



U.S. Department of Energy
Office of Inspector General
Office of Audit Services

Audit Report

The Department's Efforts to Implement
Common Information Technology
Services at Headquarters




Department of Energy

Washington, DC 20585

March 30, 2007

MEMORANDUM FOR THE SECRETARY

FROM:


Gregory H. Friedman
Inspector General

SUBJECT:

INFORMATION: Audit Report on "The Department's Efforts to Implement Common Information Technology Services at Headquarters"

BACKGROUND

The Department of Energy invested more than \$980 million on consolidated infrastructure, office automation, and telecommunications in Fiscal Year (FY) 2006. In an effort to increase efficiency and purchasing power and reduce overall expenditures, the Department launched an initiative in FY 2003 to consolidate all aspects of common information technology (IT) systems including: computer desktop support, application hosting, and equipment distribution services that had previously been managed separately by various Headquarters organizations. The initiative, originally known as the Extended Common Integrated Technology Environment, is now known as the Department of Energy's Common Operating Environment (DOE-COE).

DOE-COE was based largely on a Secretarial initiative to implement a single, integrated IT infrastructure across the Department. In the first phase of that effort, the Chief Information Officer was tasked with consolidating information technology services and providing standard desktop, e-mail, and related services at Headquarters. Because of the importance of the project to improving the economy and efficiency of the information technology environment, we conducted this audit to determine whether the DOE-COE initiative was meeting planned goals and objectives.

RESULTS OF AUDIT

Although the Department had made progress in implementing DOE-COE at Headquarters, it had not fully achieved the goals and objectives envisioned by the original initiative. In particular, we observed that:

- Five major organizations, accounting for 40 percent (2,473 of 6,199) of the total potential user population, were not migrated to the common operating environment within the first year as planned, thereby preventing realization of the full \$15 million of first year savings through expected economies of scale; and,
- For certain organizations in which implementation was completed, services were not disabled for terminated employees in a timely manner, resulting in the payment of over \$700,000 in unnecessary user fees and creating potential cyber security vulnerabilities.



These problems occurred because officials responsible for implementation did not always follow Department and Federal project management practices, such as developing formal migration plans and conducting requirements analyses. In addition, procedures relating to user account termination were not adequate. As a consequence, the Department was unable to complete the Headquarters conversion within established timeframes and is unlikely to realize originally anticipated cost savings.

To its credit, the Office of the Chief Information Officer (OCIO) has accomplished some of the project's goals. For example, 23 of 28 Headquarters organizations – representing 60 percent of the potential users – had been migrated within 12 months of implementation. IT hardware was also procured at a lower price than that of the General Services Administration's Supply Schedule and standardization of a number of platforms and applications had taken place. While these are positive steps, additional action is necessary to ensure that all consolidation objectives are satisfied. As such, we have made recommendations designed to help improve the continuing implementation and operation of the DOE-COE initiative.

Although the scope of our review was limited to Headquarters, resolving the issues identified in our report may be critical to the success of the Department's planned extension of the common operating environment to field activities. That effort, according to an OCIO official, is scheduled to be completed 18 months from the date that a support service contractor is selected and will involve Federal systems at most of the Department's sites. Given that this contracting process is underway, the Department needs to ensure that all implementation issues are understood and resolved prior to proceeding.

MANAGEMENT REACTION

The OCIO provided comments to the draft and concurred with the report's findings and recommendations. They indicated that steps had been taken relative to our recommendations and that envisioned economies of scale from these efforts are beginning to be realized. Management also indicated that emphasis is being placed on disabling and closing accounts in a timely manner and on ensuring that program organizations understand the implications of not doing so.

Management's comments are included in their entirety in Appendix 3.

Attachment

cc: Deputy Secretary
Acting Administrator, National Nuclear Security Administration
Under Secretary for Science
Acting Under Secretary of Energy
Chief of Staff
Chief Information Officer

**REPORT ON THE DEPARTMENT'S EFFORTS TO IMPLEMENT
COMMON INFORMATION TECHNOLOGY SERVICES AT
HEADQUARTERS**

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CONSOLIDATION OF INFORMATION TECHNOLOGY SERVICES

Goals and Objectives

While the Department of Energy (Department) had made progress toward implementing the initiative at Headquarters, it had not fully satisfied several significant goals and objectives. Specifically, the Department had not migrated the National Nuclear Security Administration (NNSA) and four other major organizations within established timeframes. We also noted that the Department of Energy's Common Operating Environment (DOE-COE) services were not always being terminated for departing employees in a timely fashion.

Migration of Headquarters Organizations

The Office of the Chief Information Officer (OCIO) did not meet its goal of migrating all Headquarters organizations to DOE-COE within the first year. As originally conceived, DOE-COE services were to have been fully implemented at Headquarters within 12 months of project inception – October 2003. However, as of September 2006, the OCIO had been unable to fully complete the migration of NNSA, and the Offices of Science (Science), Civilian Radioactive Waste Management (OCRWM), and Energy Efficiency and Renewable Energy (Energy Efficiency). According to an OCIO official, these remaining organizations, for which implementation remained incomplete, represented about 34 percent (2,123 of 6,199 users) of the total potential population at Headquarters.

Despite the Deputy Secretary reaffirming his commitment to the DOE-COE initiative and requiring the implementation of a single integrated information technology (IT) environment, several organizations resisted participation in the initiative. The original concept of the initiative, to facilitate savings through consolidation, called for each participating organization to provide previously allocated IT funding to the OCIO in return for delivery of needed services. However, certain organizations were reluctant to participate, citing concerns about the cost and quality of services provided versus providing those services themselves. In particular:

- A Science official indicated that his program could provide IT services cheaper and at a greater level of satisfaction than the OCIO. Based on that belief, the Director, Office of Science, attempted to retain separate IT support services for his office rather than migrate. Even though the request was

disapproved, Science has yet to agree to a migration plan. At the conclusion of our field work, we noted that the OCIO had developed and provided Science with a proposed migration plan; however, while negotiations are currently on-going, Science has not yet accepted this plan.

- NNSA was also reluctant to migrate to DOE-COE. Even though cyber security protections were sufficient to satisfy 23 of 28 organizations and the costs of migrating individual users at Headquarters was well known, an NNSA official indicated that they would not agree to implementation until its security concerns were addressed and until NNSA knew what the services would cost – including the costs to support their field offices. During our discussions with OCIO officials, we learned NNSA accepted a plan and completed migration of its Headquarters personnel by the end of January 2007.

The migrations of the remaining two organizations had also been significantly delayed. OCRWM and Energy Efficiency had originally been scheduled – as the other organizations – to be migrated within the first 12 months of project inception. However, migration plans for these organizations were not even developed until July 2006. The plan of action and milestones for OCRWM called for full migration by mid-August 2006. This target date was later moved to the end of November 2006, then to December, but by the end of January 2007, OCRWM's migration was not fully complete. While a specific date had not been set by the OCIO for migration of Energy Efficiency, it is projected to occur sometime in Fiscal Year 2007.

User Account Management

User accounts and DOE-COE services were not always suspended for terminated employees in a timely manner. Our analysis revealed that, as of May 2006, 165 former Federal and contractor employees still had active user accounts even though their association with the Department had ended. The chart below summarizes the number of accounts open following the employees' departure from the Department.

Months Outstanding	Number of Accounts	Cost of Accounts
≤ 2	8	4,500
3 to 6	27	36,600
7 to 10	20	51,300
11 to 16	10	42,000
17 to 20	78	414,900
21 to 26	16	106,200
27 to 32	6	51,000
Total	165	\$706,500

Since Department organizations are obligated to pay for DOE-COE services of active accounts at the rate of \$300 per month, over \$700,000 was unnecessarily incurred for these users. Presumably, users with active accounts also could have been able to access the Department's systems, obtain data to which they were not entitled, and, as trusted users, introduce malicious programs such as viruses or trojans. Once notified of the results of our testing, management initiated action to disable the unneeded accounts.

Implementation and Operating Practices

Project implementation and operation issues existed, at least in part, because officials had not always adhered to Department and Federal project management practices when implementing the initiative. In addition, adequate user account termination procedures had not been developed.

Project Management Practices

Efforts to complete migrations to the common operating environment within the initiative's first year of operation were not completed because the OCIO officials had not always followed Departmental and Federal project management practices. Specifically, formal migration plans were not always developed prior to the beginning of project implementation – in some cases migrations plans were not developed until three years after migration had begun – and organizational and functional requirement analyses were not always conducted as required. As outlined in Departmental guidance, plans such as these are essential to guiding project execution and achieving initiative goals. Until recently, formal migration plans for some individual organizations had not been prepared. Migration plans should have contained details on work

scope and projections regarding resources and schedules. While migration plans for Science, NNSA, Energy Efficiency, and OCRWM have now been developed, not all of them have been fully implemented. For example, as noted earlier, a proposed migration plan for Science was developed by the OCIO and presented in January 2007, but Science has yet to agree to implementation. Negotiations between the Science and the OCIO are ongoing.

Organizational and functional requirements analyses, required by DOE Order 413.3, also were not conducted prior to the implementation of the initiative. These analyses could have identified organization specific issues and problems in advance and could have allowed for individual tailoring of migration plans. For example, had such an analysis been completed for NNSA, their stated concerns might have been addressed prior to the Departments transition to DOE-COE. Instead, these concerns did not surface until the initiative was well underway.

Another factor that may have affected the willingness of organizations to migrate their systems within the originally prescribed window was the lack of a complete systems lifecycle cost benefit analysis. At the inception of the project, the OCIO only provided an estimated cost savings for the first year of the initiative, and did not estimate savings that the initiative was expected to realize over its lifecycle. A cost benefit analysis, required by documentation supporting DOE Order 200.1, would have assisted organizations in understanding the benefits of accepting the initiative, helped during budget planning and execution, and may have ensured a timely migration to the common operating environment.

Account Termination Procedures

Services for departing employees and contractors were not always terminated in a timely manner because employee departure procedures were either not effective or did not exist. While procedures required that program officials notify the OCIO of an employee's departure, an additional control to ensure that notification was made – linking the notification to the employee departure clearance or checkout process – was not always effective in the case of Federal employees and did not exist for contractors. Even though the Office of Human Capital Management

developed a checklist requiring the OCIO to be notified of an employee's departure, specifically in the area of account access, accounts for 44 Federal employees were not terminated as required. As is evident by the number of contractor accounts that had not been disabled as required – 121 or about 73 percent of the total active accounts we discovered – a formal checkout process was not in place for contractors. An OCIO official indicated that user accounts were normally kept open for 60 days – a potentially risky practice not outlined in current procedures.

Use of Resources

Because of implementation delays, the Department did not realize the anticipated savings of \$15 million in the first year of DOE-COE and has not actively tracked program savings in subsequent years. Without full migration, the Department will continue to miss opportunities for cost savings. The Department's organizations also incurred unnecessary costs of about \$700,000 over the last two years for active, but unneeded user accounts. Absent improvements in procedures, the Department could incur similar costs in the future from failing to terminate user accounts in a timely manner. Additionally, user account terminations are directly related to how IT assets are retrieved by the OCIO. Failure to retrieve IT assets in a timely manner could result in equipment not being available for re-distribution to new users. Furthermore, as previously noted, the existence of the user accounts in question could pose a cyber security risk to the Department by allowing unauthorized access to and use of information resources.

Follow-on Efforts

The Department has announced that it plans to extend its common operating environment to field activities. This effort will involve providing services similar to those deployed under the DOE-COE initiative to Federal personnel at most of the Department's sites. This phase of the effort is scheduled to be completed 18 months after the selection of a support contractor. Although the scope of our review was limited to Headquarters, the issues we identified are relevant to the upcoming effort and may be critical to a successful and timely deployment. Given the scope of this ambitious effort, the Department needs to ensure that all DOE-COE implementation issues are understood and resolved before proceeding.

RECOMMENDATIONS

To address issues with DOE-COE implementation, we recommend that the OCIO, in conjunction with responsible NNSA and other program officials:

1. Complete the Headquarters migration to DOE-COE. To facilitate this effort, ensure that:
 - a. Migration plans are completed; and,
 - b. Requirements analyses are conducted.
2. Prior to extending the initiative to the field, ensure that:
 - a. Formal migration plans are developed;
 - b. Functional requirements analyses are conducted; and,
 - c. Cost benefit analyses are performed.
3. Revise account management procedures to ensure account termination in a timely manner.

MANAGEMENT REACTION

Management concurred with our findings and recommendations and indicated that proactive steps had been taken, or are planned relative to our recommendations. Specifically, in their response to a draft of this report and in subsequent technical comments, the OCIO acknowledged the need to complete migration plans and conduct a comprehensive requirements analysis in order to facilitate the conversion of the remaining organizations.

The OCIO added that 80 percent of the user population has now migrated to the Common Operating Environment. A plan for EE is expected to be completed by June 2007, with migration December 2007. The final office, Science, will be migrated as soon as Science management agrees to do so. In addition, the OCIO committed to developing formal migration plans, requirement analyses, and cost benefit analyses prior to extending this initiative to the Department's field locations. Finally, the OCIO indicated that actions had been recently taken to remove user account access in a timely manner through the establishment of additional policy, improvement of existing procedures, and/or frequent verification and validation of user account access.

Related to the unnecessary user costs, the OCIO noted that these charges may have occurred because responsible officials did not always notify them of employee departures or because inactive workstations might have been transitioned into "offices of convenience" within that organization.

**AUDITOR
COMMENTS**

Management's comments, including corrective actions taken and planned, are responsive to our recommendations.

Management's comments to the draft report are included in their entirety as Appendix 3.

Appendix 1

OBJECTIVE	To determine whether the Department of Energy's (Department) Common Operating Environment (DOE-COE) initiative was being effectively managed and was meeting Department goals and objectives.
SCOPE	This audit was performed between December 2005 and January 2007 at Departmental Headquarters in Washington, DC, and Germantown, MD.
METHODOLOGY	<p>To accomplish our audit objective, we:</p> <ul style="list-style-type: none">• Reviewed applicable laws and regulations pertaining to development of the DOE-COE initiative. We also reviewed guidance issued by the Office of Management and Budget;• Reviewed reports issued by the Office of Inspector General and by the Government Accountability Office;• Reviewed numerous documents related to the Department's DOE-COE initiative;• Held discussions with organizational officials and personnel from Department of Energy Headquarters, including representatives from the Offices of the Chief Information Officer, Science, Environmental Management, Fossil Energy, Energy Efficiency and Renewable Energy, Counterintelligence, Intelligence, Civilian Radioactive Waste Management, Legacy Management, Hearings and Appeals, General Counsel, Environment, Safety and Health, Economic Impact and Diversity, Board of Contract Appeals, Inspector General, and the National Nuclear Security Administration, the Energy Information Administration, and the Departmental Representative to the Defense Nuclear Facilities Safety Board; and,• Reviewed the Government Performance and Results Act of 1993 to determine if performance measures had been established for managing and developing the initiative.

The audit was conducted in accordance with generally accepted Government auditing standards for performance audits and included a test of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Accordingly, we assessed internal controls regarding implementation of the DOE-COE initiative, management of the Application Hosting Environment, user account termination, customer service, and asset management. However, the audit report does not necessarily disclose all internal control deficiencies that may have existed at the time of our audit. While we did not rely solely on computer-processed data to satisfy our audit objective, we confirmed the validity of such data, when appropriate, by reviewing supporting source documents such as user lists, payment remittances, and invoices.

An exit conference was held on March 27, 2007, with officials from the Office of the Chief Information Officer.

PRIOR REPORTS

- *Information Technology Support Services at the Department of Energy's Operating Contractors*, (DOE/IG-0725, April 2006). The audit report found that while the Department of Energy (Department) had initiated action to consolidate requirements for services provided to Federal employees, it continues to face a number of challenges related to contractor procured or furnished information technology (IT) support services. The report states that although the Department had initiated action to consolidate Federal IT support services by implementing its Extended Common Integrated Technology Environment Program, it had not established a comprehensive framework which would provide a corporate-wide approach to providing IT support services that included contractor-managed sites. Without such a framework, the Department did not require contractors to adopt other available methods for reducing costs such as coordinating with established consortium buying groups to consolidate demand and obtain volume discounts. Consequently, the Department lacked an effective means of managing and controlling contractor IT support services costs. The report concluded that there is a potential for significant cost savings at the Department's numerous contractor-managed sites through better management and control of IT support services.
- *Management of the Department's Desktop Computer Software Enterprise License Agreements*, (DOE/IG-0718, January 2006). The audit found that the Department had not adequately managed the acquisition and maintenance of desktop computer software licenses. The report states that the Department spent more than \$4 million more than necessary over the last five years to acquire and maintain desktop software. In particular, the report found that enterprise agreements for common products such as security and antivirus software had not been established. According to the report, the Department had not established a complex-wide desktop software acquisition and maintenance strategy.
- *Development and Implementation of the Department's Enterprise Architecture*, (DOE/IG-0686, April 2005). This audit found that the Department had not fully defined its current or future information technology requirements, essential elements if architecture is to be an effective tool in managing information technology investments. In particular, the Department had not defined the roles, responsibilities, and authorities necessary to develop and implement a Department-wide architecture. Further, the Department did not have a formal program plan that established the scope, schedule, and cost of the development effort; nor, had it established performance goals to measure progress toward the development of architecture. Consequently, since 1998, Office of Inspector General reports have shown that the lack of an enterprise architecture contributed to more than \$155 million in lost opportunities for information technology-related savings.

Appendix 2 (continued)

- *Information Technology Support Services Contracts*, (DOE/IG-0516, August 2001). The audit found that the Department did not have a comprehensive framework for acquiring IT support services. Therefore, the Department was not effectively managing the acquisition of IT support services. For example, Headquarters and field elements did not consolidate requirements and routinely resorted to open-market procurements without formally considering the use of existing Federal contracts. Despite requirements in the Clinger-Cohen Act, the Department had not developed and implemented a framework for acquiring IT support services in an efficient and cost-effective manner. If the Department adopted an enterprise-wide approach to acquiring IT support services, significant savings, as much as \$44 million over a three year period, may be possible.
- *Corporate and Stand-Alone Information Systems Development*, (DOE/IG-0485, September 2000). The audit found that duplicative and/or redundant computer systems exist or are under development at virtually all organizational levels, corporate and Federal, within the Department. The Department had not fully developed and implemented an application software investment strategy designed to reduce or eliminate duplicative systems. As a result, the Department spent at least \$38 million developing duplicative information systems.
- *Commercial Off-the-Shelf Software Acquisition Framework*, (DOE/IG-0463, March 2000). The Department had not developed and implemented software standards or effectively used enterprise-wide contracts, key components of a Commercial Off-the Shelf acquisition framework. Therefore, departmental offices acquired application and operating system software that varied in type and price and duplicated procurement efforts by awarding and managing multiple contracts for the same product. The Department's inability to establish a framework was due to its decentralized information technology strategy and a lack of organizational support. The Department has not taken advantage of enterprise-wide software contracts that could result in savings of about \$38 million over five years for just one of its major desktop software suites. The audit also found that the use of enterprise-wide contracts for other required applications could also significantly increase savings.



Department of Energy
Washington, DC 20585

March 9, 2007

MEMORANDUM FOR RICKEY R. HASS
ASSISTANT INSPECTOR GENERAL FOR
FINANCIAL, TECHNICAL, AND CORPORATE
AUDITS

FROM: THOMAS N. PYKE, JR. 
CHIEF INFORMATION OFFICER

SUBJECT: Comments on the Draft Report on "Implementation of the
Department of Energy's Common Operating
Environment," IG-34 (A06TG018)

Thank you for the opportunity to review and comment on the Draft Report on *Implementation of the Department of Energy's Common Operating Environment* dated February 8, 2007. The Office of the Chief Information Officer (OCIO) concurs with the report's conclusions and recommendations.

We have made substantial progress rolling out the DOE Common Operating Environment (DOECO) during the last year, and we believe that the envisioned economies of scale are beginning to be realized while customer service continues at a high level. Over 80% of planned DOE Headquarters users are now migrated to DOECO (4783 of 5849 users), including the National Nuclear Security Administration. Migration in the field will occur as indicated by our continuing planning processes, which is governed by analyses of potential cost avoidance and other factors for each location.

Also, accounts are being disabled for terminated employees and contractors in a timely manner, and our staff is working with program offices to ensure that DOECO staff are notified quickly when accounts are no longer needed. Multiple sources of available information are being used to disable access for employees and contractors who leave DOE. We will continue to honor requests by program offices to keep user accounts open after individuals may have left the Department to ensure continuity of programs. In those cases, the terminated employees no longer have access to the accounts, and we continue to remind the program offices that they are paying service charges to keep the accounts open. We encourage program offices to notify DOECO staff promptly when the accounts and the associated equipment are no longer needed.



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