>	
MeF	\$39,100
Current CADE <sup>a</sup>	28,000
CADE 2	136,100
<b>Subtotal—tax administration projects</b>	<b>203,200</b>
<b>Core infrastructure projects</b>	
Development, Integration, and Testing Environments	14,500
Infrastructure Shared Services	17,500
<b>Subtotal—core infrastructure projects</b>	<b>32,000</b>
<b>Architecture, integration, and management</b>	
Architecture and integration	11,200
Program governance and control	1,650
Requirements management	2,670
Management processes	3,250
Federally funded research and development center	6,050
Project management	2,735
<b>Subtotal—architecture, integration, and management</b>	<b>27,555</b>
<b>Management reserve</b>	<b>8,925</b>
<b>BSM capital total</b>	<b>271,680</b>
<b>BSM labor<sup>b</sup></b>	<b>80,689</b>
<b>Maintaining current levels</b>	<b>0</b>
<b>Total</b>	<b>\$352,369</b>

Source: GAO analysis of IRS data.

<sup>a</sup>IRS has decided it will not use Current CADE for the January 2012 filing season. According to officials, they plan to seek internal approval to reprogram the \$13 million of \$28 million that was requested for a new release of the program to CADE 2. According to IRS guidance, once internal approval is obtained to reprogram BSM funds, the agency is required to issue a congressional notification of the change, which is reviewed and approved by Treasury and OMB prior to issuance.

<sup>b</sup>The BSM labor request is a 75 percent increase over the FY 2010 request (\$46 million). IRS officials attributed the increase to CADE 2 labor needs.



**Results**  
Statutory Conditions

**IRS's Fiscal Year 2011 BSM Expenditure Plan Satisfies the Six Statutory Conditions**

As in years past, in order to receive fiscal year 2011 funding, IRS was required to submit an expenditure plan that satisfied the following six statutory conditions. We found that the plan satisfied all six.

**Table 2: Status of Fiscal Year 2011 Expenditure Plan Provisions for Satisfying Statutory Conditions<sup>19</sup>**

Statutory conditions	Satisfied	Partially satisfied
1. Meets OMB capital planning and investment control review requirements	√	
2. Complies with IRS's EA	√	
3. Conforms with IRS's enterprise life cycle methodology	√	
4. Complies with the acquisition rules, requirements, guidelines, and systems acquisition management practices used by the federal government	√	
5. Approved by IRS, the Department of the Treasury, and OMB	√	
6. Reviewed by GAO	√	

Source: GAO analysis of IRS data.

<sup>19</sup>Full-Year Continuing Appropriations Act, 2011, Pub. L. No. 112-10, Division B, Title I, Sec. 1101(a)(6), April 15, 2011, 125 Stat. 38, 102-103; and Consolidated Appropriations Act, 2010, Pub. L. No. 111-117, Division C, Title 1, Dec. 16, 2009, 123 Stat. 3034, 3164.



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### **1. IRS's expenditure plan meets OMB capital planning and investment control review requirements**

OMB requires that agencies establish policy for planning, budgeting, acquisition, and management of federal capital assets. More specifically, it calls for agencies to develop capital planning and investment control review processes that help ensure that projects are being implemented at an acceptable cost and within reasonable and expected time frames, and that they are contributing to observable improvements in mission performance. The BSM expenditure plan met this condition. Specifically, as noted in the plan, IRS has established a structured governance and decision-making process that includes various levels of governance bodies to manage its projects under a standardized approach.



## Results Statutory Conditions

We recently performed an assessment of this process against the best practices identified in our Information Technology Investment Management Framework<sup>20</sup> and found it to be generally consistent with best practices and OMB capital planning and investment control review requirements.<sup>21</sup> While we excluded BSM projects from our assessment,<sup>22</sup> our findings related to project oversight are relevant to the BSM program. We noted in particular that IRS has a strong oversight program, implementing all of the seven associated key practices defined in our framework. For example, consistent with these practices, IRS has developed written policies and procedures for management oversight of its investments. These include (1) a tiered escalation guide which outlines the process for elevating a project to a higher level of control or governance for review, mitigation, and resolution when resolution cannot be reached at a project's respective level of control or governance; and (2) written procedures and a template for conducting milestone exit reviews to assess a project's readiness for moving to the next phase of its life cycle or exit a milestone. In addition, the agency has adequate resources for overseeing IT projects, including multiple levels of governance boards. The agency also maintains an automated system for tracking project action items assigned during governance board meetings until mitigated. IRS also requires project management plans that document cost, schedule, benefit, and risk expectations. Consistent with OMB capital planning and investment control review requirements, IRS also submits capital asset plans (known as exhibit 300s) for the BSM projects and also includes these projects in the Treasury IT Investment Portfolio (generally referred to as the exhibit 53).

<sup>20</sup>GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, GAO-04-394G (Washington, D.C.: March 2004).

<sup>21</sup>GAO, *Investment Management: IRS Has a Strong Oversight Process but Needs to Improve How It Continues Funding Ongoing Investments*, GAO-11-587 (Washington, D.C.: to be released on July 20, 2011).

<sup>22</sup>BSM investments go through a different investment management process than other investments at IRS. Because we have been reviewing these investments for more than a decade and reporting on them on a now-annual basis, we did not include them in the scope of our investment management review.



## 2. IRS's expenditure plan complies with IRS's EA

In September 2010 IRS issued its Enterprise Transition Plan, a roadmap for transitioning the IRS EA over the next 3 to 5 years. The plan, which is updated annually, provides information on IRS's overall plan to evolve IT and facilitate the investment decision-making process. For example, the transition plan identifies key IT initiatives, such as CADE 2, and identifies how they fit into operational goals deployed over a 5-year time frame. Further, the BSM expenditure plan includes activities necessary for ensuring that the BSM programs comply with the IRS EA. Specifically, the plan identifies funding for continued definition and implementation of the EA. For example, the plan identifies funding needed for

- performing architecture, engineering, and integration activities to ensure that the IRS EA provides the information and guidance necessary for modernization projects;
- supporting the performance of EA compliance certification activities; and
- finalizing and publishing updates to the EA based on change requests.

In addition, IRS has outlined general processes that projects are to follow in order to ensure their compliance with the IRS EA. Specifically, these processes discuss the activities and documentation required to ensure compliance with the EA. For example, at milestone 3 in IRS's enterprise life cycle—which is the phase where a project's preliminary design is developed—IRS requires projects to submit an EA compliance checklist, which is used to help ensure that the project design has been checked for compliance.



### **3. IRS's expenditure plan conforms to the agency's enterprise life cycle methodology**

IRS has a documented enterprise life cycle methodology, which defines a set of processes that are to be used throughout the program's life cycle, including processes for managing system investments, configuration, and risks. In August 2009, IRS revised its enterprise life cycle methodology. The new guidance provided additional information and clarification on topics such as project charters, milestone readiness reviews, and obtaining concurrence for deviations from the enterprise life cycle when tailoring the methodology for specific projects. The BSM expenditure plan conforms to IRS's enterprise life cycle. Specifically, the plan calls for the following:

- continuing to provide centralized guidance, administration, mitigation, and closure of risks and issues throughout the life cycle of each project;
- improving usability and tailoring standards for the enterprise life cycle;
- building a central enterprise integration toolkit site for all program management process tasks, assets, and tools on the enterprise life cycle path; and
- refining enterprise life cycle processes and procedures to address gaps and weaknesses identified in the CMMI<sup>®</sup> level 2 appraisal of application development for all BSM projects.<sup>23</sup>

In addition, although reporting on funding for some program milestones has been combined in previous years, the plan, consistent with our recommendation, reports available performance information for individual milestones according to their approved tailored enterprise life cycle.

<sup>23</sup>CMMI is registered in the U.S. Patent and Trademark Office by Carnegie Mellon University. The CMMI is the Software Engineering Institute's (SEI) model that describes how to develop the processes needed for software development and specific practices that organizations should follow.



**Results**  
Statutory Conditions

**4. IRS's expenditure plan complies with the acquisition rules, requirements, guidelines, and systems acquisition management practices used by the federal government<sup>24</sup>**

The quality of software is governed largely by the quality of the processes involved in developing or acquiring it and maintaining it. Carnegie Mellon University's SEI<sup>25</sup> calls for disciplined software development and acquisition practices which are considered industry best practices. SEI, recognized for its expertise in software processes, has developed models and methods that define and determine organizations' software process maturity, including the CMMI model used to develop processes needed for software development and acquisition and specific practices that agencies should follow to mature these processes.

<sup>24</sup>For this condition, we did not determine whether the expenditure plan comports with the Federal Acquisition Regulation or other federal requirements beyond those encompassed by the SEI's Capability Maturity Model. Key process areas addressed in the model include acquisition planning, solicitation, requirements development and management, project management, contract tracking and oversight, evaluation, and transition to support.

<sup>25</sup>SEI is a federally funded research and development center operated by Carnegie Mellon University and sponsored by the Department of Defense. Its objective is to provide leadership in software engineering and in the transition of new software engineering technology into practice.





## Results Statutory Conditions

IRS initiated a CMMI implementation project to improve its software acquisition and development practices by conducting a gap analysis—which compared actual performance with potential performance—and performing benchmarking activities, according to agency officials, in June 2009. As a result of these activities, IRS developed process improvement recommendations, including, among other things, updating the existing project management plan template, expanding performance monitoring, and establishing a communications management plan. In November 2010, the MITS Application Development office was found to be operating at the Managed Maturity Level 2 for both major and non-major projects.<sup>26</sup> As part of the assessment, reviewers looked at IRS’s software development and acquisition areas. Examples of weaknesses identified include the need for targeted training for Contracting Officers Technical Representatives to prepare them for their responsibilities, as well as ensuring that all projects establish and maintain a top-level work breakdown structure suitable to scope and estimate their projects. IRS plans to address the weaknesses as part of efforts to achieve a Level 3 designation.

<sup>26</sup>The CMMI ranks organizational maturity according to five levels. Maturity levels 2 through 5 require verifiable existence and use of certain key process areas. CMMI level 2, known as the “managed” level is characterized by processes that, among other things are planned and executed in accordance with policy; provide adequate resources; ensure the designated work products are under the appropriate levels of configuration management; involve relevant stakeholders; and are monitored, controlled, and reviewed.



## Results Statutory Conditions

In addition, the expenditure plan states that IRS will take the following actions in fiscal year 2011:

- as part of the BSM management processes, the plan states that IRS will collect earned value data on all major acquisitions as defined by the Department of the Treasury, implement simplified earned value reporting for all other projects, and integrate project schedules;
- develop process artifacts in process management, project management, support management, and engineering management in order to incorporate CMMI and other process improvements; and
- refine the agency's enterprise life cycle processes and procedures to address gaps and weaknesses identified in the CMMI level 2 assessment.



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**5. IRS's expenditure plan was approved by IRS, the Department of the Treasury, and OMB**

The expenditure plan was reviewed and approved by IRS on August 18, 2010, the Department of Treasury on September 10, 2010, and OMB on October 15, 2010. However, IRS revised the requested amounts for the BSM programs after the enactment of the fiscal year 2011 appropriations. The revised request was reviewed and approved by IRS on April 20, 2011; the Department of the Treasury on April 28, 2011; and OMB on May 2, 2011.

**6. IRS's expenditure plan was reviewed by GAO**

We completed our review of the plan in July 2011.



**Results**  
Prior Recommendation Status

**IRS Has Implemented Four of Our Five Outstanding Recommendations from Prior Expenditure Plan Reviews, but Still Needs to Provide a Quantitative Measure of Progress in Meeting Project Scope Expectations**

IRS implemented our recommendations to revisit the BSM vision and strategy and develop goals and plans, ensure explanations of cost and schedule variances included underlying causes, report available performance information for individual milestones, and define planning activities for the second phase of the CADE 2 program. However, steps remain to fully implement the recommendation to develop a quantitative measure of progress in meeting project scope expectations.

**Table 3: Status of IRS’s Progress in Implementing Prior Expenditure Plan Review Recommendations**

Prior GAO recommendations	Implemented	In progress
<i>Modernization vision and strategy</i> —Fully revisit the vision and strategy for the BSM program and develop a new set of long-term goals, strategies, and plans that are consistent with the budgetary outlook and IRS’s management capabilities	√	
<i>Quantitative measures of progress in meeting scope expectations</i> —Ensure that future expenditure plans include a quantitative measure of progress in meeting project scope expectations		√
<i>Underlying causes of variance</i> —Ensure that explanations of project cost and schedule variances provided in the expenditure plan consistently include underlying causes	√	
<i>Reporting on combined milestones</i> —For individual milestones that have been combined, report available performance information in the expenditure plan to provide Congress with information on progress in delivering functionality	√	
<i>Time frames for CADE 2 transition state 2</i> —Define specific time frames for the second phase of CADE 2 planning activities, including defining a core set of requirements to guide progress.	√	

Source: GAO analysis of IRS data.



### Modernization Vision and Strategy

In July 2005, we recommended that IRS fully revisit the vision and strategy for the BSM program and develop a new set of long-term goals, strategies, and plans consistent with the budgetary outlook and IRS's management capabilities.<sup>27</sup> We also noted that the vision and strategy should include time frames for consolidating and retiring legacy systems. IRS agreed with our recommendation and, in response, took several actions. For example, IRS developed an initial cycle of its Modernization Vision and Strategy in fiscal year 2006 and a companion Enterprise Transition Plan to guide IT investment decisions during fiscal years 2007 through 2011. The Enterprise Transition Plan, which IRS has been updating on an annual basis, describes the overall IRS IT modernization vision, the IT modernization strategies, and existing and proposed investments that align with these strategies. IRS also developed a high-level strategy and 5-year schedule for retiring and consolidating systems, which it began implementing.<sup>28</sup> The most recent version of the Enterprise Transition Plan also identifies IRS projects or systems that have been retired in the last year, or that have been identified as potential retirements in the next 1 to 5 years by current modernization and enhancement projects.

IRS has also been building its internal management capabilities in order to reduce reliance on vendors and has started shifting responsibilities accordingly. For example, when BSM was initiated, IRS contracted with Computer Sciences Corporation as the prime systems integration support contractor for the program. According to IRS, the agency itself now serves as the systems integrator for all BSM systems, including Current CADE, MeF, and CADE 2.

<sup>27</sup> GAO-05-774.

<sup>28</sup> IRS, *Applications Development: 5-Year Plan, "A systems view" Projects-Programs-Retirements & Consolidations*.



## Results Prior Recommendation Status

Prompted by challenges facing the CADE program, IRS performed a comprehensive study of its modernization program in 2008 which led to a focus on CADE 2, IRS's revised strategy to address the management of individual taxpayer accounts as well as several long-term goals to enhance IRS's systems. Specifically, the strategy's initial phase is to create a modernized taxpayer database and to move the processing of individual taxpayer accounts from a weekly processing cycle to a daily processing cycle by the January 2012 filing tax season. At the time of our last expenditure plan review, we had just received several planning documents for CADE 2 and had not yet assessed them to determine if the program addressed our recommendation. We have since reviewed these documents and performed a review of CADE 2.<sup>29</sup> Based on our review of the program, and the efforts identified above, we believe IRS has addressed our recommendation.

<sup>29</sup>GAO, *Taxpayer Account Strategy: IRS Should Finish Defining Benefits and Improve Cost Estimates*, GAO-11-168 (Washington, D.C.: Mar. 24, 2011).



## Results Prior Recommendation Status

### Quantitative Measure of Progress in Meeting Scope Expectations

In February 2007, we recommended that IRS ensure that future expenditure plans include a quantitative measure of progress in delivering systems' planned functionality (scope).<sup>30</sup> We also recommended that, in developing this measure, IRS consider using earned value management<sup>31</sup> since this is a proven technique required by OMB for measuring cost, schedule, and functional performance (i.e., scope of work) against plans. While IRS agreed with our recommendation to develop a quantitative measure of progress in meeting scope expectations, it stated at the time that it did not believe earned value management would provide this measure, given the manner in which the technique was being used at the agency.<sup>32</sup> Instead IRS proposed a two-step approach to address our recommendation. As an initial step, IRS developed a qualitative measure that indicated the difference between a project release's planned and delivered capabilities and began using it in the fiscal year 2008 expenditure plan. In March 2008 we reported that, as a second step, IRS planned to leverage its requirements management tools to assign quantitative values to the capabilities in order to develop a quantitative measure of scope in the fiscal year 2009 plan. IRS did not have the quantitative measure ready as planned but has continued to work on its development.

<sup>30</sup>GAO, *Business Systems Modernization: Internal Revenue Service's Fiscal Year 2007 Expenditure Plan*, GAO-07-247 (Washington, D.C.: Feb. 15, 2007).

<sup>31</sup>Earned value management is a project management tool that integrates the investment scope of work with schedule and cost elements for investment planning and control. This method compares the value of work accomplished during a given period with that of the work expected in the period. Differences between accomplishments and expectations are measured in both cost and schedule variances.

<sup>32</sup>In December 2007, the Associate Chief Information Officer for Applications Development stated that IRS uses earned value management to measure progress in completing enterprise life cycle deliverables, not in delivering functionality, and consequently the agency's application of earned value management does not provide a quantitative measure of progress in meeting scope expectations.



## Results Prior Recommendation Status

According to the Chief Technology Officer, IRS now plans to include this measure in the fiscal year 2012 expenditure plan. As we have previously reported,<sup>33</sup> fully implementing a quantitative measure of progress in delivering systems' planned functionality will help IRS in managing and controlling BSM. In addition, without this measure, Congress may not have the information it needs to effectively assess IRS's performance in implementing BSM.

<sup>33</sup>GAO, *Business Systems Modernization: Internal Revenue Service's Fiscal Year 2010 Expenditure Plan*, GAO-10-539 (Washington, D.C.: May 10, 2010).





### **Underlying Causes of Variance**

In May 2010, we recommended that IRS ensure that explanations of project cost and schedule variances provided in the expenditure plan consistently include underlying causes.<sup>34</sup> We noted that although IRS's guidance calls for an explanation of underlying causes, this explanation was not included in the expenditure plan for milestones that went over planned costs. In response, IRS stated that by September 2010 it would revise its guidance and ensure that BSM budget points of contact were notified of the updated guidance. In October 2010, IRS included underlying causes of cost variances for the five milestones in the fiscal year 2011 expenditure plan. For example, for a milestone of the MeF program, IRS indicated there was a cost variance of about \$29 million. IRS stated that this was due to implementing unplanned requirements including disaster recovery, automated interface to support external users, and expanded hardware needs. Reporting on the underlying causes of variances in the expenditure plan provides Congress with insight into specific areas needing improvement.

<sup>34</sup>GAO-10-539.



**Results**  
Prior Recommendation Status

**Reporting on Combined Milestones**

In May 2010, we recommended that for individual milestones that have been combined, IRS should report available performance information in the expenditure plan to inform Congress on progress in delivering functionality.<sup>35</sup> Further, we noted that due to the combination of milestones and the manner in which they were reported within the expenditure plan, we were unable to calculate the cost and schedule variance for one of the BSM programs. In response, IRS stated that by February 2011 it would ensure that the expenditure plan incorporated available information for delivering functionality on all individual milestones that had been combined. In the fiscal year 2011 expenditure plan, for milestones previously reported together, IRS provided cost information related to each individual milestone. Further, IRS noted that funding for the previously combined program releases was initially tracked and reported as a single milestone segment; however, it had been broken out into separate segments for consistency with the project's approved enterprise life cycle tailoring plan. Reporting milestone performance data aligned to the project's enterprise life cycle tailoring plan will provide Congress with better insight into the progress made in delivering functionality.

<sup>35</sup>GAO-10-539.



**Results**  
Prior Recommendation Status

**Time Frames for the Second Phase of CADE 2**

In May 2010, we recommended that IRS define time frames for the second phase of CADE 2 planning activities, including defining a core set of requirements to guide progress.<sup>36</sup> Specifically, we noted that while IRS had planned to set up teams to work on requirements, design principles, framework for applications and infrastructure, engineering analysis, and prototypes during fiscal year 2010, it had not yet defined associated time frames for completing these key planning activities. In response, IRS stated that by April 2011 a plan would be developed for launching the second phase activities. In December 2010, IRS identified a planning executive for the phase and began the planning process. In March 2011, IRS completed an initial plan for this phase describing capabilities and scope, the general approach for planning and delivering the phase, and planned results and initial time frames. The time frames include milestones for completing foundation planning activities for fiscal year 2011 (for example, clarifying the phase’s scope and preparing the program management office) and “ballpark” estimates spanning three fiscal years for completing the phase.

<sup>36</sup>GAO-10-539.



## Observations about IRS's BSM Program and Expenditure Plan

**Observation 1: Of 12 project milestones<sup>37</sup> planned for completion between January 2010 and May 2011, 11 were completed within 10 percent of schedule and cost estimates, under budget, or early, and 1 was completed on schedule but significantly over cost.**

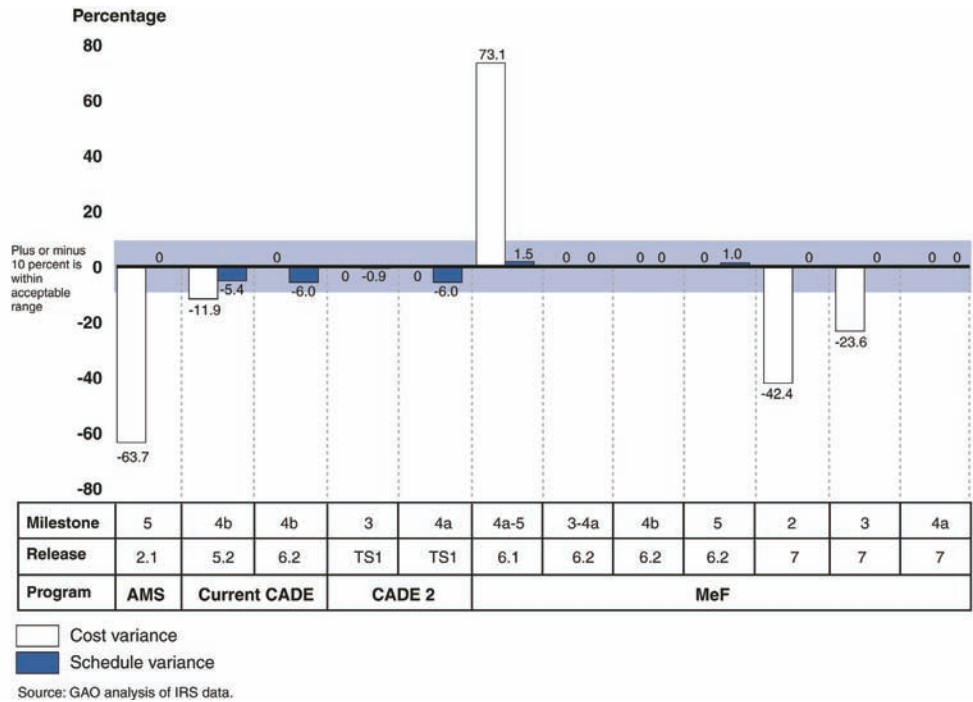
Our analysis of IRS's reported planned and actual milestone costs and completion dates showed that 11 milestones were completed within 10 percent of cost and schedule estimates, under budget, or early, and 1, while it was within 10 percent of schedule estimates, significantly exceeded its cost estimate. Specifically, Release 6.1 of MeF, intended to roll out the first phase of the 1040 processing capability, completed a combined detailed design (milestone 4a), system development (milestone 4b), and system deployment (milestone 5) milestone more than 70 percent over estimated costs.

Figure 1 depicts the detailed cost and schedule variances of the project milestones that were completed from January 2010 through May 2011.

<sup>37</sup>IRS's guidance defines milestones as management decision points reviewing updated cost, progress, and risk information to make continuation decisions. BSM programs undergo the following milestones: Milestone 1- project initiation (vision and strategy), 2- conceptual design or business architecture, 3- system logical design/system architecture, 4- development, test, and integration, 5- system deployment and transition to support and operations. The development, test, and integration phase is sometimes split into two phases, each corresponding to a different milestone: 4a- completion of system physical design and 4b- development, test, and integration.



Figure 1: Cost and Schedule Variances for Project Milestones Completed from January 2010 through May 2011





## Results Observations

The following provides details for the 11 milestones that were completed within 10 percent of cost and schedule estimates, under budget, or early:

### Accounts Management Services (AMS):<sup>38</sup>

- Release 2.1, milestone 5: this release, designed to provide authorized employees an interface to view and update certain taxpayer information, completed deployment on schedule at a cost of \$398 thousand, or about 64 percent under budget. IRS indicated that the variance was due to the required realignment of funds to support Release 1.3 software and infrastructure design activities. IRS further stated that this realignment was made possible by greater reliance on less costly in-house government support and the deployment of Release 2.1 going more smoothly than originally anticipated.

### Current CADE:

- Release 5.2, milestone 4b: this release was intended to implement changes to the tax laws for filing season 2010 as well as deliver the refund hold capability and the ability to process returns that include credit election that were deferred from Release 4.2. The release completed system development 9 days ahead of schedule at a cost of about \$19.6 million. This is \$2.6 million (about 12 percent) less than the amount budgeted for this milestone. IRS indicated that the costs for this milestone were less than planned because the expected impacts of changes to tax laws and the filing season requirements were reduced in scope and complexity to a greater extent than anticipated.

<sup>38</sup>IRS has not requested fiscal year 2011 funds for the AMS program given that, according to IRS, as of fiscal year 2010 IRS began incorporating all future AMS releases into the CADE 2 strategy.



## Results Observations

- Release 6.2, milestone 4b: this release, intended to include tax law and filing season changes, completed the development, test, and integration phase at a cost of \$22 million—as budgeted—and 10 days earlier (6 percent) than planned.

### CADE 2:

- Transition state 1: this phase of CADE 2 is intended to establish a single database to house all individual taxpayer accounts, enhance processing to include batch daily processing, provide more timely data to the key customer service database, and provide data and tools to allow business users to be more effective in compliance and customer service.
  - The logical design phase (milestone 3) was completed at a cost of \$14.2 million—as budgeted—and 2 days (0.9 percent) earlier than planned.
  - The physical design phase (milestone 4a) was completed at a cost of \$10 million—as budgeted—and 9 days (6 percent) earlier than planned.



## Results Observations

### MeF:

- Release 6.2: this release, intended to enhance the disaster recovery capabilities provided in Release 6.1 and also to implement code optimization and performance enhancement to support the volume of returns anticipated for 2012, completed three milestones during the reporting period.
  - The design phase (milestone 3-4a) was completed on schedule at a cost of \$8.9 million—as budgeted.
  - The release completed system development, integration, and testing (milestone 4b) on December 29, 2010, as planned and at a cost of \$7.8 million—as budgeted.
  - System deployment (milestone 5) was completed one day later (1 percent) than planned, and at a cost of \$5.2 million—as budgeted.
- Release 7: this release, when deployed in 2012, is intended to roll out over 125 remaining 1040 family schedules and forms, including forms 1040A and 1040EZ, which will expand MeF's reach to 100 percent of the e-file population, or approximately 98.3 million filers. IRS completed both conceptual and preliminary design phases on schedule and under budget, while detailed design met both cost and schedule estimates.
  - Conceptual design phase (milestone 2), budgeted to cost about \$5.3 million, was completed on schedule at a cost of approximately \$3 million (or about 42 percent under budget).
  - Preliminary design (milestone 3), budgeted at about \$15.9 million, was completed on schedule at a cost of approximately \$12 million (or about 24 percent under budget).
  - Detailed design (milestone 4a), was completed on schedule at a cost of about \$11.8 million—as budgeted.





## Results Observations

The following provides information on the MeF milestone that was completed on schedule, but exceeded planned costs by more than 70 percent. As we noted last year,<sup>39</sup> the deployment of Release 6.1 of MeF represented a change in strategy for the program. Specifically, in response to schedule delays due to added complexities and requirements, IRS developed a new deployment strategy whereby the deployment of the 1040 series of forms was expected to be completed up to 2 years later than planned under the initial strategy and at a cost of nearly \$50 million more:

- Release 6.1: this release, which represented the first phase of the IRS rollout of the MeF 1040 capability, completed the deployment phase (milestone 5) 7 days later than scheduled at a cost of about \$68.9 million—approximately 73 percent over the budget of approximately \$39.8 million. According to IRS, several factors contributed to the overrun, including the need for additional funds to implement unplanned requirements such as the first phase of disaster recovery, Transactional National Account Profile, automated interface to support external users, increased availability/code optimization, and expanded hardware needs.

<sup>39</sup>GAO-10-539.



## Results Observations

### **Observation 2: A large percentage of requested BSM funding is categorized as level-of-effort work.**

IRS is requesting about \$174 million, or 49 percent of the total BSM request, for level of effort (LOE) work.<sup>40</sup> According to the GAO Cost Guide, LOE consists of tasks of a general or supportive nature, such as program management, which do not result in clear work products.<sup>41</sup> Therefore schedule variances are not reported for such work. If more than 15 percent of a program's budget is classified as level of effort, best practices call for this amount to be scrutinized.

One factor contributing to the large percentage of funding for LOE work requested in the BSM expenditure plan is that IRS's definition of LOE differs from the commonly accepted definition in that it includes activities that result in clear work products, such as a risk management plan or monthly reports. For example, IRS is characterizing the work associated with developing the CADE 2 infrastructure as LOE even though this work is expected to include the development of production and disaster recovery environments, which should include discrete work.<sup>42</sup> When we discussed this issue with IRS, we found that the agency is managing some of the work assigned as LOE in the expenditure plan as discrete work and accordingly tracking schedule performance information for it. By categorizing discrete work as LOE in the expenditure plan, IRS is (1) presenting an inaccurate picture of the work it is performing and the manner in which it is being managed, and (2) providing Congress with less insight into its performance in implementing the BSM program.

<sup>40</sup>We calculated the amount requested for LOE work by summing up the requested amounts for all activities identified as LOE in the expenditure plan.

<sup>41</sup>GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: March 2009).

<sup>42</sup>Discrete work is work that has definite end products or events.



**Results**  
Observations

**Observation 3: CADE 2 risk management and preliminary cost estimating processes are generally consistent with best practices; however, IRS will be challenged in completing one of two key projects by January 2012 as planned. In addition, IRS has developed a baseline cost estimate for the first phase of the CADE 2 program.**

In March 2011, we reported that while IRS processes for managing risk and estimating costs for the CADE 2 program were generally consistent with best practices, the cost estimate could be improved and the expected benefits had not yet been fully defined.<sup>43</sup> As a result, we recommended that IRS identify benefits for the second phase, set related targets, and identify how systems and business processes might be affected. We also recommended improving the credibility of the cost estimate by (1) including inflation when calculating costs, (2) including the costs that were explicitly excluded or providing a rationale for excluding them, and (3) including business costs associated with moving to daily processing or document that these costs were excluded and provide a rationale for excluding them. IRS agreed with our recommendations and provided corrective actions and implementation dates for the recommendations. We also reported that while IRS is working to ensure CADE 2 is successfully managed, the schedule for delivering the initial phase was ambitious. IRS officials acknowledged this and took actions to increase their chances of meeting it, including moving certain activities up, performing others concurrently, and adding checkpoints to monitor the program's status. We noted while these actions may increase the likelihood of meeting the schedule, some of them, such as performing activities concurrently, could potentially introduce more risk to CADE 2's successful development and implementation.

<sup>43</sup>GAO-11-168.



## Results Observations

Further, in March 2011, IRS made the first of three critical decisions planned for the first phase of CADE 2. According to IRS officials, the first decision was whether or not to move from the current processing environment to a “new cycle” and accelerated Individual Master File for the fiscal year 2012 filing season.<sup>44</sup> According to IRS, the two remaining decision points—to be made in September 2011—will be whether or not to move forward with (1) daily processing and (2) database implementation.

To assist with the decision as to whether the program was ready to proceed with the new cycle and accelerated Individual Master File, IRS commissioned a readiness assessment by an independent group. In February 2011, the reviewers reported that based on the likelihood of success versus consequences of potential failure, IRS should proceed with the new cycle and accelerated Individual Master File, largely due to the available contingencies should the program falter. The reviewers also assessed the other two decision points in the context of how they related to the first. The review found that there was a strong case for moving ahead with daily processing. Specifically, it stated that the program was on track and should continue as planned. However, the reviewers stated there was a lower likelihood of success for the database implementation component due to compressed delivery time frames and the steep learning curve required of new staff and recommended actions to ensure success going forward. According to the Deputy Chief Information Officer for Strategy and Modernization and the Program Director for CADE 2, IRS is still on track for delivering the database by January 2012 as planned. However, consistent with a recommendation from the independent assessment, it is considering phasing its implementation to reduce the impact on filing season operations.

<sup>44</sup>The new cycle will shift the weekly business processing cycle by one day, and accelerated Individual Master File is the corresponding one-day shift in the system processing cycle, which according to IRS, leads to “accelerated” business benefits, such as faster returns.



## Results Observations

In addition, at the completion of preliminary design, IRS updated its cost estimate for the first phase of the CADE 2 program. In this updated estimate, IRS determined that the cost to complete this phase was approximately \$241 million.<sup>45</sup> In contrast to the July 2009 preliminary estimate which we assessed as part of our CADE 2 review, the estimate is based on updated information resulting from design activities. According to the Deputy Chief Information Officer for Strategy and Modernization, this estimate will serve as the baseline for the first phase of CADE 2.

<sup>45</sup>According to IRS, this amount represents an increase of \$132 million from the preliminary estimate issued in July 2009. The preliminary estimate, however, was a rough-order-of-magnitude estimate that was not informed by the detailed design information for the Database Implementation and Daily Processing projects that has been developed since.



**Observation 4: Information security weaknesses continue to affect IRS’s modernization environment.**

IRS continues to have information security weaknesses that affect its modernization environment. In March 2011,<sup>46</sup> we reported that 65 out of the 88 previously reported information security weaknesses that remained unresolved and new weaknesses identified were due, in part, to the fact that IRS had not yet fully implemented key components of its comprehensive information security program. Although not all these weaknesses pertain to BSM specifically, IRS’s information security program encompasses all agency systems, and therefore the program weaknesses affect the modernization environment. For example, we reported that the agency’s monitoring process for verifying whether an action had corrected or mitigated an identified weakness was not working as intended, and that IRS continued to inform us that it had corrected reported weaknesses which we determined were not yet fully resolved. We recommended that IRS take eight actions to fully implement key components of its comprehensive information security program. In June 2011, IRS provided us with the status of actions taken and activities planned to address these recommendations. For example, IRS stated it plans to enhance the monitoring and testing of corrective actions after they have been implemented, and continue monitoring them on an ongoing basis. While these completed and planned actions are positive steps, we have not yet determined their effectiveness in addressing our recommendations.

<sup>46</sup>GAO, *Information Security: IRS Needs to Enhance Internal Control over Financial Reporting and Taxpayer Data*, GAO-11-308 (Washington, D.C.: Mar. 15, 2011).



## Results Observations

In September 2010,<sup>47</sup> TIGTA reported that while IRS had taken steps to address 16 CADE system security vulnerabilities it had identified in a previous audit, only 10 had been fully resolved, and the remaining 6 could not be resolved until actions were completed to ensure controls are effectively in place or have been approved as deviations to IRS policy. Further, TIGTA found that IRS prematurely reported resolution of 6 vulnerabilities in its Plan of Action and Milestones list before effective corrective actions were taken. Three of these 6 vulnerabilities were not fully resolved as of the date of TIGTA's review. IRS agreed with TIGTA's recommendations and stated that the cybersecurity organization had made improvements to its process to ensure that system owners comply with IRS policy to enter and track all system vulnerabilities in IRS's tracking and reporting control system. In addition to the steps that IRS is taking to address security recommendations from GAO and TIGTA, IRS has stated that, in transition state 2, CADE 2 will fully address the security weaknesses that are currently confronting CADE. While actions to address the identified report findings will help to improve its security posture, IRS's modernization environment will continue to be at risk until the agency fully implements its security program.

<sup>47</sup>TIGTA, *Annual Assessment of the Business System Modernization Program*, 2010-20-094 (Washington, D.C.: Sept. 23, 2010).



## Conclusions

IRS's fiscal year 2011 expenditure plan satisfies all six statutory conditions. Further, IRS has made progress in addressing most of the outstanding recommendations from our prior expenditure plan reviews. However, IRS is still working to include a quantitative measure of progress in meeting scope expectations in the plan, a recommendation we made over 4 years ago. Until IRS fully implements this recommendation, Congress may not have the information it needs to effectively assess the implementation of the BSM effort.

During fiscal year 2010, IRS successfully completed 11 out of 12 project milestones within 10 percent of cost and schedule, under budget, or early. However, one milestone was completed more than 70 percent over cost due to unplanned requirements. Further, IRS has categorized a large amount—about 50 percent—of the funding requested in the expenditure plan as level of effort, including for work that does not appear to be appropriately characterized as such. By not ensuring that all funding is appropriately categorized, IRS is presenting an inaccurate picture of the work it is performing and the manner in which it is being managed and providing Congress with less insight into its performance in implementing the BSM program.

IRS has also taken key steps to ensure that its CADE 2 program is being successfully managed. However, the program's schedule is ambitious, and this has been corroborated by a recent independent assessment. IRS officials have stated they are still on track for completing planned work on schedule but are taking steps to reduce risks.

Finally, weaknesses in information security continue to affect IRS's modernization environment, largely because the agency has not fully implemented key components of a comprehensive information security program. Both we and the Treasury Inspector General for Tax Administration have reported on these weaknesses, and full implementation of outstanding recommendations will be needed for IRS to ensure the security of its systems and the information they contain.





## Recommendations for Executive Action

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To more accurately represent the work IRS is performing and provide Congress greater insight into the agency's performance in implementing BSM, we recommend that the Commissioner of Internal Revenue direct the Chief Technology Officer take the following three actions,

- (1) modify IRS's definition of level of effort work to be consistent with the commonly accepted definition;
- (2) reclassify activities involving discrete work and accordingly report on associated performance data in future expenditure plans; and
- (3) consistent with best practices, scrutinize any remaining LOE work exceeding 15 percent of the program's budget to look for opportunities to reduce the amount.



## Agency Comments and Our Evaluation

In e-mail comments on a draft of these briefing slides, IRS officials, including the Deputy Chief Information Officer for Strategy and Modernization, agreed with our recommendation to accurately represent the work IRS is performing and provide Congress with ongoing insight into the agency's performance in implementing BSM. However, the agency stated it did not agree with the actions we specified it take to implement our recommendation: IRS did not specifically address reasons for this disagreement. Nevertheless, IRS stated it would like to work with us on how to best implement our recommendation to ensure an adequate level of insight into implementation of the BSM program. IRS also provided technical comments which we have incorporated as appropriate.



**Appendix I**

Description of BSM Projects and Program-Level Initiatives

Proposed modernization initiative	Description
<b>Tax administration projects</b>	
Modernized e-File (MeF)	Is to provide a single standard for filing electronic tax returns. Initial releases will address large corporations, small business, and tax-exempt organizations. Its ultimate goal is the conversion of IRS's 1040 e-file program.
Current Customer Account Data Engine (CADE)	Is to build the modernized database foundation to replace the existing Individual Master File processing system that contains the repository of individual taxpayer information.
Customer Account Data Engine 2 (CADE 2)	Is intended to leverage CADE and the Individual Master File, which contain the repository of individual taxpayer information, to provide timely access to authoritative individual taxpayer account information and enhance IRS's ability to address technology, security, financial material weaknesses, and long-term architectural planning and viability.
<b>Core infrastructure projects</b>	
Development, Integration, and Testing Environments	Is to provide oversight for laboratory environments that support evaluation, development, and testing of components from multiple projects: (1) Virtual Development Environment intended to provide a software development environment and a standardized set of tools, and (2) Enterprise Integration and Test Environment intended to provide an integration and testing environment for all projects.
Infrastructure Shared Services	Is to deliver, in incremental releases over multiple years, a fully integrated, shared IT infrastructure to include hardware, software, shared applications, data, telecommunications, security, and an enterprise approach to systems and operations management.
<b>Architecture, integration, and management</b>	
Architecture and integration	Is to ensure that systems solutions meet IRS business needs and that the development projects are effectively integrated into the business environment.



**Appendix I**  
Description of BSM Projects and Program-Level Initiatives

Proposed modernization initiative	Description
Program governance and control	Is to facilitate the alignment of portfolio governance and control functions, ensuring the consistent application of appropriate strategic planning, investment management, and deployment practices across all IT projects. Previous expenditure plans referred to this as Business Integration.
Requirements management	Is to ensure that the BSM program is aligned with the business units' vision to deliver the desired business results by providing a comprehensive requirement methodology, standards, and guidance.
Management processes	Is to provide sustaining support for program-level management processes, including quality assurance, risk management, program control and process management, and enterprise life cycle maintenance and enhancements.
Federally funded research and development center	Is to provide program management and systems engineering support.
Program management	Is to ensure programs achieve their objectives by providing the management information and IT infrastructure that support risk management, project cost and schedule estimating, financial management, and procurement management for the prime contracts and associated task orders.

Source: GAO analysis of IRS data.



**Appendix II**  
Additional Detail on IRS's Fiscal Year 2010 BSM Expenditure Plan

Proposed modernization initiative	Release <sup>a</sup>	Milestone/ type of activity <sup>b</sup>	Amount (in thousands)
<b>Tax administration projects</b>			
MeF	7	4b	\$22,100
MeF	7	5	7,000
MeF	8	2-3	10,000
<b>Subtotal— MeF project</b>			<b>39,100</b>
<hr/>			
Current CADE	7.2	4b	13,000
Current CADE	Operations and maintenance	Level of effort	15,000
<b>Subtotal—CADE project</b>			<b>28,000</b>
<hr/>			
CADE 2	Infrastructure	Level of effort	77,000
CADE 2	Program management office	Level of effort	8,700
CADE 2	Engineering and analysis	Level of effort	4,700
CADE 2	Transition state 1	4b	36,700
CADE 2	Transition state 2	3	0
CADE 2	Up/downstream	Level of effort	9,000
<b>Subtotal—CADE 2 project</b>			<b>136,100</b>
<b>Subtotal—tax administration projects</b>			<b>203,200</b>
<hr/>			
<b>Core infrastructure projects</b>			
Development, integration, and testing environment		Infrastructure	14,500
Infrastructure shared services		Infrastructure	17,500
<b>Subtotal—core infrastructure projects</b>			<b>32,000</b>



**Appendix II**  
Additional Detail on IRS's Fiscal Year 2011 BSM Expenditure Plan

Proposed modernization initiative	Release <sup>a</sup>	Milestone/type of activity <sup>b</sup>	Amount (in thousands)
<b>Architecture, integration, and management</b>			
Architecture and integration		Level of effort	\$11,200
Program governance and control		Level of effort	1,650
Requirements management		Level of effort	2,670
Management processes		Level of effort	3,250
Federally funded research and development center		Level of effort	6,050
Program management		Level of effort	2,735
<b>Subtotal—architecture, integration, and management</b>			<b>27,555</b>
<b>Management reserve</b>			<b>8,925</b>
<b>BSM capital total</b>			<b>271,680</b>
<b>BSM labor total</b>			<b>80,689</b>
<b>Maintaining current levels</b>			<b>0</b>
<b>Total fiscal year 2011 BSM program</b>			<b>\$352,369</b>

Source: GAO analysis of IRS data.

<sup>a</sup>Releases are software versions that provide a subset of the total planned project functionality.

<sup>b</sup>Milestones correspond to phases within IRS's enterprise life cycle (1- project initiation, 2- conceptual design or business architecture, 3- system logical design/system architecture, 4a- completion of system physical design and 4b- development, test and integration, 5- system deployment and transition to support and operations). According to IRS, "level of effort" activities generally support the overall management of the program, such as contracting or risk management. They do not follow the enterprise life cycle methodology nor do they directly create end user benefits. They do require the contractor to provide a specified level of effort, over a stated period, on work stated in general terms. Infrastructure projects follow many aspects of the enterprise life cycle but differ from development projects in that they (1) do not have a separate business case, though they have definable costs and general broad benefits; (2) operate based on the support needs of the project, rather than end-user requirements; (3) cannot make changes that are independent from the projects they support, that is, the infrastructure projects must synchronize changes with the application projects and assess the impact; and (4) project teams have no direct control over external changes (e.g., a new requirement for an application project) that will drive cost fluctuations.



**Appendix III**  
IRS Reported Cost and Schedule Variance for Project Milestones

This table shows project segments completed from January 2010 through May 2011.

Project segment	Estimated completion date and funding (in thousands)	Milestone exit and cost (in thousands)	Change (%)	IRS explanation of change
AMS Release 2.1 Milestone 5	02/08/10 \$1,097	02/08/10 \$398	0 days (0%) -\$699 (-63.7%)	IRS reported spending was less on this milestone due to the required realignment of funds to support Release 1.3 software and infrastructure design activities, the greater reliance on less costly in-house government support, and the fact that the deployment of Release 2.1 went more smoothly than originally anticipated.
CADE Release 5.2 Milestone 4b	01/31/10 \$22,200	01/15/10 \$19,565	-10 days (-6.0%) -\$2,635 (-11.9%)	IRS indicates that the costs for this milestone were less than planned because the expected impacts of legislative and filing season change requirements were reduced in scope and complexity.
CADE Release 6.2 Milestone 4b	01/31/11 \$22,000	01/14/11 \$22,000	-11 days (-6.6%) \$0 (0%)	
CADE 2 Transition state 1 Milestone 3	12/15/10 \$14,200	12/13/10 \$14,200	-2 days (-0.9%) \$0 (0%)	
CADE 2 Transition state 1 Milestone 4a	04/30/11 \$10,000	04/18/11 \$10,000	-9 days (-6.0%) \$0 (0%)	
MeF Release 6.1 Milestone 4a-5	05/14/10 \$39,802	05/25/10 \$68,902	7 days (1.5%) \$29,100 (73.1%)	IRS pointed to several factors contributing to the overrun, including the need for additional funds to implement unplanned requirements including the first phase of disaster recovery, Transactional National Account Profile, automated interface to support external users, increased availability/code optimization, and expanded hardware needs.



**Appendix III**  
IRS Reported Cost and Schedule Variance for Projects

Project segment	Estimated completion data and funding (in thousands)	Milestone exit and cost (in thousands)	Change (%)	IRS explanation of change
MeF Release 6.2 Milestone 3-4a	09/21/10 \$8,900	09/21/10 \$8,900	0 days (0%) \$0 (0%)	
MeF Release 6.2 Milestone 4b	12/29/10 \$7,800	12/29/10 \$7,800	0 days (0%) \$0 (0%)	
MeF Release 6.2 Milestone 5	05/17/11 \$5,200	05/18/11 \$5,200	1 day (1.0%) \$0 (0%)	
MeF Release 7 Milestone 2	07/27/10 \$5,295	07/27/10 \$3,049	0 days (0%) -\$2,246 (-42.4%)	IRS stated that the cost variance was the result of lower-than-expected hardware and software costs.
MeF Release 7 Milestone 3	12/21/10 \$15,875	12/21/10 \$12,121	0 days (0%) -\$3,754 (-23.6%)	IRS stated that the cost variance was the result of lower-than-expected hardware and software costs.
MeF Release 7 Milestone 4a	04/26/11 \$11,830	04/26/11 \$11,830	0 days (0%) \$0 (0%)	

Source: GAO analysis of IRS data.

Note: Variances for projects through milestone 3 are based on rough order of magnitude estimates. Post-milestone-3 variances are based on more specific estimates.





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# Appendix II: Comments from the Internal Revenue Service



COMMISSIONER

DEPARTMENT OF THE TREASURY  
INTERNAL REVENUE SERVICE  
WASHINGTON, D.C. 20224

September 22, 2011

Mr. David Powner  
Director, Information Technology Management Issues  
U.S. Government Accountability Office  
441 G Street, N.W.  
Washington, D.C. 20548

Dear Mr. Powner:

Thank you for the opportunity to comment on the Government Accountability Office (GAO) draft report titled "*Business Systems Modernization: Internal Revenue Service's Fiscal Year 2011 Expenditure Plan*," (GAO-12-26). The Business Systems Modernization (BSM) Program emphasizes development and delivery of a number of modernized tax systems and is intended to replace the Agency's aging tax processing systems. This remains one of the IRS's top priorities.

As GAO recognizes, performing a major technology enhancement to core taxpayer account systems that process approximately \$2.5 trillion in annual revenues is a highly complex effort. We must continue to invest in BSM to maintain our country's tax system, which contributes to the overall economic infrastructure.

I appreciate that your report recognizes that our expenditure plan satisfies each of the six applicable statutory conditions set out by Congress, including meeting the Office of Management and Budget's capital planning and investment control review requirements, and complying with federal systems acquisition requirements and management practices. We are also proud of the fact that the IRS has achieved the Software Engineering Institute's Level 2 for Capability Maturity Model Integration, and is well on the way to achieving Level 3.

We continue to value GAO's feedback, and have implemented four of the five outstanding recommendations from prior expenditure plan reviews. We plan to implement the fifth recommendation, the inclusion of quantitative measures of progress in meeting project scope expectations, as a metric in our FY 2012 Expenditure Plan.

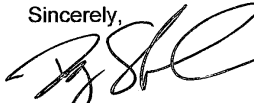
I also understand that IRS staff have expressed disagreement over certain aspects of your feedback on cost estimation but continue to engage in constructive dialog to ensure that the level of effort the IRS puts into specific deliverables is clearly expressed in our expenditure plan.

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Finally, in addressing your concern in the area of information security weaknesses, we consider the security of our systems and information assets to be of paramount importance to the execution of our mission. Further through ongoing efforts to preserve and expand the security of our systems and information, we have made substantial progress in the resolution of identified security concerns over the past year. In light of which, as you note in your report, we have requested your review of the actions we have completed to address your eight recommendations to fully implement our comprehensive information security program.

We appreciate your continued support and guidance. If you have any questions, please contact me or a member of your staff may contact Terence V. Milholland, Chief Technology Officer, at (202) 622-6800.

Sincerely,



Douglas H. Shulman

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# Appendix III: GAO Contact and Staff Acknowledgments

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## GAO Contact

David A. Powner, (202) 512-9286 or [pownerd@gao.gov](mailto:pownerd@gao.gov)

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## Staff Acknowledgments

In addition to the individual named above, Sabine R. Paul, Assistant Director; Sairah R. Ijaz; Lee A. McCracken; and Paul B. Middleton made key contributions to this report.

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