**Additional Actions Are Needed to Establish
and Maintain Controls Over Computer
Hardware and Software Changes**

December 2003

Reference Number: 2004-20-026

December 16, 2003

MEMORANDUM FOR CHIEF INFORMATION OFFICER

Gordon C. Milbourn III

FROM: Gordon C. Milbourn III
  Acting Deputy Inspector General for Audit

SUBJECT: Final Audit Report – Additional Actions Are Needed to Establish and Maintain Controls Over Computer Hardware and Software Changes (Audit # 200320015)

This report presents the results of our review of the Internal Revenue Service's (IRS) configuration management (CM) process for computer hardware and software.[1] The overall objective of this review was to determine whether the IRS' Modernization and Information Technology Services (MITS) organization effectively implemented an enterprise-wide CM process.

The IRS is dependent on a large collection of computer systems with complex interdependencies among a network of mainframe computers, mid-range computers, individual computers, several hundred vendor-supplied software products, and millions of lines of computer code. The MITS organization is currently modernizing,[2] consolidating, and maintaining these computer systems to support the mission of the IRS. Responsibility for managing these computer systems is divided among the MITS organizations as follows:

- The Information Technology Services (ITS) organization develops, operates, and maintains computer hardware and software that supports the production environment.

- The Business Systems Modernization Office (BSMO) acquires and delivers new computer hardware and software for the IRS' modernized business processes.

---

[1] 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.

[2] The Business Systems Modernization program is modernizing the IRS' business processes and computer technology.

Among the disciplines needed to manage and coordinate these efforts is an integrated CM process to ensure that the integrity and consistency of the IRS' computer systems are maintained throughout their life cycles. The CM process systematically identifies and baselines[3] the items that make up a system (identification), formally controls any modifications to those items (control), reports on the status of the CM process (status accounting), and ensures that baseline configurations are implemented (audit).[4]

In summary, the MITS organization has made progress in defining and establishing an enterprise-wide CM process through the issuance of a CM Directive that describes the CM process to be used throughout the MITS organization, and standard operating procedures (e.g., configuration control boards, configuration items and baselines, and configuration control). The MITS organization has chartered a Configuration Management Working Group to establish, maintain, and improve the CM process.

However, the CM functions (i.e., identification, control, status accounting, and audit) have not been uniformly implemented within the MITS organization. An integrated, enterprise-wide implementation of the CM process within the MITS organization is particularly important for modernized systems that will migrate in stages or releases[5] to ensure computer system changes are properly managed throughout their life cycles. In addition, this process provides a means to document, communicate, and coordinate system development and production CM baselines between the BSMO and the ITS organizations. For example, as a result of CM control weaknesses, the Enterprise Systems Management (ESM) project incurred additional contractor costs of approximately $216,500 and a 4-month schedule delay to rollout ESM Release 2.1. Without an integrated and uniform CM process, there is an increased potential that modernized and existing systems will require extensive rework resulting in additional costs, schedule delays, and other risks to the IRS' computer operations (e.g., system outages and data corruption).

The implementation deficiencies found in the MITS organization's CM processes occurred because the MITS CM Directive and procedures did not establish executive level responsibility that would ensure that:

- The CM processes were implemented throughout the ITS organization and coordinated with the BSMO.

- Deficiencies identified in internal CM assessments were appropriately addressed.

---

[3] A baseline is a configuration identification document or set of such documents formally designated and fixed at a specific time during the life cycle. Baselines, plus approved changes, constitute the current configuration.

[4] See Appendix V for a diagram of these four CM functions.

[5] The BSMO systems that are scheduled to migrate to the production environment during Fiscal Years 2003 – 2005 are the Enterprise Systems Management (ESM), Integrated Financial System (IFS), Modernized e-File, e-Services, Custodial Accounting Project (CAP), Human Resources (HR) Connect, Internet Employee Identification Number, Internet Refund/Fact of Filing Project, Security Audit and Analysis System, and Customer Account Data Engine (CADE). The following systems will be migrated in stages: ESM, IFS, Modernized e-File, e-Services, CAP, HR Connect, and CADE.

- The different CM software[6] used by the MITS organization facilitated enterprise-wide CM.

- Policies were established defining authority levels and threshold criteria to approve and control production changes in the ITS organization.

To promote the establishment of an integrated MITS organization CM process, we recommended that the Chief Information Officer (CIO) modify the MITS CM Directive and procedures to: 1) assign responsibility for ensuring that MITS CM processes are implemented throughout the ITS organization and coordinated with the BSMO and that CM deficiencies are appropriately addressed; and 2) establish governance policies, similar to those used by the BSMO,[7] for defining the authority levels and threshold criteria to approve and control changes to the production environment in the ITS organization. Additionally, we recommended that the CIO develop a transition plan to implement standardized Enterprise Architecture compliant CM software to be used throughout the MITS organization to facilitate CM on an enterprise-wide level.

<u>Management's Response</u>: IRS management agreed with our recommendations. The MITS organization will revalidate its CM Directive to address organizational responsibility, governance policy, and needed improvements in the Configuration Control Board (CCB) structure. In addition, management will address the establishment of governance policies and threshold criteria to approve and control changes to the ITS production environment while establishing plans to organize separate CCBs for the ITS and BSMO organizations. Regarding CM software, the MITS organization will identify acceptable CM software and publish applicable guidance upon the completion of ongoing CM software assessments within the ITS organization. Management's complete response to the draft report is included as Appendix VI.

Copies of this report are also being sent to the IRS managers who are affected by the report recommendations. Please contact me at (202) 622-6510 if you have questions or Margaret E. Begg, Assistant Inspector General for Audit (Information Systems Programs), at (202) 622-8510.

---

[6] Examples include Computer Associates Endevor, IBM Rational® Suite, and in-house developed databases.
[7] *BSM Authority Levels and Threshold Criteria Directive*, dated September 6, 2002.

Table of Contents

| **Background** | The Internal Revenue Service (IRS) is dependent on a large collection of computer systems with complex interdependencies among a network of mainframe computers, mid-range computers, individual computers, several hundred vendor-supplied software products, and millions of lines of computer code. The IRS' Modernization and Information Technology Services (MITS) organization is currently modernizing,[1] consolidating, and maintaining these computer systems to support the IRS' mission. Responsibility for managing these computer systems is divided among the MITS organizations as follows: |

- The Information Technology Services (ITS) organization develops, operates, and maintains computer hardware and software that supports computer systems in production.

- The Business Systems Modernization Office (BSMO) acquires and delivers new computer hardware and software for the IRS' modernized business processes.

An integrated, enterprise-wide configuration management (CM)[2] process is essential for ensuring that the integrity and consistency of the IRS' computer systems are maintained throughout their life cycles. The purpose of CM is to systematically identify and baseline[3] the items that make up a system (identification), formally control any modifications to those items (control), report on the status of

---

[1] The Business Systems Modernization program is modernizing the IRS' business processes and computer technology.

[2] 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.

[3] A baseline is a configuration identification document or set of such documents formally designated and fixed at a specific time during the life cycle. Baselines, plus approved changes, constitute the current configuration.

the CM process (status accounting), and ensure that baseline configurations are implemented (audit).[4]

Both the Treasury Inspector General for Tax Administration (TIGTA) and the General Accounting Office (GAO) have issued reports[5] on the IRS' Business Systems Modernization efforts that commented on the MITS organization's CM process. Our report focuses on the implementation of the CM processes throughout the MITS organization and on selected modernization projects that had migrated from the BSMO to support and maintenance within the ITS organization. Our audit work in the Office of Security Services was limited due to the anticipated restructuring of that office as part of the realignment of the IRS' management structure.[6] Personnel from the Office of Security Services indicated that they plan to place security policy documentation under CM control; therefore, no additional fieldwork was performed in that office.

Audit work was conducted in the MITS organization at the IRS National Headquarters in New Carrollton, Maryland, from May through September 2003. The audit was conducted in accordance with *Government Auditing Standards*. Detailed information on the audit objective, scope, and methodology is presented in Appendix I. Major contributors to the report are listed in Appendix II.

Progress Has Been Made in Implementing Configuration Management Processes

MITS organization management has recognized the need to institutionalize an enterprise-wide CM process throughout their organization and issued a CM directive in August 2002 to support that need. Management has taken

---

[4] See Appendix V for a diagram detailing the interrelationship of these four CM functions.

[5] TIGTA report, *Modernization Project Teams Need to Follow Key Systems Development Processes* (Reference Number 2002-20-025, dated November 2001), and GAO reports, *Business Systems Modernization: IRS Needs to Better Balance Management Capacity with Systems Acquisition Workload* (GAO/AIMD-02-356, dated February 2002), and *Business Systems Modernization: IRS Has Made Significant Progress in Improving Its Management Controls, but Risks Remain* (GAO/AIMD-03-768, dated June 2003).

[6] The IRS announced on May 22, 2003, through Press Release Statement Number IR-2003-67, a realignment of the IRS' management structure.

several specific actions to implement this directive as well as an enterprise-wide CM process. Specifically, the MITS organization has taken the following actions:

- Chartered a MITS Configuration Management Working Group (CMWG) to establish, maintain, and improve CM processes, procedures, and techniques to be used throughout the MITS organization.

- Issued various CM standard operating procedures (e.g., configuration control boards [CCB],[7] configuration items [CI][8] and baselines, configuration control, and configuration management process compliance assessments).

- Conducted CM process compliance assessments of eight BSMO projects to evaluate whether CM policy and procedures were being followed.

- Chartered a MITS CCB as the authority for receiving, reviewing, and approving proposed system change requests and changes to system baselines that have a cost impact that exceeds the dollar threshold and authority levels established for lower level project CCBs. The MITS organization CCB is also intended to be the forum to resolve conflicts such as those resulting from request impact analysis and authority issues that occur at or among the subordinate CCBs for individual projects.

- Chartered project level CCBs within the BSMO, such as the Internet Refund/Fact of Filing (IRFOF) Project and the Infrastructure Modernization Project.

- Issued a directive[9] that defined the BSMO's authority levels (e.g., for BSMO project level CCBs) and

---

[7] A CCB is a group composed of project stakeholders, technical representatives, and CM representatives with the authority to review and dispose of requests for changes to configuration items within the board's statement of scope.

[8] A configuration item is an aggregation of hardware, software, and documentation, which satisfies an end use function, is designated for CM control, and is treated as a single entity in the CM process.

[9] *BSM Authority Levels and Threshold Criteria Directive*, dated September 6, 2002.

threshold criteria for changing BSMO project baselines for schedule, cost, or requirements. For example, the BSMO Infrastructure Modernization Project CCB has the authority for approving proposed change requests that affect infrastructure modernization projects with a cost impact threshold of less than $500,000, and those above this level would be forwarded to a higher level CCB.

- Chartered organizational level CCBs within ITS (e.g., for the Detroit, Martinsburg, and Tennessee Computing Centers).

- Established the Office of Configuration Management (OCM) within the BSMO, whose chief, as chair of the MITS CMWG, is responsible for establishing, maintaining, and improving CM processes and procedures throughout the MITS organization.

The ITS organization has an effort underway to align the existing computing center CM processes with the Triplex Strategy.[10] Further, the BSMO has developed a CM training plan, developed CM training courses, and held initial CM classes for the MITS organization.

Our review identified that the MITS organization has made progress in implementing a CM process; however, as explained below, further actions are needed to establish and integrate uniform CM implementation processes across the MITS organization.

Additional Actions Are Needed to Establish Integrated, Enterprise-Wide Configuration Management Processes

Treasury Directive 84-01, *Information Systems Life Cycle Manual,* dated March 2002, requires CM to be used throughout every project's life cycle. It also defines the four CM functions of identification, control, audit, and status accounting. The IRS has incorporated these requirements into its systems life cycle methodologies (Enterprise Life Cycle [ELC] and ELC-Lite), the Enterprise Architecture (EA), and the MITS organization CM Directive and procedures. The MITS organization CM Directive also cites the American National Standards

---

[10] The Triplex Strategy is an effort to improve the three computing centers' operations efficiency and effectiveness, including disaster recovery capabilities.

Institute/Electronic Industries Alliance Standard 649,
*National Consensus Standard for Configuration
Management*, an industry CM best practice. Additionally,
the Office of Management and Budget Circular A-123,
Management Accountability and Control, dated July 1995,
requires that the appropriate authority, responsibility, and
accountability are defined and delegated to accomplish the
implementation of the CM process and that an appropriate
organizational structure is established to effectively carry
out these CM responsibilities.

However, the CM functions outlined in Treasury
Directive 84-01 have not been uniformly implemented
within the MITS organization. Specifically, the following
areas could be improved for each of the four required CM
functions:

Identification: The IRS identified CIs for the current
production environment that affected modernization
project releases in 2002. However, not all ITS divisions
have identified and baselined the CIs for their
production systems. An OCM contractor was
identifying the CIs; however, the effort was not
completed because funding for the contractors was cut
in February 2003. An effective CM process requires
that CIs be identified. These items must be identified
and controlled prior to establishing system baselines for
production systems that will be affected by BSMO
projects.

Control: The BSMO has chartered project level CCBs
to control changes to the BSMO project baselines and
established threshold criteria for decision-making by the
project and MITS CCBs, as well as Executive Steering
Committees. However, the ITS organization has not
chartered lower level CCBs, except for the Enterprise
Operations Services' (EOS) Computing Center CCBs,
which are change management[11] rather than CM
oriented. The EOS plans to establish a CM process as

---

[11] Change management is the process of controlling changes to a system
to ensure that only authorized changes are applied.

part of its Triplex initiative. An effective CM process requires a CCB to set and control baselines.

Status Accounting and Audit: The BSMO is performing the CM status accounting and audit functions. The OCM performed CM compliance assessments of several BSMO projects and identified problems with at least one of these functions in each assessment. Although the BSMO project managers have the responsibility to correct project specific CM process issues, the OCM does not have the authority to ensure that the issues are corrected. Also, the ITS organization is not performing the status accounting and audit functions because it has not finished establishing the identification and control processes.

Without an integrated, enterprise-wide CM process, the IRS cannot adequately assure that changes to its computer system configurations are properly managed throughout their life cycles. An integrated, enterprise-wide implementation of the CM process within the MITS organization is particularly important for modernized systems that will migrate in stages or releases[12] to ensure computer system changes are properly managed throughout their life cycles. In addition, this process provides a means to document, communicate, and coordinate system development and production CM baselines between the BSMO and the ITS organizations.

For example, the Enterprise Systems Management (ESM) project experienced schedule delays and incurred additional costs because it did not have an integrated, enterprise-wide CM process. For the ESM project, such a process is necessary since different organizations are responsible for

---

[12] The BSMO systems that are scheduled to migrate to the production environment during Fiscal Years 2003 – 2005 are the Enterprise Systems Management (ESM), Integrated Financial System (IFS), Modernized e-File, e-Services, Custodial Accounting Project (CAP), Human Resources (HR) Connect, Internet Employee Identification Number, IRFOF, Security Audit and Analysis System, and Customer Account Data Engine (CADE). The following systems will be migrated in stages: ESM, IFS, Modernized e-File, e-Services, CAP, HR Connect, and CADE.

developing and deploying ESM releases. Specifically, the ESM team from the IRS' PRIME Business Systems Modernization contractor (PRIME) is responsible for development, and the ITS' End-User Equipment and Services (EUES) organization is responsible for deployment.

In February 2003, during the ESM Release 2.1 deployment, the EUES organization, with support from the PRIME, upgraded the ESM production environment. During this upgrade, changes were introduced to the production environment without adequate testing or adherence to CM processes. As a result of these CM weaknesses, a database server experienced serious, unexpected performance problems. Resolution of the performance problems delayed the implementation of ESM Release 2.1 for 4 months and increased the PRIME contractor's cost by approximately $216,500 since this work fell outside the scope of the PRIME contractor's existing task orders.

The ESM system is just one of several modernized systems that will be migrated in stages over the next several years. Between Fiscal Year (FY) 2003 and FY 2005, the IRS scheduled nine other modernized systems to migrate to the production environment. These modernized systems include new tax administration and financial management systems. These modernized systems not only have interdependencies with each other, but also with the existing IRS systems. Consequently, delays in one project can cause delays in others. For example, the delays in implementing ESM Release 2.1 delayed full management reporting functionality for the IRFOF system.

Several factors contributed to the implementation deficiencies found in the MITS organization. First, the MITS organization CM Directive and procedures did not establish executive level responsibility that would ensure that the MITS organization CM processes are implemented throughout the ITS organization and coordinated with the BSMO, and that deficiencies identified in internal CM assessments are appropriately addressed. Second, governance policy has not been established for defining authority levels and threshold criteria to review, approve,

and control production changes in the ITS organization or for elevating change requests from the ITS organization to a higher-level CCB or committee for approval or coordination such as that found in the BSMO organization.

In addition, some ITS organizations use different CM software that does not comply with the current EA and may not readily facilitate the coordination of system baseline information on an enterprise-wide CM level. The current revision of the IRS' EA, dated July 9, 2003, includes an Enterprise Standards Profile that identifies commercial off-the-shelf software products for use in various computer environments. However, prior EA versions and the MITS organization CM policies and procedures did not identify approved CM software for enterprise-wide use. As a result, some ITS organizations use CM software that does not comply with the current EA. The use of non-compliant software to automate the CM process places the ITS organizations at risk of not being able to effectively communicate and coordinate changes on the production environment with affected organizations and projects, such as BSMO projects that have production environment interdependencies. Since a variety of CM software is currently being used, a period of transition will be needed to review and establish the CM software to be used and integrated throughout the MITS organization.

For example, a contributing cause for not adhering to CM processes for the ESM project was the use of different automated software to manage changes for the project. The BSMO and the PRIME use IBM's Rational® software for configuration management, and the EUES organization uses IRS developed software to control change requests.

Without an integrated and uniform CM process, there is an increased potential that modernized and existing systems will require extensive rework resulting in additional costs, schedule delays, and other risks to the IRS' computer operations (e.g., system outages and data corruption).

Recommendations

To promote the establishment of an integrated MITS organization CM process, we recommend that the Chief Information Officer:

1. Modify the MITS organization CM Directive and procedures to: a) assign organizational responsibility for ensuring that MITS organization CM processes are implemented throughout the ITS organization and coordinated with the BSMO and that CM deficiencies are appropriately addressed; and b) establish governance policies, similar to those used by the BSMO, for defining the authority levels and threshold criteria to approve and control changes to the production environment in the ITS organization.

Management's Response: The MITS organization will revalidate its CM Directive to address organizational responsibility, governance policy, and needed improvements in the CCB structure. In addition, management will address the establishment of governance policies and threshold criteria to approve and control changes to the ITS production environment while establishing plans to organize separate CCBs for the ITS and BSMO organizations.

2. Develop a transition plan to implement standardized EA-compliant CM software to be used throughout the MITS organization to facilitate CM on an enterprise-wide level.

Management's Response: The MITS organization will identify acceptable CM software and publish applicable guidance upon the completion of ongoing CM software assessments within the ITS organization.

Detailed Objective, Scope, and Methodology

The overall objective of this review was to determine whether the Modernization and Information Technology Services (MITS) organization effectively implemented an enterprise-wide configuration management (CM) process.[1]

As part of this review, we interviewed personnel and reviewed CM documentation throughout the MITS organizations of Business Systems Modernization Office (BSMO), Information Technology Services (ITS), Business Planning and Assurance, and Security Services. Within the BSMO, we interviewed personnel from the Office of Configuration Management and Systems Engineering & Integration Division as well as the project teams for the Enterprise Systems Management (ESM) and Internet Refund/Fact of Filing (IRFOF) projects. Within the ITS organization, we interviewed personnel from the Infrastructure Architecture and Engineering, Business Systems Development, Enterprise Operations Services, End User Equipment and Services, Enterprise Networks, and Web Services functions.

This audit assessed the CM processes throughout the MITS organization and selected projects that migrated from acquisition by the BSMO to support and maintenance by the ITS organization. The ESM and IRFOF projects were judgmentally selected from the population of BSMO projects based on one project having been fully migrated and another being migrated in stages or releases to the production environment. The IRFOF Project was selected as a project that had migrated from the BSMO environment to the production environment, which is operated and supported by the ITS organization. The ESM project was selected as a project that migrated in stages or releases since a release was already being supported in the ITS' production environment and future releases were being developed by the IRS' PRIME Business Systems Modernization contractor that is overseen by the BSMO.

To accomplish the overall objective for this audit, we:

I. Identified applicable Federal Government standards and industry best practices that guide the CM process. This included Department of the Treasury directives, Office of Management and Budget circulars, and information technology standards organization documents.

---

[1] 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.

II.   Evaluated the ITS Executive and the BSMO Office of Configuration Management roles and responsibilities for administering the enterprise-wide CM process.

III.   Evaluated the policies and procedures supporting the enterprise-wide CM process.

Major Contributors to This Report

Margaret E. Begg, Assistant Inspector General for Audit (Information Systems Programs)
Gary V. Hinkle, Director
Theodore Grolimund, Audit Manager
Kevin Burke, Senior Auditor
Christopher Funke, Senior Auditor
Frank Greene, Senior Auditor
Michael Howard, Senior Auditor
Tina Wong, Senior Auditor
Olivia Jasper, Auditor

Report Distribution List

Commissioner C
Office of the Commissioner – Attn: Chief of Staff C
Deputy Commissioner for Operations Support OS
Associate Commissioner for Modernization OS:CIO:B
Chief, Information Technology Services OS:CIO:I
Chief, Mission Assurance OS:MA
Director, Business Systems Development OS:CIO:I:BSD
Acting Director, End User Equipment and Services OS:CIO:I:EU
Director, Enterprise Networks OS:CIO:I:EN
Director, Enterprise Operations OS:CIO:I:EO
Director, Infrastructure, Architecture and Engineering OS:CIO:I:IA
Director, Portfolio Management OS:CIO:R:PM
Director, Web Services OS:CIO:I:W
Manager, Enterprise Systems Management OS:CIO:I:EU:ESM
Manager, Office of Configuration Management OS:CIO:B:MP:CM
Chief Counsel CC
National Taxpayer Advocate TA
Director, Office of Legislative Affairs CL:LA
Director, Office of Program Evaluation and Risk Analysis RAS:O
Office of Management Controls OS:CFO:AR:M
Audit Liaisons:
      Associate Commissioner for Modernization OS:CIO:B
      Chief, Information Technology Services OS:CIO:I
      Chief, Mission Assurance OS:MA
      Director, Business Systems Development OS:CIO:BSD
      Director, End User Equipment and Services OS:CIO:I:EU
      Director, Enterprise Networks OS:CIO:I:EN
      Director, Enterprise Operations Services OS:CIO:I:EOS
      Director, Infrastructure, Architecture and Engineering OS:CIO:I:IA
      Director, Web Services OS:CIO:I:W
      Program Manager, Program Oversight and Coordination OS:CIO:R:PM:PO

Outcome Measures

This appendix presents detailed information on the measurable impact that our recommended corrective actions will have on tax administration. This benefit will be incorporated into our Semiannual Report to the Congress.

Type and Value of Outcome Measure:

- Inefficient use of resources – Actual; $216,500 (see page 4).

Methodology Used to Measure the Reported Benefit:

Not having an integrated, enterprise-wide Configuration Management (CM) process[1] was demonstrated by the schedule delays and increased costs of the Enterprise Systems Management (ESM) project. The ESM Release 2.1 was developed by the Internal Revenue Service's (IRS) PRIME Business Systems Modernization contractor (PRIME) and deployed by the Information Technology Services' End-User Equipment and Services (EUES) organization. In February 2003, during the ESM 2.1 deployment, the EUES organization, with support from the PRIME, upgraded an ESM production environment.

During this upgrade, changes were introduced to the production environment without adequate testing or adherence to CM processes and, as a result, a database server experienced serious, unexpected performance problems. A contributing cause for not adhering to CM processes was the use of different automated software to manage changes for the ESM project. The Business Systems Modernization Office and the PRIME use IBM's Rational® software for configuration management and the EUES organization uses IRS-developed software to control change requests. Resolution of the performance problems delayed the implementation of ESM Release 2.1 for 4 months and increased the PRIME contractor's cost by approximately $216,500 since this work fell outside the scope of their existing task orders. This cost was documented in a notification of change letter to the PRIME contract, sent to the IRS on April 11, 2003.
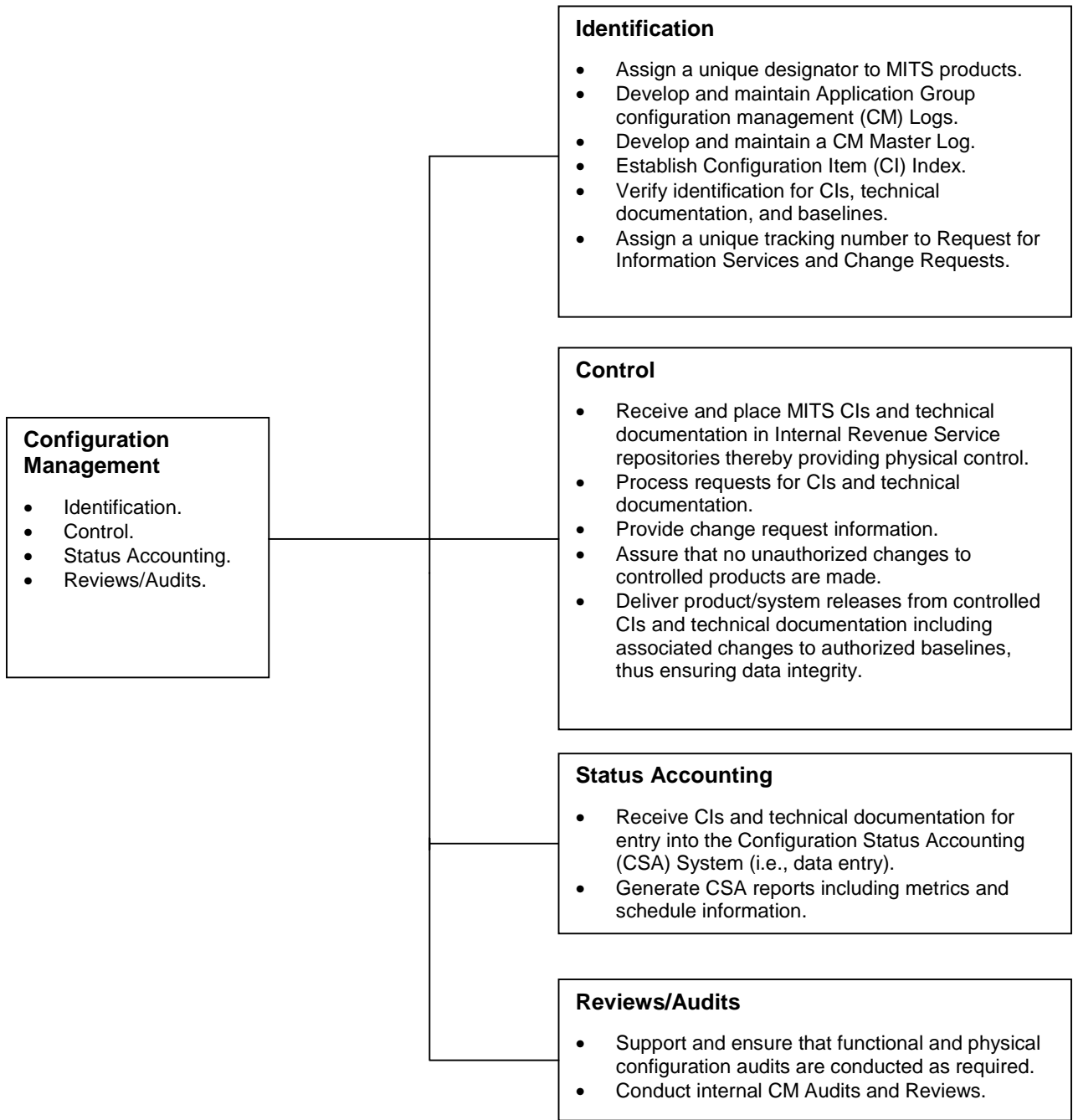
---

[1] 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.

Overview of Configuration Management Functions
(Adapted From the Modernization and Information Technology Services (MITS) Configuration
Management Plan, Version 2.1, October 8, 2001)

Identification

- Assign a unique designator to MITS products.
- Develop and maintain Application Group configuration management (CM) Logs.
- Develop and maintain a CM Master Log.
- Establish Configuration Item (CI) Index.
- Verify identification for CIs, technical documentation, and baselines.
- Assign a unique tracking number to Request for Information Services and Change Requests.

Control

- Receive and place MITS CIs and technical documentation in Internal Revenue Service repositories thereby providing physical control.
- Process requests for CIs and technical documentation.
- Provide change request information.
- Assure that no unauthorized changes to controlled products are made.
- Deliver product/system releases from controlled CIs and technical documentation including associated changes to authorized baselines, thus ensuring data integrity.

Configuration Management

- Identification.
- Control.
- Status Accounting.
- Reviews/Audits.

Status Accounting

- Receive CIs and technical documentation for entry into the Configuration Status Accounting (CSA) System (i.e., data entry).
- Generate CSA reports including metrics and schedule information.

Reviews/Audits

- Support and ensure that functional and physical configuration audits are conducted as required.
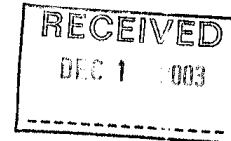- Conduct internal CM Audits and Reviews.

Management's Response to the Draft Report

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

RECEIVED
DEC 1 003

CHIEF INFORMATION OFFICER

November 24, 2003

MEMORANDUM FOR TREASURY INSPECTOR GENERAL FOR TAX
ADMINISTRATION

FROM: W. Todd Grams
               Chief Information Officer

SUBJECT: Draft Audit Report – Additional Actions Are Needed to Establish
               and Maintain Controls Over Computer Hardware and Software
               Changes (Audit # 200320015)

Thank you for the opportunity to review the subject draft audit report. We are pleased
that your audit work confirms that the Modernization and Information Technology
Services (MITS) organization has made progress in defining an enterprise-wide
configuration management (CM) process.

As your report notes, the MITS organization has taken the following actions to establish
the CM process:

- Issued a CM Plan to describe the overall organizational structure and hierarchy of
  MITS CM organizations.

- Chartered a MITS Configuration Management Working Group to establish, maintain,
  and improve the CM processes and procedure to be used throughout the MITS
  Services organization; and established project and functional configuration control
  boards (CCBs).

- Issued various CM standard operating procedures and procedures to define and
  establish an enterprise-wide CM process.

- Conducted CM process compliance assessments of eight BSMO projects to
  evaluate whether CM policy and procedures were being followed.

We generally agree with your report's conclusion that work remains to fully implement
the CM process, practices and tools across the MITS organization and ensure that the
integrity and consistency of our computer systems are maintained and that changes are
better coordinated.

In fact, in October 2003, I launched an analysis of the entire CM activity within MITS.
Your report will be helpful in defining some of the areas and challenges we need to

2

address, such as a uniform CM process and a coordinated change management effort throughout the MITS organization.

We appreciated the opportunity to discuss your team's observations during the review process. We agree with your report's recommendations. Attached are responses to the individual recommendations.

If you have any questions, please contact me at (202) 622-6800, or Fred Forman, Associate Commissioner for Business Systems Modernization, at (202) 622-3378.

Attachment

Draft Audit Report – Additional Actions Are Needed to Establish and Maintain
Controls Over Computer Hardware and Software Changes (Audit # 200320015)

**TO PROMOTE THE ESTABLISHMENT OF AN INTEGRATED MITS
ORGANIZATION CM PROCESS, WE RECOMMEND THAT THE CHIEF
INFORMATION OFFICER:**

IDENTITY OF RECOMMENDATION 1: Modify the MITS organization CM
Directive and procedures to: a) assign organizational responsibility for ensuring
that the MITS organization CM processes are implemented throughout the ITS
organization and coordinated with the BSMO and that CM deficiencies are
appropriately addressed; and b) establish governance policies, similar to those
used by the BSMO, for defining the authority levels and threshold criteria to
approve and control changes to the production environment in the ITS
organization.

CORRECTIVE ACTION 1a: Agree with this recommendation. We will
revalidate the MITS CM Directive to address ITS organizational responsibility,
governance policy, CM deficiencies and needed improvements in CCB structure.
We will most likely look into the establishment and charter of new CCBs: one for
BSM and another for ITS, reporting to the existing MITS CCB.

IMPLEMENTATION DATE:

COMPLETED: **PROPOSED: March 31, 2004**

RESPONSIBLE OFFICIAL: **Associate Commissioner for Business
                                Systems Modernization and Chief,
                                Information Technology Services**

CORRECTIVE ACTION MONITORING PLAN: We enter accepted corrective
actions into the Item Tracking, Reporting and Control System (ITRAC). We also
create and send Status Update Reports for each corrective action to the MITS
Program Director's Office (PDO). This information is used to update the ITRAC
system and send it to the Office of Management Controls (OMC) as formal
acknowledgment of the due dates and action plan. The Oversight Coordinator
uses an EXCEL spreadsheet to monitor pending corrective actions monthly.

The OMC maintains an inventory of all corrective actions we send to MITS
Program Oversight Office for review and validation. When a corrective action is
completed, we add completion dates to the Status Update Report and send to
OMC. The corrective action is then closed in the ITRAC database.

2

Draft Audit Report – Additional Actions Are Needed to Establish and Maintain
Controls Over Computer Hardware and Software Changes (Audit # 200320015)

CORRECTIVE ACTION 1b: Agree with this recommendation. We will
address the establishment of governance policies and threshold criteria to
approve and control changes to the production environment in the ITS
organization as we establish plans to organize separate CCBs for the ITS and
BSM organizations.

IMPLEMENTATION DATE:

COMPLETED: **PROPOSED: March 31, 2004**

RESPONSIBLE OFFICIAL: **Associate Commissioner for Business
Systems Modernization and Chief,
Information Technology Services**

CORRECTIVE ACTION MONITORING PLAN: Refer to Monitoring Plan
described for Recommendation 1.

IDENTITY OF RECOMMENDATION 2: Develop a transition plan to implement
standardized EA-compliant CM software to be used throughout the MITS
Services organization to facilitate CM on an enterprise-wide level

CORRECTIVE ACTION 2: Agree with this recommendation. There are
several ongoing efforts to assess the use of CM tools software within the ITS
organization. At completion of these efforts, we will determine what tools will be
acceptable and publish applicable guidance.

IMPLEMENTATION DATE:

COMPLETED: **PROPOSED: March 31, 2004**

RESPONSIBLE OFFICIAL: **Associate Commissioner for Business
Systems Modernization and Chief,
Information Technology Services**

CORRECTIVE ACTION MONITORING PLAN: Refer to Monitoring Plan
described for Recommendation 1.