



*Reengineering Individual Tax Return
Processing Requires Effective
Risk Management*

December 7, 2009

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This report has cleared the Treasury Inspector General for Tax Administration disclosure review process and information determined to be restricted from public release has been redacted from this document.



TREASURY INSPECTOR GENERAL
FOR TAX ADMINISTRATION

DEPARTMENT OF THE TREASURY
WASHINGTON, D.C. 20220

December 7, 2009

MEMORANDUM FOR CHIEF TECHNOLOGY OFFICER

Nancy A. Nakamura

FROM: (for) Michael R. Phillips
Deputy Inspector General for Audit

SUBJECT: Final Audit Report – Reengineering Individual Tax Return Processing
Requires Effective Risk Management (Audit # 200920029)

This report presents the results of our review of the adequacy of the Internal Revenue Service's (IRS) Modernized Taxpayer Account Program Integration Office start-up activities to manage the transition of taxpayer account processing to a new modernized environment. This review was conducted in response to a request from the Chief Technology Officer for us to assess the Modernized Taxpayer Account Program Integration Office start-up activities and governance processes. Further, we plan to provide periodic assessments of this program's progress and accomplishments.

Impact on the Taxpayer

The current Customer Account Data Engine (CADE) includes applications for daily processing, settlement, maintenance, refunds processing, and issue detection for taxpayer accounts and return data. In August 2008, the IRS Commissioner established the Modernized Taxpayer Account Program Integration Office to manage the transition of individual taxpayer account processing to a new modernized environment. To successfully complete the current modernization effort, IRS executives will need to effectively manage Program risks and maintain Program continuity. Once completed, the new modernization environment should allow the IRS to more effectively and efficiently update taxpayer accounts, support account settlement and maintenance, and process refunds on a daily basis, which will contribute to improved service to taxpayers.



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Synopsis

The Modernized Taxpayer Account Program Integration Office has taken the lead in transitioning the current individual income tax processing environment consisting of multiple computer systems into a single environment for processing tax returns, payments, and other transactions that affect individual taxpayer accounts. In August 2008, the Program Integration Office began working in conjunction with the IRS business owners to evaluate several approaches to accomplish its goal. It decided to integrate elements from both the existing Individual Master File¹ and current CADE processes into a new Customer Account Data Engine Strategy.² The proposed plan incrementally transfers taxpayer accounts from the current Individual Master File and CADE processing environments to a new Customer Account Data Engine relational database. The first steps involve creating the new database and converting the Individual Master File into a daily processing environment.

The Program Integration Office and the IRS business owners have made significant progress in developing conceptual models for 1) the current processing environment, 2) the process that will be used to transition to a modernized environment, and 3) the future-state business processes. Upon completion, individual tax account processing applications will access and update taxpayer data using the new relational database. The relational database will be the single system of record for all individual taxpayer accounts. Accounts will be updated and settled within 24 hours to 48 hours, and subsequently synchronized with other systems. The system will provide financial management services for all individual taxpayer accounts, and mechanisms will be in place to ensure data privacy and integrity.

The Program Integration Office expects the new Customer Account Data Engine to reduce risks and costs that exist from operating in two environments for individual taxpayer account processing. It also plans to modernize the individual taxpayer account processing environment to be consistent with private financial institutions, including appropriate security and privacy standards.

To enable the successful implementation of the new Customer Account Data Engine Strategy, the Program Integration Office must effectively manage the risks it has identified. The Program Integration Office solution teams, working in conjunction with the IRS business owners, have identified risks that must be managed to allow the success of the new Customer Account Data Engine Strategy. The solution teams have prepared management strategies for each high-level risk. Following are some challenges that we believe the Program Integration Office must address to effectively manage these risks.

¹ See Appendix VIII for a glossary of terms.

² The new Customer Account Data Engine Strategy refers to Modernized Taxpayer Accounts Program plans to transition the Individual Master File and current CADE database to a modernized environment. Current CADE refers to the database which started processing some individual tax accounts in Calendar Year 2004.



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- Ensuring support for the modernization efforts from other critical IRS organizations.
- Implementing a governance structure for the Program Integration Offices to provide oversight and direction for the implementation of the new Customer Account Data Engine Strategy.
- Employing enough competent technical resources to modify the Individual Master File and current CADE programs, while continuing to keep the current system operating.
- Developing a strategy for addressing potential questions and concerns by Congress, the IRS Oversight Board, and other stakeholder groups about the refocused Modernization plans and transitional activities.
- Developing contingency plans in the event that the new Customer Account Data Engine Strategy cannot be fully implemented.

Successful completion of the new Customer Account Data Engine Strategy will require a long-term commitment from both current and future IRS executives to maintain the modernization direction and goals. Past attempts by the IRS to modernize its computer systems have been affected by changes introduced by new senior level executives. While some changes are inevitable due to evolving technologies and changing environments, consistency in Program direction and goals is critical for successful completion. To promote Program continuity, senior executives should continue to use the Information Technology Modernization Vision and Strategy framework as a baseline for Modernization Program decision making. The Information Technology Modernization Vision and Strategy, if adhered to, provides executives the ability to achieve the current and planned modernization plans.

Response

The Chief Technology Officer responded with appreciation for our acknowledgement that the Modernization and Information Technology Services organization Program Integration Office and the IRS business owners have made significant progress in developing conceptual models for the current processing environment, the process to transition to the modernized environment, and the future-state business processes. The Chief Technology Officer further noted that the report assessment was valid and that the detailed program plan, being developed as we suggested with the Modernization Vision and Strategy framework, may result in adjustments to target deliverables and time periods including elimination of redundant processing systems. Management's complete response to the draft report is included as Appendix IX.

Copies of this report are also being sent to the IRS managers affected by the report conclusions. Please contact me at (202) 622-6510 if you have questions or Alan R. Duncan, Assistant Inspector General for Audit (Security and Information Technology Services), at (202) 622-5894.



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Abbreviations

CADE	Customer Account Data Engine
IRS	Internal Revenue Service



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Background

In Calendar Year 1999, the Internal Revenue Service (IRS) and the PRIME Contractor¹ initiated the Customer Account Data Engine (CADE) project and started work on the business vision and the operations concept. Early on, their work confirmed that the IRS architecture had two major limitations that needed to be overcome—speed and accuracy. The current processing environment needs up to 2 weeks to update taxpayer tax accounts, and multiple, non-synchronized databases foster an environment of inconsistent data reporting to taxpayers.

The original CADE project planned to build a modernized database to replace the existing Individual Master File processing systems, which are the IRS' official repositories of taxpayer information.

The current CADE includes applications for daily processing, settlement, maintenance, refunds processing, and issue detection for taxpayer accounts and return data. Original plans called for the current CADE to be deployed in five releases. Each release would relate to a specific taxpayer segment with implementation phased in over a period of 6 years. The completion of the CADE implementation would result in the replacement of the Individual Master File, allowing the IRS to conduct business more efficiently and effectively. Specifically:

- IRS employees would have online access to taxpayer data that are accurate as of the last 24 hours.
- IRS employees would be able to post transactions and update taxpayer account and return data online.
- Weekly Individual Master File processing at the Martinsburg Computing Center would be replaced by daily processing.
- Accounts for electronically filed returns would be processed and settled within 48 hours of receipt by IRS systems.

In Calendar Year 2007, the IRS conducted an extensive technical analysis on the future of the current CADE, the Account Management Services system, and the Integrated Data Retrieval System. As part of this analysis, the IRS evaluated its long-term modernization goals and objectives. Under the advice of executives from the IRS business operating divisions and the Modernization and Information Technology Services organization, the IRS Commissioner subsequently decided that the IRS would refocus its approach to modernize existing systems.

¹ See Appendix VIII for a glossary of terms.



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In August 2008, the IRS Commissioner established the Modernized Taxpayer Account Program Integration Office to manage the transition of taxpayer account processing to the newly refocused plan for a new modernized environment. To accomplish this transition, Program Integration Office solution teams were established to consider the use of elements from the Individual Master File and the current CADE database. A proposed solution involves moving tax accounts from the Individual Master File and the current CADE database to a new relational database. This relational database will use some of the current CADE routines and primarily rely on modifying the Individual Master File to run on a daily rather than a weekly basis. This reengineering effort has plans to phase out the current CADE and move to a single tax processing system. It is intended that this relational database will simplify and reduce costs, and eliminate redundant processing systems.

This review was performed in the Modernization and Information Technology Services organization in New Carrollton, Maryland, during the period March through August 2009. We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. This review was conducted in response to a request from the Chief Technology Officer for us to assess the Modernized Taxpayer Account Program Integration Office start-up activities and governance processes. Further, we plan to provide periodic assessments of this program's progress and accomplishments. Detailed information on our audit objective, scope, and methodology is presented in Appendix I. Major contributors to the report are listed in Appendix II.



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Results of Review

The Modernized Taxpayer Account Program Integration Office has taken the lead in transitioning the current individual income tax processing environment consisting of multiple computer systems into a single environment for processing tax returns, payments, and other transactions that affect individual taxpayer accounts. To accomplish this transition, starting in August 2008, the Program Integration Office began working in conjunction with the IRS business owners to evaluate several approaches to accomplish its goal. The Program Integration Office decided to integrate elements from both the existing Individual Master File and current CADE processes into a new Customer Account Data Engine Strategy.² The proposed plan incrementally transfers taxpayer accounts from the current Individual Master File and CADE processing environments to a new Customer Account Data Engine relational database. The first steps involve creating the new database and converting the Individual Master File into a daily processing environment.

Significant Progress Has Been Made In Developing Conceptual Models for Future Individual Income Tax Processing

The IRS uses the Enterprise Life Cycle³ as its standard approach to implement information systems projects. Prior to project initiation during the Vision and Strategy phase of the Enterprise Life Cycle, high-level concepts are developed that outline project expectations as they are envisioned by IRS executives and workers. Conceptual modeling assists in this endeavor by clarifying the meaning of the various terms and concepts to ensure that problems resulting from different interpretations do not occur. Adherence to these concepts and disciplines are critical for the successful and timely completion of projects and programs.

The Program Integration Office and the IRS business owners have made significant progress in developing conceptual models for 1) the current processing environment, 2) the process that will be used to transition to a modernized environment, and 3) the future-state business processes. Major data classes for tax administration (e.g., taxpayer, taxpayer account, notice, and tax return), along with major data stores (e.g., the Core Data Store, the Individual Account Operational Data Store, the Integrated Production Model, and the Taxpayer Information File), have been defined. A strategic framework process has also been developed. This process describes how the Modernized Taxpayer Account Program Integration Office goals and

² The new Customer Account Data Engine Strategy refers to Modernized Taxpayer Accounts Program plans to transition the Individual Master File and current CADE database to a modernized environment. Current CADE refers to the database which started processing some individual tax accounts in Calendar Year 2004.

³ Appendix IV presents an overview of the Enterprise Life Cycle.



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objectives will be delivered by relying on a foundation of business, data, architecture, and technical principles and strategies.

The current individual taxpayer account processing environment

The Individual Master File began processing individual taxpayer accounts in the 1960s, and was the only IRS system responsible for processing individual taxpayer accounts through Calendar Year 2003. Beginning in Calendar Year 2004, the current CADE started to process some individual taxpayer accounts. The Individual Master File and the current CADE share the responsibility of managing individual taxpayer accounts. Each individual taxpayer account is active on only the Individual Master File or the current CADE, not on both at the same time. Presently, the current CADE can process only accounts that are full paid or overpaid, have no unresolved issues such as a tax liability on the current or prior years, and require no updates other than address changes. Accounts on the current CADE that do not meet these requirements are returned to the Individual Master File for processing.

Long-term system requirements issues challenged the current CADE project.

- The current CADE processing system requires a large amount of capacity for both the storage and retrieval of data. Future releases with more complex accounts are estimated to both significantly increase the need for additional capacity and increase complexity of the processing.
- The ability of the current CADE to access historical taxpayer account information currently residing on the Individual Master File had to be resolved to enable requirements for future developed releases.
- The expectation of significant increases in current CADE taxpayer population, processing capacity, and data storage required consideration to meet future operational needs. The engineering staff performed the last formal study of current CADE processing capacity in Calendar Year 2004 and had not determined the long-term processing capacity requirements.

Current CADE and the Individual Master File must interact with the Integrated Data Retrieval System and each other every time an account on the current CADE is returned to the Individual Master File. Sustaining parallel operation and maintenance on dual systems is far more complex and costly than managing either one of them alone. Each successive release of the current CADE adds taxpayer accounts with increasingly more difficult issues, such as those resulting from adjustments, unpaid assessments, examinations, bankruptcy, installment agreements, and penalties.

Financial integrity is also at risk. Future releases will move billions of dollars between the Individual Master File and the current CADE, exposing the IRS to the potential for lost revenue and/or uncontrolled accounts during the transfer. For example, accounts with unpaid



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assessments and/or excess credits that are in the current CADE potentially could be returned to the Individual Master File. Appendix V presents a flowchart of the current processing environment.

The transition to a new modernized environment

The focus of the Modernized Taxpayer Account Program Integration Office is to move the IRS away from operating in two tax processing environments while positioning the IRS for more significant reengineering of the tax account management process in the future. The Program Integration Office strategy for improving individual taxpayer account processing involves three transition states:

- **Transition State 1** will modify the Individual Master File to run daily (currently individual taxpayer accounts are processed on a weekly basis) and establish a new relational database. The IRS plans to implement Transition State 1 in January 2012.
- **Transition State 2** will use a single set of applications and address previously identified financial material weaknesses. In its Fiscal Year 2008 Financial Audit Report of the IRS, the Government Accountability Office reported that the “IRS faces serious challenges from its continued use of obsolete financial management systems that do not conform to the requirements of the Federal Financial Management Integrity Act.” The IRS plans to implement Transition State 2 in January 2014.
- **Target State** will consist of a single system using elements of the Individual Master File and the current CADE and will eliminate all transitional applications such as those used to link the current CADE, the Individual Master File, and the Integrated Data Retrieval System. Although the IRS had an early estimate to implement the Target State by 2015, it is now performing additional analysis to establish an estimated completion date.

Appendix VI presents the conceptual models of each transition state.

Upon completion, individual tax account processing applications will access and update taxpayer data using the new relational database. The relational database will be the single system of record for all individual taxpayer accounts. Accounts will be updated and settled within 24 hours to 48 hours, and subsequently synchronized with other systems. The system will provide financial management services for all individual taxpayer accounts and mechanisms will be in place to ensure data privacy and integrity.

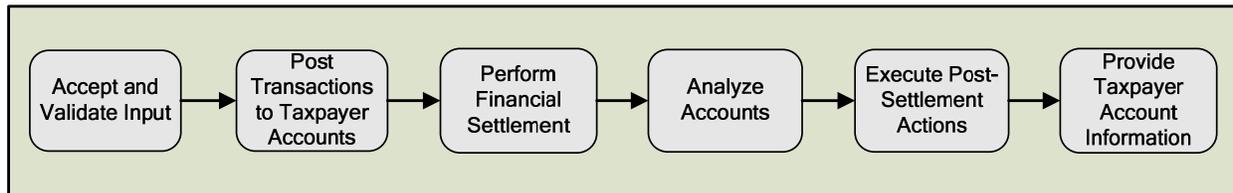
The future state of managing individual taxpayer accounts

A team made up of Program Integration Office staff and IRS business owners representing a broad cross-section of different IRS perspectives defined a high-level future-state business process flow for the management of individual taxpayer accounts. The business process activities are presented in Figure 1.



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Figure 1: Business Process Flow Activities



Source: *Manage Taxpayer Accounts Core Team Report*, dated February 25, 2009.

Accept and Validate Input – Validate and balance transactions and files, transform data for subsequent processing, and store inbound reference data for use by other processes.

Post Transactions to Taxpayer Accounts – Detect, validate, and store new taxpayer account information.

Perform Financial Settlement – Compute balances, allocate credits to debits, compute and post penalty and interest transactions, perform financial offsets, update account status, create and post refund transactions, record accruals, and create deferred actions.

Analyze Accounts – Identify and update conditions present on taxpayer accounts for subsequent processing.

Execute Post-Settlement Actions – Detect notice conditions and request notice creation, detect a refund transaction and request funds disbursement when appropriate, and create transcripts based on detection of specific conditions.

Provide Taxpayer Account Information – Provide taxpayer account information for use by other IRS and external processes.

The Modernized Taxpayer Account Program Integration Office objectives for the new Customer Account Data Engine Strategy are to:

- Process tax returns, payments, and other transactions that affect individual taxpayer accounts in a single environment.
- Update and settle individual accounts within 24 hours to 48 hours with current, complete, and authoritative data, and provide employees with access in a timely manner.
- Address known financial audit and computer security weaknesses.
- Improve long-term viability of the individual taxpayer account processing solution.

The Program Integration Office expects the new Customer Account Data Engine Strategy to reduce risks and costs that exist from operating in two environments for individual taxpayer account processing. It also plans to modernize the individual taxpayer account processing environment to be consistent with private financial institutions, including appropriate security and privacy standards.



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Identified Risks Must Be Effectively Managed for Successful Implementation of the New Customer Account Data Engine Strategy

The Program Integration Office solution teams, working in conjunction with the IRS business owners, have identified risks that must be managed to allow the success of the new Customer Account Data Engine Strategy. The solution teams have prepared high-level risk management strategies for each risk. To facilitate the risk management strategy planning process, the solutions teams have grouped each risk into the following categories: Audit Risk (1 issue), Delivery Risks (11 issues), Funding and Schedule Risks (2 issues), Operational Risks (3 issues), People Risks (4 issues), and Technical/Complexity Risks (4 issues). Appendix VII presents a description of these Program risks.

A formal Risk Management Plan to track, control, validate, and analyze each identified risk will ensure that the risks are successfully resolved. When risks are not successfully resolved in a timely manner, schedule and/or cost may be negatively affected. Depending on the level of the risk, an unresolved risk could jeopardize the success of an entire Program.

The solution teams have identified several risks that fall into this high-risk category. For example, key stakeholders must actively participate in the decision-making process. This will ensure that changes made to processes and services take into account the customer's perspective. In addition, the IRS employee and contractor resource capacity must be closely monitored to ensure that simultaneous demands for requirements, development, test, and production systems are met in a timely manner. Effective scope management has been an ongoing modernization concern. If scope is not rigorously managed, the Modernized Taxpayer Account Program's ability to deliver intended benefits may be jeopardized.

Other high-level risks include adequate performance and funding. If the new Customer Account Data Engine does not meet system performance requirements for peak volume with reasonable capacity, individual tax return processing may be put at risk. And without sufficient funding, the delivery schedule will be delayed, negatively affecting taxpayers by not providing benefits such as faster refunds.

Challenges Facing the New Program Integration Office Must Be Addressed

While conceptual modeling and risk identification are required first steps, the Program Integration Office and business owners need to develop, validate, and implement the reengineering concepts, as well as manage the identified risks. Following are some challenges we believe that the Program Integration Office must address to effectively manage these risks:

- Ensuring support for the modernization efforts from other critical IRS organizations, such as the Modernization and Information Technology Services organization and other business units. An issue the current Business Systems Modernization program had to



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overcome was that IRS personnel were not fully engaged in the initial program design and development processes. The challenge is to engage all relevant IRS subject matter experts in building the new system by including them in the new Customer Account Data Engine Strategy.

- Implementing a governance structure for the Program Integration Offices to provide oversight and direction for the implementation of the new Customer Account Data Engine Strategy. For example, will the existing Executive Steering Committee responsibilities carry over to the new strategy, or will the new strategy demand a re-scoping of the Executive Steering Committee responsibilities?
- Employing enough competent technical resources to modify the Individual Master File and current CADE programs, while continuing to keep the current systems operating.
- Deciding on the development programming language(s) to be used by the end-state single system.
- Deciding on the hardware platform(s) to be used by the end-state single system.
- Ensuring the end-state single system is cost-effectively designed to minimize processing capacity demands and storage requirements.
- Developing a strategy for addressing potential questions and concerns by Congress, the IRS Oversight Board, and other stakeholder groups about the refocused Modernization plans and transitional activities. For example, the strategy could focus on potential concerns such as ensuring adequate funding for the new plans and addressing the possible perception that the transitional step of retiring the current CADE and moving back to Master File processing, even if done on daily basis, might look like a step backward.
- Developing contingency plans in the event that the new Customer Account Data Engine Strategy cannot be fully implemented. For example, what are the options if the Individual Master File programs cannot be modified to run daily, or as frequently as needed?

In addition to the risks identified by the Program Integration Office and the IRS business owners, and the challenges facing the Program Integration Office, both groups need to work together to address the following procedural issues.

Program Management Office Framework – Management processes and controls need to be established requiring coordination and input from the Program Integration Office, the business owners, and the Modernization and Information Technology Services organization to ensure a smooth transition to the new Customer Account Data Engine Strategy.

Enhancement Requests to Existing Systems – A process to manage enhancement requests such as system upgrades from the business owners for all current systems affected by the new



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Customer Account Data Engine Strategy need to be developed. This also includes establishing controls to identify and manage multisystem interdependent requirements and the effect the requests will have on the new Customer Account Date Engine Strategy.

Unless sufficient time and resources are provided to address each of these challenges and procedural issues that are needed to support the Modernized Taxpayer Account Program Integration Office goals and objectives, the new Customer Account Data Engine Strategy will be unable to process tax returns for all individual taxpayers as planned.

A Long-Term Commitment Is Needed by Current and Future Executives to Ensure Modernization Program Success

In September 1996, after intense scrutiny from Congress based on prior unsuccessful attempts to modernize its systems, the IRS agreed to use a contractor to design and build the Business Systems Modernization program. Congress issued this directive after the IRS was unsuccessful in modernizing its computer systems for more than 20 years. Specifically,

- From 1973 through 1978, the IRS conducted the Tax Administration System of the 1970s program. Funding was denied in Fiscal Year 1977 due to questions over costs and benefits, and the program was terminated in Fiscal Year 1978.
- In early 1982, the IRS began new efforts to redesign the tax administration system through the “Tax System Redesign” program. However, none of the approaches to modernization (pursued from 1982 through 1986) progressed beyond the planning stage, resulting in part, according to the Government Accountability Office, from repeated changes in leadership at the IRS and the Department of the Treasury, a lack of clear management responsibility for the program, and the need for enhanced technical and managerial expertise within the agency’s ranks.
- In 1986, the IRS initiated the Tax Systems Modernization program that planned to upgrade existing systems and provide additional computer capacity. However, the IRS could not explain to Congress how these projects would eventually come together to meet the long-term goals and objectives. Congress eventually cut the Tax Systems Modernization program budget in Fiscal Year 1996 due partly to concerns about the value of program investments to date and the minimal progress in delivering new systems.

In December 1998, the IRS awarded its PRIME contract for systems modernization and relied on the PRIME contractor to act as a systems integrator to find and manage the best expertise and technical resources to achieve the IRS’ organizational goals. However, the PRIME contractor, acting in its role as systems integrator, did not make the best use of IRS subject matter experts to understand and document the IRS’ current processing environment. In January 2005, due to budget reductions and concerns about the adequacy of the PRIME contractor’s performance, the



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IRS transitioned many activities from the PRIME contractor by taking over the primary role as the systems integrator for all projects.

If the IRS and the PRIME contractor had made better use of IRS expertise during the initial start-up of the Business Systems Modernization effort in 1999 and performed similar conceptual modeling and risk identification as described earlier in this report, the refocusing of current modernization efforts may not have been needed. Successful completion of the new Customer Account Data Engine Strategy will require a long-term commitment from both current and future IRS executives to maintain the modernization direction and goals.

Past attempts by the IRS to modernize its computer systems have been affected by changes introduced by new senior level executives. While some changes are inevitable due to evolving technologies and changing environments, consistency in Program direction and goals is critical for successful completion. To promote Program continuity, senior executives should continue to use the Information Technology Modernization Vision and Strategy framework as a baseline for Modernization Program decision making. The Information Technology Modernization Vision and Strategy, if adhered to, provides executives the ability to achieve the current and planned modernization plans.

Management's Response: The Chief Technology Officer responded with appreciation for our acknowledgement that the Modernization and Information Technology Services Program Integration Office and the IRS business owners have made significant progress in developing conceptual models for the current processing environment, the process to transition to the modernized environment, and the future-state business processes. The Chief Technology Officer further noted that the report assessment was valid and that the detailed program plan, being developed as we suggested with the Modernization Vision and Strategy framework, may result in adjustments to target deliverables and time periods including elimination of redundant processing systems.



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Appendix I

Detailed Objective, Scope, and Methodology

The overall objective of this review was to assess the adequacy of the Modernized Taxpayer Account Program Integration Office start-up activities to manage the transition of taxpayer account processing to a new modernized environment. To accomplish this objective, we:

- I. Determined the background and purpose for the IRS' creation of the Modernized Taxpayer Account Program Integration Office.
 - A. Reviewed the prior Treasury Inspector General for Tax Administration and Government Accountability Office audit reports on IRS modernization efforts.
 - B. Reviewed internal reports, technical assessments, and studies conducted by the IRS related to current and future modernization efforts.
 - C. Reviewed external reports, technical assessments, and other studies of IRS modernization efforts, including those on Program Integration Office plans, conducted by non-Government entities.
 - D. Reviewed meeting minutes and decisions from governance bodies such as the Customer Service Executive Steering Committee¹ and the Modernize Taxpayer Accounts Executive Steering Committee.
- II. Determined the goals and objectives of the Modernized Taxpayer Account Program Integration Office and the new Customer Account Data Engine Strategy.
 - A. Reviewed Program charters, governance documents, program life cycle methodology, and strategic framework proposals related to the Modernized Taxpayer Account Program Integration Office and the new Customer Account Data Engine Strategy.
 - B. Assessed the overall approach of the proposed governance structure of the Modernized Taxpayer Account Program Integration Office.
 - C. Reviewed documentation of solution planning and oversight meetings and meeting minutes related to Modernized Taxpayer Account Program Integration Office start-up activities and the new Customer Account Data Engine Strategy.
 - D. Analyzed external reports prepared by non-Government entities for findings and recommendations related to the Modernized Taxpayer Account Program Integration Office and the new Customer Account Data Engine Strategy.

¹ See Appendix VIII for a glossary of terms.



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- E. Analyzed internal reports, technical assessments, and studies conducted by the IRS related to the Program Integration Office and the new Customer Account Data Engine Strategy.
- III. Determined the adequacy of the process to estimate the cost to implement the new Customer Account Data Engine Strategy.
 - A. Reviewed the latest IRS Budget Request.
 - B. Reviewed the latest Business Systems Modernization Expenditure Plan.
 - C. Reviewed the latest Program Integration Office Basis of Estimate for cost and schedule.



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Appendix II

Major Contributors to This Report

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Appendix III

Report Distribution List

Commissioner C
Office of the Commissioner – Attn: Chief of Staff C
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Deputy Commissioner for Services and Enforcement SE
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Associate Chief Information Officer, Enterprise Services OS:CTO:ES
Director, Procurement OS:A:P
Director, Stakeholder Management OS:CTO:SM
Director, Customer Account Services, Wage and Investment Division SE:W:CAS
Director, Strategy and Finance, Wage and Investment Division SE:W:S
Chief, Performance Improvement, Wage and Investment Division SE:W:S:PI
Deputy Associate Chief Information Officer, Applications Development OS:CTO:AD
Deputy Associate Chief Information Officer, Business Integration OS:CTO:ES:BI
Deputy Associate Chief Information Officer, Systems Integration OS:CTO:ES:SI
Director, Requirements and Demand Management OS:CTO:SP:DM
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 Associate Chief Information Officer, Applications Development OS:CTO:AD
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 Director, Requirements and Demand Management OS:CTO:SP:DM
 Chief, GAO/TIGTA/Legislative Implementation Branch SE:S:CLD:PSP:GTL



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Appendix IV

Enterprise Life Cycle Overview

The Enterprise Life Cycle is the IRS' standard approach to business change and information systems initiatives. It is a collection of program and project management best practices designed to manage business change in a successful and repeatable manner. The Enterprise Life Cycle addresses large and small projects developed internally and by contractors.

The Enterprise Life Cycle includes such requirements as:

- Development of and conformance to an enterprise architecture.
- Improving business processes prior to automation.
- Use of prototyping and commercial software, where possible.
- Obtaining early benefit by implementing solutions in multiple releases.
- Financial justification, budgeting, and reporting of project status.

In addition, the Enterprise Life Cycle improves the IRS' ability to manage changes to the enterprise; estimate the cost of changes; and engineer, develop, and maintain systems effectively. Figure 1 provides an overview of the phases and milestones within the Enterprise Life Cycle. A phase is a broad segment of work encompassing activities of similar scope, nature, and detail and providing a natural breakpoint in the life cycle. Each phase begins with a kickoff meeting and ends with an executive management decision point (milestone) at which IRS executives make "go/no-go" decisions for continuation of a project. Project funding decisions are often associated with milestones.



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Figure 1: Enterprise Life Cycle Phases and Milestones

Phase	General Nature of Work	Milestone
Vision and Strategy/Enterprise Architecture Phase	High-level direction setting. This is the only phase for enterprise planning projects.	0
Project Initiation Phase	Start-up of development projects.	1
Domain Architecture Phase	Specification of the operating concept, requirements, and structure of the solution.	2
Preliminary Design Phase	Preliminary design of all solution components.	3
Detailed Design Phase	Detailed design of solution components.	4A
System Development Phase	Coding, integration, testing, and certification of solutions.	4B
System Deployment Phase	Expanding availability of the solution to all target users. This is usually the last phase for development projects.	5
Operations and Maintenance Phase	Ongoing management of operational systems.	System Retirement

Source: *The Enterprise Life Cycle Guide*.



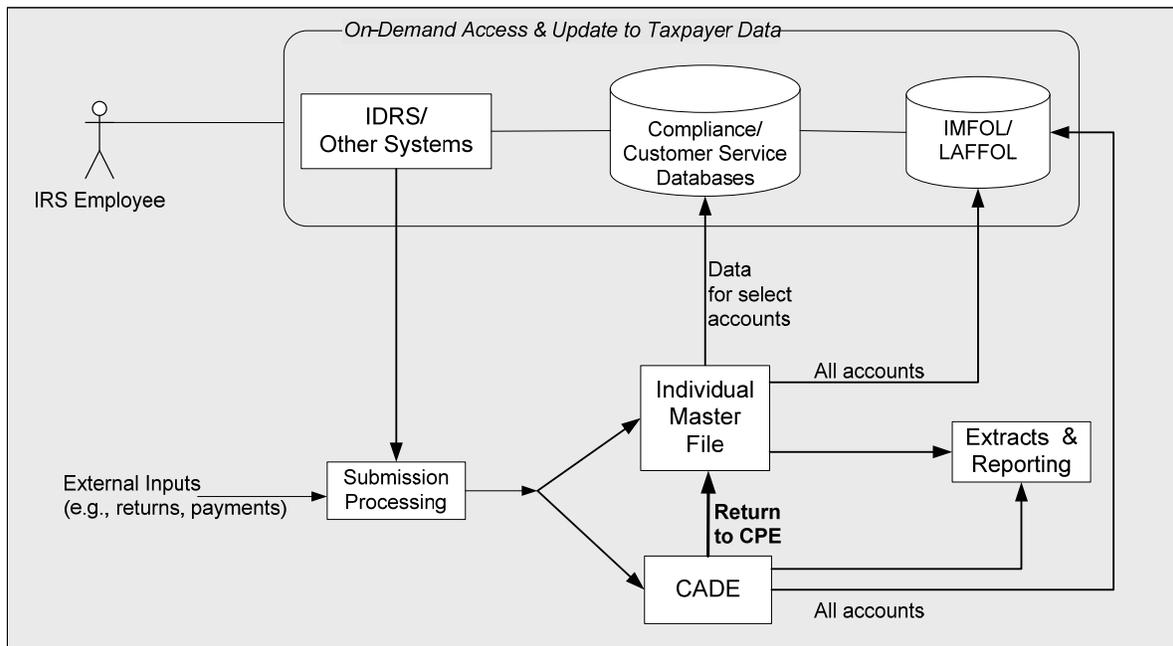
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Appendix V

Current Processing Environment

Figure 1 presents a high-level depiction of the current processing environment for individual tax accounts.

Figure 1: Individual Tax Return Processing



CPE—Current processing environment;¹ IDRS—Integrated Data Retrieval System; IMFOL/LAFFOL— Individual Master File On-Line Processing/Legacy Account Formatted File On-Line.

Source: *Manage Taxpayer Accounts Core Team Report*, dated February 25, 2009.

- Most transactions for individual taxpayer accounts are processed through Submission Processing systems; however, a few transaction types bypass Submission Processing.
- The Individual Master File and the current CADE share the responsibility of managing individual taxpayer accounts.
- When the current CADE detects any transaction or condition that it cannot address, it executes a process known as Return to Current Processing Environment to return the management and data of that individual taxpayer account to the Individual Master File.

¹ See Appendix VIII for a glossary of terms.



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- The Individual Master File extracts data on a weekly basis to the Individual Master File On-Line data store. As the current CADE processes transactions, it supplies data in Individual Master File format to the Legacy Account File Format On-Line. These two data stores are for read-only access of taxpayer account information.
- Both the Individual Master File and the current CADE provide data for multiple extracts, reports, and updates to downstream systems.
- The Individual Master File provides data to the Integrated Data Retrieval System for synchronization of information for selected accounts.



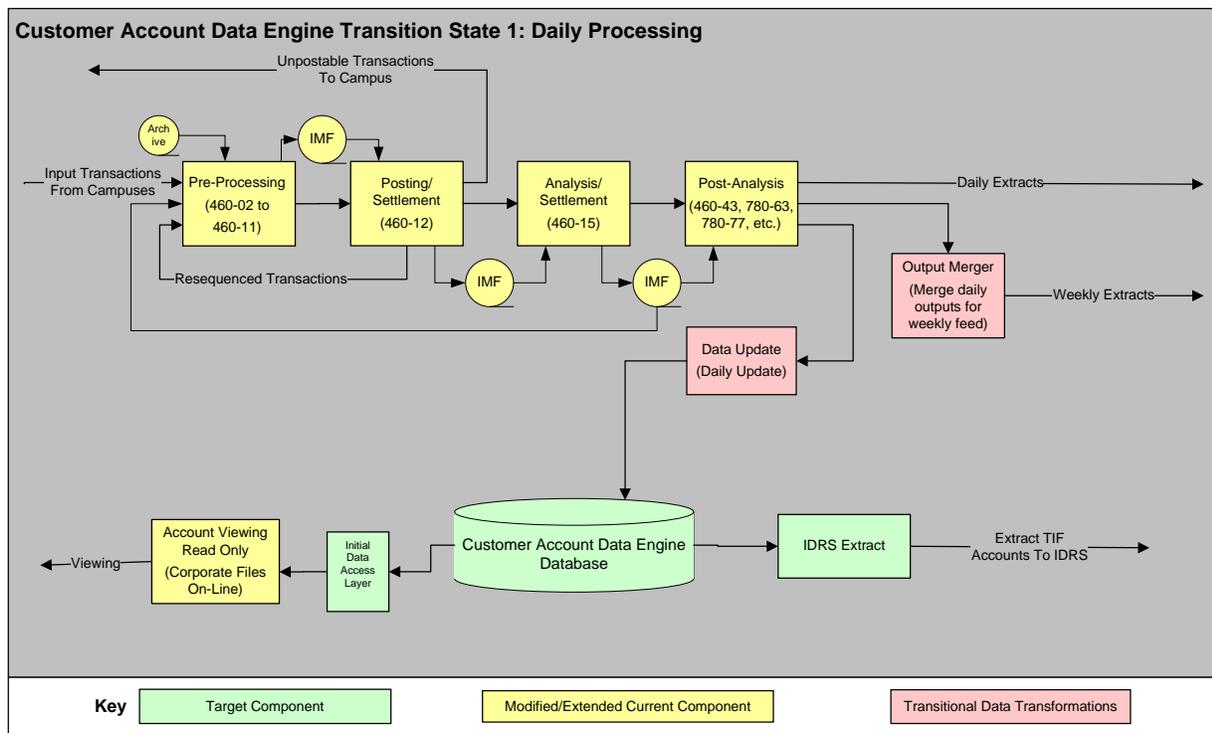
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Appendix VI

Transition States

Figures 1, 2, and 3 present conceptual models for future individual income tax processing.

Figure 1: Transition State 1 Processing Plan



CFOL–Corporate Files On-Line;¹ IMF–Individual Master File; TIF–Taxpayer Information File

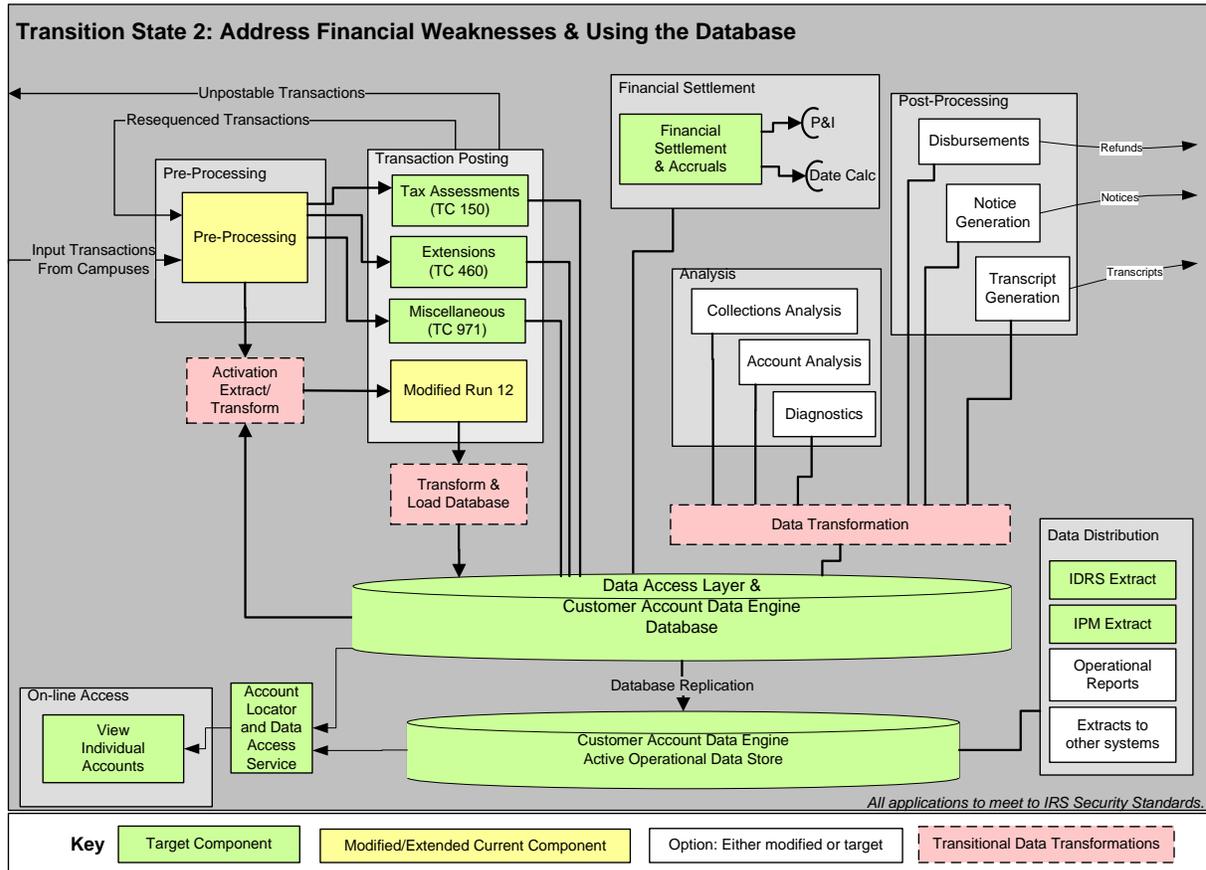
Source: IRS Customer Account Data Engine presentation to the Treasury Inspector General for Tax Administration staff, dated August 6, 2009.

¹ See Appendix VIII for a glossary of terms.



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Figure 2: Transition State 2 Processing Plan



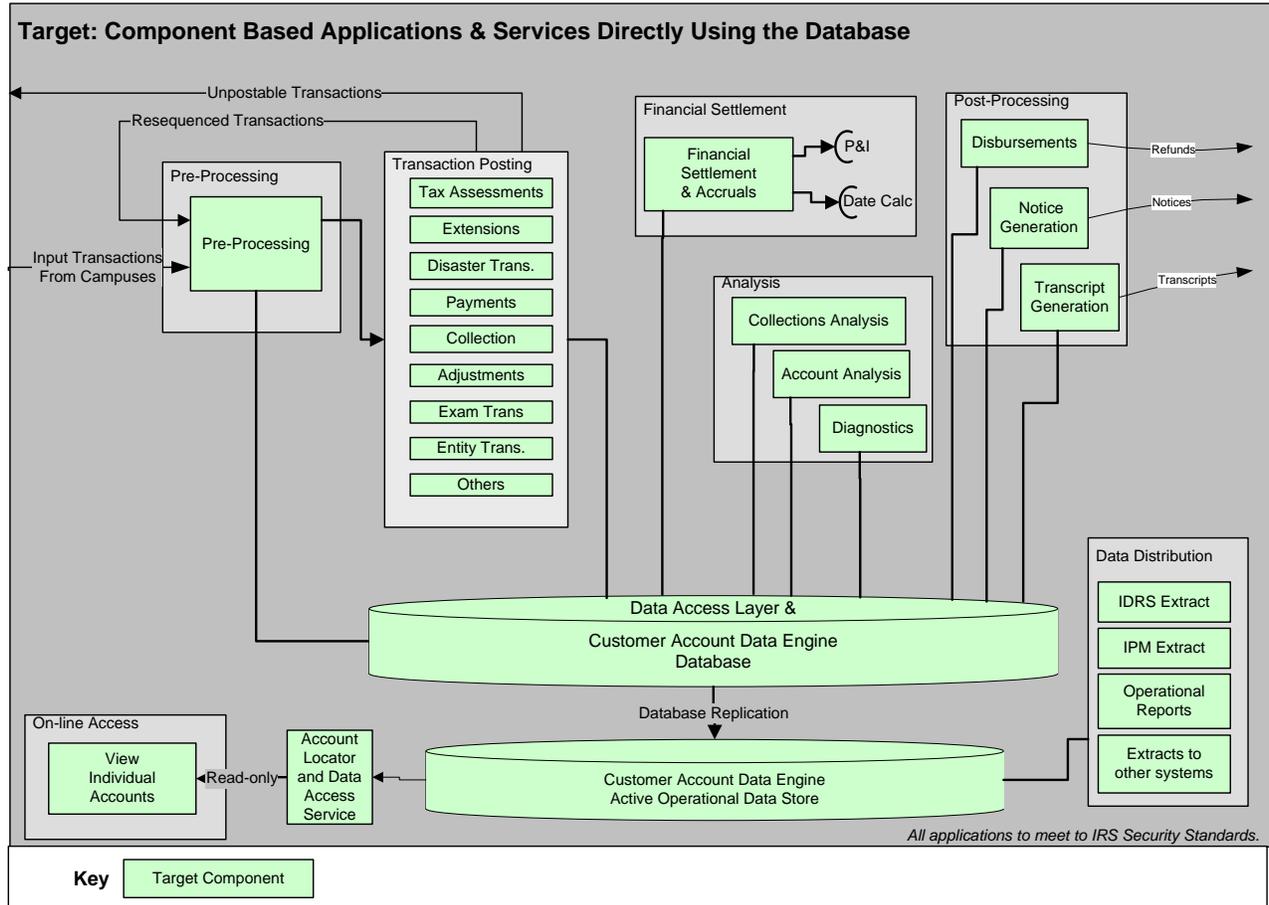
IPM—Integrated Production Model

Source: IRS Customer Account Data Engine presentation to the Treasury Inspector General for Tax Administration staff, dated August 6, 2009.



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Figure 3: Target State Processing Plan



Source: IRS Customer Account Data Engine presentation to the Treasury Inspector General for Tax Administration staff, dated August 6, 2009.



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Appendix VII

Risks Facing the Modernized Taxpayer Account Program Integration Office

The following high-level risks identified by the Modernized Taxpayer Account Program Integration Office solution teams affect development and implementation of the new Customer Account Data Engine Strategy.

Audit Risk

Balance and Control – The balancing, control, and reconciliation process is crucial for the IRS to ensure the data integrity of the taxpayer information brought into the current CADE. The risk associated with the balancing, control, and reconciliation process makes it difficult to maintain a clean audit opinion because taking the current CADE out of production has implications which result in loss of some capabilities for addressing financial material weaknesses.

Delivery Risks

Identification of Business Requirements – The ability to identify business requirements from Individual Master File¹ applications is very difficult because the application design documentation is not always available.

Comprehensive Test Strategy – New approaches to testing are required to ensure that all business requirements are tested.

Having Decisions Stick Is a Challenge – If key stakeholders are not part of the decision process, intended results may be in jeopardy.

Information Technology Versus Business Driven Program – Even though the business owners from the Wage and Investment and the Small Business/Self-Employed Divisions are participating in the Modernized Taxpayer Account Program, they are not driving the solution from a business perspective and it may be difficult to ensure they stay fully engaged. The business processes and services are not changing from a customer prospective.

Not Enrolling Suppliers – Not enrolling key vendors and taking advantage of their expertise in the development effort may affect the ability to deliver Modernized Taxpayer Account Program goals. For example, current CADE experts are primarily external contractors and the challenge

¹ See Appendix VIII for a glossary of terms.



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is to integrate the current CADE experts with the Individual Master File experts, which are IRS employees.

Parallelism, Overlap Between Transition States – To achieve the target solution in a reasonable time period requires parallel development of multiple transition states. Simultaneous demands for requirements, development, test, and production systems may exceed resource capacity.

Program Authority – If a Modernized Taxpayer Account Program does not have the authority to make day-to-day decisions that affect scope, budget, technical solution, and quality, then the ability to deliver the Customer Account Data Engine Strategy may be negatively affected.

Program Integration – The IRS does not have mature processes for developing integrated technical solutions at the enterprise and Program levels. Integration across multiple projects presents a risk of not identifying inter-project dependencies, which will result in parallel work inefficiencies. The Program Lifecycle is a newly defined model within the IRS and will require significant effort to implement.

Scope Management – If scope is not rigorously managed, the Program's ability to deliver agreed to capabilities may be jeopardized.

Transition Software Costs – Software used to link the current CADE, the Individual Master File, and the Integrated Data Retrieval System during the transition process will no longer be required upon completion of the end-state target system. The acquisition of transition software, if not properly monitored, could negatively affect development costs and increase the complexity of the technical solution.

Yearly Filing Season Changes – Long development time periods require that the IRS implement yearly tax law changes in applications and databases while simultaneously performing development work. Yearly tax law changes may affect the Program delivery schedule.

Funding and Schedule Risks

External Constraints – The inability to move Business Systems Modernization program funds within the Modernized Taxpayer Account Program without Congressional approval hampers the ability to deliver the new Customer Account Data Engine Strategy.

Funding the Program – Not fully funding the Modernized Taxpayer Account Program could delay the delivery schedule.

Operational Risks

Data Cleanup and Account Cleanup – Invalid individual taxpayer account conditions currently residing on processing systems constrain the development effort.



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Filing Season Readiness – Each year, the IRS plans specific, detailed action items to ensure preparations are made for the IRS to effectively perform in the upcoming filing season. This plan requires IRS operational organizations to be in a state of readiness to identify, surface, and elevate any barriers that may jeopardize a successful filing season. Filing season readiness responsibilities must not be forgotten.

Not Making Progress Against Financial Material Weaknesses – Current CADE capabilities such as the balancing, control, and reconciliation process meet Federal Financial Management Systems Requirements guidelines and address financial material weaknesses. Taking the current CADE out of production has implications that will result in the loss of some capabilities that address financial material weaknesses.

People Risks

Appropriate Leadership and Governance – If appropriate leadership and governance are not established within the Modernized Taxpayer Account Program, the Program may be unable to deliver promised capabilities.

Critical Skill Constraints – Resource contention over knowledgeable and skilled IRS employees and contractors may affect the Program Integration Office requirements.

Gaining Organizational Alignment and Commitment – Given the history of Business Systems Modernization, consistent turnover of leadership, and sensitivity to external perceptions, there is a possibility that the Modernized Taxpayer Account Program will not have active support from the necessary stakeholders needed to complete the Program.

Readiness to Leverage Data – Inadequate preparation from the Wage and Investment and the Small Business/Self-Employed Divisions and the Modernization and Information Technology Services organization to fully take advantage of relational database capabilities, such as easy access and reassembly of data, may result in missed opportunities in providing improved account management services to IRS employees.

Technical/Complexity Risks

Architectural Issues – Architectural issues present within the Individual Master File (e.g., financial material weaknesses imbedded in current Assembler Language Code applications) and the current CADE (e.g., processing inefficiencies) must be addressed to ensure short-term and long-term tradeoffs are considered.

Development Language and Architectural Platform – The current plan to move to Java programming language poses a risk because the solution team has not fully assessed the technical implications of this decision.



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End-to-End Performance – If the end-state solution does not meet system performance requirements for peak volume with reasonable capacity, individual tax return processing may be jeopardized.

Identification of Security Requirements – The technical solution must adhere to Federal Government and IRS security guidelines.



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Appendix VIII

Glossary of Terms

Term	Definition
Account Management Services	A project that provides an integrated approach to view, access, update, and manage taxpayer accounts.
Computing Center	Supports tax processing and information management through a data processing and telecommunications infrastructure.
Core Data Store	Provides the system of record for all tax return processing that replaces the tape-based Master File systems and the current CADE system.
Corporate Files On-Line	This system provides online transactional access to Individual and Business Master File data, Information Return Program data, and various other related data collections. These files are accessed via IRS-developed Customer Information Control System command codes.
Current Processing Environment	The IRS' existing entire Information Technology environment including business applications, data stores, data interfaces and processing flows, infrastructure, and Information Technology services, as well as involved organizations, locations, processes, policies, and people.
Cycle	A 7-day processing period (usually from Sunday to Saturday) measurement used by the IRS.
Enterprise Life Cycle	A structured business systems development method that requires the preparation of specific work products during different phases of the development process.
Executive Steering Committee	Oversees investments, including validating major investment business requirements and ensuring that enabling technologies are defined, developed, and implemented.
Filing Season	The period from January through mid-April when most individual income tax returns are filed.



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Term	Definition
Individual Account Operational Data Store	Provides a high-availability store used to allow applications access to view individual taxpayer account information not stored on the Taxpayer Information File.
Individual Master File	The IRS database that maintains transactions or records of individual tax accounts.
Individual Master File On-Line Processing	This system provides online transactional access to Individual Master File data. See Glossary for Corporate Files On-Line.
Information Technology Modernization Vision and Strategy	Establishes a 5-year plan that drives investment decisions; addresses the priorities around modernizing front-line tax administration and supporting technical capabilities; and leverages existing systems (where possible) and new development (where necessary) to optimize capacity, manage program costs, and deliver business value on a more incremental and frequent basis.
Infrastructure	The fundamental structure of a system or organization. The basic, fundamental architecture of any system (electronic, mechanical, social, political) determines how it functions and how flexible it is to meet future requirements.
Integrated Data Retrieval System	An IRS mission-critical system consisting of databases and programs supporting IRS employees working active tax cases. It manages data retrieved from the Master File, allowing IRS employees to take specific actions on taxpayer account issues, track status, and post updates back to the Master File.
Integrated Production Model	Intended to be a data store to meet IRS needs for data analytics and long-term reporting and as a source for other types of analytic data that supplement the transactional core data store.



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Term	Definition
Legacy Account Formatted File On-Line	At the beginning of each processing year, accounts from the Individual Master File are reviewed to determine whether they are current CADE eligible (i.e., if the incoming tax return for the account is likely to be one that the current CADE can process). Prior year tax modules for accounts that are considered current CADE eligible are moved from the Individual Master File to the Legacy Account Formatted File On-Line area of the current CADE database. Tax modules that were initiated and settled in the Individual Master File and then moved to the Legacy Account Formatted File On-Line remain in the Individual Master File format.
Master File	The IRS database that stores various types of taxpayer account information. This database includes individual, business, and employee plans and exempt organizations data.
Notice	A computer-generated message resulting from an analysis of the taxpayer's account on the Master File.
PRIME Contractor	The Computer Sciences Corporation, which heads an alliance of leading technology companies brought together to assist with the IRS' efforts to modernize its computer systems and related information technology.
Program Life Cycle	The Program Life Cycle is designed to be a generic life cycle applicable to most information technology focused programs, though it is being developed initially for the new Customer Account Data Engine Strategy.
Relational Database	A relational database is a collection of data items organized as a set of formally described tables from which data can be accessed or reassembled in many different ways without having to reorganize the database tables.
Release	A specific edition of software.



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Term	Definition
Strategic Framework	Describes how Modernized Taxpayer Account Program goals and objectives will be delivered by relying on principles and strategies that include the Business Architecture, the Data Architecture, the Application Architecture, and the Technology Architecture. Each of these is supported by the policies and processes related to Security and Privacy, Human Capital Management, Program and Project Management, the Enterprise Life Cycle, and Requirements.
Submission Processing	Submission Processing includes the filing of both paper and electronic tax returns and the initial capture of tax revenues. Submission Processing plays an important role in both service and enforcement. As the first contact point for most taxpayers, public perceptions about service are established. From an enforcement standpoint, data capture and up-front issue detection and resolution contribute to effective tax law enforcement.
Taxpayer	Taxpayer information includes the taxpayer identification number, taxpayer name, name history, addresses, and information or conditions that affect the IRS' relationship with the taxpayer.
Taxpayer Account	The data about a taxpayer's tax obligations with the IRS for specific tax periods. A taxpayer's account is divided into tax modules—a separate tax module for each type of tax and tax period. Each tax module includes the tax assessments, payments, penalties, interest assessments, adjustments, status history, notice history, freezes, audit transactions, collection transactions, memo transactions, etc.
Taxpayer Information File	Provides information to the Customer Service and Compliance processes, which are often the source of account transactions.
Tax Return	Information filed by a taxpayer and signed under penalty of perjury that this is true and accurate information which is required to calculate the correct tax and credits.
Vision and Strategy	The phase that translates the fundamental business strategy into a transformation strategy for business processes, information technology, and organizational change.



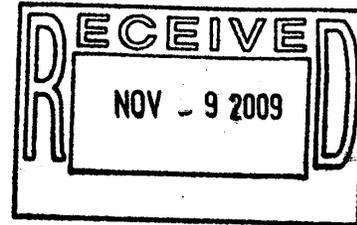
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Appendix IX

Management's Response to the Draft Report



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



NOV 09 2009

MEMORANDUM FOR DEPUTY INSPECTOR GENERAL FOR AUDIT

FROM: Terence V. Milholland *Terence V. Milholland*
Chief Technology Officer

SUBJECT: Draft Audit Report – Reengineering Individual Tax Return Processing
Requires Effective Risk Management (Audit #200920029) (i-trak
#2010-65980)

Thank you for the opportunity to review the draft audit report and respond to your assessments and observations. We appreciate your acknowledgement that the Modernization and Information Technology Services' Program Integration Office and the IRS business owners have made significant progress in developing conceptual models for the current processing environment, the process to transition to a modernized environment and the future-state business processes.

Overall, we believe your assessment is valid. We do point out that the detailed program plan, being developed as you suggest, with the Modernization Vision and Strategy framework, may result in adjustments to the target deliverables and timeframes including elimination of redundant processing systems.

I would also like to extend my appreciation for recognizing my request to assess the start-up activities and governance processes surrounding the Modernized Taxpayer Account Program Integration Office. Again, your quick response in performing this review is much appreciated.

The Service's Modernization and Information Technology Services organization is committed to continuously improving our information technology systems and processes. We value your continued support and the assistance and guidance your team provides. If you have any questions, please contact me at (202) 622-6800 or James McGrane at (202) 622-4770.