



*Implementing the Data Strategy Will Make  
System and Application Development  
More Efficient and Effective*

**February 19, 2009**

**Reference Number: 2009-20-022**

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

February 19, 2009

**MEMORANDUM FOR CHIEF TECHNOLOGY OFFICER**

A handwritten signature in black ink, appearing to read "Michael R. Phillips".

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

**SUBJECT:** Final Audit Report – Implementing the Data Strategy Will Make System and Application Development More Efficient and Effective (Audit # 200820007)

This report presents the results of our review of the development and implementation of the Internal Revenue Service (IRS) Data Strategy. The overall objective of this review was to determine whether the IRS Data Strategy includes adequate management and internal controls for its program and project plans. This review was part of our Fiscal Year 2008 Annual Audit Plan for reviews of the IRS Modernization Program.<sup>1</sup>

*Impact on the Taxpayer*

The IRS is developing a Data Strategy that includes a comprehensive plan for data collection, consolidation, storage, and distribution. A comprehensive Data Strategy is a key element in the IRS Modernization Program and is considered one of the four “pillars of modernization,” along with the Modernized Electronic Filing, Customer Account Data Engine, and Account Management Services projects. Successful implementation of these four “pillars” is essential to the support of all tax administration activities and is critical to the long-term success of the Modernization Program.

*Synopsis*

The Data Strategy is designed to provide standardized access to official IRS data sources; eliminate redundant, inconsistent, and outdated data; and provide guidance to identify and use

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<sup>1</sup> See Appendix VI for a glossary of terms.



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data effectively and efficiently to gather and manage taxpayer account information. The Enterprise Data Access and Data Strategy Implementation Programs are the major components of the Data Strategy. These Programs are in development, and projects related to these Programs have been initiated and, in some cases, completed. We reviewed the Integrated Production Model and the Metadata Repository portions of the Data Strategy and found that these efforts are generally meeting their objectives.

While progress is being made, management needs to take further actions to develop and implement the goals of the Data Strategy. Since the Modernization Program began in 1999, the IRS has initiated nine efforts to achieve consistency in data management when developing and managing information technology systems. Although the IRS has previously pursued efforts to achieve efficiency and consistency in data management, the current Data Strategy is the first comprehensive effort since the Modernization Program began.

***Although the IRS has previously pursued efforts to achieve efficiency and consistency in data management, the current Data Strategy is the first comprehensive effort since the Modernization Program began.***

Obtaining adequate funding for the current Data Strategy efforts has been a challenge for the Data Strategy executives. The funding needs identified by these executives were communicated to the potential users of the Data Strategy efforts. Although specific funding for the Data Strategy was not designated in the IRS budget, the executives were able to obtain funding from the respective organizations that anticipate using the capabilities. Without a commitment to fully fund and implement the Data Strategy, the IRS will continue to have redundant, inconsistent, and outdated data, making it difficult to provide its customers and stakeholders with appropriate service and to efficiently and effectively enforce the nation's tax laws.

The IRS has not mandated that all project development staffs coordinate data and application needs with the Modernization and Information Technology Services (MITS) organization Data Strategy development team. Defining and sharing the quantifiable benefits for using the Data Strategy would help the various Modernization project teams understand the advantages and necessity of employing the Data Strategy. However, the Data Strategy team stated that it does not currently have cost details quantifying the benefits it expects to provide.

The IRS has developed an Information Technology Modernization Vision and Strategy plan to help guide the Modernization Program, but it does not assign a priority for scheduling development and implementation. As of August 2008, the MITS organization had not established criteria to prioritize which IRS systems and data assets should be included in the Data Strategy and a schedule of when the systems and assets will be incorporated into IRS operations. This could lead to an ineffective and inefficient transition of the Data Strategy.



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### *Recommendations*

To facilitate complete implementation of the Data Strategy, we recommended that the Chief Technology Officer 1) work with IRS senior executives to consider the priority of the Data Strategy effort in relation to the MITS organization's budget and provide the necessary funding so that it can be successfully implemented as an integral component of the Information Technology Modernization Vision and Strategy, 2) quantify and communicate the benefits that will be realized from implementation of the Data Strategy to promote the Data Strategy and justify funding through budget requests, and 3) develop a method to determine the priority for IRS systems and data assets to begin following the Data Strategy and when systems and data assets can be retired due to the Data Strategy.

### *Response*

The IRS agreed with our second and third recommendations but did not agree to implement our first recommendation. The Data Strategy Implementation Program Office will quantify its benefits, including those derived from eliminating redundant storage, using the Modernization Vision and Strategy costing model developed by the Enterprise Data Management Office. Further, the Data Strategy Implementation Division within the Applications Development Division will analyze IRS systems and data assets to develop a plan for determining a prioritization methodology for systems and assets to be incorporated into the Data Strategy. While the IRS agreed with the spirit and intent of our first recommendation to consider the priority of the Data Strategy effort, IRS management does not plan to implement the recommendation because they cannot agree to fund any one project without considering each year's annual budget. Notwithstanding, it is the IRS' intent over the long term to move to a data-centric organization. Management's complete response to the draft report is included as Appendix VII.

### *Office of Audit Comment*

The Data Strategy is cited by the IRS as one of the "four pillars of modernization." We understand IRS management's position that it cannot agree to fund any one project without considering the available budget, but we continue to believe the IRS should place a high enough priority on the Data Strategy that the project is considered for a relevant portion of available funding. Without providing the resources to secure this portion of the foundation, the Modernization effort is weakened, potentially leading the Data Strategy to a partially completed goal.

Copies of this report are also being sent to the IRS managers affected by the report recommendations. Please contact me at (202) 622-6510 if you have questions or



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Margaret E. Begg, Acting Assistant Inspector General for Audit (Security and Information Technology Services), at (202) 622-8510.



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## *Abbreviations*

IRS

Internal Revenue Service

MITIS

Modernization and Information Technology Services



## *Implementing the Data Strategy Will Make System and Application Development More Efficient and Effective*

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### *Background*

The Internal Revenue Service (IRS) is developing a Data Strategy that includes a comprehensive plan for data collection, consolidation, storage, and distribution. A comprehensive Data Strategy is a key element in the IRS Modernization Program<sup>1</sup> and is considered one of the four “pillars of modernization,” along with three projects at the heart of the Modernization Program—the Modernized Electronic Filing, Customer Account Data Engine, and Account Management Services projects. Successful implementation of these four “pillars” is essential to the support of all tax administration activities and is critical to the long-term success of the Modernization Program.

The IRS Information Technology Modernization Vision and Strategy includes the goals for the Data Strategy:

- Improve data quality to enable IRS management to make data-based decisions.
- Consolidate redundant data repositories.
- Expose and enforce common data standards to a wider audience.
- Reduce point-to-point data transfers to enhance processing efficiency between systems and applications.

The Data Strategy is designed to provide standardized access to official IRS data sources; eliminate redundant, inconsistent, and outdated data; and provide guidance to identify and use data effectively and efficiently to gather and manage taxpayer account information. All of the IRS compliance activities rely on tax return and account data to assist with workload selection. By improving the quality and accessibility of the data, the IRS will be better equipped to enforce the nation’s tax laws and instill confidence in its ability to make informed decisions.

The IRS Modernization and Information Technology Services (MITS) organization is responsible for developing and implementing the Data Strategy. Two offices within the MITS organization are responsible for the Data Strategy. The Enterprise Data Management office’s mission is to more easily and efficiently organize, identify, share, reuse, and correlate data that enable the IRS business operating divisions to use information and maximize its value to the IRS. The Data Strategy Implementation office’s mission is to support the creation of an enterprise strategy for data management, storage, and access and to develop and implement the data repositories for both near-term and long-term business goals. In addition, the Small

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<sup>1</sup> See Appendix VI for a glossary of terms.





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Business/Self-Employed Division represents the needs of all IRS business operating divisions in implementing the Data Strategy.

The Data Strategy consists of two major programs—the Enterprise Data Access Program and the Data Strategy Implementation Program.

***The Enterprise Data Access and Data Strategy Implementation Programs are the major components of the Data Strategy.***

- **The Enterprise Data Access Program** consists of an Extensible Markup Language Relational Database and the Integrated Production Model. The Extensible Markup Language Relational Database became operational in Fiscal Year 2006 and provides the IRS Tax Exempt and Government Entities Division with electronically filed business returns in a relational database that captures and associates data using common attributes. The Integrated Production Model will provide a consolidated database of tax return and account data in a single repository for compliance data used in the case selection processes. Through analyzing Integrated Production Model data, the IRS hopes to implement efforts that enhance tax compliance efforts to decrease the tax gap.
- **The Data Strategy Implementation Program** will be responsible for implementing the data strategies that define the Enterprise Data Architecture, define the current and future data requirements, reduce and/or eliminate data duplication within the enterprise, provide solutions for information access and sharing, support interoperability among information systems, and support IRS business goals. These activities include developing the Enterprise Return Retrieval project and the Metadata Repository to support individual business units' analytical and research needs in the processing of transaction data.

This review was performed at the MITS organization facilities in New Carrollton, Maryland, during the period May through November 2008. 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 that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. 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 Data Strategy Is Progressing Toward Information Technology Modernization Vision and Strategy Goals***

The MITS organization's plans for the Data Strategy address the goals of the Information Technology Modernization Vision and Strategy, and the MITS organization is making progress in achieving those goals. The Enterprise Data Access and Data Strategy Implementation Programs are in development, and projects related to these Programs have been initiated and, in some cases, completed. Our reviews of the Integrated Production Model and the Metadata Repository show that these efforts are generally meeting their objectives.

While progress is being made, management needs to take further actions to develop and implement the goals of the Data Strategy. Challenges facing MITS organization executives include gaining support for implementing the Data Strategy throughout the IRS, obtaining adequate funding to execute the related Data Strategy programs, and sustaining the support to achieve the goals of the Information Technology Modernization Vision and Strategy.

### ***The Integrated Production Model is being developed to provide a consolidated database of tax return and account data***

The IRS is currently developing the Integrated Production Model to provide all IRS business operating divisions with a consolidated database of consistent tax return and taxpayer account data that will allow the IRS to retire duplicative and costly data extracts. The Integrated Production Model will provide access to core data that can be used for case identification, selection, prioritization, and assignment.

The Integrated Production Model involves developing storage for and integrated access to data from various IRS files systems or data sources. The Integrated Production Model Releases 1.0 and 1.1 were implemented in September 2007 and August 2008, respectively. Releases 2 and 3 were both officially cancelled in June 2008 after the IRS determined that they were no longer needed because of hardware advancements and application efficiencies. The Integrated Production Model project team is currently developing Release 4.0, which is scheduled for implementation in December 2008. Releases 5 and 6 are scheduled to add remaining data sources in December 2009 and

***The Integrated Production Model will provide all IRS business operating divisions with a consolidated database of consistent tax return and taxpayer account data that will allow the IRS to retire duplicative and costly data extracts.***



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December 2010, respectively. Appendix IV presents the status and capabilities of the Integrated Production Model releases.

Reviews of Integrated Production Model Releases 1.0, 1.1, and 4.0 documents showed that the project team successfully implemented the following project management processes and activities. The Integrated Production Model team adequately:

- Justified the need for the project and reported planned funding.
- Managed its requirements.
- Managed its risks.
- Planned configuration management activities.
- Planned project quality and performance tracking and reporting activities.

Because the Integrated Production Model adequately followed project management guidance established by the Enterprise Life Cycle, work products and deliverables have met or are on schedule to meet project goals.

### **The Metadata Repository is standardizing the format and interpretation of data**

A description of data (e.g., name, format, source) is termed metadata. Metadata help users locate, manage, understand, and use data by describing what data are available, in which system they are located, what they mean, where they came from, how they were processed, and how they are used. IRS metadata are present in both the modernized and current processing environment and systems.

The MITS organization is building an enterprise-wide Metadata Repository that will be the official source for information about IRS data. The Repository is using a consistent vocabulary to categorize data and ensure a consistent meaning of the data throughout the IRS. The Repository is initially being populated with tax return and taxpayer account data from the Integrated Production Model. The metadata collected from the various Integrated Production Model releases will contain a majority of the metadata needed by the IRS.

The Metadata Repository currently resides on a Microsoft Access database. A pilot is underway to test the feasibility of using an IBM Information Server as a data management tool to house the Metadata Repository and replace the Microsoft Access database. The MITS organization has built a comprehensive framework into the IBM Information Server to include enterprise data descriptions and data naming standards. In addition, the core metadata from the Integrated Production Model Releases 1.0 and 1.1 have been added to both the Access and IBM Metadata Repositories. These Repositories will be used concurrently until the plans to implement the IBM Information Server repository become official.



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In addition to testing the IBM Information Server for housing and management of the Metadata Repository, the IRS is developing the Repository policy and guidance documentation. The MITS organization will develop and issue a Metadata Requirements checklist to help ensure consistency in the use of data by project development teams. This checklist, as well as the Metadata Repository guidance, will be included in a Data Implementation Guide that provides direction to ensure that current and future Modernization projects adhere to the IRS Data Strategy.

### ***Sustaining the Data Strategy Effort Will Allow for More Efficient and Effective System Development and Operations***

The IRS has recognized the significance of a comprehensive Data Strategy to achieving its Information Technology Modernization Vision and Strategy and has previously initiated work on several projects to achieve an enterprise Data Strategy. Since the Modernization Program began in 1999, the IRS has initiated nine efforts to achieve consistency in data management when developing and managing information technology systems. Although the IRS has previously pursued efforts to achieve efficiency and consistency in data management, the current Data Strategy is the first comprehensive effort since the Modernization Program began. Appendix V includes a list of the IRS' efforts to achieve data consistency and efficiency.

Obtaining adequate funding for the current Data Strategy efforts has been a challenge for the Data Strategy executives. The funding needs identified by these executives were communicated to the potential users of the Data Strategy efforts. Although specific funding was not designated in the IRS budget to develop and deliver the immediate efforts of the Data Strategy, the executives were able to obtain funding from the respective organizations that anticipate using the capabilities.

***Obtaining adequate funding for the current Data Strategy efforts has been a challenge for the Data Strategy executives.***

Cost estimates to complete the two major programs in the Data Strategy are significant:

- The Enterprise Data Access Program business case shows more than \$8 million will be needed for Budget Year 2009 and an additional \$8 million will be needed for Budget Year 2010. The IRS plans to complete the Enterprise Data Access Program in Budget Year 2011 with an estimated total cost of \$50 million.
- The Data Strategy Implementation Program business case shows more than \$9 million planned for Budget Year 2009 and more than \$12 million planned for Budget Year 2010. The Data Strategy Implementation Program has an estimated cost of \$130 million to complete over the next 7 years. However, the IRS withdrew the Data Strategy Implementation Program business case, which was prepared to support the entire Program. The IRS revised its approach for this Program and decided instead to prepare business cases for the individual projects. Currently, the IRS is drafting a business case



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for the Enterprise Return Retrieval project, one of the projects within the Data Strategy Implementation Program, for Budget Year 2010. Funding for this Program is awaiting approval.

The goals of the Data Strategy are to provide standardized access mechanisms to authoritative data sources needed for processing tax accounts and IRS compliance activities that rely on these data; eliminate redundant, inconsistent, and outdated data; and provide data design guidance to support the variety of Modernization projects being developed by the IRS. Without a commitment to fully fund and implement the Data Strategy, the IRS will continue to have redundant, inconsistent, and outdated data, making it difficult to provide IRS customers and stakeholders with appropriate service and to efficiently and effectively enforce the nation's tax laws.

### ***Recommendation***

**Recommendation 1:** The Chief Technology Officer should work with IRS senior executives to consider the priority of the Data Strategy effort in relation to the MITS organization's budget and provide the necessary funding so that the Data Strategy can be successfully implemented as an integral component of the Information Technology Modernization Vision and Strategy. The funding method needs to support the development, implementation, and maintenance of the Data Strategy as it facilitates and supports IRS data access.

**Management's Response:** The IRS agreed with the spirit and intent of the recommendation to consider the priority of the Data Strategy effort in relation to the Modernization and Information Technology Services organization budget, but stated that it did not agree to implement the recommendation to fund any one project without considering each year's annual budget. The actions taken to prioritize all information technology demand with IRS senior leadership limits the Chief Technology Officer's ability to direct resources to specific development projects. Priorities for the limited information technology resources are driven through a service-wide priority process. Notwithstanding, it is the IRS' intent over the long term to move to a data-centric organization.

**Office of Audit Comment:** The Data Strategy is cited by the IRS as one of the "four pillars of modernization." We understand IRS management's position that it cannot agree to fund any one project without considering the available budget, but we continue to believe the IRS should place a high enough priority on the Data Strategy that the project is considered for a relevant portion of available funding. Without providing the resources to secure this portion of the foundation, the Modernization effort is weakened, potentially leading the Data Strategy to a partially completed goal.



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## **Quantifying the Benefits of the Data Strategy Will Strengthen the Commitment for Implementation**

The Data Strategy team in the MITS organization has communicated the Data Strategy and the various components to all levels across the IRS. Efforts include meetings with the Deputy Commissioners; Business Systems Planning representatives; Chief Financial Officer, directors, and staff; Data and Other Common Services Executive Steering Committee managers; and Applications Development Division directors. These executives also provide an annual briefing to all of the business operating divisions' Commissioners and Deputy Commissioners.

The IRS has not mandated that all project development staffs coordinate data and application needs with the MITS organization Data Strategy development team. Rather, the Data Strategy team has generally taken a service approach by providing new projects with data and application development input upon request. The complementary approach by the Data Strategy team to release standardized universal data to drive project development is a goal that is envisioned but not yet practiced.

***The Data Strategy team has not attempted to quantify the benefits of the Data Strategy because detailed data maintenance costs were not readily available.***

Defining and sharing the quantifiable benefits of using the Data Strategy would help the various Modernization project teams understand the advantages and necessity of employing the Data Strategy. However, the Data Strategy team stated that it does not currently have cost details quantifying the benefits it expects to provide. For example, estimates of unnecessary costs to maintain duplicate tax account information in the various IRS databases have not been quantified.

The overall benefits of implementing the Data Strategy and eliminating duplicative, inconsistent, and outdated data include reducing:

- Development costs for each project to get its own data.
- Time to deploy the applications and their data.
- Maintenance costs to maintain duplicate data and technologies.
- Burden to secure and protect duplicate data.

The Clinger-Cohen Act of 1996<sup>2</sup> directs executive agency heads to identify quantifiable measurements to determine the net system development investment benefits and risks. Additional guidance in the Control Objectives for Information and related Technology provides

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<sup>2</sup> Pub. L. No. 104-106, 110 Stat. 642 (codified in scattered sections of 5 U.S.C., 5 U.S.C. app., 10 U.S.C., 15 U.S.C., 16 U.S.C., 18 U.S.C., 22 U.S.C., 28 U.S.C., 29 U.S.C., 31 U.S.C., 38 U.S.C., 40 U.S.C., 41 U.S.C., 42 U.S.C., 44 U.S.C., 49 U.S.C., 50 U.S.C.).





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that the information technology function and business stakeholders are responsible for ensuring that optimal value is realized from project and service portfolios. Also, stakeholders should be consulted to identify and control the total costs and benefits within the context of the information technology strategic and tactical plans. This process fosters partnership between information technology and business stakeholders; enables the effective and efficient use of information technology resources; and provides transparency and accountability into the total cost of ownership, the realization of business benefits, and the return on investment of information technology-enabled investments.

Without determining the quantifiable benefits of reducing or eliminating duplicative data within the IRS, the MITS organization cannot appropriately promote and justify the commitment to implement and follow the Data Strategy.

### ***Recommendation***

**Recommendation 2:** The Chief Technology Officer should quantify and communicate the benefits that will be realized from implementing the Data Strategy, to be in a better position to promote the Data Strategy and justify and receive funding through budget requests and MITS organization governance directives.

**Management's Response:** The IRS agreed with this recommendation. The Data Strategy Implementation Program Office will quantify its benefits, including those derived from eliminating redundant storage, using the Modernization Vision and Strategy costing model developed by the Enterprise Data Management Office. This process will only address new Modernization Vision and Strategy projects, as existing and non-Modernization Vision and Strategy projects are not subject to the costing model. For Modernization Vision and Strategy projects that already exist, the Data Strategy Implementation Program Office will quantify and extract the benefits from its budget.

### ***A Method to Include Systems and Data Assets in the Data Strategy Should Be Developed***

The IRS has developed an Information Technology Modernization Vision and Strategy, a 5-year plan that is updated annually and includes descriptions of projects planned for development, but it does not assign a priority for scheduling development and implementation. As of August 2008, the MITS organization had not established criteria to prioritize which IRS systems and data assets should be included in the Data Strategy and a schedule of when the systems and assets will be incorporated into IRS operations. In addition, it had not established criteria to

***By establishing criteria, the MITS organization can effectively prioritize which IRS systems and data assets should be included in the Data Strategy and when to retire systems and data assets no longer needed because of the Data Strategy.***



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prioritize when systems and data assets can be retired when they are no longer needed because of the Data Strategy.

When the Data Strategy was initiated, seven projects were identified for inclusion in the Integrated Production Model portfolio. The MITS organization had determined that these 7 projects used almost 90 percent of the types of taxpayer account data managed throughout the IRS.

Since including the initial seven projects, the Data Strategy team has used an approach of letting the project needs drive the Data Strategy. Also, managers wanted their projects to become part of the Integrated Production Model portfolio as the source of their data because the projects did not have funding to develop specific data sources. Criteria to prioritize and accept projects into the Integrated Production Model portfolio have not yet been developed.

The Data Strategy effort is currently in the process of streamlining data access as part of the Integrated Production Model. The Data Strategy team advised us that when this initial effort is completed, it will have a better understanding of what is involved in adding projects and will be able to develop a method to advance the Data Strategy.

The Clinger-Cohen Act directs executive agency heads to apply criteria when considering whether to undertake a particular investment in information systems, including the net, risk-adjusted return on investment and specific quantitative and qualitative criteria for comparing and prioritizing alternative information systems investment projects. The Control Objectives for Information and related Technology provides that a framework needs to be established and maintained to manage information technology-enabled investment programs and to encompass cost, benefits, prioritization within budget, a formal budgeting process, and management against the budget.

The Department of Defense Net Centric Data Strategy recognized the need to prioritize the ordering of systems and data assets as part of its Data Strategy. The prioritized list of data assets provides a focus for near-term efforts to create and advertise metadata and ensures that the data are available in shared space.

Without a method to prioritize IRS systems and data assets to become part of the Data Strategy, the MITS organization might not sufficiently plan the implementation of the Data Strategy. This could lead to an ineffective and inefficient transition of the Data Strategy. In addition, without a plan for retiring IRS current production environment systems and data assets, the IRS cannot fully realize the benefits of the Data Strategy. These benefits could be shown as a potential cost savings that would further support obtaining funding for the Data Strategy.





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**Recommendation**

**Recommendation 3:** The Chief Technology Officer should develop a method to determine the priority for IRS systems and data assets to begin following the Data Strategy and when systems and data assets can be retired due to the Data Strategy.

**Management's Response:** The IRS agreed with this recommendation. The Data Strategy Implementation Division within the Applications Development Division will analyze IRS systems and data assets to develop a plan for determining a prioritization methodology for these systems and assets to be incorporated into the Data Strategy.



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## **Appendix I**

### *Detailed Objective, Scope, and Methodology*

The overall objective of this review was to determine whether the IRS Data Strategy includes adequate management and internal controls for its program and project plans. To accomplish our objective, we reviewed the two programs that drive the IRS' Data Strategy—the Enterprise Data Access Program and the Data Strategy Implementation Program. In performing our review, we interviewed personnel in the MITS organization Enterprise Services and Applications Development Divisions and in the Small Business/Self-Employed Division working on the Data Strategy. Specifically, we:

- I. Determined whether development and implementation of the Data Strategy included adequate planning and coordination.
  - A. Determined whether the Data Strategy being developed and implemented is meeting the organizational goals and objectives.
    1. Reviewed the Information Technology Modernization Vision and Strategy<sup>1</sup> to determine the intent of the completed Data Strategy.
    2. Reviewed the Exhibit 300 documents for the Enterprise Data Access Program and Data Strategy Implementation Program to determine the planned Data Strategy.
  - B. Determined whether best practices or lessons learned from other IRS projects, government agencies, or private corporations were used to help in the development of the IRS Data Strategy.
  - C. Determined whether the IRS Data Strategy effort included participation and commitment from the MITS organization and the business operating divisions to achieve an integrated Data Strategy.
- II. Determined the adequacy of efforts to develop, share, and maintain the Metadata Repository by reviewing the Metadata Project Plan to determine whether it included adequate details for development of the Metadata Repository.

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<sup>1</sup> See Appendix VI for a glossary of terms.



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- III. Determined whether the Integrated Production Model team followed established project management processes and activities to help ensure successful project development, deployment, and implementation. We determined whether the Integrated Production Model had adequate:
- A. Justification.
  - B. Funding.
  - C. Identification and management of risks.
  - D. Identification and management of requirements.
  - E. Configuration management.
  - F. Project quality and performance tracking and reporting activities.



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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  
Deputy Commissioner for Operations Support OS  
Deputy Commissioner for Services and Enforcement SE  
Chief, Agency-Wide Shared Services OS:A  
Chief Information Officer OS:CIO  
Commissioner, Small Business/Self-Employed Division SE:S  
Associate Chief Information Officer, Applications Development OS:CIO:AD  
Associate Chief Information Officer, Enterprise Services OS:CIO:ES  
Director, Procurement OS:A:P  
Director, Stakeholder Management OS:CIO:SM  
Deputy Associate Chief Information Officer, Applications Development OS:CIO:AD  
Deputy Associate Chief Information Officer, Business Integration OS:CIO:ES:BI  
Deputy Associate Chief Information Officer, Systems Integration OS:CIO:ES:SI  
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    Director, Procurement OS:A:P  
    Director, Program Oversight OS:CIO:SM:PO



## Appendix IV

### *Integrated Production Model Releases*

- **Release 1** was implemented in September 2007 and contained data from the:
  - Business Master File database and repository containing Business Master File entities, tax modules, entity transactions, tax return transactions, and tax return statuses.
  - Business Returns Transaction File, which is a repository of the transcribed portion of the business returns.
  - Combined Annual Wage Reporting file, which is a repository of wage-related documents received from the Social Security Administration.
- **Release 1.1** loaded data from several files and sources in August 2008. These included Business Master File delinquency records, Employee Plans Master File delinquency records, Audit Information Management System data, zip code data, and aggregated Information Returns Master File data.
- **Release 2.0** was cancelled by the IRS and the business customers; the Data and Other Common Services Executive Steering Committee approved this decision. The IRS no longer needs this Release because it is moving all project servers into the MITS organization's operations, which resolved the need to control the servers.
- **Release 3.0** was cancelled by the IRS, and the Tax Exempt and Government Entities Business Systems Planning Officer and the Data and Other Common Services Executive Steering Committee approved this decision. The intent of this Release was to prevent the Tax Exempt and Government Entities Division from having to create a duplicate database.
- **Release 4.0** will add at least two new data sources, including the Individual Master File and the Individual Returns Transaction File. User requirements for this Release have been completed, and the Release is in the logical/physical design stage. Deployment is scheduled for December 2008.
- **Release 5.0** will provide access to additional Individual Master File and Individual Returns Transaction File sources. Deployment is scheduled for December 2009.
- **Release 6.0** will provide access to additional Business Master File and Business Returns Transaction File sources. Deployment is scheduled for December 2010.



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**Appendix V**

*Internal Revenue Service Data Consistency and Efficiency Efforts*

The following are the data consistency and efficiency efforts begun by the IRS since the Modernization Program<sup>1</sup> began in 1999 through Fiscal Year 2008.

<b>Fiscal Year Started</b>	<b>Effort Name</b>	<b>Effort Description</b>	<b>Cost</b>	<b>Current Status of Effort</b>
2001	Enterprise Data Warehouse	An enterprise-wide data warehouse of detailed data and data marts designed to meet predictable strategic and tactical information needs.	\$96.2 million	Was transformed into and renamed the Integrated Production Model in Fiscal Year 2007. See Integrated Production Model description below.
2003	Modernized Data Access	Software providing a single integrated approach for accessing current processing environment data throughout the organization, with key data infrastructure components that all modernization projects could share. This software would eliminate the need for projects to develop their own databases and contend with current processing environment complexities.	\$3 million	Proof-of-concept prototype was completed in June 2003.

<sup>1</sup> See Appendix VI for a glossary of terms.



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<b>Fiscal Year Started</b>	<b>Effort Name</b>	<b>Effort Description</b>	<b>Cost</b>	<b>Current Status of Effort</b>
2003	Treasury Inspector General for Tax Administration Report, <i>Adhering to Established Development Guidelines Will Help to Ensure the Customer Account Data Engine Meets Expectations</i> (Reference Number 2003-20-089, dated March 2003)	We recommended that the IRS ensure the development of job and file naming standards to facilitate project development and limit additional costs on future Customer Account Data Engine releases and other IRS modernization projects. The Chief Information Officer agreed with the recommendation to develop naming standards. Key naming standards were planned to be published and available for use by the current processing and modernization environments by August 1, 2003.	\$35,000	Corrective action completed October 1, 2003.
2005	Submission and Settlement Harvesting Project	An initiative to identify business process redesign opportunities for the submission and settlement aspects of electronic tax return processing, allocate high-level business rules sets to modernized systems such as the Customer Account Data Engine, and identify architectural alternatives such as potential reuse of the current processing environment.	Unknown	Completed December 14, 2005.
2005	Modernized e-File Integration	A project to allow returns electronically filed by large corporations and tax-exempt organizations to be easily accessible to IRS staff and to fulfill the IRS Commissioner's commitment to use these electronic data in compliance operations.	\$1.2 Million	Completed its project capabilities in Fiscal Year 2006. Planned capabilities to view, print, and analyze electronically filed tax returns not delivered.





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<b>Fiscal Year Started</b>	<b>Effort Name</b>	<b>Effort Description</b>	<b>Cost</b>	<b>Current Status of Effort</b>
2006	Extensible Markup Language Relational Database	An initiative that provides customers in the Tax Exempt and Government Entities Division with the electronically filed business returns in a relational format.	\$9.2 million	Became operational in Fiscal Year 2006.
2006	Enterprise Return Retrieval	A project to provide authorized IRS employees with the ability to view and print images of electronically filed returns from their workstations and to provide the Extensible Markup Language raw data for decision analytics and case-processing activities.	\$3.6 million	Transformed from the Modernized e-File Integration in Fiscal Year 2006. In process.
2007	Integrated Production Model	A consolidated database of tax return and account data.	\$17.1 million	Transformed from the Enterprise Data Warehouse in Fiscal Year 2007. In process.
2009	Metadata Repository	Being developed to classify and categorize IRS metadata independent of workflow and organizational boundaries. It will be the authoritative source for information about data.	\$358,000	In process.

*Source: MITS organization Enterprise Data Management and Data Strategy Implementation offices.*



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**Appendix VI**

*Glossary of Terms*

<b>Term</b>	<b>Definition</b>
Account Management Services	A project to modernize the ability to collect, view, retrieve, and manage taxpayer information.
Audit Information Management System	A computer system used by the Small Business/Self-Employed Division Examination Operations function and others to control returns, input assessments/adjustments to the Master File, and provide management reports.
Business Master File	The IRS database that consists of Federal tax-related transactions and accounts for businesses. These include employment taxes, income taxes on businesses, and excise taxes.
Control Objectives for Information and related Technology	A set of best practices (framework) for information technology management created by the Information Systems Audit and Control Association and the Information Technology Governance Institute in 1992. It provides managers, auditors, and information technology users with a set of generally accepted measures, indicators, processes, and best practices to assist them in maximizing the benefits derived through the use of information technology and in developing appropriate information technology governance and control in a company.
Customer Account Data Engine	Consists of databases and related applications that will replace the IRS' official repository of taxpayer information (the Master File) and provide the foundation for managing taxpayer accounts to achieve the IRS modernization vision.
Data Mart	Contains customized and summarized data from the data warehouse and is tailored to support the specific analytical requirements of a business unit or function.
Employee Plans Master File	A file consisting of various types of pension, profit sharing, and tax-sheltered annuity plans.



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Term	Definition
Enterprise Data Architecture	Addresses the key principles that affect the way that projects create and use data. It includes: data storage and management; data modeling, categorization, and relevant subject areas; data access standards and strategies; authoritative data definitions and guidelines; data resources and technologies, including metadata and extensible markup language; and data stewardship.
Enterprise Data Strategy	A strategy to develop integrated data solutions and retire duplicate systems while maintaining the business functionality.
Enterprise Return Retrieval Project	A project intended to provide the abilities to view, print, and analyze electronically filed tax returns.
Executive Steering Committee	Oversees investments, including validating major investment business requirements and ensuring that enabling technologies are defined, developed, and implemented.
Exhibit 300	A Capital Asset Plan and business case required by the Office of Management and Budget.
Extensible Markup Language	The universal format for structured documents and data on the Internet.
Individual Master File	The IRS database that maintains transactions or records of individual tax accounts.
Individual Returns Transaction File	Contains fields currently transcribed from U.S. Individual Income Tax Return (Form 1040 and Form 1040A) or Income Tax Return for Single and Joint Filers With No Dependents (Form 1040EZ), and their accompanying forms and schedules. The information is obtained from the tax return as originally filed by the taxpayer, but can reflect math error corrections. The information is not updated to reflect amended returns or subsequent adjustments.
Information Returns Master File	A master file of current tax year information returns and access to 6 prior years.



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Term	Definition
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. It is the basic, fundamental architecture of any system (electronic, mechanical, social, political, etc.) that determines how it functions and how flexible it is to meet future requirements.
Integrated Production Model	A consolidated source of core taxpayer data (e.g., tax account, tax return, and third-party data) and business application data to be used by a wide range of business applications to support case identification, selection, prioritization, and delivery.
Metadata Repository	The authoritative source for information about data. It serves as a centralized hub for accessing metadata across the enterprise, providing a consistent and complete view.
Modernization Program	A program, which began in 1999, that is a complex effort to modernize the IRS technology and related business processes.
Modernized e-File	A project that develops the modernized, web-based platform for filing approximately 330 IRS forms electronically, beginning with the U.S. Corporation Income Tax Return (Form 1120), U.S. Income Tax Return for an S Corporation (Form 1120S), and Return of Organization Exempt From Income Tax (Form 990). The project serves to streamline filing processes and reduce the costs associated with a paper-based process.
Net Centric	The realization of a networked environment.
Relational Database	A database that captures data using common attributes found in the data set.
Release	A specific edition of software.



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<b>Term</b>	<b>Definition</b>
Tax Gap	The estimated difference between the amount of tax that taxpayers should pay and the amount that is paid voluntarily and on time.



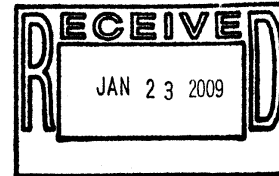
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**Appendix VII**

*Management's Response to the Draft Report*



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



January 23, 2009

MEMORANDUM FOR DEPUTY INSPECTOR GENERAL FOR AUDIT

FROM:

Terence V. Milholland  
Chief Technology Officer

*Terence V. Milholland*

SUBJECT:

Draft Audit Report – Implementing the Data Strategy Will Make System and Application Development More Efficient and Effective (Audit #200820007) (i-trak #2009-48923)

Thank you for the opportunity to review your draft audit report and to meet with the audit team to discuss earlier draft report observations.

We appreciate your comments and observations that acknowledge the Modernization and Information Technology Services organization's plans for Data Strategy not only address the goals of the Modernization Vision and Strategy, but are progressing to meet those goals. We also acknowledge and appreciate the audit team's advice on ways to further improve the process.

We agree with two of the three recommendations made as a result of your audit and the attachment to this memo details our planned actions to implement them. While we agree that our Data Strategy effort is important, and appreciate the spirit and intent of your recommendation, we cannot agree to commit funding from future budgets to any one project. Prioritizing all information technology demand against our limited resources is a service-wide effort involving senior leadership from across the Internal Revenue Service. Therefore, the Chief Technology Officer's ability to direct resources to specific development projects is limited. While we agree to continue consideration of the Data Strategy effort within the budget process, we cannot agree to guarantee funding at any level without considering other priorities. Notwithstanding, it is our intent over the long term to move the Internal Revenue Service to a data-centric organization.

We value your continued support and the guidance your team provides. If you have any questions, please contact me at (202) 622-6800 or Perry Robinett, Director of Program Oversight, at (202) 283-6283.

Attachment



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*Implementing the Data Strategy Will Make System and Application Development More Efficient and Effective*

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Attachment

Draft Audit Report – Implementing the Data Strategy Will Make System and Application Development More Efficient and Effective (Audit #20082007) (i-trak #2009-48923)

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**RECOMMENDATION #1:** The Chief Technology Officer should work with Internal Revenue Service senior executives to consider the priority of the Data Strategy effort in relation to the Modernization and Information Technology Services' budget, and provide the necessary funding so that the Data Strategy can be successfully implemented as an integral component of the Modernization Vision and Strategy. The funding method needs to support the development, implementation and maintenance of the Data Strategy as it facilitates and supports Internal Revenue Service data access.

**CORRECTIVE ACTION #1:** While we agree with the spirit and intent of the recommendation to consider the priority of the Data Strategy effort in relation to the Modernization and Information Technology Services budget, we cannot agree to fund any one project without considering each year's annual budget. The actions taken to prioritize all information technology demand with Internal Revenue Service senior leadership limits the Chief Technology Officer's ability to direct resources to specific development projects. Priorities for the limited information technology resources are driven through a service-wide priority process. Notwithstanding, it is our intent over the long term to move the Internal Revenue Service to a data-centric organization.

**IMPLEMENTATION DATE:** Not Applicable

**RESPONSIBLE OFFICIAL:** Not Applicable

**CORRECTIVE ACTION MONITORING PLAN:** Not Applicable

**RECOMMENDATION #2:** The Chief Technology Officer should quantify and communicate the benefits that will be realized from implementing the Data Strategy to be in a better position to promote the Data Strategy and justify and receive funding through budget requests and Modernization and Information Technology Services' governance directives.

**CORRECTIVE ACTION #2:** We agree with this recommendation. The Data Strategy Implementation Program Office will quantify our benefits, including those derived from eliminating redundant storage, using the Modernization Vision and Strategy costing model developed by the Enterprise Data Management Office. This process will only address new Modernization Vision and Strategy projects, as existing and non Modernization Vision and Strategy projects are not subject to the costing model. For Modernization Vision and Strategy projects that already exist, we will quantify and extract the benefits from their budget.

**IMPLEMENTATION DATE:** July 15, 2009

**RESPONSIBLE OFFICIAL:** Director, Data Strategy Implementation Program Office, Small Business/Self Employed

**CORRECTIVE ACTION MONITORING PLAN:** The Director, Data Strategy Implementation Program Office, Small Business/Self Employed will advise the Modernization and Information Technology Services organization of any delays in implementing this corrective action.



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*Implementing the Data Strategy Will Make System and Application Development More Efficient and Effective*

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Attachment

Draft Audit Report – Implementing the Data Strategy Will Make System and Application Development More Efficient and Effective (Audit #20082007) (i-trak #2009-48923)

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**RECOMMENDATION #3:** The Chief Technology Officer should develop a method to determine the priority for Internal Revenue Service systems and data assets to begin following the Data Strategy and when systems and data assets can be retired due to the Data Strategy.

**CORRECTIVE ACTION #3:** We agree with this recommendation. The Data Strategy Implementation Division within Applications Development will analyze Internal Revenue Service systems and data assets to develop a plan for determining a prioritization methodology for these systems and assets to be incorporated into the Data Strategy.

**IMPLEMENTATION DATE:** September 1, 2009

**RESPONSIBLE OFFICIAL:** Associate Chief Information Officer, Applications Development

**CORRECTIVE ACTION MONITORING PLAN:** We enter accepted Corrective Actions into the Joint Audit Management Enterprise System and monitor them on a monthly basis until completion.