GAO

November 2004

BUSINESS SYSTEMS MODERNIZATION

IRS's Fiscal Year 2004 Expenditure Plan

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BUSINESS SYSTEMS MODERNIZATION

IRS's Fiscal Year 2004 Expenditure Plan

Why GAO Did This Study

The Internal Revenue Service's (IRS) Business Systems Modernization (BSM) program is a multibillion-dollar, high-risk, highly complex effort that involves the development and delivery of a number of modernized information systems that are intended to replace the agency's aging business and tax processing systems. BSM funds are not available until IRS submits an expenditure plan that meets various conditions to congressional appropriations committees for approval. In January and July 2004, the Department of the Treasury submitted IRS's initial and revised fiscal year 2004 plans, respectively.

As required by law, GAO reviewed the plans to (1) determine whether the plans satisfied the conditions specified in the law, (2) determine what progress IRS had made in implementing our prior recommendations, and (3) provide any other observations about the plans and IRS's BSM program.

What GAO Recommends

GAO recommends that the Commissioner of Internal Revenue direct the Chief Information Officer to ensure that, after BSM projects are deployed, post-implementation reviews are performed that include an analysis of quantitative and qualitative investment data to determine, at a minimum, whether expected benefits were achieved. In commenting on a draft of this report, the Commissioner agreed with GAO's recommendation.

www.gao.gov/cgi-bin/getrpt?GAO-05-46.

What GAO Found

IRS's initial (January 2004) and revised (July 2004) fiscal year 2004 expenditure plans, which requested about $388 million for the BSM program, satisfied the conditions specified in the law. These conditions include 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.

IRS has made progress in implementing our recommendations to improve its modernization management controls and capabilities and in completing BSM projects that have benefited taxpayers and the agency. For example, IRS has implemented our prior recommendation to promptly update its enterprise transition strategy to conform to changes in the agency's enterprise architecture. In addition, IRS has deployed several modernized systems that provide benefits, including Modernized e-File Release 1, which provides electronic filing for large businesses and tax-exempt organizations.

Although progress has been made, GAO's previous recommendations on modernization management controls and capabilities related to configuration management, human capital management, cost and schedule estimating, and contract management have not yet been fully implemented or institutionalized. Weaknesses in these controls and capabilities have contributed, in part, to BSM project cost and schedule shortfalls.

GAO's observations on IRS's expenditure plans and the BSM program include the following:

- Projects continue to incur significant cost increases and schedule delays. In its revised fiscal year 2004 plan, IRS disclosed that key BSM projects have continued to experience cost and schedule shortfalls against prior commitments. For example, the total life cycle cost for full deployment of the initial release of IRS's new core accounting system has increased by almost $74 million, and project completion has been delayed by 15 months. Reasons cited for the increases and delays include an inability to resolve key system design, integration, and performance issues in a timely manner.

- In-depth internal and independent assessments of the BSM program conducted during 2003 identified significant weaknesses and risks, consistent with our prior reviews. IRS developed 48 action issues to address the concerns raised by these program reviews and has taken actions to resolve them; however, most of the issues remain open.

- IRS has also performed post-implementation reviews on three deployed projects, but they were incomplete in that they did not include, for example, an analysis of actual versus planned benefits. Without such an analysis, IRS lacks important information about whether BSM projects are meeting expectations.

_____ **United States Government Accountability Office**

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Abbreviations

BSM	Business Systems Modernization
CIO	Chief Information Officer
EA	Enterprise Architecture
IRS	Internal Revenue Service
OMB	Office of Management and Budget

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United States Government Accountability Office
Washington, D.C. 20548

November 17, 2004

The Honorable Richard C. Shelby
Chairman
The Honorable Patty Murray
Ranking Member
Subcommittee on Transportation, Treasury
    and General Government
Committee on Appropriations
United States Senate

The Honorable Ernest J. Istook, Jr.
Chairman
The Honorable John W. Olver
Ranking Minority Member
Subcommittee on Transportation, Treasury
    and Independent Agencies
Committee on Appropriations
House of Representatives

As required by law, the Department of the Treasury submitted the Internal Revenue Service's (IRS) initial and revised fiscal year 2004 expenditure plans in January and July 2004, respectively, to the congressional appropriations committees, requesting about $388 million from the Business Systems Modernization (BSM) account. Our objectives in reviewing the plans were to (1) determine whether the plans satisfied the conditions specified in the law,[1] (2) determine what progress IRS had made in implementing our prior recommendations, and (3) provide any other observations about the initial and revised plans and IRS's BSM program.

On March 8 and August 31, 2004, we briefed your respective offices on the results of our reviews. This report transmits the materials used at those briefings and reiterates the recommendation that we made to the

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[1]BSM funds are unavailable until the IRS submits to congressional appropriations committees for approval a modernization expenditure plan that (1) meets the Office of Management and Budget's (OMB) capital planning and investment control review requirements; (2) complies with IRS's enterprise architecture; (3) conforms with IRS's enterprise life cycle methodology; (4) is approved by IRS, the Department of the Treasury, and OMB; (5) is reviewed by GAO; and (6) complies with federal acquisition rules, requirements, guidelines, and systems acquisition management practices. See P.L. 108-199, Div. F, Title II, Jan. 23, 2004, for fiscal year 2004 funding.

Commissioner of Internal Revenue in our August 2004 briefing. The full briefing materials, including our scope and methodology, are reprinted in appendixes I and II.

In summary, we made the following major points in our March 2004 briefing on the results of our review of IRS's initial expenditure plan for fiscal year 2004:

- IRS's initial expenditure plan satisfied each of the six legislative conditions.

- IRS had made progress in implementing our recommendations to improve its modernization management controls and capabilities and in completing some modernization projects during fiscal year 2003 that have benefited taxpayers and the agency. For example, IRS had (1) implemented our prior recommendation to promptly update its enterprise transition strategy to conform to changes in the agency's enterprise architecture;[2] (2) reported the deployment of an application that provides refund status for the Advanced Child Tax Credit; and (3) reported the delivery of the first release of a new human resources system, HR Connect, to 73,000 IRS employees that allows them to access and manage their human resources information online. Although progress had been made, modernization management controls and capabilities related to configuration management,[3] human capital management, cost and schedule estimating, and contract management had not yet been fully implemented or institutionalized. Weaknesses in these controls and capabilities had contributed, in part, to BSM project cost and schedule shortfalls.

- Projects continued to incur cost increases and schedule delays for several reasons, including inadequate definition of systems requirements, increases in project scope, and cost and schedule

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[2]An enterprise architecture (EA) is an institutional blueprint that defines how an organization operates today, in both business and technology terms, and intends to operate in the future. An EA also includes an enterprise transition strategy that describes how an organization will migrate from its current operating environment to its future operating environment.

[3]Configuration management is the means for ensuring the integrity and consistency of system modernization program and project products throughout their life cycles. Through effective configuration management, for example, integration among related projects and alignment between projects and the enterprise architecture can be achieved.

estimating deficiencies. Cost overruns and schedule delays impaired IRS's ability to make appropriate decisions about investing in new projects, delayed delivery of benefits to taxpayers, and postponed the resolution of material weaknesses affecting other program areas.

- In-depth and more comprehensive internal and independent assessments of the BSM program had identified significant weaknesses and risks that are consistent with our prior reviews. IRS was taking actions to address the issues identified in these BSM assessments.

In our August 2004 briefing on the results of our review of IRS's revised fiscal year 2004 expenditure plan, we reported that IRS had deployed several modernized systems to date that provide benefits, including (1) Modernized e-File Release 1, which provides electronic filing for large businesses and tax-exempt organizations; (2) e-Services, which creates a Web portal and other e-Services to promote the goal of conducting most IRS transactions with taxpayers and tax practitioners electronically; and (3) Customer Account Data Engine[4]—Individual Master File Release 1.1, which is expected to improve processing of all formats (telefile, electronic, or paper) of the 1040EZ return for single taxpayers with refund or even-balance returns.

In addition, we made the following major points in the August 2004 briefing:

- IRS's revised plan satisfied the conditions specified in the appropriations law.

- Projects continued to incur significant cost increases and schedule delays. In its revised fiscal year 2004 plan, IRS disclosed that key BSM projects had continued to experience cost and schedule shortfalls against prior commitments. For example, the total estimated life cycle cost for full deployment of Release 1 of the Integrated Financial System had increased by almost $74 million, and project completion had been delayed by 15 months. IRS cited various reasons for cost increases and schedule delays related to this and other projects, including an inability

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[4]The Customer Account Data Engine is to build the modernized database foundation to replace the current master files processing systems, which are the agency's repository for taxpayer information. There are master files for individuals, businesses, and employer retirement plans.

to resolve key system design, integration, and performance issues in a timely manner.

- IRS had taken actions to address issues raised in independent BSM assessments. IRS developed 48 action issues to address concerns raised by various program reviews conducted during 2003 and, in a May 2004 report, stated that almost all of them were closed based on completed actions. However, many of these action issues were prematurely closed because required activities were incomplete. Subsequent to the May report, the Associate Chief Information Officer (CIO) for Modernization Management began tracking the progress of the action issues, including those that had been previously closed (merging some of these issues so that 38 issues instead of 48 were being tracked). As of the end of August 2004, 10 of the 38 issues had been closed, leaving 28 issues open. IRS reported that some of the issues will take time to fully complete, while others will span the life of the program.

- IRS had performed post-implementation reviews on three deployed projects, but they were incomplete. Federal and IRS guidance calls for post-implementation reviews to be performed on completed projects to determine whether expected benefits have been achieved and to document lessons learned. IRS had performed three such reviews, but they did not include, for example, an analysis of actual versus planned benefits. Without such an analysis, IRS lacks important information about whether its BSM projects are meeting expectations.

Recommendation for Executive Action
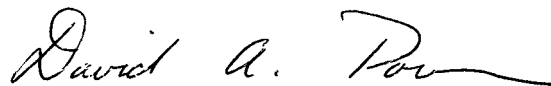
We recommend that the Commissioner of Internal Revenue direct the CIO to ensure that, after BSM projects are deployed, post-implementation reviews are performed that include an analysis of quantitative and qualitative investment data to determine, at a minimum, whether expected benefits were achieved.

Agency Comments

In providing written comments on a draft of this report, the Commissioner of Internal Revenue agreed with our recommendation and commented on the actions IRS is taking to implement it. The Commissioner also provided additional information on various improvement efforts that IRS has undertaken. The Commissioner's written comments are reprinted in appendix III.

We are sending copies of this report to the Chairmen and Ranking Minority Members of other Senate and House committees and subcommittees that have appropriations, authorization, and oversight responsibilities for the Internal Revenue Service. 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 the Office of Management and Budget. Copies are also available at no charge on the GAO Web site at http://www.gao.gov.

Should you or your offices have questions on matters discussed in this report, please contact me at (202) 512-9286 or Linda Lambert, Assistant Director, at (202) 512-9556. We can also be reached by E-mail at pownerd@gao.gov and lambertl@gao.gov, respectively. Key contributors to this report are listed in appendix IV.

David A. Powner
Director, Information Technology
   Management Issues

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Review of IRS's Fiscal Year 2004
Business Systems Modernization Expenditure Plan

Briefing for the staffs of the
Subcommittee on Transportation, Treasury and General Government
Senate Committee on Appropriations
and
Subcommittee on Transportation, Treasury and Independent Agencies
House Committee on Appropriations

March 8, 2004

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Introduction and Objectives

- IRS's current multibillion-dollar effort, known as the Business Systems Modernization (BSM) program, was initiated in fiscal year 1999. IRS contracted with Computer Sciences Corporation (CSC) as the prime systems integration support (PRIME) contractor to assist with designing, developing, and integrating a new set of information systems that were intended to replace IRS's aging business and tax processing systems. BSM involves the development and delivery of a number of modernized business, data, and core infrastructure projects that are intended to provide improved and expanded service to taxpayers as well as IRS internal business efficiencies.

- As mandated by IRS's fiscal year 2004 appropriations act,[1] BSM funds are not available until IRS submits to the congressional appropriations committees for approval a modernization expenditure plan that

  - meets the capital planning and investment control review requirements established by the Office of Management and Budget (OMB),

  - complies with IRS's enterprise architecture,[2]

  - conforms with IRS's enterprise life cycle methodology,[3]

  - is approved by IRS, Treasury, and OMB,

  - is reviewed by GAO, and

  - complies with federal acquisition rules, requirements, guidelines, and systems acquisition management practices.

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[1] P.L. 108-199, Div. F, Title II, Jan. 23, 2004.
[2] An enterprise architecture (EA) is an institutional blueprint that defines how an enterprise operates today, in both business and technology terms, and intends to operate in the future. An EA also includes a roadmap for transitioning between these environments.
[3] IRS refers to its life cycle management program as the Enterprise Life Cycle (ELC), which is graphically depicted in the Background section.

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Introduction and Objectives

- Since mid-1999, IRS has submitted a series of expenditure or "spending" plans requesting release of BSM appropriated funds. To date, about $1.7 billion has been appropriated for BSM, including about $388 million for fiscal year 2004.[4] Of the $1.7 billion appropriated, about $1.35 billion has been released.

- IRS requested about $388 million in its expenditure plan for fiscal year 2004.

- However, OMB approved only $246 million of IRS's $388 million request. Per OMB, this funding level is intended to enable progress to continue while awaiting the development of a revised expenditure plan. A revised plan is expected to be submitted to OMB this month that reflects fully the recommendations of the recent reviews of the BSM program, the level of fiscal year 2004 appropriations, and any other changes needed to align the fiscal year 2004 portfolio with the President's fiscal year 2005 request for the program.

- On January 16, 2004, Treasury submitted IRS's fiscal year 2004 expenditure plan for about $388 million, seeking release of the $246 million approved by OMB.

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

  - determine whether IRS's fiscal year 2004 expenditure plan satisfies the legislative conditions specified in IRS's appropriations act,

  - determine IRS's progress in implementing our prior recommendations, and

  - provide any other observations about the plan and IRS's BSM program.

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[4] P.L. 108-199, Div. F, Title II, Jan. 23, 2004. IRS uses the appropriated totals to cover contractor costs related to the BSM program. IRS funds internal costs for managing BSM with another appropriation. These costs are not tracked separately for BSM-related activities.

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Results in Brief

- IRS's fiscal year 2004 plan satisfies each of the six legislative conditions.

- Although IRS has made progress in implementing our recommendations and improving its modernization management controls and capabilities, certain of these controls and capabilities related to configuration management, human capital management, cost and schedule estimating, and contract management have not yet been fully implemented or institutionalized. Weaknesses in these controls and capabilities have contributed, at least in part, to BSM project cost and schedule shortfalls.

- We also make four observations related to the BSM program and fiscal year 2004 expenditure plan:

  - Projects continue to incur cost increases and schedule delays for several reasons, including inadequate definition of systems requirements, increases in project scope, and cost and schedule estimating deficiencies.

  - Cost overruns and schedule delays impair IRS's ability to make appropriate decisions about investing in new projects, delay delivery of benefits to taxpayers, and postpone resolution of material weaknesses affecting other program areas.

  - In-depth and more comprehensive internal and independent assessments of BSM have identified significant weaknesses and risks, consistent with our prior reviews.

  - IRS is taking actions to address issues identified in the BSM assessments.

- We are not making additional recommendations at this time.

- In commenting on a draft of this briefing, the Associate Chief Information Officer (CIO) for BSM generally agreed with it and provided technical comments.

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Background

- To date, we have reviewed and reported on nine requests for BSM funding releases:

  - Since mid-1999, we have reported[5] on the risks associated with IRS's approach of concurrently building systems while developing and implementing program management capabilities such as having a fully operational program management office and implementing its Enterprise Life Cycle (ELC). IRS's ELC is a structured method for managing system modernization program and project investments throughout their life cycles (see next page for a simplified diagram of the life cycle). We reported that attempting to acquire modernized systems before having the requisite management capability increases the risk that systems will experience cost, schedule, and performance shortfalls.

  - We have also reported[6] that the risk of cost increases and schedule delays associated with building systems without the requisite management controls is not as severe early in projects' life cycles when they are being planned (project definition and preliminary system design), but escalates as projects are built (detailed design and development) and implemented (enterprise deployment).

  - In the case of IRS and its ELC, a key point of risk escalation is milestone 3. From this point through deployment (milestone 4) to operations and support (milestone 5), risk can increase significantly without requisite controls. In our June 2003 report,[7] we identified key IRS projects that were approaching or had passed milestone 4 that were experiencing cost, schedule, and performance shortfalls, and concluded that program risks were heightened.

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[5] For example, see U.S. General Accounting Office, *Business Systems Modernization: Results of Review of IRS' March 2001 Expenditure Plan*, GAO-01-716 (Washington, D.C.: June 29, 2001) and *Internal Revenue Service: Progress Continues But Serious Management Challenges Remain*, GAO-01-562T (Washington, D.C.: April 2, 2001).

[6] For example, see U.S. General Accounting Office, *Tax Systems Modernization: Results of Review of IRS' Third Expenditure Plan*, GAO-01-227 (Washington, D.C.: Jan. 22, 2001) and *Business Systems Modernization: IRS Needs to Better Balance Management Capacity with Systems Acquisition Workload*, GAO-02-356 (Washington, D.C.: Feb. 28, 2002).

[7] U.S. General Accounting Office, *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).

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Background

IRS's Enterprise Life Cycle Phases and Milestones (MS)
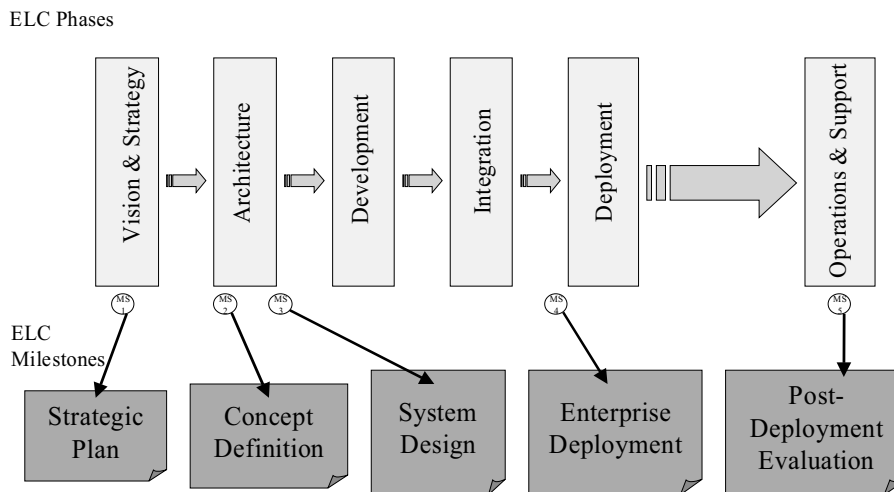
Source: GAO analysis of IRS's enterprise life cycle methodology.

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Background

- IRS's fiscal year 2004 plan reported the completion of modernization projects during fiscal year 2003 that have benefited taxpayers and the agency, including the deployment of an application that provides refund status for the Advanced Child Tax Credit and the delivery of the first release of a new human resources system, HR Connect, to 18,000 IRS employees. IRS subsequently reported that the system has now been delivered to 73,000 employees.

- The plan that Treasury submitted to OMB is to (1) continue ongoing program-level initiatives through the first week of November 2004, and core infrastructure projects through the end of November 2004, (2) continue four ongoing business/data projects (e-Services, Customer Account Data Engine – Individual Master File (CADE IMF) Release 1,[8] Custodial Accounting Project Release 1, and Integrated Financial System Release 1) to their next milestones, and (3) start five new projects or new releases of existing projects. These five new projects/releases are:
  - Collection Contract Support
  - Modernized e-file Release 2
  - Modernized e-file Release 3
  - CADE IMF Business Rules
  - CADE IMF Release 2

  See appendix I for a description of these BSM projects and program-level initiatives.

- However, OMB has only approved funding for IRS to (1) continue ongoing program-level initiatives and core infrastructure projects through April 2004, (2) continue two ongoing business/data projects (e-Services and CADE IMF Release 1) to their next milestones, and (3) start the five new projects/releases.

- Table 1 shows a summary of the plan and OMB approved amounts.

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[8] IRS initiated CADE as part of BSM, to modernize the agency's outdated and inefficient data management system. The current system—referred to by IRS as the master files—contains taxpayer account and return data. There are master files for individuals, businesses, and employer retirement plans. IRS also sees CADE as the corporate data source enabling future customer service and financial management applications. CADE is therefore IRS's linchpin modernization project.

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Background

Table 1: Summary of IRS's Fiscal Year 2004 Expenditure Plan (in thousands of dollars)[9]

Project[10]	IRS request	OMB approved
Business projects (e.g., e-Services, Modernized e-File)	$81,450	$76,350
Data projects (e.g., CADE IMF, Integrated Financial System)	108,555	62,755
Core infrastructure projects (e.g., Infrastructure Shared Services)	84,007	53,438
Subtotal	274,012	192,543
Program-Level Initiative		
Architecture & integration	31,400	
Business integration	7,300	
Management processes	10,700	
Federally funded research and development center (FFRDC) - MITRE	16,300	
Program management	8,100	
Other BSM action plan activities	10,000	
Program-level initiatives risk adjustment	2,000	
Subtotal	85,800	48,562
Management Reserve	27,887	4,895
Total	**$387,699**	**$246,000**

Source: IRS and OMB.

[9] See appendix II for additional detail on the plan.
[10] The three categories under this heading included 11 separate projects or project releases.

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Scope and Methodology

- To accomplish our objectives, we

  - reviewed the fiscal year 2004 expenditure plan submitted by Treasury in the context of both the amount originally requested by IRS and the amount approved by OMB;

  - analyzed the plan against the legislative conditions to identify any variances;

  - reviewed program and project management reports, briefings, and related documentation to assess progress in implementing modernization management controls and capabilities;

  - observed modernization executive steering committee meetings to, among other things, document how the plan was developed and reviewed;

  - interviewed IRS program and project management officials to corroborate our understanding of the plan and other BSM activities;

  - analyzed available evidence on recent efforts to implement modernization management controls and capabilities—specifically, progress and plans for
    - configuration management,
    - EA definition and implementation,
    - human capital management,
    - cost and schedule estimation practices, and
    - contract management, and

  - collaborated with the Treasury Inspector General for Tax Administration (TIGTA) to avoid duplication of effort in reviewing BSM initiatives and incorporated TIGTA results in this briefing where appropriate. Program-level processes addressed by TIGTA included configuration management, human capital management, cost and schedule estimation, and contract management.

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Scope and Methodology

- Consistent with prior reviews, we did not independently validate planned initiatives' cost estimates or confirm, through system and project management documentation, the validity of IRS-provided information on the initiatives' content and status.

- We performed our work from January through March 2004, in accordance with generally accepted government auditing standards.

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Results

Objective 1: The plan satisfies the conditions in IRS's Fiscal Year 2004 appropriations act.

Table 2: Fiscal Year 2004 Expenditure Plan Provisions for Satisfying Legislative Conditions

Legislative conditions	Expenditure plan provisions
1. Meets OMB capital planning and investment control review requirements	IRS's fiscal year 2004 expenditure plan identifies funding required for managing information technology (IT) investments as part of a single portfolio through its capital planning and investment control process. This includes conducting periodic portfolio reviews to select, control, and evaluate IT investments.
2. Complies with IRS's enterprise architecture	The plan identifies funding required to continue definition and implementation of the enterprise architecture (EA). For example, it identifies funding needed for • finalizing and publishing updates to EA version 2.1 based on change requests • performing EA compliance certification activities • updating the 2004 release architecture • producing the 2005/2006 release architecture
3. Conforms with IRS's enterprise life cycle methodology	The plan identifies funding required for meeting the requirements in IRS's enterprise life cycle (ELC) management program. For example, the plan calls for • maintaining responsibility for coordinating, tracking, and integrating all programwide costs, schedules, releases, issues, and risks • maintaining and enhancing the ELC
4. Approved by IRS, Treasury, and OMB	• IRS – October 24, 2003 • Treasury – November 28, 2003 • OMB – January 6, 2004 (partial approval)[11] • Submitted to IRS's appropriations subcommittees – January 16, 2004
5. Reviewed by GAO	• GAO – March 8, 2004, briefing to IRS's appropriations subcommittees
6. Complies with the acquisition rules, requirements, guidelines, and systems acquisition management practices of the federal government	As part of the ELC, IRS has defined processes, roles, and responsibilities for implementing Carnegie Mellon University's Software Engineering Institute (SEI) Software Acquisition Capability Maturity Model™ practices within the level 2 key process areas.[12] These practices are consistent with federal acquisition requirements and management practices, and the plan calls for implementation of the ELC on all projects. Further, all PRIME contractor cost reimbursement task orders are subject to a final independent audit by the Defense Contract Audit Agency to ensure that costs incurred are commensurate with the physical completion of the contract.

Source: IRS's fiscal year 2004 appropriations act and GAO analysis.

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[11] OMB approved only $246 million of the $388 million requested by IRS.
[12] These are acquisition planning, solicitation, requirements development and management, project management, contract tracking and oversight, evaluation, and transition to support.

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Results

Objective 2: IRS has made further progress in implementing our prior recommendations to improve its modernization controls and capabilities, although some have not yet been fully addressed.

- Since we reported on IRS's last plan,[13] it has made further progress in addressing our prior recommendations to improve its modernization controls and capabilities, as the following table illustrates:

Table 3: Status of IRS Progress in Implementing Prior GAO Recommendations

Prior recommendations to improve IRS's modernization controls and capabilities	Implemented	In progress	Status as of fiscal year 2004 plan
Configuration management			
Institutionalize Business Systems Modernization Office (BSMO) configuration management procedures		√	(See pp. 14-15)
Human capital management			
Implement plans for obtaining, developing, and retaining requisite human capital resources		√	(See pp. 16-17)
Cost and schedule estimation practices			
Implement effective procedures for validating contractor-developed cost and schedule estimates		√	(See pp. 18-19)
Enterprise Architecture (EA) definition and implementation			
Promptly update the enterprise transition strategy (ETS) to conform to changes in IRS's EA	√		IRS concurrently approved versions 2.1 of the ETS and EA in June 2003
Contract management			
Establish and implement a process for determining the type of task order to be awarded		√	(See pp. 20-21)

Source: GAO.

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[13] GAO-03-768.

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Results

Configuration Management

- Effective configuration management (CM) is an essential control for ensuring the integrity and consistency of system modernization program and project products throughout their life cycles.[14]

- In June 2001, we reported[15] that BSM CM was ineffective, and made recommendations to address this weakness.

- In June 2003, we reported[16] that IRS had implemented most of our recommendations and strengthened its CM processes, but had not yet fully institutionalized these processes across the BSM program.

- During fiscal year 2003, IRS reported that it made further progress toward establishing mature CM processes, including developing and delivering training, implementing measurement and reporting processes, and completing compliance assessments on four BSM projects to evaluate whether policies and procedures were being followed. However, the results of these assessments demonstrated the need for additional improvements, as several discrepancies were identified against each of the projects evaluated.

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[14] CM is a discipline that applies technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a piece of hardware or software, control changes to those characteristics and their related documentation, record and report change processing and implementation status, and verify compliance with specified requirements. The purpose of CM is to systematically identify and baseline the items that make up a system (identification), formally control any modifications to those items (control), report on the status of the CM process (status accounting), and ensure that baseline configurations are implemented (audit).
[15] GAO-01-716.
[16] GAO-03-768.

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- In December 2003, TIGTA reported[17] that although IRS had made progress in defining and establishing an enterprisewide CM process throughout the Modernization and Information Technology Services (MITS) organization,[18] the CM functions (i.e., identification, control, status accounting, and audit) had not been uniformly implemented within the organization because IRS did not establish executive-level responsibility to ensure that processes were properly implemented and that deficiencies identified in internal assessments were appropriately addressed. TIGTA made recommendations to IRS to address these issues.

- IRS's CIO acknowledges that further work remains to be done to put stronger CM in place. IRS has committed to modifying the MITS CM directive and procedures during fiscal year 2004 to assign organizational responsibility for ensuring that processes are implemented and deficiencies are addressed. IRS has also committed to conducting initial/follow-up assessments of all modernization projects and developing and delivering three additional training modules throughout the year.

- Until IRS fully institutionalizes effective CM processes, it cannot adequately ensure that systems are being developed in accordance with enterprisewide needs and requirements. Consequently, increased risk exists that projects will eventually require expensive rework resulting in additional costs and/or schedule delays.

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[17] Treasury Inspector General for Tax Administration, *Additional Actions Are Needed to Establish and Maintain Controls Over Computer Hardware and Software Changes*, Reference Number 2004-20-026 (Washington, D.C.: Dec. 16, 2003).
[18] MITS consists of (1) BSMO, which acquires and delivers new computer hardware and software for IRS's modernized business processes, and (2) the Information Technology Services organization, which develops, operates, and maintains computer hardware and software that supports the current production environment.

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Human Capital Management

- To maintain and enhance the capabilities of IT staff, organizations should develop and implement a human capital strategy that, among other things, includes the following steps:

  - assessing knowledge and skills needed to effectively perform IT operations to support agency mission and goals,
  - inventorying the knowledge and skills of current IT staff,
  - identifying gaps between requirements and current staffing, and
  - developing and implementing plans to fill the gaps.

- In February 2002, we reported[19] that IRS had not yet defined or implemented an IT human capital strategy, and recommended that IRS address this weakness.

- In June 2003, we reported[20] that IRS had made important progress in addressing our recommendation, but had yet to

  - develop a comprehensive multiyear workforce plan in place of the current annual plan that did not encompass all phases of multiyear projects; and

  - hire, develop, or retain sufficient human capital resources with the required competencies, including technical skills, in specific mission areas.

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[19] GAO-02-356.
[20] GAO-03-768.

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- In September 2003, TIGTA reported[21] that IRS's MITS organization had made significant progress in developing its human capital strategy,[22] including the development of a 5-year human capital plan; however, the strategy needs further development to provide a roadmap to reach its goal of having the right people at the right time to meet its mission. Specifically, IRS has not yet (1) identified and incorporated human capital asset demands for the modernized organization, (2) developed detailed hiring and retention plans, or (3) established a process for reviewing the human capital strategy development and monitoring its implementation. TIGTA made recommendations to IRS to address these issues.

- As of the end of February 2004, IRS's Associate CIO for BSM stated that the agency had assigned 225 personnel to BSMO, about 85% of the office's authorized level of 267 personnel, and had identified a need for additional positions to address deficiencies highlighted by the recent BSM assessments.

- IRS acknowledges that work remains to be completed to strengthen IT human capital management. Its commitments for fiscal year 2004 include

  - developing detailed plans for recruiting and retention, and

  - conducting quarterly reviews of the human capital strategy development and implementation.

- Until IRS fully implements its strategy, it will not have all of the necessary IT knowledge and skills to effectively manage the BSM program or to operate modernized systems as they deploy. Consequently, the risk of BSM program and project cost, schedule, and performance shortfalls is increased.

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[21] Treasury Inspector General for Tax Administration, *The Modernization, Information Technology and Security Services Organization Needs to Take Further Action to Complete Its Human Capital Strategy*, Reference Number 2003-20-209 (Washington, D.C.: Sept. 22, 2003).
[22] The BSM human capital strategy is an integral part of the overall strategy for the MITS organization.

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Cost and Schedule Estimation Practices

- The BSM program has experienced numerous cost overruns and schedule delays, and has been criticized for its ineffective cost and schedule estimation capabilities and inability to deliver projects within budget and on time.

- In February 2002, we reported that BSM project cost and schedule estimates were contractor-provided, "rough order of magnitude" estimates that had not been validated by IRS, and recommended that IRS adopt effective cost and schedule estimating practices.[23] In our review of IRS's fiscal year 2003 expenditure plan, we reported that although IRS had made progress, processes for validating the PRIME contractor's cost and schedule estimating methods had not been fully implemented.[24]

- In September 2003, TIGTA reported[25] that IRS and the PRIME contractor had made progress in establishing a BSM cost and schedule estimating system consistent with industry best practices, including the following accomplishments:

  - The PRIME contractor developed a guidebook (updated quarterly) to assist in the development of cost and schedule estimates.

  - IRS conducted a pilot of three project estimates to verify the adequacy of its procedure for independently reviewing contractor-provided cost and schedule estimates.

  - IRS and the PRIME contractor began developing a risk-adjusted model to include an analysis of uncertainty when preparing estimates.

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[23] GAO-02-356.
[24] GAO-03-768.
[25] Treasury Inspector General for Tax Administration, *The Cost and Schedule Estimation Process for the Business Systems Modernization Program Has Been Improved, but Additional Actions Should Be Taken*, Reference Number 2003-20-219 (Washington, D.C.: Sept. 29, 2003).

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However, TIGTA reported that progress has been slower than expected, and continued management focus is needed to ensure that planned activities are completed and that future improvement activities are initiated and completed.

- Since then, IRS reported that it has completed its initial validation of the PRIME contractor's cost and schedule estimation system, and is continuing to recruit and hire dedicated cost and schedule estimators. IRS reports that it is committed to finalizing its processes and procedures and completing implementation of the improved BSM cost and schedule estimation system by October 1 of this year.

- Until improved estimation practices are fully implemented, BSM project cost and schedule shortfalls are likely to continue.

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Contract Management

- The Federal Acquisition Regulation indicates that performance-based contracting[26] is the preferred method for acquiring services, should be used to the maximum extent practicable, and that fixed-price task orders[27] are the preferred type of performance-based task order.

- In September 2002, TIGTA recommended[28] that BSMO require the use of fixed-price task orders whenever possible and appropriate for projects in development and deployment and for any other task orders where requirements are clearly identified.

- OMB has also encouraged IRS to use performance-based, fixed-price task orders to the maximum extent practicable.

- In June 2003, we reported[29] that IRS did not have a clearly documented process for determining the type of task order to be awarded for BSM projects. We recommended that IRS establish and implement a process for determining the type of task order to be awarded.

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[26] The use of performance-based contracting means structuring all aspects of an acquisition around the purpose of the work to be performed, with the contract requirements set forth in clear, specific, and objective terms with measurable outcomes.
[27] A fixed-price task order provides for a price that is not subject to any adjustment on the basis of the contractor's cost experience in performing contract tasks.
[28] Treasury Inspector General for Tax Administration, *Additional Improvements Are Needed in the Application of Performance-Based Contracting to Business Systems Modernization Projects*, Reference Number 2002-20-170 (Washington, D.C.: Sept. 13, 2002).
[29] GAO-03-768.

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- Since then, IRS has

  - issued BSMO guidance[30] that outlines IRS's intent to utilize more fixed-price task orders where appropriate and provides guidance regarding the selection of appropriate contract types for BSM task orders,

  - issued a CIO memorandum[31] that states the new policy that contracts and task orders for BSM development projects in milestones 4 and 5 will be fixed-price, and

  - issued a BSMO directive[32] that provides implementation guidance and a strategy to facilitate the use of performance-based contracting in the development of BSM task orders.

- IRS has developed a fiscal year 2004 action plan to complete the implementation of the above performance-based contracting practices for BSM. IRS's fiscal year 2004 commitments include

  - redefining ELC milestone 4 into milestones 4a and 4b and implementing fixed-price contracting for milestones 4b and 5,

  - developing and implementing performance-based contracting performance measures, and

  - assessing performance-based contracting compliance and practices.

- Until IRS fully implements performance-based contracting practices for managing BSM task orders, it cannot ensure that contractor costs are being adequately controlled.

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[30] Internal Revenue Service, *Enabling the Selection of Appropriate Contract Types for BSM Task Orders*, BSMO-Guidance-Contract Types (Washington, D.C.: Aug. 11, 2003).
[31] Internal Revenue Service, *Business Systems Modernization Fixed-Price Policy*, CIO Memorandum (Washington, D.C.: Sept. 29, 2003).
[32] Internal Revenue Service, *Performance-Based Contracting for BSM Task Orders*, BSMO-DIR-PBC (Washington, D.C.: Sept. 30, 2003).

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Objective 3: Observations About IRS's BSM Program and Expenditure Plan

Observation 1: Projects Continue to Incur Cost Increases and Schedule Delays

- Based on IRS's expenditure plans, BSM projects have consistently cost more and taken longer to complete than originally estimated. In its fiscal year 2004 plan, IRS disclosed that key BSM projects have continued to experience cost and schedule shortfalls against prior commitments. The following table shows the life cycle variance in cost and schedule estimates for completed and ongoing BSM projects. These variances are based on a comparison of IRS's initial and revised cost and schedule estimates to complete initial operation[33] or full deployment[34] of the projects.

- As the table on the next page indicates, the life cycle cost and schedule estimates for full deployment of the e-Services project have increased by just over $86 million and 18 months, respectively, which included a significant increase from the initial project scope. In addition, the estimated cost for the full deployment of CADE Release 1 has increased by almost $37 million, and project completion has been delayed by 30 months.

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[33] Initial operation refers to the point at which a project is authorized to begin enterprisewide deployment.
[34] Full deployment refers to the point at which enterprisewide deployment has been completed and a project is transitioned to operations and support.

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Table 4: IRS BSM Project Life Cycle Cost/Schedule Variance Summary

Project	Cost variance (in thousands)	Reported/revised estimated cost (in thousands)	Schedule variance (in months)	Reported/revised estimated completion date
Completed Projects				
Security and Technology Infrastructure Release 1	+$7,553	$41,287	+5	1/31/02 (initial operation)
Customer Communications 2001	+5,310	46,420	+9	2/26/02 (full deployment)
Customer Relationship Management Exam	-1,938	7,375	+3	9/30/02 (full deployment)
Human Resources Connect Release 1	+200	10,200	0	12/31/02 (initial operation)
Internet Refund/Fact of Filing	+12,923	26,432	+14	9/26/03 (full deployment)
Ongoing Projects[a]				
Modernized e-File Release 1	+17,057	46,303	+4.5	3/31/04[b] (initial operation)
e-Services	+86,236	130,281	+18	4/30/05 (full deployment)
CADE Release 1	+36,760	97,905	+30[c]	6/30/05[c] (full deployment)
Integrated Financial System Release 1	+53,916	153,786	TBD[c]	TBD[c] (full deployment)
Custodial Accounting Project Release 1	+72,058	119,219	TBD[c]	TBD[c] (full deployment)

Source: GAO analysis of data contained in IRS's BSM expenditure plans.

[a] Projects ongoing as of 9/30/03.
[b] IRS subsequently reported that Modernized e-File began initial operation on 2/23/04.
[c] Project schedules for CADE, the Integrated Financial System, and the Custodial Accounting Project are currently under review.

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- In addition to the modernization management control shortcomings discussed above, our work has shown that the increases and delays were caused, in part, by

  - *inadequate definitions of systems requirements*. As a result, additional requirements have been incorporated into ongoing projects.

  - *increases in project scope.* For example, the e-Services project has changed significantly since the original design. The scope was broadened by IRS to provide additional benefits to internal and external customers.

  - *underestimating project complexity*. This factor has contributed directly to the significant delays in the CADE Release 1 schedule.

  - *competing demands of projects for test facilities*. Testing infrastructure capacity is insufficient to accommodate multiple projects when testing schedules overlap.

  - *project interdependencies*. Delays with one project have had a cascading effect and have caused delays in related projects.

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Observation 2: Cost Overruns and Schedule Delays Impair IRS's Ability to Make Appropriate Decisions About Investing in New Projects, Delay Delivery of Benefits to Taxpayers, and Postpone Resolution of Material Weaknesses Affecting Other Program Areas

- Producing reliable estimates of expected costs and schedules is essential to determining a project's cost-effectiveness. In addition, it is critical for budgeting, management, and oversight. Without this information, the likelihood of poor investment decisions is increased.

- Schedule slippages delay the provision of modernized systems' direct benefits to the public. For example, delays in CADE will impact IRS's ability to provide faster refunds and timely response to taxpayer inquiries.

- Delays in the delivery of modernized systems also affect the remediation of material internal management weaknesses.

  - The Custodial Accounting Project is intended to address a financial material weakness and permit the tracking from submission to disbursement of all revenues received from individual taxpayers. This release has yet to be implemented, and a revised schedule has not yet been determined.

  - The Integrated Financial System is intended to address financial management weaknesses. When IRS submitted its fiscal year 2003 BSM expenditure plan, Release 1 of the Integrated Financial System was scheduled for delivery on October 1, 2003. However, it has yet to be implemented, and additional cost increases are expected. In response to continued delays in the delivery of this system, the Commissioner of Internal Revenue recently testified that IRS plans to direct upcoming enforcement modernization projects, including Collection Contract Support, to other contracts.

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Observation 3: Internal and Independent Assessments of BSM Have Identified Significant Weaknesses and Risks

- Given the continued cost overruns and schedule delays experienced by these BSM projects, IRS and the PRIME contractor, CSC, initiated and recently completed several in-depth and more comprehensive assessments of the health of BSM. The following table describes these assessments.

Table 5: BSM Assessments Undertaken During 2003

Subject	Organization conducting assessment	Purpose
Root cause analysis	IRS	To review data from historical documents and interviews to determine root causes for schedule delays and cost increases
PRIME review	Bain and Company	To identify root causes of breakdown in CSC's business processes and engagement model and provide recommended solutions
IRS Office of Procurement Assessment	Acquisition Solutions, Inc.	To assess the efficiency and effectiveness of the IRS procurement organization structure, employment of best practices, management and administration, staffing, and to briefly review BSM contracting
CADE assessment	SEI	To provide an independent technical assessment of CADE program history and the feasibility of future plans

Source: IRS.

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- The IRS root cause analysis, PRIME review, and the Office of Procurement assessment have revealed several significant weaknesses that have driven project cost overruns and schedule delays, and also provided a number of actionable recommendations for IRS and CSC to address the identified weaknesses and reduce the risk to BSM. Deficiencies identified are consistent with our prior findings and include

  - poorly defined requirements,
  - low program productivity levels,
  - project scope creep,
  - IRS/PRIME role confusion,
  - immature management processes,
  - ineffective integration across IRS, and
  - insufficient applications and technology engineering.

- As noted, CADE Release 1 has reportedly experienced significant cost overruns and schedule delays throughout its life cycle, and has yet to be delivered. SEI's independent technical assessment of CADE pointed to four primary factors that have caused the project to get off track and resulted in such severe cost and schedule impairments: (1) the complexity of CADE Release 1 was not fully understood; (2) the initial business rules engine[35] effort stalled; (3) both IRS and PRIME technical and program management were ineffective in key areas, including significant breakdowns in developing and managing CADE requirements; and (4) the initially contentious relationship between IRS and PRIME hindered communications.

  SEI also warned that CADE runs the risk of further trouble with later releases due to unexplored/unknown requirements; security and privacy issues that have not been properly evaluated (e.g., online transactions are different from the way IRS does business today); dependence on an unproven business rules engine software product; and the critical, expensive, and lengthy business rules harvesting[36] effort that has not yet

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[35]A business rules engine translates business rules, or processing criteria (e.g., income tax refunds of $x or more are held for administrative review), into executable computer code that processes transactions related to a tax form, and selects and executes correct rules based on the tax year and tax form.
[36]Business rules harvesting refers to the process of extracting, defining, and documenting tax processing criteria from a variety of sources, including IRS subject matter experts, legacy system source code, the tax code, and various other paper documents.

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been started. SEI offered several recommendations to address current CADE issues and reduce project risk in the future.

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Observation 4: IRS Is Taking Actions to Address Issues Identified in the BSM Assessments

- Based on these assessments, IRS identified a total of 46 specific issues for resolution in the following six areas, and developed a BSM action plan comprising individual action plans to address each issue:

  - *Organization and Roles*. Immediate steps are needed to clarify IRS/PRIME roles and responsibilities and clearly define decision-making authorities.

  - *Key Skills & Strengthening the Team*. Strengthened skills and capabilities are needed in such key areas as project management and systems engineering.

  - *Technology–Architecture & Engineering*. More focus is needed to improve current systems architecture integration.

  - *Technology–Software Development Productivity & Quality*. Improvements in product quality and productivity are essential to strengthening software delivery performance.

  - *Acquisition*. Contracting and procurement practices require major streamlining to improve overall contract management.

  - *CADE*. Delivery of CADE Release 1 will require aggressive focus and attention, and a business rules engine solution requires additional evaluation.

- These 46 issue action plans were assigned completion dates, and an IRS or PRIME owner was assigned to take the lead in implementing each plan. IRS and PRIME each also assigned a senior-level executive to drive the execution of the issue action plans, identify and help mitigate implementation hindrances or roadblocks, and ensure successful completion of all planned actions.

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- Additionally, the IRS Oversight Board issued a report[37] on its analysis of the BSM program, which made several observations and recommendations that are consistent with those discussed here. IRS conducted an analysis of that report to reconcile the board's recommendations with those that were already being addressed in the BSM action plan. As a result, IRS opened two additional issues and action plans (for a total of 48) to address (1) rationalizing and streamlining oversight of the BSM program, and (2) determining and maintaining a manageable portfolio of projects.

- IRS has reported making progress in implementing the BSM action plan. According to the IRS BSM program office, as of late February 2004, 29 of the 48 issue action plans have been completed. Examples of completed actions include (1) making business owners and program directors accountable for project success; (2) assigning teams to investigate and resolve problem areas on key projects such as CADE, the Integrated Financial System, and e-Services; (3) aligning critical engineering talent to the most critical projects; (4) increasing the frequency of CADE program reviews; and (5) issuing a firm fixed-price contracting policy.

- Significant further work remains to complete implementation of the remaining 19 open issue action tasks. According to IRS, Bain & Company—which conducted the independent review of PRIME—has been hired to facilitate the implementation of various issue action plans within the Organization and Roles challenge area, while SEI has been contracted to conduct further periodic reviews of the CADE project. IRS expects to complete the majority of the BSM action plan by the end of April of this year, and fully implement any remaining open actions by the end of the calendar year.

- Because of the significant risks associated with the findings of these various assessments, continued monitoring by IRS and validation of the effectiveness of corrective actions is critical to reducing the risk of additional cost overruns and schedule delays.

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[37]IRS Oversight Board, *Independent Analysis of IRS Business Systems Modernization*, Special Report (Washington, D.C.: Dec. 2003).

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Conclusions

- IRS's fiscal year 2004 plan satisfies the legislative conditions.

- IRS has made progress in implementing our recommendations to improve its modernization management controls and capabilities and in deploying some applications that have benefited the public and the agency. However, our reviews, those of the Treasury inspector general, and the recently completed internal and independent assessments of the BSM program clearly demonstrate that significant challenges and serious risks remain. IRS acknowledges this and is acting to address them.

- Weak management controls contributed directly to the cost, schedule, and/or performance shortfalls experienced by most projects. Given that the tasks associated with those projects that are moving beyond design and into development are by their nature more complex and risky and that IRS's fiscal year 2004 BSM expenditure plan supports progress toward the later phases of key projects and continued development of other projects, systems modernization projects likely will encounter additional cost and schedule shortfalls.

- It will be important for IRS to continue to strengthen BSM program management by continuing efforts to

  - balance the scope and pace of the program with the agency's capacity to handle the workload, and

  - institutionalize the management processes and controls necessary to resolve the deficiencies identified by the reviews and assessments.

  Further, continuing oversight by the Congress, OMB, and others, as well as ongoing independent assessments of the program, can assist IRS in strengthening the BSM program.

- Meeting these challenges and improving performance are essential if IRS and the PRIME contractor are to successfully deliver the BSM program.

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Agency Comments

- In providing oral comments on a draft of this briefing, the Associate CIO for BSM concurred with our findings and conclusions, and stated that it is a fair representation of the BSM program. He also provided specific technical comments that we have incorporated into the briefing, as appropriate.

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Appendix I: Description of Business Systems Modernization (BSM)
Projects and Program-Level Initiatives

Proposed Modernization Initiative	Description
Data Projects:	
Customer Account Data Engine – Individual Master File (CADE IMF)	Is to build the modernized database foundation to replace the existing individual master file processing systems.
Custodial Accounting Project (CAP)	Is to provide integrated tax operations and internal management information to support evolving decision analytics, performance measurement, and management information needs.
Integrated Financial System (IFS)	Is to provide a single ledger for custodial and financial data and a platform to integrate core financial data with budget, performance, and cost accounting data.
Business Projects:	
HR Connect	Is to allow IRS employees to access and manage their human resources information online.
Internet Refund / Fact of Filing (IR/FoF)	Is to provide instant refund status information and instructions for resolving refund problems to taxpayers with Internet access.
Customer Account Management (CAM)	Is to support employee access to tax account data, contact management, case management, outbound correspondence management, and workflow management.
Work Management	Is to replace numerous IRS legacy systems and reporting tools used for planning, scheduling, and managing work with a single Enterprise Resource Planning system.
e-Services	Is to create a Web portal and other e-Services to promote the goal of conducting most IRS transactions with taxpayers and tax practitioners electronically.
Collection Contract Support (CCS)	Is to provide a commercial-off-the-shelf software package that enables IRS to support private collection agencies.
Modernized e-file	Is to provide a single standard for filing electronic tax returns.

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Projects and Program-Level Initiatives

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Proposed Modernization Initiative	Description
Core Infrastructure Projects:	
Development, Integration & Testing Environment (DITE)	Is to provide oversight for laboratory environments that support evaluation, development, and testing of components from multiple projects: (1) Virtual Development Environment provides a development environment and a standardized set of tools; (2) Enterprise Integration Testing Environment provides an integration testing environment for all projects.
Infrastructure Shared Services (ISS)	Is to establish a program to build and deliver an infrastructure that is scalable, interoperable, flexible, manageable, and features standardized operations and a single security and enterprise systems management framework.
Program-Level Initiatives:	
Architecture & Integration	Is to ensure that systems solutions meet IRS business needs and that the projects are effectively integrated.
Business Integration	Is to ensure that IRS's BSM program is aligned with the business units' reengineering efforts, and serves as a business liaison between BSMO and all internal and external stakeholders.
Management Processes	Is to provide sustaining support for program-level management processes, including quality assurance, process improvement, training, program control, and ELC maintenance and enhancements.
Federally Funded Research and Development Center (FFRDC) - MITRE	Is to provide program management and systems engineering support to BSMO.
Program Management	Is to provide overall program management for IRS-PRIME partnership activities and deliverables, and is responsible for coordinating, tracking, and integrating all programwide costs, schedules, and performance measures.

Source: IRS.

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Appendix II: Additional Detail on IRS's Fiscal Year 2004 BSM
Expenditure Plan (in thousands of dollars)

Proposed Modernization Initiative	Release[a]	Milestone[b]	Milestone date	Amount requested	OMB approved
Business Projects					
e-Services	R1.1,1.2,2.0	5	April 05	$24,500	
e-Services	PeopleSoft Upgrade	Level of Effort	April 05	7,400	
e-Services Risk Adjustment				4,100	
Subtotal - e-Services Project				36,000	$31,900
Collection Contract Support (CCS)		3,4a	Oct. 04	7,250	
CCS Risk Adjustment				1,000	
Subtotal – CCS Project				8,250	7,250
Modernized e-file (MeF)	R2	4	Sep. 04	15,325	
Modernized e-file (MeF)	R3	3	April 04	1,563	
Modernized e-file (MeF)	R3	4	March 05	17,612	
MeF Risk Adjustment				2,700	
Subtotal – MeF Project				37,200	37,200
Data Projects					
Customer Account Data Engine – Individual Master File (CADE IMF)	R1	Level of Effort	Dec. 04	6,000	
Customer Account Data Engine – Individual Master File (CADE IMF)	Business Rules	Level of Effort	June 04	17,000	
Customer Account Data Engine – Individual Master File (CADE IMF)	R2	4	Jan. 06	39,755	
CADE IMF Risk Adjustment				4,600	
Subtotal – CADE IMF Project				67,355	62,755
Custodial Accounting Project (CAP)	R1	4,5	TBD	10,600	
CAP Risk Adjustment				14,600	
Subtotal – CAP Project				25,200	
Integrated Financial System (IFS)	R1	5	TBD	15,000	
IFS Risk Adjustment				1,000	
Subtotal – IFS Project				16,000	

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Appendix II: Additional Detail on IRS's Fiscal Year 2004 BSM
Expenditure Plan (in thousands of dollars)

(Continued from previous page)

Proposed Modernization Initiative	Release[a]	Milestone[b]	Milestone date	Amount requested	OMB approved
Core Infrastructure Projects[c]					
Development, Integration & Testing Environment (DITE)		FY 04	Nov. 04	$14,584	
Infrastructure Shared Services (ISS)		FY 04	Nov. 04	66,423	
DITE/ISS Risk Adjustment				3,000	
Subtotal - Core Infrastructure Projects				84,007	$53,438
Program-Level Initiatives[c]					
Architecture & Integration		FY 04	Nov. 04	31,400	
Business Integration		FY 04	Nov. 04	7,300	
Management Processes		FY 04	Nov. 04	10,700	
FFRDC – MITRE		FY 04	Nov. 04	16,300	
Program Management		FY 04	Nov. 04	8,100	
Other BSM Action Plan Activities		FY 04	Nov. 04	10,000	
Program-Level Initiatives Risk Adjustment				2,000	
Subtotal – Program-Level Initiatives				85,800	48,562
Management Reserve				27,877	4,895
Total Fiscal Year 2004 BSM Program				**$387,699**	**$246,000**

Source: IRS and OMB.

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[a] Releases are software versions that provide a subset of the total planned project functionality.
[b] Milestones correspond to phases within IRS's enterprise life cycle, which is graphically depicted in the Background section.
[c] Core infrastructure projects and program-level initiatives are funded on a fiscal year (FY) basis rather than by milestone.

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Review of IRS's Revised Fiscal Year 2004
Business Systems Modernization Expenditure Plan

Briefing for the staffs of the
Subcommittee on Transportation, Treasury and General Government
Senate Committee on Appropriations
and
Subcommittee on Transportation, Treasury and Independent Agencies
House Committee on Appropriations

August 31, 2004

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Introduction and Objectives

- IRS's current multibillion-dollar effort, known as the Business Systems Modernization (BSM) program, was initiated in fiscal year 1999. IRS contracted with Computer Sciences Corporation (CSC) as the prime systems integration support (PRIME) contractor to assist with designing, developing, and integrating a new set of information systems that are intended to replace IRS's aging business and tax processing systems. BSM is a high-risk, highly complex program that involves the development and delivery of a number of modernized tax administration, internal management, and core infrastructure projects that are intended to provide improved and expanded service to taxpayers as well as IRS internal business efficiencies.

- As mandated by IRS's fiscal year 2004 appropriations act,[1] BSM funds are not available until IRS submits a modernization expenditure plan for approval to the congressional appropriations committees. 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;[2]

  - conform with IRS's enterprise life cycle methodology;[3]

  - be approved by IRS, Treasury, and OMB;

  - be reviewed by GAO; and

  - comply with federal acquisition rules, requirements, guidelines, and systems acquisition management practices.

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[1]P.L. 108-199, Div. F, Title II, Jan. 23, 2004.
[2]An enterprise architecture (EA) is an institutional blueprint that defines how an enterprise operates today, in both business and technology terms, and intends to operate in the future. An EA also includes a roadmap for transitioning between these environments.
[3]IRS refers to its life cycle management program as the enterprise life cycle (ELC).

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Introduction and Objectives

- Since mid-1999, IRS has submitted a series of expenditure or "spending" plans requesting release of BSM appropriated funds. To date, about $1.7 billion has been appropriated for BSM, including about $388 million for fiscal year 2004.[4] Of the $1.7 billion appropriated, about $1.6 billion has been released.

- On January 16, 2004, Treasury submitted IRS's fiscal year 2004 expenditure plan for about $388 million, seeking release of the $246 million approved by OMB at that time.

- The relevant House and Senate appropriations subcommittees subsequently approved the release of the requested $246 million on March 24 and 25, 2004, respectively.

- On July 14, 2004, Treasury submitted a revised fiscal year 2004 expenditure plan for about $388 million, seeking release of the remaining $141.7 million from the BSM account.

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

  - determine whether IRS's revised fiscal year 2004 expenditure plan satisfies the legislative conditions specified in IRS's appropriations act, and

  - provide any other observations about the plan and IRS's BSM program.

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[4]P.L. 108-199, Div. F, Title II, Jan. 23, 2004. IRS uses the appropriated totals to cover contractor costs related to the BSM program. IRS funds internal costs for managing BSM with another appropriation. These costs are not tracked separately for BSM-related activities.

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Results in Brief

- IRS's revised fiscal year 2004 expenditure plan satisfies each of the six legislative conditions.

- We have three observations related to IRS's BSM program and revised fiscal year 2004 expenditure plan:

  - *Projects continue to incur cost increases and schedule delays*. BSM projects continue to cost more and take longer to complete than originally estimated. For example, the estimated life cycle cost for full deployment of Release 1 of the Integrated Financial System has increased by almost $74 million and project completion has been delayed by 15 months. IRS cited various reasons for cost increases and schedule delays related to this and other projects, including an inability to resolve key system design, integration, and performance issues in a timely manner.

  - *IRS has taken actions to address issues raised in independent BSM assessments.* IRS developed 48 action issues to address concerns raised by various reviews and, in a May 2004 report, stated that almost all of them were closed based on completed actions. However, many of these action issues were prematurely closed because required activities were incomplete. Subsequent to the May report, the Associate Chief Information Officer (CIO) for Modernization Management began tracking the action issues—including those that were previously closed—and most of them remain open.

  - *IRS has performed post-implementation reviews on three deployed projects, but they were incomplete*. Federal and IRS guidance calls for post-implementation reviews to be performed on completed projects to determine whether expected benefits have been achieved and to document lessons learned. IRS has performed three such reviews, but they did not include, for example, an analysis of actual versus planned benefits. Without such an analysis, IRS lacks important information about whether its BSM projects are meeting expectations.

- We are making a recommendation to the Commissioner of Internal Revenue to perform analyses of whether completed projects have achieved expected benefits.

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Results in Brief

- IRS IT officials, including the Associate CIO for BSM and the Associate CIO for Modernization Management, provided oral comments on a draft of this briefing. In general, the officials stated that they did not believe that the draft briefing adequately described the progress that IRS had made in deploying systems and implementing management improvements. In particular, the officials stated that variances in cost and schedule estimates have significantly decreased over the past year. We believe that the briefing accurately characterizes IRS's progress as a whole (e.g., from conception to the latest expenditure plan), not just within the past year. Nevertheless, based on additional documentation provided, we revised the draft to include information on additional actions that IRS has taken, particularly relating to their tracking of action issues.

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Background

- To date, IRS's BSM program has deployed several modernization projects and reported benefits to taxpayers and the agency. For example:

  - Customer Communications 2001 – improves telecommunications infrastructure, including telephone call management, call routing, and customer self-service applications.

  - Human Resources (HR) Connect Release 1 – allows employees to access and manage their human resources information online. This system has reportedly been delivered to 75,000 IRS employees, and is expected to enable the redirection of several hundred staff years to enforcement activities by the time it is fully deployed.

  - Internet Refund / Fact of Filing – improves customer self-service by providing instant refund status information and instructions for resolving refund problems to taxpayers with internet access. IRS reports that this application has had over 20 million inquiries in 2004.

  - Modernized e-File Release 1 – provides electronic filing to large businesses and tax-exempt organizations. IRS reports that over 32,000 electronic returns have been accepted as of mid-May 2004.

  - E-Services – creates a Web portal and other e-Services to promote the goal of conducting most IRS transactions with taxpayers and tax practitioners electronically. IRS reports that several of the planned electronic services products are now deployed and available over the Internet.

  - Customer Account Data Engine[5] Individual Master File (CADE IMF) Release 1[6] – is to improve processing of all formats (telefile, electronic, or paper) of the 1040EZ return for single taxpayers with refund or even-balance returns. IRS reported that CADE IMF Release 1.1 was deployed in July 2004.

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[5]CADE is to build the modernized database foundation to replace the current master files processing systems, which are the agency's repository of taxpayer information. There are master files for individuals, businesses, and employer retirement plans.
[6]Release 1 includes 4 segments. Release 1.0 consists of the base release, 1040EZ functionality. Release 1.1 includes filing season 2003 and 2004 tax law changes. Release 1.2 is to include filing season 2005 tax law changes. Release 1.3 is to include filing season 2006 tax law changes.

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Background

- In our March 2004 briefing on the results of our review of IRS's initial fiscal year 2004 BSM expenditure plan, we reported, among other things, that:

  - IRS's initial expenditure plan satisfied each of the six legislative conditions.

  - IRS had made progress in implementing our recommendations to improve its modernization management controls and capabilities and in deploying some applications that had provided benefits.

  - Although progress had been made, modernization management controls and capabilities related to configuration management, human capital management, cost and schedule estimating, and contract management had not yet been fully implemented or institutionalized. Weaknesses in these controls and capabilities had contributed, at least in part, to BSM project cost and schedule shortfalls.

- In addition, we made four observations in our March 2004 briefing related to the BSM program and IRS's initial fiscal year 2004 expenditure plan:

  - Projects continued to incur cost increases and schedule delays for several reasons, including inadequate definition of systems requirements, increases in project scope, and cost and schedule estimating deficiencies.

  - Cost overruns and schedule delays impaired IRS's ability to make appropriate decisions about investing in new projects, delayed delivery of benefits to taxpayers, and postponed resolution of material weaknesses affecting other program areas.

  - In-depth and more comprehensive internal and independent assessments of BSM had identified significant weaknesses and risks, consistent with our prior reviews.

  - IRS was taking actions to address issues identified in these BSM assessments.

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- We also concluded in our March 2004 briefing that it will be important for IRS to continue to strengthen BSM program management by continuing efforts that we had previously recommended to

  - balance the scope and pace of the program with the agency's capacity to handle the workload, and

  - institutionalize the management processes and controls necessary to resolve the deficiencies identified by the reviews and assessments.

  Further, continuing oversight by the Congress, OMB, and others, as well as ongoing independent assessments of the program, can assist in strengthening the BSM program.

- Table 1 shows a summary of the revised fiscal year 2004 expenditure plan.

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Table 1: Summary of IRS's Revised Fiscal Year 2004 BSM Expenditure Plan (in thousands of dollars)[a]

	Amount requested	Released (March 2004)	Pending approval
Project Category[b]			
Tax administration projects	$148,805	$139,105	$9,700
Internal management projects	57,200		57,200
Core infrastructure projects	84,007	53,438	30,569
Subtotal	290,012	192,543	97,469
Architecture, Integration & Management			
BSM action plan activities	10,000		
Architecture & integration	31,400		
Business integration	7,300		
Management processes	10,700		
Federally funded research and development center—MITRE	16,300		
Program management	8,100		
Architecture, integration & management risk adjustment	2,000		
Subtotal	85,800	48,562	37,238
Management Reserve	11,887	4,895	6,992
Total	**$387,699**	**$246,000**	**$141,699**

Source: IRS.

[a]See appendix I for a description of each BSM project and program-level initiative. See appendix II for additional detail on the revised plan. See appendix III for a detailed comparison of IRS's initial and revised fiscal year 2004 expenditure plans.

[b]The three categories under this heading include 10 separate projects or project releases.

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Scope and Methodology

- To accomplish our objectives, we

  - reviewed the revised fiscal year 2004 expenditure plan submitted by Treasury in July 2004,

  - analyzed the plan against the legislative conditions to identify any variances,

  - compared the revised (July 2004) plan to the initial (January 2004) plan to identify changes in the nature and scope of BSM activities planned for fiscal year 2004,

  - reviewed the *BSM Challenges Plan Close-Out Report* to assess progress made to complete actions and implement changes recommended by internal and independent assessments of the BSM program,

  - interviewed IRS program and project management officials to corroborate our understanding of the plan and other BSM activities, and

  - collaborated with the Treasury Inspector General for Tax Administration to avoid duplication of effort in reviewing BSM initiatives.

- Consistent with prior reviews, we did not independently validate planned initiatives' cost estimates or confirm, through system and project management documentation, the validity of IRS-provided information on the initiatives' content and status.

- We performed our work from July through August 2004 in accordance with generally accepted government auditing standards.

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Objective 1: The revised plan satisfies the conditions in IRS's fiscal year 2004 appropriations act.

Table 2: Revised Fiscal Year 2004 Expenditure Plan Provisions for Satisfying Legislative Conditions

Legislative conditions	Expenditure plan provisions
1. Meets OMB capital planning and investment control review requirements	IRS's revised fiscal year 2004 expenditure plan identifies funding required for managing information technology (IT) investments as part of a single portfolio through its capital planning and investment control process. This includes conducting periodic reviews to select, control, and evaluate IT investments.
2. Complies with IRS's enterprise architecture	The revised plan identifies funding required to continue definition and implementation of the enterprise architecture (EA). For example, it identifies funding needed for • finalizing and publishing updates to EA version 2.1 based on change requests • performing EA compliance certification activities • updating the 2004 release architecture • producing the 2005/2006 release architecture
3. Conforms with IRS's enterprise life cycle methodology	The revised plan identifies funding required for meeting the requirements in IRS's enterprise life cycle (ELC) management program. For example, the plan calls for • maintaining responsibility for coordinating, tracking, and integrating all programwide costs, schedules, releases, issues, and risks • maintaining and enhancing the ELC
4. Approved by IRS, Treasury, and OMB	• IRS – May 19, 2004 • Treasury – May 28, 2004 • OMB – June 28, 2004
5. Reviewed by GAO	• GAO – August 31, 2004, briefing to IRS's appropriations subcommittees
6. Complies with the acquisition rules, requirements, guidelines, and systems acquisition management practices of the federal government	As part of the ELC, IRS has defined processes, roles, and responsibilities for implementing Carnegie Mellon University's Software Engineering Institute (SEI) Software Acquisition Capability Maturity Model™ practices within the level 2 key process areas.[a] These practices are consistent with federal acquisition requirements and management practices, and the plan calls for implementation of the ELC on all projects. Further, all PRIME contractor cost reimbursement task orders are subject to a final independent audit by the Defense Contract Audit Agency to ensure that costs incurred are commensurate with the physical completion of the contract.

Source: IRS's fiscal year 2004 appropriations act and GAO analysis.

[a]These are acquisition planning, solicitation, requirements development and management, project management, contract tracking and oversight, evaluation, and transition to support.

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Objective 2: Observations About IRS's BSM Program and Revised Expenditure Plan

Observation 1: Projects Continue to Incur Cost Increases and Schedule Delays

- Based on IRS's expenditure plans, BSM projects have consistently cost more and taken longer to complete than originally estimated. In its revised fiscal year 2004 plan, IRS disclosed that key BSM projects have continued to experience cost and schedule shortfalls against prior commitments. Table 3 shows the life cycle variance in cost and schedule estimates for the completed and ongoing BSM projects reported in the expenditure plans. These variances are based on a comparison of IRS's initial and revised cost and schedule estimates to complete initial operation[7] or full deployment[8] of the projects. Examples of projects with the largest variances are:

  - *Integrated Financial System (IFS) Release 1*. The total estimated life cycle cost for full deployment has now increased by almost $74 million, and project completion has been delayed by 15 months. This includes an additional $14 million of fiscal year 2004 funding required to cover cost overruns associated with delaying the planned start of IFS initial operation from April to October 2004. IRS plans to transfer the necessary resources from BSM program management reserve to fund this effort. This latest schedule delay further postpones the delivery of IRS's new core accounting system.

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[7]Initial operation refers to the point at which a project is authorized to begin enterprisewide deployment.
[8]Full deployment refers to the point at which enterprisewide deployment has been completed and a project is transitioned to operations and support.

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- *Customer Account Data Engine – Individual Master File (CADE IMF) Release 1.* CADE is one of IRS's most important modernization projects. The life cycle cost and schedule estimates for full deployment of CADE IMF Release 1 have increased by just over $118 million and 30 months, respectively. The revised cost estimate includes an increase of nearly $28 million during fiscal year 2004 to fund various activities associated with initial operation/deployment, filing season 2005 tax law changes, and required mainframe maintenance and capacity upgrades that were not included in the previous estimate. IRS plans to postpone CADE IMF Release 2 work until 2005 and realign the associated funding to cover the additional CADE IMF Release 1 costs. This will further delay the delivery of planned improvements in IRS's ability to process electronically-filed full paid or refund 1040 returns with schedules A and B for individual taxpayers with single filing status.

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Table 3: IRS BSM Project Life Cycle Cost/Schedule Variance Summary

Project	Cost variance (in thousands)	Reported/revised estimated cost (in thousands)	Schedule variance (in months)	Reported/revised estimated completion date
Completed Projects				
Security and Technology Infrastructure Release 1	+$8,450[a]	$45,401[a]	+5	1/31/02 (initial operation)
Customer Communications 2001	+14,562[a]	60,762[a]	+9	2/26/02 (full deployment)
Customer Relationship Management Exam	-721[a]	9,245[a]	+3	9/30/02 (full deployment)
Human Resources Connect Release 1	+200	10,200	0	12/31/02 (initial operation)
Internet Refund/Fact of Filing	+12,923	26,432	+14	9/26/03 (full deployment)
Modernized e-File Release 1	+21,057	50,303	+6.5	5/31/04 (initial operation)
Ongoing Projects				
Modernized e-File Release 2	0	16,325	0	9/30/04 (initial operation)
Modernized e-File Release 3	+5,300[b]	27,175[b]	0	3/31/05 (initial operation)
e-Services	+102,271[a b]	148,820[a b]	+18	4/30/05 (full deployment)
Integrated Financial System Release 1	+73,710	173,580	+15	6/30/05 (full deployment)
Customer Account Data Engine – Individual Master File (CADE IMF) Release 1	+118,129[a b]	182,774[a b]	+30	6/30/05 (full deployment)
Custodial Accounting Project Release 1	+91,789	138,950	+33	11/01/05 (full deployment)
CADE IMF Business Rules	+11,902	38,102	+18	12/31/05 (phase 2)

Source: GAO analysis of data contained in IRS's BSM expenditure plans.

[a]Cost estimates for Security and Technology Infrastructure Release 1, Customer Communications 2001, Customer Relationship Management Exam, e-Services, and CADE IMF Release 1 include the addition of fiscal year 1999 and 2000 project cost data provided by IRS since our March 2004 briefing.
[b]Cost estimates for Modernized e-File Release 3, e-Services, and CADE IMF Release 1 include initial estimated expenditures for fiscal year 2005.

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- In addition to the reasons discussed in our March 2004 briefing, IRS reported that the increases and delays have been caused, in part, by

  - unstable interface definitions;
  - integration testing delays due to unanticipated data anomalies and interface testing issues;
  - technical changes required to comply with the enterprise architecture; and
  - an inability to resolve key system design, integration, and performance issues in a timely manner.

- Another factor that contributed to the revised cost estimates for the ongoing projects is that IRS has recently begun to implement a risk-adjusted cost estimating methodology.

  - Prior to the fiscal year 2004 plan, IRS's project cost estimates consisted of point estimates that did not include an adjustment for project risk.

  - In the fiscal year 2004 expenditure plan, as directed by OMB, IRS has added a "risk adjustment" amount to the cost estimate for each BSM project in order to allow for variance and uncertainty. These risk-adjusted estimates in the fiscal year 2004 plan incorporate ranges, based on the uncertainty in the point estimates, and adjust those estimates to provide a specified level of confidence given the inherent variability.

  - Currently, the risk adjustment is shown for each project in the plan and is not associated with project milestones or releases. IRS is in the process of refining and finalizing its risk-adjusted cost estimating methodology, and plans to apply it at the project release level in future BSM expenditure plans. As this risk adjustment methodology continues to mature, it should improve IRS's ability to more accurately provide reliable cost estimates for its modernization projects.

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- As BSM delays and cost increases persist, particularly on such key projects as CADE and IFS, it has become increasingly evident to IRS that the PRIME contractor, CSC, as well as its subcontractors need to considerably improve their performance to consistently meet their commitments for delivery of project functionality on time and within budget.

  - The Commissioner has explicitly stated that the performance of the PRIME contractor must improve.

  - An example of one of the actions that IRS has taken recently to try to address this issue is to negotiate a risk sharing arrangement with CSC on the IFS project. According to IRS program officials, this arrangement provides cost sharing provisions and a focus on key deliverables that is intended to limit the government's financial exposure while providing incentives for the contractor to deliver the product in a timely manner.

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Observation 2: IRS Has Taken Actions to Address Issues Raised in Independent BSM Assessments

- Given continued cost overruns and schedule delays in the BSM program, during the summer of 2003, IRS and the PRIME contractor, CSC, initiated three external independent studies and one IRS internal analysis to assess the health of the BSM program and to review the CADE project.

- These assessments and a December 2003 report by the IRS Oversight Board[9] resulted in 48 action issues to address weaknesses in and reduce risks to the BSM program.

- The action issues were grouped into 6 key areas with the following objectives:

  - Clarify roles and responsibilities and clearly define decision authorities between IRS and CSC.

  - Strengthen project skills and capabilities in such key areas as project management and systems engineering.

  - Improve the current systems architecture integration.

  - Improve product quality and productivity to strengthen software delivery performance.

  - Streamline contracting and procurement practices between the IRS and PRIME, including subcontractors, to improve overall contract management.

  - Bring aggressive and focused attention to the delivery of CADE Release 1.0, and perform an additional evaluation of the proposed business rules engine solution.

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[9]IRS Oversight Board, *Independent Analysis of IRS Business Systems Modernization,* Special Report (Dec. 2003).

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- In October 2003, IRS established a BSM challenges plan to address the 48 action issues, and assigned a senior executive to coordinate the development of goals, management plans, and closure criteria.

- Government internal control standards[10] indicate that managers should (1) promptly evaluate findings from audits and other reviews, (2) determine proper actions in response to findings and recommendations, and (3) complete, within established timeframes, all actions that correct or otherwise resolve the matters brought to management's attention. According to the standards, the resolution process begins when review results are reported to management, and is completed only after action is taken that (1) corrects identified deficiencies, (2) produces improvements, or (3) demonstrates the findings and recommendations do not warrant management action.

- In May 2004, IRS reported[11] that 44 of the 48 action issues were closed and that the plan had accomplished its mission to help put the necessary policies and procedures in place to improve the delivery of modernized systems. However, our review of this report found examples of important issues that were closed even though required activities were incomplete. For example, several action issues dealt with BSM staffing issues, such as strengthening the IRS program and project management team. Generally, these action issues were closed before the hiring and other identified activities were completed. For example, the action issue to strengthen IRS's systems engineering capability was closed even though IRS acknowledged that the full execution of the applicable hiring and contracting actions extended beyond the closing date.

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[10]GAO, *Standards for Internal Control in the Federal Government*, GAO/AIMD-00-21.3.1 (Washington, D.C.: Nov. 1999).
[11]Internal Revenue Service, *BSM Challenges Plan Close-Out Report* (May 2004).

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- Subsequent to the May 2004 report, the IRS Associate CIO for Modernization Management determined that many of the action issues had been prematurely closed in the BSM challenges plan report. As a result, he began internally tracking the progress of the original action issues, including those that had been closed (merging some of these issues so that 38 issues instead of 48 were being tracked). To date, 10 of the 38 issues have been closed, leaving 28 issues open from the BSM challenges plan. Also, the IRS Associate CIO for Modernization Management told us that he is tracking additional issues, along with these 28, and that these issues are being addressed by priority.

- In addition, in its July 2004 revision to the fiscal year 2004 BSM expenditure plan, IRS noted that:

  - Some issues will take time to fully complete (e.g., strengthening systems engineering capabilities by hiring new staff and evaluating the effectiveness of the new governance structure).

  - Other issues will span the life of the program (e.g., the ongoing challenge of balancing the scope and pace of modernization projects with management capacity, ensuring the right people are in place before launching a project, and establishing realistic delivery schedules and cost estimates).

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Observation 3: IRS Has Performed Post-Implementation Reviews on Three Deployed Projects, but They Were Incomplete

- Post-implementation reviews (PIR) are the process for reviewing IT projects to identify lessons learned from investments and determine whether the benefits anticipated in the business case for the investment have been realized.

- OMB Guidance,[12] GAO's Information Technology Investment Framework,[13] and IRS's ELC require that post implementation reviews be performed on deployed information systems. According to our framework, the reviews should include (1) the collection, evaluation, and analysis of both quantitative and qualitative investment data, and (2) documentation of lessons learned and recommendations for improving the information technology investment process.

- To date, IRS has performed PIRs on the three BSM projects that have been fully deployed:

    - Customer Communications 2001,
    - Customer Relationship Management Exam, and
    - Internet Refund/Fact of Filing.

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[12]Executive Office of the President, Office of Management and Budget, *Evaluating Information Technology Investments: A Practical Guide*, (November 1995) and Circular A-130, Transmittal Memorandum #4, *Management of Federal Information Resources,* (Nov. 2000).
[13]GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, GAO-04-394G (Washington, D.C.: March 2004).

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- However, these PIRs were not complete. Although the PIRs documented lessons learned in implementing the projects and provided recommendations for future improvements, the reviews did not include an analysis of (1) actual versus planned benefits and systems performance, (2) the validity of original business assumptions, or (3) actual versus planned cost and schedule estimates. Without such analysis, these reviews provide little feedback that can be used to improve the performance of ongoing and future BSM projects.

- Although IRS's ELC procedure for conducting PIRs[14] requires that the reviews focus on evaluating the actual project results compared to estimates of cost, schedule, performance, and mission improvement outcomes, the PIRs that were performed did not follow this procedure. IRS staff explained that the agency is developing a new procedure that is expected to require reviews at each ELC milestone exit. These post milestone reviews are to focus on the processes used in systems development, while the PIRs are to focus on outcomes related to expected business benefits, user expectations, and technical performance requirements. It is important that this new procedure address the PIR policies and guidance that we and OMB have previously issued. Moreover, a new procedure will not prove beneficial unless IRS ensures that it is followed, since the current procedure has not been.

- By not reviewing whether expected benefits have been achieved for deployed projects, IRS lacks important information on whether expectations of these projects have been met. Moreover, comprehensive PIRs can help senior management develop better decision criteria for selecting future IT investments and improve the evaluation of ongoing projects.

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[14]Internal Revenue Service, *Investment Decision Management Post Implementation Review (PIR) Procedure*, (June 30, 2000).

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Conclusions

- Although IRS's revised fiscal year 2004 plan satisfies the required six legislative conditions contained in its appropriation act, BSM projects continue to incur significant cost increases and schedule delays. Accordingly, our conclusion in our March 2004 briefing that it was important that IRS continue to strengthen BSM program management by continuing to address our prior recommendations is still valid.

- In recognition of its ongoing program management challenges, the agency and its PRIME contractor initiated various assessments of the BSM program, which resulted in numerous action issues that IRS reported were largely closed in May 2004. Subsequently, the IRS Associate CIO for Modernization Management determined that many of these issues had been prematurely closed and continued to track their progress.

- Moreover, while IRS has performed post-implementation reviews of three deployed BSM projects, these reviews were incomplete in that they did not include, for example, whether the projects achieved expected benefits. Such information is important to help senior management and other parties, such as the Congress, determine whether projects are meeting expectations and, if not, to determine whether action needs to be taken on ongoing or future projects to increase the likelihood that expected benefits are achieved for these projects.

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Recommendation for Executive Action

- We recommend that the Commissioner of Internal Revenue direct the CIO to take the following action:

  - After BSM projects are deployed, perform post-implementation reviews that include an analysis of quantitative and qualitative investment data to determine, at a minimum, whether expected benefits were achieved.

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Agency Comments and Our Evaluation

- IRS officials, including the Associate CIO for BSM and the Associate CIO for Modernization Management, provided oral comments on a draft of this briefing. In general, the officials stated that they did not believe that the draft briefing adequately described the progress that IRS has made in terms of the systems that have been deployed and the management improvements that have been made. In particular, the officials made the following comments on our observations:

  - *Observation 1.* The officials agreed with the facts in the draft briefing but stated that we did not acknowledge that variances in cost and schedule estimates have significantly decreased over the past year, citing various system releases and sub-releases that they claimed were delivered on or earlier than scheduled and at or below budget. The short timeframes associated with this review did not allow us to perform an in-depth analysis of whether IRS's estimating has improved. However, our review of the past three expenditure plans (submitted in March 2003, January 2004, and July 2004) show that variances continue to occur. Moreover, we believe that our overall characterization of IRS's progress—from project conception to the current expenditure plan—is accurate.

  - *Observation 2.* The officials disagreed with our characterization of their closure of action issues raised in independent BSM assessments because the agency had taken additional actions since the May 2004 *BSM Challenges Plan Close-Out Report*. Based on additional information provided, we revised the briefing to reflect the actions that IRS has taken since its May 2004 report.

  - *Observation 3.* The officials stated that they had previously identified PIRs as a problem area that needed correcting and are planning to implement a new procedure to address this issue in early October. Since our report acknowledges this effort, we did not make any changes to the briefing.

- The IRS officials also provided additional technical comments that we incorporated into the report, as appropriate.

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Appendix I: Description of Business Systems Modernization (BSM)
Projects and Program-Level Initiatives

Proposed Modernization Initiative	Description
Tax Administration Projects:	
e-Services	Is to create a Web portal and other e-Services to promote the goal of conducting most IRS transactions with taxpayers and tax practitioners electronically.
Collection Contract Support (CCS)	Is to provide a commercial-off-the-shelf software package that enables IRS to support private collection agencies.
Modernized e-file	Is to provide a single standard for filing electronic tax returns.
Customer Account Data Engine – Individual Master File (CADE IMF)	Is to build the modernized database foundation to replace the existing master file processing systems that contain a repository of information on individual taxpayers.
HR Connect	Is to allow IRS employees to access and manage their human resources information online.
Internet Refund / Fact of Filing (IR/FoF)	Is to provide instant refund status information and instructions for resolving refund problems to taxpayers with Internet access.
Internal Management Projects:	
Custodial Accounting Project (CAP)	Is to provide integrated tax operations and internal management information to support evolving decision analytics, performance measurement, and management information needs.
Integrated Financial System (IFS)	Is to provide a single ledger for custodial and financial data and a platform to integrate core financial data with budget, performance, and cost accounting data.

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Appendix I: Description of Business Systems Modernization (BSM)
Projects and Program-Level Initiatives

(continued from previous page)

Proposed Modernization Initiative	Description
Core Infrastructure Projects:	
Development, Integration, & Testing Environment	Is to provide oversight for laboratory environments that support evaluation, development, and testing of components from multiple projects: (1) Virtual Development Environment provides a development environment and a standardized set of tools; (2) Enterprise Integration Testing Environment provides an integration testing environment for all projects.
Infrastructure Shared Services	Is to establish a program to build and deliver an infrastructure that is scalable, interoperable, flexible, manageable, and features standardized operations and a single security and enterprise systems management framework.
Architecture, Integration & Management:	
BSM Action Plan	Is to provide focus to many of the challenges facing the IRS modernization, and includes multiple activities geared toward improving the structure and operations of the modernization program.
Architecture & Integration	Is to ensure that systems solutions meet IRS business needs and that the projects are effectively integrated.
Business Integration	Is to ensure that IRS's BSM program is aligned with the business units' reengineering efforts, and serves as a business liaison between BSMO and all internal and external stakeholders.
Management Processes	Is to provide sustaining support for program-level management processes, including quality assurance, process improvement, training, program control, and ELC maintenance and enhancements.
Federally Funded Research and Development Center—MITRE	Is to provide program management and systems engineering support to BSMO.
Program Management	Is to provide overall program management for IRS-PRIME partnership activities and deliverables, and is responsible for coordinating, tracking, and integrating all programwide costs, schedules, and performance measures.

Source: IRS.

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Appendix II: Additional Detail on IRS's Revised Fiscal Year 2004 BSM Expenditure Plan (in thousands of dollars)

Proposed Modernization Initiative	Release[a]	Milestone[b]	Milestone date	Amount requested	Released (Mar. 04)	Pending approval
Tax Administration Projects						
e-Services	R1.1, 1.2, 2.0	5	April 05	$24,500		
e-Services	PeopleSoft Upgrade	N/A	April 05	7,400		
e-Services Risk Adjustment				4,100		
Subtotal – e-Services Project				36,000	$31,900	$4,100
Collection Contract Support (CCS)	R1	3,4a	Jan. 05	7,250		
CCS Risk Adjustment				1,000		
Subtotal – CCS Project				8,250	7,250	1,000
Modernized e-file (MeF)	R2	4	Sep. 04	15,325		
MeF	R3	3	June 04	1,563		
MeF	R3	4	March 05	17,612		
MeF Risk Adjustment				2,700		
Subtotal – MeF Project				37,200	37,200	
Customer Account Data Engine – Individual Master File (CADE IMF)	R1	5	June 05	10,450		
CADE IMF	R1	Filing Season 05	Dec. 04	23,403		
CADE IMF	Business Rules	Phase 2	Dec. 05	28,902		
CADE IMF Risk Adjustment				4,600		
Subtotal – CADE IMF Project				67,355	62,755	4,600
Subtotal – Tax Administration Projects				**148,805**	**139,105**	**9,700**
Internal Management Projects						
Custodial Accounting Project (CAP)	R1	5	Nov. 05	10,600		
CAP Risk Adjustment				14,600		
Subtotal – CAP Project				25,200		25,200
Integrated Financial System (IFS)	R1	4	Jan. 05	14,000		
IFS	R1	5	June 05	15,000		
IFS Risk Adjustment				3,000		
Subtotal – IFS Project				32,000		32,000
Subtotal – Internal Management Projects				**57,200**		**57,200**

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**Appendix II: Additional Detail on IRS's Revised Fiscal Year 2004
BSM Expenditure Plan (in thousands of dollars)**

(continued from previous page)

Proposed Modernization Initiative	Release[a]	Milestone[b]	Milestone date	Amount requested	Released (Mar. 04)	Pending approval
Core Infrastructure Projects						
Development, Integration & Testing Environment (DITE)		FY 04[c]	Nov. 04	$14,584		
Infrastructure Shared Services (ISS)		FY 04[c]	Nov. 04	66,423		
DITE/ISS Risk Adjustment				3,000		
Subtotal -- Core Infrastructure Projects				**84,007**	**$53,438**	**$30,569**
Architecture, Integration, & Management						
BSM Action Plan Activities		FY 04[c]	Nov. 04	10,000		
Architecture & Integration		FY 04[c]	Nov. 04	31,400		
Business Integration		FY 04[c]	Nov. 04	7,300		
Management Processes		FY 04[c]	Nov. 04	10,700		
FFRDC – MITRE		FY 04[c]	Nov. 04	16,300		
Program Management		FY 04[c]	Nov. 04	8,100		
Architecture, Integration & Management Risk Adjustment				2,000		
Subtotal – Architecture, Integration, & Management				**85,800**	**$48,562**	**$37,238**
Management Reserve				**11,887**	**4,895**	**6,992**
Total Fiscal Year 2004 BSM Program				**$387,699**	**$246,000**	**$141,699**

Source: IRS.

[a]Releases are software versions that provide a subset of the total planned project functionality.
[b]Milestones correspond to phases within IRS's ELC (1 – Strategic Plan, 2 – Concept Definition, 3 – System Design, 4 – Deployment, 5 – Post-Deployment Evaluation).
[c]Core infrastructure projects and management initiatives are funded on a fiscal year (FY) basis rather than by milestone.

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Appendix III: Detailed Comparison of IRS's Initial and Revised Fiscal Year 2004 BSM Expenditure Plans (in thousands of dollars)

Proposed Modernization Initiative	Jan. 04 Milestone Date	July 04 Milestone Date	Schedule Variance (in months)	Jan. 04 Amount Requested	July 04 Amount Requested	Cost Variance	IRS Explanation of Variances
Tax Administration Projects							
e-Services Releases 1.1, 1.2, 2.0; Milestone 5	April 05	April 05	0	$24,500	$24,500	$0	
e-Services PeopleSoft Upgrade	April 05	April 05	0	7,400	7,400	0	
e-Services Risk Adjustment	-	-	-	4,100	4,100	0	
Subtotal – e-Services Project				36,000	36,000	0	
CCS Release 1; Milestone 3,4a	Jan. 05	Jan. 05	0	7,250	7,250	0	
CCS Risk Adjustment	-	-	-	1,000	1,000	0	
Subtotal – CCS Project				8,250	8,250	0	
MeF Release 2; Milestone 4	Sep. 04	Sep. 04	0	15,325	15,325	0	
MeF Release 3; Milestone 3	April 04	June 04	+2	1,563	1,563	0	See Note 1
MeF Release 3; Milestone 4	March 05	March 05	0	17,612	17,612	0	
MeF Risk Adjustment	-	-		2,700	2,700	0	
Subtotal – MeF Project				37,200	37,200	0	
CADE IMF Release 1; Milestone 5	June 05	June 05	0	0	10,450	+10,450	See Note 2
CADE IMF Release 1; Filing Season 05	Dec. 04	Dec. 04	0	6,000	23,403	+17,403	See Note 3
CADE IMF Business Rules; Phase 2	June 04	Dec. 05	+18	17,000	28,902	+11,902	See Note 4
CADE IMF Release 2; Milestone 4	Jan. 06	-	-	39,755	0	-39,755	See Note 5
CADE IMF Risk Adjustment	-	-	-	4,600	4,600	0	
Subtotal – CADE IMF Project				67,355	67,355	0	
Subtotal – Tax Administration Projects				**148,805**	**148,805**	**0**	
Internal Management Projects							
CAP Release 1; Milestone 5	TBD	Nov. 05	+33	10,600	10,600	0	See Note 6
CAP Risk Adjustment	-	-	-	14,600	14,600	0	
Subtotal – CAP Project				25,200	25,200	0	
IFS Release 1; Milestone 4	TBD	Jan. 05	+16	0	14,000	+14,000	See Note 7
IFS Release 1; Milestone 5	TBD	June 05	+15	15,000	15,000	0	See Note 8
IFS Risk Adjustment	-	-	-	1,000	3,000	+2,000	See Note 9
Subtotal – IFS Project				16,000	32,000	+16,000	
Subtotal – Internal Management Projects				**41,200**	**57,200**	**+16,000**	

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Appendix III: Detailed Comparison of IRS's Initial and Revised Fiscal Year 2004 BSM Expenditure Plans (in thousands of dollars)

(continued from previous page)

Proposed Modernization Initiative	Jan. 04 Milestone Date	July 04 Milestone Date	Schedule Variance (in months)	Jan. 04 Amount Requested	July 04 Amount Requested	Cost Variance	IRS Explanation of Variances
Core Infrastructure Projects							
DITE	Nov. 04	Nov. 04	0	$14,584	$14,584	$0	
ISS	Nov. 04	Nov. 04	0	66,423	66,423	0	
DITE/ISS Risk Adjustment	-	-	-	3,000	3,000	0	
Subtotal – Core Infrastructure Projects				**84,007**	**84,007**	**0**	
Architecture, Integration, & Management							
BSM Action Plan Activities	Nov. 04	Nov. 04	0	10,000	10,000	0	
Architecture & Integration	Nov. 04	Nov. 04	0	31,400	31,400	0	
Business Integration	Nov. 04	Nov. 04	0	7,300	7,300	0	
Management Processes	Nov. 04	Nov. 04	0	10,700	10,700	0	
FFRDC – MITRE	Nov. 04	Nov. 04	0	16,300	16,300	0	
Program Management	Nov. 04	Nov. 04	0	8,100	8,100	0	
Architecture, Integration & Management Risk Adjustment	-	-	-	2,000	2,000	0	
Subtotal – Architecture, Integration, & Management				**85,800**	**85,800**	**0**	
Management Reserve				**27,887**	**11,887**	**-16,000**	See Note 10
Total Fiscal Year 2004 BSM Program				**$387,699**	**$387,699**	**$0**	

Source: IRS.

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IRS Explanation of Variances:

Note 1: Delay in exiting Milestone 3 of Release 3 attributed to difficulties experienced with Release 2 (e.g. baselining requirements, enterprise architecture recertification, and complex technical solution to the logical design).

Note 2: Additional cost is to fund the Initial Operational Capability to Final Operational Capability period, which IRS did not include in the initial Milestone 5 estimate.

Note 3: Additional funding required to convert the Filing Season 2005 effort to a fixed price contract and fund mainframe maintenance and additional capacity.

Note 4: This work has been rescheduled to accommodate delays in CADE Release 1 and also to incorporate the results of the ongoing Business Rules Engineering study. The original cost estimate did not include the Release 1 Filing Season 2004 through 2006 tax law changes. In addition, it did not include testing and deployment of the Business Rules within a specific release. The cost increase also includes funding for additional mainframe processing capacity after adding the Filing Season 2004 through 2006 changes to the Business Rules.

Note 5: CADE IMF Release 2 delayed to ensure that Release 1 systems and functional performance is acceptable before proceeding. Funding realigned to cover cost increases for CADE IMF Release 1 and Business Rules efforts.

Note 6: The schedule delays are due to the revised exit criteria for Milestone 5 adding the conduct of a parallel audit, which has extended the time between Milestones 4 and 5 from six weeks to 14 months. Other contributing factors include: unstable CADE and IFS interface definitions, additional testing time due to larger than anticipated volume of data anomalies discovered during the conversion of data from current master file, and the time required to resolve system performance issues.

Note 7: The Milestone 4 schedule delays are due to technical changes required to comply with the enterprise architecture, an inability to resolve key design and integration issues in a timely manner, the identification of the health coverage tax credit interface requirement late in the development process, and delays experienced in integration testing due to poor application quality and interface testing issues. IRS negotiated a risk sharing arrangement with CSC for the cost overrun resulting from the delayed IFS Release 1 effort post-April 30, 2004. The additional $14 million represents the estimated IRS share (24%) of the estimate to complete Milestone 4 project activities.

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Note 8: The Milestone 5 schedule delays are due to delays in the Milestone 4 schedule.

Note 9: IFS project risk adjustment increased due to the uncertainty associated with IFS Milestone 4 and 5 activities.

Note 10: Management Reserve transferred to (1) IFS Release 1 Milestone 4 to cover negotiated IRS share of project cost overruns and (2) IFS risk adjustment due to the uncertainty associated with cost to complete IFS Milestone 4 and 5 activities.

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Comments from the Internal Revenue Service

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

COMMISSIONER

October 28, 2004

Mr. David A. Powner
Director, Information Technology Management Issues
United States Government Accountability Office
Washington, D.C. 20548

Dear Mr. Powner:

We have reviewed the Government Accountability Office (GAO) draft report entitled
"Business Systems Modernization: IRS's Fiscal Year 2004 Expenditure Plan"
(GAO-05-46, November 2004). We are pleased that the GAO:

• Validated that we satisfied the six legislative conditions as specified in
  Congressional appropriations;
• Acknowledged that we have shown marked improvement in implementing
  modernization management controls and capabilities;
• Noted that we are implementing GAO's past recommendations; and
• Recognized that we are providing real benefits to American taxpayers and IRS
  employees as a result of delivering several modernized systems (e.g.,
  Modernized e-File Release 1, e-Services, and the Customer Account Data
  Engine Release 1.1).

We would also like to comment on additional improvements we have made in two
areas.

The first area pertains to program performance as it relates to cost estimating and
scheduling. The report states that "projects continue to incur significant cost increases
and schedule delays." In the Fall/Winter of 2003 (during the annual program planning
process), we re-baselined the cost estimates and delivery schedules for each of the
BSM program projects. Since then, our cost and scheduling performance have
dramatically improved. With the exception of one (IFS), all projects were delivered on
time (either early or within a few weeks of schedule) and within budget. This is a major
accomplishment. It demonstrates that the steps we took in 2004 to improve program
performance are having a positive impact. Thus, due to the successful implementation
of numerous program management improvements, 2004 did not follow the pattern of
cost overruns that had occurred from 1999 through 2003.

The second area pertains to the action items we developed to improve the BSM
program. The report discusses the list of 48 action items that we developed and the

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fact that many are still open. In that connection, we would note that many of these action items are ongoing and continuous. We would also emphasize the other program improvement goals that were met. For example, external studies conducted in 2003 confirmed:

- The BSM portfolio of projects far exceeded the IRS and PRIME's management and technical capacity;
- The IRS Business United were not involved enough in project management; and
- Contractor performance was not at an acceptable level.

We have made significant progress in addressing each of these major challenges.

First, the 2005 IRS budget to Congress reflects a portfolio reduction of 37% from the 2003 level, which more closely aligns the BSM workload with the IRS's and PRIME contractor's management capacity.

Second, a Business Unit leader is assigned to each project with responsibility for leading the related BSM Governance Committee, and sharing accountability for delivering the modernization project as stated in their annual performance commitments.

Third, we are making progress in improving the accountability of the PRIME contractor. I meet monthly with the Chief Operating Officer of the Computer Sciences Corporation to reinforce the accountability of the contractor to the IRS. Additionally, we have made significant progress in restructuring BSM project contracts with the PRME that shift an appropriate amount of financial risk to the contractor and tie costs to performance. These steps have resulted in improved contractor performance as demonstrated in the deliverables in 2004 and the general adherence to costs and schedules.

In addition, we have concluded that we did not have enough seasoned technology executives with a proven track record of managing and delivering large, complex IT projects. In response, we made great progress in hiring experienced executive and seasoned managers who have expertise in running large IT programs and projects. A little over a year ago the mix of leadership at the top of the BSM program consisted of one outside expert and six internal IRS executives. Today, that mix will soon be five outside experienced experts and three internal IRS executives. This mix is a much better balance of the technology talents and tax administration experience needed to successfully run BSM.

We recognize that there is still a lot of work ahead of us to continue to mature the BSM Program, and we appreciate your assistance in this effort. To that end, we will continue to provide GAO with monthly dashboard reports on our progress in maturing our management controls (as we have done over the past 30 months). We believe that in

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the future, however, some of our management controls will have matured enough to eliminate the need for monthly tracking of progress, and we will further discuss these issues with GAO.
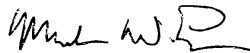
I would like to briefly comment on the specific recommendation in the report:

RECOMMENDATION: After BSM projects are deployed, post-implementation reviews are performed that include an analysis of quantitative and qualitative investment data to determine, at a minimum, whether expected benefits were achieved.

We agree with this recommendation. As the report indicates, we concluded some time ago that the Post-Implementation Review (PIR) process we were following (as called for in the Enterprise Life-Cycle methodology) was inadequate. We have developed new procedures that not only extend the PIR process as recommended by the GAO, but that will take a look at lessons learned at the end of each project milestone and retain the results of these comprehensive reviews in a repository that is available to everyone on the BSM Program. We expect to conduct the first PIR's under the new process by the end of the calendar year and within 45 days of passing each subsequent project milestone. This repository will also contain all previous reviews.

We appreciate your continued support and the valuable assistance and guidance from your staff. If you have any questions, please contact W. Todd Grams, Chief Information Officer, at (202) 622-6800.

Sincerely,

Mark W. Everson

GAO Contacts and Staff Acknowledgments

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Staff Acknowledgments

In addition to the individuals named above, other key contributors were Bernard R. Anderson and Timothy D. Hopkins.

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Washington, D.C. 20548-0001

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