United States General Accounting Office

GAO

Report to Congressional Committees

November 2000

TAX SYSTEMS MODERNIZATION

Results of Review of IRS' August 2000 Interim Spending Plan

GAO

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GAO-01-91

Contents

Letter 3

Appendixes

Appendix I: Briefing Slides From September 22, 2000, Briefing of Senate and House Appropriations Subcommittee Staff 14

Appendix II: Objectives, Scope, and Methodology 59

Appendix III: Comments From the Internal Revenue Service 61

Appendix IV: GAO Contacts and Staff Acknowledgments 65

Abbreviations

BSMO	Business Systems Modernization Office
CADE	Customer Account Data Engine
CAP	Custodial Accounting Project
ELC	Enterprise Life Cycle
IRS	Internal Revenue Service
ITIA	Information Technology Investments Account
OMB	Office of Management and Budget
PRIME	prime systems integration services contractor
SEI	Software Engineering Institute
STIR	Security and Technology Infrastructure Release

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United States General Accounting Office
Washington, D.C. 20548

November 8, 2000

The Honorable Ben Nighthorse Campbell
Chairman
The Honorable Byron L. Dorgan
Ranking Minority Member
Subcommittee on Treasury and General Government
Committee on Appropriations
United States Senate

The Honorable Jim Kolbe
Chairman
The Honorable Steny H. Hoyer
Ranking Minority Member
Subcommittee on Treasury,
Postal Service and General Government
Committee on Appropriations
House of Representatives

Throughout the 1990s, the Internal Revenue Service (IRS) has tried unsuccessfully to improve taxpayer service and IRS internal management by modernizing its inefficient information systems. To prevent a repeat of past mistakes, the Congress legislated explicit controls over IRS systems modernization spending. Specifically, the Department of the Treasury's fiscal year 1998 and 1999 appropriations acts[1] limit the obligation of modernization funds until IRS submits to the Congress for approval an expenditure plan—which IRS commonly refers to as a spending plan—that (1) implements the IRS Modernization Blueprint, (2) meets Office of Management and Budget (OMB) investment guidelines for information systems, (3) is reviewed and approved by IRS' Investment Review Board, OMB, and Treasury's IRS Management Board and is reviewed by GAO, (4) meets the requirements of IRS' system life cycle management program, and (5) complies with acquisition rules, requirements, guidelines, and systems acquisition management practices of the federal government. These legislative conditions are consistent with systems modernization recommendations that we made to IRS in 1995. Currently, however, our recommendations have yet to be fully implemented.

[1]The fiscal year 1998 Treasury and General Government Appropriations Act (Public Law 105-61) and the fiscal year 1999 Omnibus Consolidated and Emergency Supplemental Appropriations Act (Public Law 105-277).

In March 2000, IRS submitted its second spending plan, requesting $176.3 million from its systems modernization appropriations account referred to as the Information Technology Investments Account (ITIA).[2] In April 2000, IRS' Senate and House appropriations subcommittees approved $148.4 million of that request and, on the basis of our findings on IRS' management of the program, specified several conditions for IRS to satisfy. Recognizing that the $148.4 million would be obligated before another spending plan was submitted, IRS submitted in late August 2000 what it called an interim spending plan for $32.8 million as a stopgap funding measure.

As agreed, our objectives were to (1) determine whether IRS satisfied the conditions that the subcommittees specified in their April 2000 letters approving the interim plan and (2) provide any other observations relating to the agency's management of the program.

The four conditions specified by the subcommittees were:

- adhere to the March 2000 spending plan as approved and funded or seek approval to do otherwise;
- meet the commitments made in the March 2000 spending plan;
- address modernization management weaknesses and establish the capability to build systems by
  - hiring an individual to lead the Business Systems Modernization Office (BSMO),
  - developing mature software acquisition capabilities,
  - clearly defining and applying IRS and contractor roles and responsibilities,
  - creating performance-based task orders, and
  - fully implementing IRS' life cycle management methodology—Enterprise Life Cycle (ELC)—and completing and using its enterprise architecture—Blueprint 2000—to define, direct, and control future modernization activities; and
- establish more reliable cost and schedule estimates for the initiatives outlined in the March 2000 plan.

[2]IRS requested and the Congress established and funded this account with $506 million via the fiscal year 1998 Treasury and General Government Appropriations Act (Public Law 105-61) and the fiscal year 1999 Omnibus Consolidated and Emergency Supplemental Appropriations Act (Public Law 105-277).

On September 21, 2000, we briefed senior IRS officials, including the Chief Information Officer and the Business Systems Modernization Executive, on the results of our work. They stated that our briefing was fair, objective, and helpful. They also provided clarifying points that were incorporated into the briefing as appropriate. On September 22, 2000, we briefed the subcommittees' offices. As requested by your offices, this report transmits and summarizes the briefing. The briefing slides are in appendix I.

We performed our work at IRS offices in Washington, D.C., from August through mid-September 2000, in accordance with generally accepted government auditing standards. See appendix II for details on our scope and methodology. IRS provided us with written comments on a draft of this report. Their comments are discussed in the "Agency Comments" section of this report and reprinted in appendix III.

Results in Brief

IRS has satisfied some, but not all, of the conditions set out by its appropriations subcommittees. For example, IRS has hired an individual to lead the BSMO and is using performance-based contract task orders. It has also used more reliable methods to estimate the costs included in this spending plan. Further, although it has not fully satisfied all the commitments that it made in its March 2000 spending plan, it has made important progress on many of its initiatives, including acquiring requirements definition and preliminary design deliverables on such key projects as its corporate tax account database, drafting the initial release of its enterprise architecture known as Blueprint 2000, and defining and applying its ELC on projects.

However, IRS (1) deviated from the spending plan, as approved and funded, without seeking approval to do so, (2) missed many project cost and schedule commitments, and (3) has not fully corrected all its modernization management weaknesses. Two projects—Custodial Accounting Project (CAP) and Security and Technology Infrastructure Release (STIR)—are missing important requirements analysis, modernization integrations, and/or business case justification. Also, IRS has not yet made its BSMO fully operational and considers not having done so a major risk.

For various reasons discussed in this report, we did not view these issues, with two exceptions, as barriers to approval of the interim spending plan. These exceptions concerned CAP and STIR, and we are making recommendations to IRS about addressing them. In commenting on a draft

of this report, IRS' Chief Information Officer generally agreed with our findings and stated that IRS is taking actions to implement our recommendations. On September 28, 2000, your subcommittees approved IRS' interim spending plan but limited IRS' use of CAP and STIR funds until missing requirements are addressed, which is consistent with our recommendations.

Background

Since May 1999, IRS has submitted two spending plans and two interim, stopgap plans. On June 15, 1999, we reported on IRS' first spending plan, stating that the $35 million requested satisfied the legislative conditions for the use of ITIA funds and was consistent with our open recommendations.[3] We also said that it was an appropriate first step but that the key to success would be effective implementation of the plan. We recommended that future plans specify progress against prior plan commitments and that the next plan clarify the roles and responsibilities of IRS, its prime systems integration services contractor (PRIME) for modernization, and other modernization support contractors.

Because IRS was unable to submit its second plan on time, it submitted in December 1999 a stopgap request for $33 million and additional time as an interim measure. We reviewed the request and raised concerns about projects that were scheduled to begin detailed design and software development before, among other things, the enterprise architecture was completed and the ELC was defined and implemented. Later that December, the appropriations subcommittees approved IRS' $33 million funding measure but, in discussions and correspondence, directed IRS to (1) expedite completion of the architecture and implementation of the ELC and (2) explain in future expenditure plans how it plans to manage the risk of performing detailed design or development work if the architecture is not completed or the ELC is not implemented. Subsequently, IRS reassessed its modernization program plans and decided to restructure the program by scaling back its systems development efforts until it addressed our concerns and put in place the requisite modernization management capability.

On March 7, 2000, IRS submitted to the appropriations subcommittees its second spending plan, which reflected these restructuring decisions and

[3] *Tax Systems Modernization: Results of Review of IRS' Initial Expenditure Plan* (GAO/AIMD/GGD-99-206, June 15, 1999).

sought to obligate about $176 million from ITIA. On March 31, 2000, we briefed the subcommittee and subsequently reported[4] that (1) the plan satisfied the legislative conditions and was generally consistent with recommendations contained in our earlier reports and (2) IRS met few of the commitments in its first spending plan, even though it later received an additional $33 million and nearly 5 months additional time to do so. We stated that the key to success would be whether IRS effectively implemented the second plan. We also stated that until IRS implemented the plan, it would continue to lack key modernization and technical controls.

In April 2000, the appropriations subcommittees approved IRS' plan for $148.4 million of the funds requested and underscored the need for IRS to pursue its restructuring plans by, among other things, directing IRS to establish modernization management capabilities and controls—including completion and implementation of the blueprint and systems life cycle methodology—before it began building systems.

Recognizing that it would fully obligate the $148.4 million before it was ready to submit another spending plan, on August 25, 2000, IRS submitted its second interim plan. This interim plan requested $32.8 million to carry the modernization program into early fiscal year 2001.

IRS Satisfied Some, But Not All, of the Subcommittees' Conditions

IRS did not fully satisfy all of the conditions that its appropriations subcommittees established in their April 2000 letters releasing modernization investment account funding. However, IRS has made important progress on both modernization projects and initiatives to address long-standing modernization management weaknesses. Our assessment of IRS' success in satisfying each condition is detailed below.

Condition 1: Adhere to the March 2000 Spending Plan as Approved and Funded or Seek Approval to Do Otherwise

IRS did not adhere to the approved and funded March 7, 2000, spending plan and did not seek approval to deviate from the plan. IRS' position is that variances from the approved funding levels were small and inevitable given the scale and complexity of the program and that because IRS is

[4] *Tax Systems Modernization: Results of Review of IRS' March 7, 2000, Expenditure Plan* (GAO/AIMD-00-175, May 24, 2000).

closely managing the variances, they do not necessitate the subcommittees' actions.

In sum, IRS varied from the approved spending levels for twelve program projects and initiatives. These variances ranged in amount from approximately $44,000 to $9,000,000. In our view, such variances are to be expected given the projects' and initiatives' complexity and early stage in the life cycle and the inherent uncertainty associated with software/systems cost estimating.

Condition 2: Meet the Commitments Made in the March 7, 2000, Spending Plan

IRS did not meet its cost and schedule commitments on most projects and initiatives in its March 7, 2000, spending plan. For example, Milestone III for the Customer Account Data Engine (CADE) project slipped by 3 months, and the estimated cost for meeting Milestone III rose by about $1.4 million (9.1 percent). Also, Milestone III for the STIR project slipped 2 months, and its cost increased about $1.4 million (17.0 percent).

In our view, these cost and schedule variances are to be expected because, as we previously reported,[5] the milestone commitments for most of the initiatives in the March 2000 plan were not based on detailed work breakdown structures and schedules. Rather, they were merely targets that IRS had represented in its plan as achievable commitments. As a result, these variances are not good measures of progress.

Most modernization initiatives, including key projects, have made important progress since March 2000. For example, the CADE and e-Services projects each completed the system planning and definition phase of the ELC, including a preliminary business case showing a positive return on investment, and both projects have met ELC criteria for beginning preliminary design work.

[5]GAO/AIMD-00-175, May 24, 2000.

However, one project, CAP,[6] has been approved to begin the detailed design and development phase (i.e., the system is being built) without sufficient definition and without a compelling business case to justify treating it as a near-term investment priority. Specifically,

- the CAP business case does not show a positive return on investment;
- the $150 million estimated total project cost does not include the cost to define and build interfaces with projects that are yet to be defined (i.e., Integrated Financial Systems' standard general ledger, CADE, and STIR);
- CAP business requirements are not yet sufficiently defined to verify claimed benefits;
- CAP was approved to begin the development phase with two important conditions that could affect the system's baseline requirements and functions (and thus cost); and
- CAP integration with other modernization projects is unclear because CAP is not included in the integrated master schedule and monthly program management reviews.

Another project, STIR, was granted approval to begin the preliminary design phase without a risk-based approach to defining and economically justifying its requirements (i.e. preliminary security risk assessment, preliminary security certification package, and preliminary business case). Such an approach, as discussed in our November 1999 guide on security risk assessment practices of leading organizations,[7] is a federal requirement and a key element of successful organizations' security risk assessment programs.

[6]CAP is one of a collection of systems comprising IRS' Integrated Financial System project. CAP is designed to provide tax receipt and receivable analysis and reporting. Standard general ledger and other financial and administrative reporting as required by federal management directives are to be provided by other future projects.

[7]*Information Security Risk Assessments: Practices of Leading Organizations* (GAO/AIMD-00-33, November 1999).

Condition 3: Address Modernization Management Weaknesses and Establish the Capability to Build Systems

IRS has fully addressed two of the five modernization management weaknesses cited by the subcommittees. Namely, it has hired a BSMO executive, and it reports that 20 of its 22 task orders issued since June 2000 are performance based. We reviewed 3 key task orders and found that they reflected the tenets of performance-based contracting.

IRS is also making progress in addressing other modernization management weaknesses. For example, since March 2000, as part of the ELC, it has defined processes, roles, responsibilities, etc. for implementing selected Level 2 key process areas[8] of the Software Engineering Institute (SEI) Software Acquisition Capability Maturity Model ™. IRS plans to train staff and have all projects following these by the November 2000-to-January 2001 timeframe. In September 2001, IRS plans to conduct an evaluation (via an independent assessor) to ensure compliance with SEI's Level 2 requirements. In addition, IRS has taken other steps to increase its acquisition discipline, such as conducting monthly program management reviews with the modernization contractor and establishing an integrated master schedule to track the projects' schedules and interdependencies.

In July 2000, IRS defined and baselined most parts of the ELC. Our review of selected projects (CAP, CADE, and STIR) indicates that the ELC is generally being followed. Further, IRS has defined IT investment management controls and is in the process of incorporating them into the ELC.

The initial release of IRS' enterprise architecture was being drafted and was not yet available for our review, however, some parts of the ELC are still being developed and finalized (e.g., program control policies and procedures, 75 to 80 change requests, legacy system impact supplement, and enterprise architecture management supplement). While IRS did not satisfy the September 30, 2000, commitments it made in the March 2000 plan for issuing the enterprise architecture and fully implementing the ELC, it is making important progress and plans to complete both between November 2000 and January 2001.

[8]This model was developed by the SEI at Carnegie Mellon University to evaluate an organization's software acquisition capability. Level 2 of the model requires the definition, implementation, and demonstration of management structures and processes in acquisition planning, solicitation, requirements development and management, project management, contract tracking and oversight, evaluation, and transition to support.

Condition 4: Establish More Reliable Cost and Schedule Estimates for the Initiatives Outlined in the March 2000 Plan

IRS has revised and validated its March 2000 spending plan cost and schedule estimates to increase their reliability. According to IRS, it tasked the contractor to develop, for each initiative, a detailed work breakdown schedule of the tasks, deliverables, staff, and time needed to complete the initiatives in accordance with the ELC. With the resulting staffing and time requirements, the contractor applied its cost rates to determine cost and schedule estimates and then submitted the estimates to IRS in task order proposals. IRS validated these costs during the task order "definitization" process by, among other things, comparing them to historical and current contractor rates charged to IRS and other federal agencies (e.g., General Services Administration). IRS then negotiated rates that could not be validated. For two projects—CADE and Customer Communications—we verified that IRS followed this process (although we did not specifically evaluate the reliability of IRS' cost validation).

Other Observations

IRS has made important progress in establishing its BSMO, although this office is not yet fully operational. Specifically, the office is in place, staff have been assigned, and roles, responsibilities, policies, and procedures have been defined that include SEI Level 2 software acquisition processes. However, IRS has not yet

- developed charters for the eight units (e.g., Architecture Management, and Program Oversight) within BSMO, although IRS plans to do so by the end of October 2000;
- completed training on BSMO roles, responsibilities, policies, and procedures and the ELC, although IRS plans to do so between November 2000 and January 2001; and
- filled 21 vacant positions, or 18 percent of total BSMO staffing levels, including managers for program integration, program control, and program planning and four staff for configuration management.

Until these tasks are completed, IRS will continue to report BSMO readiness as a major program risk.

Conclusions

Although IRS has not fully met all the conditions specified by the subcommittees, it has moved aggressively and made important progress since March 2000 in advancing many projects and addressing modernization management weaknesses. Nevertheless, until these management weaknesses are fully addressed, key controls will be missing,

thereby increasing the risks that projects will not perform as intended and/or cost more and take longer to complete. These risks are not as severe early in a project life cycle when it is being planned, but they escalate as a project moves into the detailed design and development phase of its life cycle. Given that IRS plans show that several projects are scheduled to begin detailed design and development within the next 6 months, expeditious implementation of these program management controls is of paramount importance.

Further, IRS' CAP project has prematurely passed milestone III before being economically justified and before addressing modernization integration issues. Also, IRS' STIR project is missing the requisite analysis of security threats and vulnerabilities so that a meaningful risk profile can be developed and cost effective system requirements to counter these risks can be specified.

Recommendations for Executive Action

Because we have open recommendations to address IRS modernization management weaknesses that remain applicable, we reemphasize to the Commissioner of Internal Revenue that these recommendations should be implemented before IRS begins building software-intensive systems.

In addition, we recommend that the Commissioner limit further investment in CAP until IRS (1) demonstrates that CAP is of sufficient business value to treat it as a near-term investment priority and (2) reports to the Senate and House appropriations committees on how it is mitigating the risks associated with beginning to build CAP before important program-level management controls are fully implemented.

Further, we recommend that the Commissioner (1) direct the STIR project to complete as soon as possible a security risk assessment and validate STIR requirements against the risk assessment results and then (2) ensure that STIR requirements and the proposed design solution are economically justified through business case analysis.

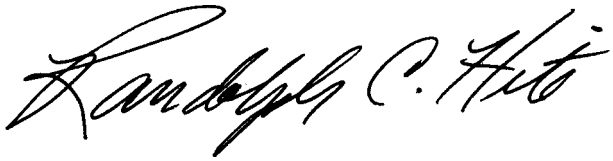
Agency Comments

In commenting on a draft of this report, IRS' Chief Information Officer generally agreed with our findings and described, at a very high level, actions since our September 22, 2000, briefing that are completed, underway, and planned to address our recommendations. IRS stated that in November 2000 it plans to report on these actions in more detail to its

Senate and House appropriations subcommittees. In closing, IRS stated that it appreciated our overall assessment of the management of the systems modernization program and that IRS has benefited from GAO's work.

We are sending copies of this report to Senator Max Baucus, Senator Robert C. Byrd, Senator Orrin G. Hatch, Senator Joseph I. Lieberman, Senator Daniel Patrick Moynihan, Senator William V. Roth, Jr., Senator Ted Stevens, and Senator Fred Thompson, and to Representative Bill Archer, Representative Dan Burton, Representative William J. Coyne, Representative Stephen Horn, Representative Amo Houghton, Representative David R. Obey, Representative Charles B. Rangel, Representative Jim Turner, Representative Henry A. Waxman, and Representative C.W. Bill Young, in their capacities as Chairmen or Ranking Minority Members of Senate and House Committees and Subcommittees. We are also sending copies to the Honorable Charles O. Rossotti, Commissioner of Internal Revenue; the Honorable Lawrence H. Summers, Secretary of the Treasury; and the Honorable Jacob J. Lew, Director of the Office of Management and Budget. Copies will also be made available to others upon request.

Should you or your staff have any questions on matters discussed in this report, please contact me at (202) 512-6240. I can also be reached by e-mail at *hiter@gao.gov.* Key contributors to this report are listed in appendix IV.



Randolph C. Hite
Director, Information Technology Issues

Briefing Slides From September 22, 2000, Briefing of Senate and House Appropriations Subcommittee Staff

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Results of Review of IRS' August 2000 Interim Information Technology Investments Account (ITIA) Spending Plan

Briefing to Staffs of
the Senate Committee on Appropriations,
Subcommittee on Treasury and General Government
and
the House Committee on Appropriations,
Subcommittee on Treasury, Postal Service,
and General Government

September 22, 2000

1

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Briefing Overview

- Introduction and Objectives
- Scope and Methodology
- Results in Brief
- Background
- Results
- Conclusions
- Recommendations
- Appendix I - Summary of August 2000 Interim Spending Plan

2

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Introduction and Objectives

Introduction

- IRS submitted its second spending plan to the Congress in March 2000, requesting $176.3 million from the Information Technology Investments Account (ITIA) for its ongoing systems modernization program.

- IRS' House and Senate Appropriations Subcommittees approved a spending plan of $148.4 million of the requested funds in April 2000. On the basis of our findings on IRS' management of the program, they specified several conditions for IRS to satisfy before the Subcommittees would approve future ITIA spending plans.

3

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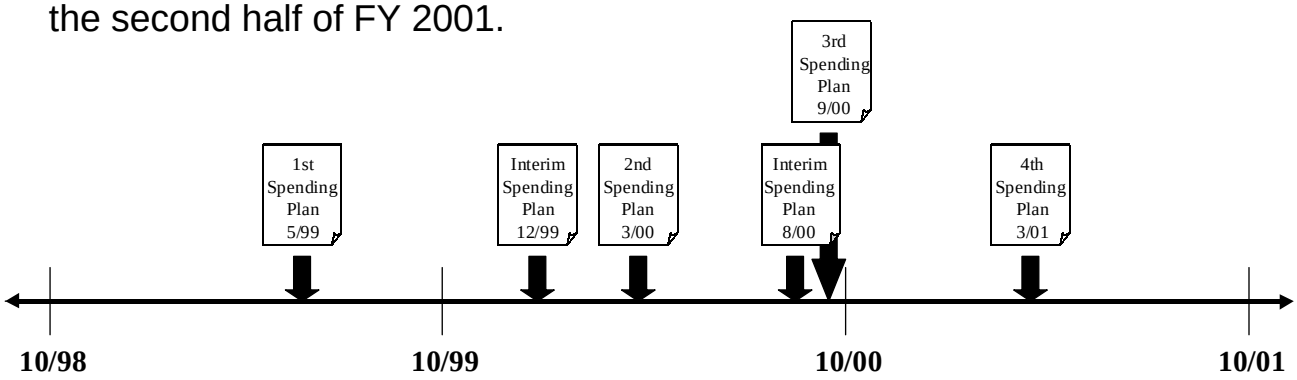
Introduction and Objectives

- Recognizing the $148.4 million was to be obligated before another comprehensive spending plan was submitted, IRS submitted an “interim” plan for $32.8 million to carry the systems modernization program through the end of FY 2000 and into early FY2001. IRS plans to submit the more comprehensive spending plan in late September to cover the first half of FY2001, and another spending plan in March 2001 to cover the second half of FY 2001.



Cumulative Release of ITIA Funds (millions) **$35** → **$68** → **$216** → **?** → **?** → **?**

4

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Introduction and Objectives

Objectives

- As agreed, our objectives were to (1) determine IRS' satisfaction of the Subcommittee's conditions regarding the ITIA funds and (2) provide any other observations about IRS' management of the program. The conditions specified by the Subcommittees were for IRS to
  - adhere to the March 7, 2000 spending plan as approved and funded, or seek approval to do otherwise;
  - meet the commitments made in the March 7, 2000 spending plan;
  - address modernization management weaknesses and establish the capability to build systems by:

5

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Introduction and Objectives

- hiring a person to lead the business systems modernization office (BSMO),
- developing mature software acquisition capabilities,
- clearly defining and applying IRS and contractor roles and responsibilities,
- creating performance-based task orders,
- fully implementing IRS' system life cycle management methodology, referred to as the Enterprise Life Cycle, and completing and using the Blueprint 2000, its enterprise architecture, to define, direct, and control future modernization efforts; and

• establish more reliable cost and schedule estimates for the initiatives in the March 7, 2000, plan.

• We also agreed to provide our results within 30 days of the Subcommittees' receipt of the spending plan (August 25, 2000).

6

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Scope and Methodology

To accomplish our objectives, we

- Reviewed IRS' interim ITIA funding request dated August 18, 2000, and other IRS documentation associated with the initiatives identified in the request to understand the scope and content of each;
- Analyzed the interim request against the conditions specified in the Senate and House responses to the March 7, 2000, spending plan to identify variances;
- Compared progress on selected program and project initiatives-- as reported in the request and other modernization documentation and supplemented by interviews of IRS and contractor officials--against deliverables promised and commitments made in the March 7, 2000, spending plan. The program initiatives were Blueprint 2000 and the ELC and the project initiatives were CAP, CADE, and STIR.

7

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Scope and Methodology

- Selected the Blueprint 2000 and ELC program initiatives because both are intended to address open GAO recommendations; selected the CAP, CADE, and STIR project initiatives because our reviews of these projects were already underway for the Subcommittees.
- Analyzed relevant documentation concerning the operational status of the Business System Modernization Office (BSMO), such as plans, status reports, policies and procedures, IRS/contractor roles and responsibilities descriptions.
- Analyzed progress in definitizing task orders and making them performance-based. To do this, we selected three task orders and compared them to performance-based contracting criteria. The task orders selected were for CADE, STIR, and the PRIME's program management office. Selected the CADE and STIR task orders because the Subcommittees had asked us to review these two projects. Selected the program management office task order in order to include one program-level task order in our scope.

8

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Scope and Methodology

- Analyzed process that IRS and the contractor undertook to revise and validate cost and schedule estimates in the March 2000 spending plan and verified on two projects--CADE and Customer Communications--whether IRS adhered to its process. Selected these two projects because they had the highest funding requirements.

- Collaborated with the Treasury Inspector General for Tax Administration (TIGTA) to avoid duplication of effort in reviewing program and project initiatives and incorporated TIGTA's results in this briefing where appropriate. Initiatives addressed by TIGTA included the Customer Communications and e-Services projects, ELC, BSMO, and Blueprint 2000.

9

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Scope and Methodology

- In order to meet the 30-day reporting requirement, we did not independently validate planned initiatives' cost estimates or confirm through review of system and project management documentation the IRS provided information on the initiatives' content and progress.
- We provided this briefing on September 21, 2000, to IRS' Chief Information Officer, Business Systems Modernization Executive, and other IRS executives and incorporated their comments where appropriate.
- We performed our work from August through mid-September 2000 in accordance with generally accepted government auditing standards.

10

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Results in Brief

CONDITIONS	GAO RESULTS
1. Adhere to the March 7, 2000 spending plan as approved and funded, or seek approval to do otherwise.	• IRS has not adhered to the approved and funded March 7, 2000, spending plan and has not sought approval to deviate from the approved plan. Variances from approved funding levels have occurred due to changes in the scope of initiatives. • IRS' position is that the variances from the approved funding levels are small and inevitable given the scale and complexity of the program, and that because IRS is closely managing the variances, they do not necessitate Subcommittee action.
2. Meet the commitments made in the March 7, 2000 spending plan.	• On selected initiatives, IRS has not met cost and schedule commitments made in its March 7, 2000 spending plan. For example, Version 1.0 of the Enterprise Architecture has slipped from September 30, 2000 to sometime in November 2000. Also, the cost for the Customer Communications initiative is about $5 million over the estimate. • As we reported in April 2000, the cost and schedule commitments in the March 7, 2000 spending plan were not reliable because (1) the cost estimates were not based on work breakdown structures and subjected to IRS analysis and verification and (2) the milestones were merely goals that were not based on project work breakdown schedules. As a result, performance against these cost and schedule commitments is not a good measure of progress. • Most modernization initiatives have nevertheless made important progress since March2000. Key program initiatives have addressed or are addressing modernization management weaknesses, such as developing and implementing the modernization blueprint and its system life cycle management methodology. In addition, key projects have completed requisite system definition and design products, including mapping dependencies with other projects, and have been justified by preliminary business cases. For example,

11

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Results in Brief

CONDITIONS	GAO RESULTS
2. Meet the commitments made in the March 7, 2000 spending plan. (continued)	IRS has advanced its "linchpin" project initiative, the Customer Account Data Engine (CADE), into the system design phase by producing such prerequisites as a preliminary business case that shows a positive return on investment, key plans for completing the project (e.g., acquisition, test, and risk management plans), and analyses of dependencies with other modernization initiatives. • One project, Custodial Accounting Project (CAP), has been approved for product development (i.e. the system is being built) without sufficient definition and without a compelling business case. Another project, Security and Technology Infrastructure Release (STIR), is being preliminarily designed without sufficient requirements definition and economic justification.
3. Address modernization management weaknesses and establish the capability to build systems by: - hiring a person to lead the business systems modernization office (BSMO), - developing mature software acquisition capabilities, - clearly defining and applying IRS and contractor roles and responsibilities, - creating performance-based task orders	• IRS has fully addressed two of its modernization management capability weaknesses, and it is making progress in addressing others.

Modernization Management Capability Weaknesses	Fully Addressed	Partially Addressed / Progress Made Since March 2000
BSMO Leadership	X	
Software Acquisition Capabilities		X
IRS and Contractor Roles and Responsibilities		X
Performance-based Task Orders	X	
ELC		X
Blueprint 2000		X

12

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Results in Brief

CONDITIONS	GAO RESULTS
3. Address modernization management weaknesses and establish the capability to build systems by: (continued) - fully implementing the Enterprise Life Cycle (ELC), and completing and using the Blueprint 2000	• While much remains to be accomplished to fully address all weaknesses, IRS has plans in place and actions underway to address each weakness.
4. Establish more reliable cost and schedule estimates for the initiatives in the March 7, 2000, plan.	• IRS has revised its March 7, 2000 spending plan cost and schedule estimates. In doing so, it has developed cost and schedule estimates based on formal work breakdown structures/schedules detailing tasks and deliverables and application of standard industry labor rates and product costs. • IRS has then used its estimates to negotiate and definitize its task orders with the contractor. • IRS plans to follow this estimating process in the future to ensure that future spending plans contain more realistic cost and schedule estimates against which progress can be measured.
OTHER OBSERVATIONS	**GAO RESULTS**
	• The BSMO has been established; staff has been assigned; and roles, responsibilities, policies, and procedures have been defined that include mature software acquisition capabilities. BSMO has also instituted monthly program management reviews and established an integrated master schedule to manage the schedules and interdependencies of the projects. However, one project, CAP, had not yet been integrated into these activities. • IRS recognizes BSMO is not fully functional because roles, responsibilities, policies, etc. have not yet been implemented; IRS plans to have it so by December 2000.

13

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Background

Chronology of Spending Plans and GAO Review Results

Spending Plan	Results of GAO Review
1st Spending Plan (May 1999) ($35 million request)	• The plan satisfied the legislative conditions for the use of ITIA finds and was consistent with our open recommendations. • The plan was an appropriate first step, but the key to success would be effective implementation of the plan. • Future plans should specify progress against prior plan commitments, and the next plan should clarify IRS/contractor roles and responsibilities.
Interim Spending Plan (Dec 1999) ($33 million request)	• The plan raised concerns about projects that were scheduled to begin detailed design and software development before, among other things, the enterprise architecture was completed and the ELC was defined and implemented. • IRS should expedite completion of the architecture and implementation of the ELC. • Future plans should explain how IRS plans to manage the risk of performing detailed design or development work if the architecture is not sufficiently completed or the ELC is not sufficiently implemented.
2nd Spending Plan (Mar 2000) ($176 million request)	• IRS met relatively few commitments in its $35 million first ITIA spending plan, even though the Service later received an additional $33 million and nearly 5 months of extra time to accomplish the goals set forth in the first plan. • The plan satisfied the legislative conditions for the use of ITIA funds, and was generally consistent with recommendations contained in our earlier reports. • The key to success would be whether IRS effectively implements the plan. • Until IRS completes its initiated actions to redirect and restructure its modernization effort, it would continue to lack key modernization and technical controls.

14

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Background

August 2000 Interim Spending Plan	($000)
Program Level Activities	**$4,567**
Management Capabilities	(4,190)
Enterprise Architecture	(310)
Vision and Strategy	9,067
Project Level Activities	**$28,191**
Fiscal Year 2001 Release	6,116
Fiscal Year 2002 Release	3,460
Tax Account Replacement (Customer Account Data Engine)	1,400
Custodial Accounting Project	4,253
Enabling Infrastructure	12,962
Requested Release	**$32,758**

15

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Results

Condition 1

- IRS has not adhered to the approved funding levels and categories specified in the April 2000 Senate and House responses to IRS' March 7, 2000, plan.
- According to IRS, the variances could not be avoided given the size and complexity of the business systems modernization program.

FFRDC (MITRE)	$0	*No Change* $0	$32,758
Customer Communications FY2002	$0		
Customer Communications FY2001	**$5,049**	*Change due to scope increase* $16,574	
e-Services	$3,460		
Customer Account Data Engine	$1,400		
Virtual Development Environment	**$6,203**		
Enterprise Integration and Test Environment	$462		
Tax Administration Vision & Strategy	**$9,023**	*Not funded in April 2000 release* $13,276	
Custodial Accounting Project	$4,253		
Program Management Office	($324)	*Change due to cost refinement* $2,908	
ELC Enhancement, Maintenance & Fully Deployment	($1,617)		
Enterprise Architecture and Blueprint 2000	($310)		
Configuration Management Policies and Processes	($844)		
Business Integration	($1,405)		
Internal Management Vision and Strategy	$44		
CRM Exam (1120 replacement)	$1,067		
Security and Technology Infrastructure Release	$2,656		
Enterprise Systems Management	$1,983		
Telecommunications Enterprise Strategic Program	$3,051		
Solutions Development Lab	($1,393)		

Amounts in table are listed in thousands ($000).

16

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Results

- For two initiatives with the largest amount variance from approved funding levels, IRS gave the following reasons why extra funds were needed:
  - Customer Communications - the costs for modifying legacy systems to interface with Customer Communications were omitted from IRS' March 2000 spending plan.
  - Virtual Development Environment - changes to scope of projects (e.g., CADE) required additional capabilities.

17

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Results

Condition 2

- On selected initiatives, IRS has not met cost and schedule commitments in its March 7, 2000 spending plan. For example,

Project / Program Management Initiative	3/2000 Commitment Date and Funding ($000)	Revised Commitment Date and Funding ($000)	Change ($000)
Blueprint 2000	09/30/2000 $8,667	11/05/2000 $8,357	+ 2 months - $310
ELC	9/30/2000 $5,113	12/31/2000 $3,496	+ 3 months - $1,617
CADE Milestone 3	12/31/2000 $15,312	03/31/2001 $16,712	+ 3 months + $1,400
STIR Milestone 3	09/30/2000 $8,549	11/30/2000 $11,205	+ 2 months + $2,656

18

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Results

- These variances were to be expected because--as stated in our briefing and report on IRS' March 2000 plan[1]--the milestone commitments for most of the initiatives in the March plan were not based on detailed work breakdown structures and schedules, but rather were merely targets that IRS had represented in its plan as achievable commitments. As a result, these variances are not good measures of progress.

- The milestone changes are consistent with the Commissioner's stated position that initiatives will not be "schedule-driven." Rather, they will be "content-driven" and will not be allowed to proceed past a major ELC milestone unless they are ready to do so.

[1] *Tax Systems Modernization: Results of Review of IRS' March 7, 2000, Expenditure Plan* (GAO/AIMD-00-175, May 24, 2000)

19

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Results

- Most modernization initiatives have nevertheless made important progress since March 2000. Key projects have completed requisite system definition and design products, including mapping dependencies with other projects, and have been justified by preliminary business cases.[2]

[2]Note: Progress on program initiatives are discussed under Condition 3.

20

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Results

Selected Projects	Examples of Progress Made Since March 2000
CADE	• Completed ELC Milestone II work products and received Executive Steering Committee approval to proceed to Milestone III on August 8, 2000. • Prepared preliminary business case showing positive return-on-investment. • Issued performance-based task order to PRIME to develop necessary ELC work products to get Milestone III approval.
STIR	• Per ELC, conducted interim systems requirements review and produced interim systems requirements report. • Per ELC, produced interim project management plan. • Issued performance-based task order to PRIME to develop necessary ELC work products to get Milestone III approval.
e-Services *	• Completed ELC Milestone II work products and received Executive Steering Committee approval to proceed to Milestone III on August 8, 2000. • Prepared preliminary business case showing a positive return-on-investment. • Security Certification Package received an unqualified approval.
Customer Comm. *	• Exited ELC Milestone III and received Executive Steering Committee approval to proceed to Milestone IV. • Pilot on track for timely completion by September 28, 2000. • Issued performance-based task order to PRIME to develop ELC required workproducts to get Milestone IV/V approval.
	* *According to Treasury Inspector General for Tax Administration (TIGTA)*

21

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Results

- However, one project, CAP,[3] has been approved for post-milestone III product development (i.e., the system is being built) without sufficient definition and without a compelling business case to justify treating it as an investment priority. For example,
  - Business case does not show positive return on investment.
  - $150 million estimated cost does not include cost to build interfaces with projects that are yet to be designed (i.e., Integrated Financial System's standard general ledger, CADE, and STIR). According to IRS, it has interproject teams working to define/design these interfaces.
  - CAP business requirements not yet sufficiently defined to trace to and verify claimed benefits.
  - CAP approved to exit milestone III with two important conditions that could affect the system's baseline requirements and functions (and thus cost). Conditions are:

[3]CAP is one of a collection of systems comprising IRS' Integrated Financial System project. CAP is to provide tax receipt and receivable analysis and reporting. Standard general ledger and other financial/administrative reporting as required by federal management directives are to be provided by other future projects.

22

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Results

- determine impact of enterprise data warehouse architecture standards on CAP baseline.
- identify whether ongoing legacy enhancements to masterfile will create new interfaces for CAP.

- CAP integration with other modernization projects is unclear because CAP is not included in the integrated master schedule and monthly program management reviews.

- Another project, STIR, was granted milestone II approval without a risk-based approach to defining and economically justifying its requirements. Such an approach, as discussed in our November 1999 guide[4] on security risk assessment practices of leading organizations, is a federal requirement and a key of element of successful organizations' security risk assessment programs.

[4] *Information Security Risk Assessments: Practices of Leading Organizations (GAO/AIMD-00-33*, November 1999).

23

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Results

- IRS plans to address these issues before milestone III.
  - Preliminary security risk assessment
  - Security certification package
  - Preliminary business case

24

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Results

Condition 3

IRS has fully addressed two modernization management weaknesses, and it is making progress in addressing others. Specifically,

- BSMO Leadership
  - In March 2000, BSMO planned to hire a full-time business systems modernization executive.
  - In June 2000, IRS hired this executive.
- Mature Software Acquisition Capabilities
  - As of March 2000, the BSMO had made limited progress in defining the structures and processes for implementing mature software acquisition capabilities.
  - Since then, the BSMO, as part of the ELC, has defined processes, roles, responsibilities, etc. for implementing selected Software Engineering Institute (SEI) Software Acquisition Capability Maturity Model™Level 2 key process areas.[5]

[5]These are Acquisition Planning, Solicitation, Requirements Development and Management, Project Management, Contract Tracking and Oversight, Evaluation, and Transition to Support.

25

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Results

- The BSMO plans to train staff and have all projects following these by the November 2000-January 2001 timeframe.
- The BSMO's plans also includes evaluation in September 2001 by independent assessor to ensure compliance with SEI's level 2 requirements.
- The BSMO has also taken other steps to increase its acquisition discipline. For example, it and the PRIME contractor
  - started conducting Monthly Program Management Reviews
  - established an integrated master schedule to track the projects' schedules and interdependencies.
- However, neither of these two management steps included the CAP project.

26

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Results

- Defined IRS and contractor roles and responsibilities
  - In March 2000, IRS was in the process of defining IRS, PRIME, and other support contractor roles and responsibilities.
  - As part of plan for establishing BSMO, IRS has defined IRS and PRIME contractor roles/responsibilities. In doing so, IRS has clearly differentiated between its role as the acquirer and the PRIME's role as the developer in such areas as program leadership, architecture management, acquisition management, and program oversight and assurance, quality assurance, testing, risk management, and requirements management.
  - IRS plans to implement these roles/responsibilities by December 2000.
  - IRS has not yet defined roles and responsibilities for other modernization support contractors (e.g., Integrated Support Contractor for CAP project development).

27

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Results

- Performance-based task orders
  - In March 2000, IRS planned to implement performance-based task orders.
  - Since then, IRS reports that 20 of its 22 task orders issued since June 2000, were performance-based.
  - Our review of 3 of these task orders showed that IRS was implementing the concepts of performance-based contracting.
- ELC definition and implementation
  - As of March 2000, IRS had not yet defined many important parts of the ELC.
  - In July 2000, IRS defined and baselined most parts; however, some parts are still being developed/finalized. For example,
    - program control policies and procedures.
    - 75-80 change requests
    - legacy system impact supplement
    - enterprise architecture management supplement

28

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Results

- While IRS will not satisfy the September 30, 2000, commitment for ELC implementation stated in the March 2000 plan, IRS has developed an ELC deployment plan to provide detailed training on ELC processes and procedures by the November 2000 to January 2001 timeframe.
- Review of selected projects (CAP, CADE, and STIR) indicates that ELC is generally being followed. Exceptions reflect:
  - ELC tailoring whereby projects are allowed to delete applicability of selected work products.
  - CAP and STIR initially followed another life-cycle management methodology because the ELC was not yet available for use. CAP and STIR have since been subjected to ELC requirements.

29

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Results

- In addition, IRS has defined IT investment management controls and is in the process of incorporating them into the ELC. The controls include the development of business case guidance and enforcement of business case management reviews. IRS also defined controls for:
  - business case assessment,
  - portfolio prioritization,
  - investment approval,
  - investment monitoring,
  - in-process evaluation, and
  - post-implementation review.

- As defined, IRS' investment management approach appears consistent with our IT investment management framework.
- While these processes have been defined and IRS has begun using the business case procedure, it has not yet fully implemented all investment management controls.

30

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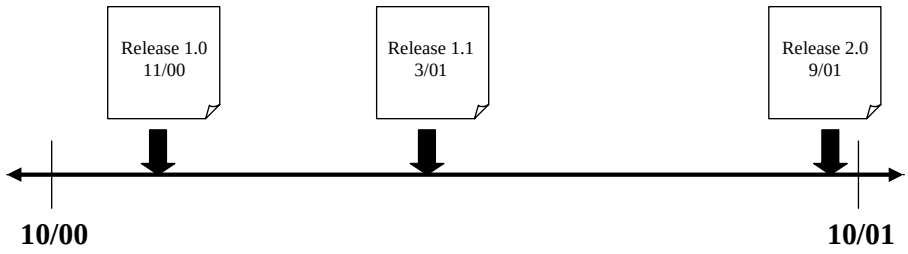
Results

- Blueprint 2000/enterprise architecture completion and use
  - In March 2000, IRS had defined a high-level framework (consisting of approximately 60 notional work products) for developing its enterprise architecture and had begun to define “key concepts” that transcend individual architectural work products.
  - Since then, IRS
    - has determined that it will develop and complete its enterprise architecture in 3 phases--referred to as Releases 1.0, 1.1, and 2.0. Release 1.0 is referred to as Blueprint 2000.



31

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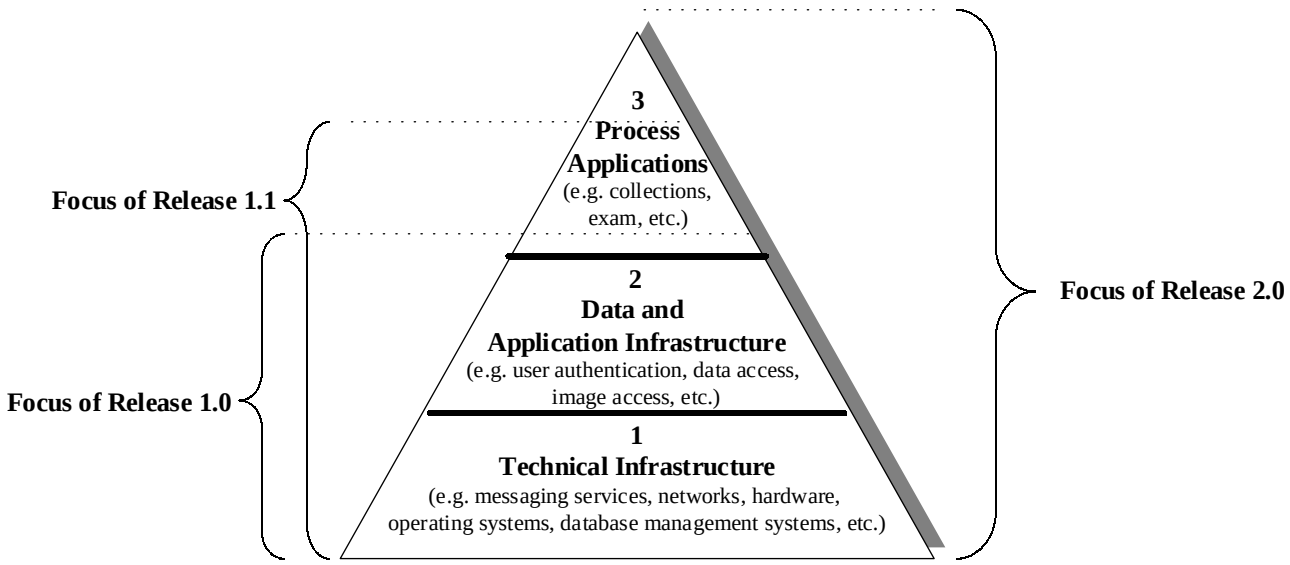
Results

Enterprise Architecture Being Developed in Phases



32

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Results

Enterprise Architecture Being Developed in Phases

Enterprise Architecture 1.0

- Builds on and updates Blueprint 97
- Foundation for incrementally defined, incrementally delivered enterprise
- Rich in Technical Infrastructure and Applications Infrastructure (lower pyramid)
- Lean in business process applications (top of pyramid)
- Provides structural framework for future Enterprise Architecture releases
- Captures and conveys critical high-level requirements
- Business processes fit together from pre-filing to post-filing
- All systems, applications, data and interfaces derived from business processes
- Includes business processes for 2002 projects
- Subsystem descriptions from Blueprint 97 are accounted for
- IMVS input limited to custodial accounting
- High-level data warehouse strategy
- Each project scoped by business systems
- Directed by Key Concepts on location, portals, systems framework, TRM, data

Enterprise Architecture 1.1

- Builds on Enterprise Architecture 1.0
- Rich in business-specific processes
- Mid- and Long-Term Enterprise Transition Strategy
- Includes TAVS migration strategy transition specificity
- Includes IMVS content not included in Enterprise Architecture 1.0
- Complete Data Warehouse strategy
- Key Concept updates
  - Knowledge Management
  - Systems Management
  - Software Development
  - Networks
  - Data
  - Business Rules Engines
- Business processes around Knowledge Management
- Deals with Enterprise Architecture 1.0 issues/conditionals

Enterprise Architecture 2.0

- Builds on Enterprise Architecture 1.1
- Includes IMVS migration strategy transition specificity
- Shared Services at same level as TAVS 1.0
- Knowledge Management components incorporated into architecture, requirements, transition strategy
- Incorporates other vision and strategy results and updates as needed

33

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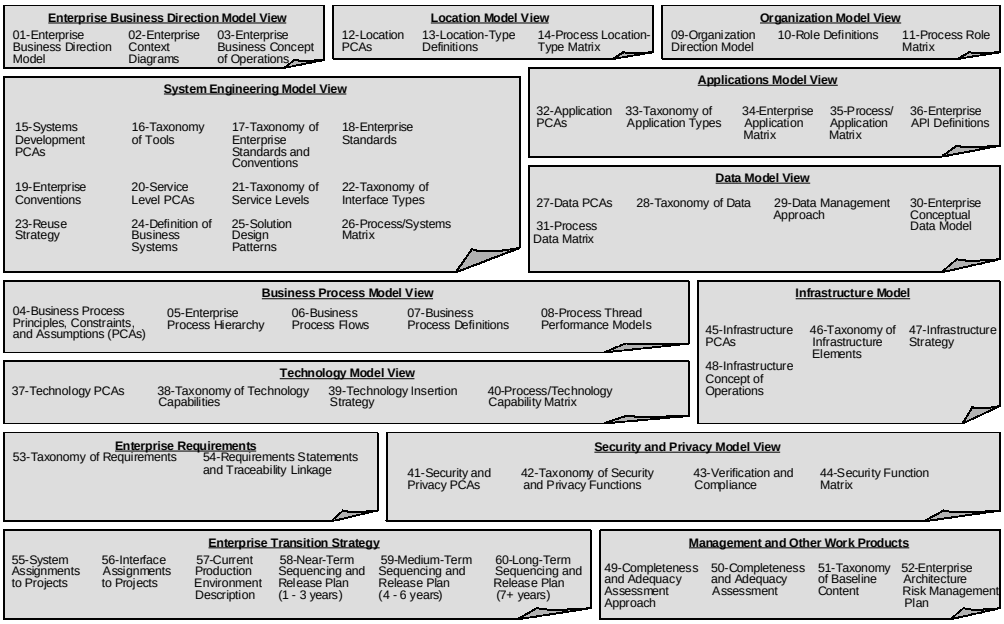
Results

- defined the framework's 60 work products and the process/management controls for populating these work products with the content associated with each release.



34

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Results

- expanded its list of “key concepts” to 23. They include computing platforms, backup/recovery, development environment and languages, data warehouse framework, and data base management. Nine have been completed, and IRS officials told us they plan to complete the remaining 14 by mid-November 2000.

- been drafting the 60 enterprise architecture products comprising Release 1.0. They are to be submitted for review to IRS business and other stakeholders by October 1, 2000. IRS estimates this review and approval process will take a month. IRS then plans to obtain Core Business Systems Executive Steering Committee approval in early November 2000.

35

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Results

- established structures and processes for developing, implementing, and monitoring the enterprise architecture. For example,
  - Program Architecture Integration Team - provides forum for identifying and resolving enterprise architecture issues raised by ongoing projects.
  - Program Integration Board - reviews projects at ELC milestones to ensure conformance with draft architecture work products and key concepts.

- required the PRIME to review the quality of each product to establish an enterprise architecture quality assurance function, and tasked the Federally Funded Research and Development Center (FFRDC) contractor (MITRE) with assessing release 1.0 completeness and adequacy.

36

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Results

Condition 4

- IRS has revised and validated its March 2000 spending plan cost and schedule estimates. According to IRS,
  - It tasked the contractor to develop for each initiative a detailed work breakdown structure/schedule of the tasks, deliverables, staff, and time needed to complete initiatives in accordance with the ELC.
  - With the staffing and time requirements, the contractor applied its cost rates to determine how much the effort would cost and then submitted the cost and schedule estimates to IRS in a task order proposal.
  - IRS validated these costs during the task order "definitization" process by, among other things, comparing them to historical and current contractor rates charged to IRS and other federal agencies (e.g., GSA) to assess their reasonableness.
- For two projects--CADE and Customer Communications--we verified that IRS did follow this process.

37

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Results

Other Observations

- IRS reports that it "stood up" the BSMO in July 2000. This means that IRS has, among other things, established the office, assigned staff, and defined roles/responsibilities, policies, and processes.
- However, it does not mean that the program office is fully functional. IRS recognizes this and as a result, is reporting BSMO's readiness as a major program risk. To address this risk, IRS
  - is developing charters for the eight units (i.e., Architecture Management, Program Oversight, etc.) within BSMO, which IRS plans to have done by the end of October 2000.
  - plans to complete training on BSMO roles, responsibilities, policies, and procedures and the ELC by November 2000 - January 2001 timeframe.
  - is working to fill 21 vacant positions or 18% of total BSMO staffing level, including (1) managers for program integration, program control, and program planning and (2) all staff (four) for configuration management.

38

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Conclusions

- IRS has not fully satisfied all of the conditions that its Appropriations Subcommittees established for further release of ITIA funds. However, IRS has moved aggressively and has made important progress in addressing its modernization management weaknesses, and it has similarly made progress on project initiatives.

- Until IRS' management weaknesses are fully addressed, key modernization management controls will be missing, which increases the risks of projects not performing as intended, and costing more and taking longer than they should. As we have consistently stated for the last 3 years, these risks are not as severe early in projects' life cycles when they are being planned (project definition and preliminary system design), but they escalate as projects begin to build (detailed design and development). In the case of IRS and its ELC, this point of risk escalation is ELC milestone III. Consequently, we will remain concerned about projects that proceed beyond milestone III before these weaknesses are fully addressed.

39

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Conclusions

- Given that IRS' plans call for several projects to pass ELC milestone III during the next 6 months, it is important for IRS to continue to make implementation of these program management controls a top priority. In particular, it needs to fully address our open recommendations by (1) completing its enterprise architecture, (2) fully developing and implementing its ELC, including portfolio investment management practices, and (3) making its BSMO fully operational by, among other things, completing unit charters, training BSMO staff, and filling management and staff vacancies
- One project, CAP, has prematurely passed Milestone III without a justifiable basis for investing money in developing/building the system. Specifically, it is unclear whether CAP is properly aligned with the enterprise architecture and IRS' yet-to-be established standard general ledger. In addition, IRS has not demonstrated that CAP is effectively integrated with other modernization projects; that its requirements can be traced to expected benefits; and that expected benefits versus costs provide a compelling business case for treating it as an investment priority.

40

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Conclusions

- On another project, STIR, IRS does not have adequate assurance that it is properly designing this system because it has not assessed its security threats and vulnerabilities, analyzed the resulting risks in terms of probability and impact, and used this risk analysis to develop and justify cost effective countermeasures.

41

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Recommendations to the Commissioner of Internal Revenue

- Because we have open recommendations regarding IRS' need to implement program level modernization management controls, we are not making additional recommendations at this time but rather are re-emphasizing to the Commissioner of Internal Revenue that these recommendations remain operative and applicable until IRS (1) addresses the modernization management and technical weaknesses discussed in this briefing such as completing and implementing its enterprise architecture and (2) does so before it begins building new software-intensive systems.

- The Commissioner should also limit further investment in CAP until IRS (1) demonstrates that sufficient business value will be derived to treat CAP as a near-term investment priority and (2) reports to the Senate and House Appropriations Committees on how the risks associated with post milestone III CAP development and the lack of program level controls, are being effectively mitigated.

42

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Recommendations to the Commissioner of Internal Revenue

- In addition, the Commissioner should (1) direct the STIR project to complete as soon as possible a security risk assessment and validate STIR requirements against the risk assessment results and (2) then ensure that STIR requirements and the proposed design solution are economically justified through business case analysis.

43

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Appendix I

Summary of IRS' Interim Release Request for ITIA Funds

Proposed Modernization Initiatives	ELC Milestone	Date to Achieve Milestone	Request
Program Level Activities			***4,567***
Management Capabilities			**(1,941)**
Program Management Office	FY00	09/30/00	(324)
ELC Enhancements, Maintenance, and Full Deployment	FY00	09/30/00	(1,617)
Federally Funded Research and Development Contractor (MITRE)	FY00	09/30/00	0
Management Reserve			0
Architecture Engineering			**(2,559)**
Enterprise Architecture and Blueprint 2000	FY00	09/30/00	(310)
Configuration Management Policies and Procedures	FY00	09/30/00	(844)
Business Integration	FY00	09/30/00	(1,405)
Blueprint and Architecture			**9,067**
Vision and Strategy, Tax Admininistration	MS1		9,023
Vision and Strategy, Internal Management	MS2	10/13/00	44
Project Level Activities			***22,045***
FY 2001 Release			**(30)**
Customer Communications	MS3	05/22/00	(1,097)
Customer Relationship Management Exam (1120 Replacement)	MS3	11/07/00	1,067
FY 2002 Release			**3,460**
Customer Communications	MS3	11/30/00	0
e-Services	MS2	08/08/00	(2,020)
	MS3	02/28/01	5,480

Amounts in table are listed in thousands ($000).

44

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Appendix I

Summary, continued

Tax Account Replacement			**1,400**
Customer Account Data Engine (CADE)	MS3	03/31/01	1,400
Integrated Financial System (IFS)			**4,253**
IFS Revenue Accounting			
Collections Subledger			0
Tax Account Subledger	MS3	08/08/00	2,547
	MS4	09/30/00	1,706
Devel. Enabling Infrastructure			**12,962**
Security And Technology Infrastructure Release (STIR)	MS3	11/30/00	2,656
Enterprise Systems Management (ESM)	MS3	01/31/01	1,983
Telecommunications Enterprise Strategic Program (TESP)	MS2	01/31/01	3,051
Solutions Demonstration Lab (SDL)	n/a	09/30/00	(1,393)
Virtual Development Environment (VDE)	n/a	09/30/00	6,203
Enterprise Integration and Test Environment (EITE)	n/a	09/30/00	462
Longer-Term Projects			***6,146***
Fiscal Year 2001 Release			**6,146**
Customer Communications	MS4,5	05/31/01	6,146
Customer Relationship Management Exam (1120 Replacement)			0
TOTAL			**32,758**

Amounts in table are listed in thousands ($000).

45

Objectives, Scope, and Methodology

Pursuant to the mandate in Treasury's fiscal year 1998 and 1999 appropriations acts and requests by the Senate and House appropriations subcommittees, our objectives were to (1) determine to what extent IRS has satisfied the subcommittees' conditions regarding the ITIA funds and (2) provide any other observations about IRS' management of the program. The conditions specified by the subcommittees were:

- adhere to the March 7, 2000, spending plan as approved and funded or seek approval to do otherwise;
- meet the commitments made in the March 7, 2000, spending plan;
- address modernization management weaknesses and establish the capability to build systems by
  - hiring a person to lead the business systems modernization office (BSMO),
  - developing mature software acquisition capabilities,
  - clearly defining and applying IRS and contractor roles and responsibilities,
  - creating performance-based task orders, and
  - fully implementing IRS' system life cycle management methodology—the Enterprise Life Cycle—and completing and using its enterprise architecture—Blueprint 2000—to define, direct, and control future modernization activities; and
- establishing more reliable cost and schedule estimates for the initiatives in the March 7, 2000, plan.

To accomplish our objectives we took several steps. To understand the scope and content of each, we reviewed IRS' August 2000 interim ITIA funding request and other IRS documentation associated with the initiatives identified in the request. Then, to identify variances, we analyzed the interim request in relation to the conditions specified in the Senate and House responses to the March 7, 2000, spending plan. We compared progress on selected program and project initiatives-as reported in the request and other modernization documentation and supplemented by interviews of IRS and contractor officials-against deliverables promised and commitments made in the March 7, 2000, spending plan. The program initiatives we compared were Blueprint 2000 and the ELC and the project initiatives were CAP, CADE, and STIR. We selected (1) the Blueprint 2000 and ELC program initiatives because both are intended to address open GAO recommendations and (2) the CAP, CADE, and STIR project initiatives because our reviews of these projects were already under way for the subcommittees. In addition, we analyzed relevant documentation concerning the operational status of the Business System Modernization

Office (BSMO), such as plans, status reports, policies and procedures, and descriptions of IRS and contractor roles and responsibilities. We also analyzed progress in definitizing task orders and making them performance based. To do this, we selected three task orders and compared them to performance-based contracting criteria. The task orders selected were for CADE, STIR, and the PRIME's program management office. We selected (1) the CADE and STIR task orders because the subcommittees had asked us to review these two projects and (2) the program management office task order to include one program-level task order in our scope.

We analyzed the process that IRS and the contractor undertook to revise and validate cost and schedule estimates in the March 2000 spending plan and verified for two projects-CADE and Customer Communications-whether IRS adhered to its process. We selected these projects because they had the highest funding requirements. We collaborated with the Treasury Inspector General for Tax Administration (TIGTA) to avoid duplication of effort in reviewing program and project initiatives and incorporated the TIGTA results in this briefing where appropriate. Initiatives addressed by TIGTA included the Customer Communications and e-Services projects, ELC, BSMO, and Blueprint 2000.

In order to meet the 30-day reporting requirement, we did not independently validate planned initiatives' cost estimates or confirm through review of system and project management documentation the IRS information provided on the initiatives' content and progress. We performed our work from August through mid-September 2000 in accordance with generally accepted government auditing standards.

Comments From the Internal Revenue Service

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

CHIEF INFORMATION OFFICER

October 31, 2000

Randolph C. Hite
Director, Information Technology Issues
U.S. General Accounting Office
441 G Street N.W. – Room 4T21
Washington, D.C. 20548

Dear Mr. Hite:

Thank you for the opportunity to provide our comments on your report, *Results of Review of IRS' August 2000 Interim Expenditure Plan for the Business Systems Modernization (BSM) Program*. We appreciate your overall assessment of the Program and generally agree with your findings and the related qualifications.

IRS continues to support responsible program management throughout the Business Systems Modernization program. IRS' BSM Program is large and complex, involving significant business and technological changes to tax administration processes. Any large business systems program carries a great deal of risk, and BSM is no exception. Because we understand and recognize the risks inherent in the program, we are committed to aggressively managing risk. IRS continues to weigh the program risks against the benefits and minimize risk through mitigation plans.

We are encouraged by the progress we have made in the last 14 months. While not without start-up problems, our initial experience with this program compares favorably with successful business systems programs in the private and public sectors, few of which approach the scale of the IRS's program. We have carefully examined the factors that led to success and failure at the IRS and elsewhere in major systems programs, and we learned from our assessment. Many of our achievements have stemmed from successfully managing risks, carefully managing concurrent development of systems and a rigorous governance process. We have benefited from GAO's comments and input from other oversight organizations, and we are confident we can continue to succeed.

I have provided additional comments in the enclosure for each of the conditions cited in your report. If you have any questions, please call me at (202) 622-6800.

Sincerely,

Paul J. Cosgrave

Enclosure

Enclosure

Conditions Specified by the Appropriation Subcommittee for the Information Technology and Investments Account (ITIA) Spending Plan

Condition 1: Adhere to the March 2000 spending plan as approved and funded, or seek approval to do otherwise.

We appreciate and fully support your assessment that variances are to be expected given the BSM projects' and initiatives' complexity, early life cycle state and the inherent uncertainty associated with software/systems costing estimates. We believe that we have substantially adhered to the intent of this condition-- to develop and deliver the projects and the activities listed in the spending plan and not exceed the funding allotted.

We would welcome a recommendation on alternative ways for reporting variances or any other program/project area; and, on changing the evaluation criteria of this condition to reflect that prudent and responsible program management of a program of this magnitude will result in changes to the schedule and cost. BSM will not start any project without following the governance rigor and the investment decision model approach that manages, guides and evaluates our portfolio decision.

Condition 2: Meet the commitments made in the March 7, 2000 spending.

We have addressed the first commitment, "meeting cost and schedule," in our discussion under Condition 1: Adhere to the March 2000 spending plan as approved and funded, or seek approval to do otherwise.

In addition, we have taken steps to strengthen the reliability of both our overall program and individual project level estimates of life cycle and milestone to milestone level costs. Specific steps include analysis of: systemic, independent, cost and cost realism analysis performed by IRS contracting professionals in collaboration with BSMO technical monitors, supplemented by subject matter experts from MITRE.

We will comply with Congress's direction 1) to review the business case of Custodial Accounting Project (CAP) and report back on the compelling business value to the IRS; and 2) to expedite the Security Risk Assessment of the Security and Technology Infrastructure (STIR) and provide a Commissioner certification. We are providing the following comments for CAP and STIR.

Custodial Accounting Project (CAP)

The CAP is a business priority for the IRS and the US government. As IRS migrates to the Customer Account Data Engine, IRS will not be able to produce credible financial statements. This ability to meet statutory requirements and properly account for, report on, and analyze taxes collected makes a compelling business case for this project. It is therefore, imperative to continue the work begun on the CAP project as planned in order to ensure the functionality

of CAP when CADE rolls out. As directed, the Chief Information Officer (CIO) and the Chief Financial Officer (CFO) intend to report back to the Subcommittee on this compelling business case in early November. We have addressed each of the concerns listed in your report below at a very high-level to be followed by a more detailed response.

- The $150 million estimated total project cost does not include the cost to define and build interfaces with projects; however, we have determined the costs of these interfaces.
- CAP business requirements are sufficiently defined by Joint Financial Management Improvement Program (JFMIP).
- Analysis competed in September on the enterprise data warehouse architecture standards and on legacy enhancements to the master file has not resulted in changes to the system's baseline requirements.
- CAP has been integrated into the BSM program management in processes and procedures. CAP's schedule has been integrated at the highest level and work is continuing to fully integrate the project schedule. The project has begun reporting at the monthly program management reviews in October.

Security and Technology Infrastructure Release (STIR)

The concern you raised about STIR needing to develop a risk-based approach and economically justifying its requirements is a valid concern that we are addressing very aggressively. STIR did not go through a formal Milestone (MS) 2 process that would have formally required the delivery of preliminary work products to include the Preliminary Security Risk Assessment and the Preliminary Business Case. Instead the Business Systems Modernization Office determined STIR should focus on MS 3, which delivers the Baseline Business Case and the Intermediate Security Risk Assessment. The Final Security Risk Assessment is delivered at MS 4. The Security Risk Assessment is a living document that matures through the life cycle. At the time of your assessment, these products were being developed; however, we have put increased focus on the quality, maturity and completeness of these documents for our upcoming MS 3 review. An important part of our focus is on ensuring the product is consistent with the Enterprise Life Cycle (ELC) and adequately addresses the most up-to-date architectural guidance. As part of the normal MS 3 Readiness review, key stakeholders in the IRS Security and Privacy Office and the CFO's Office will validate the contents of the documents to include a validation of the requirements and that the business case adequately reflects the findings in the Security Risk Assessment.

Condition 3: Address modernization management weaknesses and establish the capability to build systems.

We agree with your assessment of our status and appreciate your acknowledgement of our progress. Like you, we believe the BSM management process has improved rapidly and is managing the program successfully at the scale at which it is currently operating. We have a goal of achieving a recognized industry standard (CMM level 2 for systems acquisition) by

September 30, 2001. It is critical to stress that achieving this level of improvement this rapidly is a very challenging goal and can only be achieved through practical experience in managing the program.

Condition 4: Establish more reliable cost and schedule estimates for the initiatives outlined in the March 2000 plan.

You accurately depicted our revised process to more accurately forecast our costs. We know it has resulted in improving the reliability of business modernization cost estimates and schedule forecasts. We have developed a systematic and independent process to determine costs and the likelihood those costs will vary. These include:

- The IRS contracting experts performing cost analysis;
- MITRE supplementing the technical analysis of PRIME project proposals; and
- Introducing performance-based contracting that better defines the project deliverables, cost, and schedules.

Using these contracting tools, performance based and fixed-price contracts, can add to the initial cost projection of the contracts and that estimates by their very nature have a high probability of changing.

Other Observations

We continue to provide more refinement on BSM roles, responsibilities, processes and procedures. It will be a continuous learning process. We are providing the following comments on your issues raised in your reports on BSM operational status.

- We scheduled our chartering workshops for completion in November 2000. These workshops are an important real world exercise that validates or refines the BSMO staff's experience in applying the baselined procedures.

- We will complete initial training on BSMO roles and responsibilities by December 2000 including all chartering workshops. We review implemented roles and responsibility to ensure effective operations and that the operations meet SA CMM Level requirements. We are still scheduled for SA CMM Level 2 review and certification by September 2001.

- We address project training needs immediately as they approach each milestone.

- We are reviewing current staffing levels for appropriateness and availability.

GAO Contacts and Staff Acknowledgments

GAO Contacts

Gary Mountjoy, (202) 512-6367
Steve Sebastian, (202) 512-9521

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