AUDIT REPORT

Implementation of the Enterprise Resource Planning Financial System

Number A-03-07

March 31, 2004

SUMMARY

The Office of the Inspector General audited project management controls over the implementation of the Enterprise Resource Planning (ERP) financial system. Our purpose was to evaluate the planning, controls over, and implementation of the ERP financial system.

The ERP financial system project has experienced significant schedule and cost overruns. The Institution planned to implement nine ERP financial modules in two phases: The first phase included three modules and was scheduled to be implemented by October 2002 at a cost of $6.2 million. The second phase included six modules and was scheduled to be implemented by October 2003 at a cost of $10 million. Instead of accomplishing these project management goals on schedule and within budget, the Institution implemented the first three modules at a cost of $18.6 million.

Several circumstances contributed to the system not being implemented on schedule or within budget including the following:

- Insufficient staff to fully support the project
- Lack of budgetary control
- Lack of experience in implementing the software
- Weak project management controls

The schedule and cost overruns will require the Institution to obtain either additional funding to complete the remaining modules or to accept fewer financial modules than planned, thereby diminishing the accounting, financial, and reporting benefits of the ERP.

In addition, current ERP financial management reports do not meet internal or external management needs. A fundamental misunderstanding between the Office of the Chief Financial Officer, the Office of the Chief Information Officer, and the units of how reporting and operational training needs would be met resulted in the system not meeting user needs. Furthermore, Institution staff was frustrated, and confidence in the system deteriorated significantly.

Finally, the current ERP contract changed from a fixed-price contract to a cost-reimbursement contract. This change increased the Institution's risk of project cost overruns since the responsibility to control costs shifted from the contractor to the Institution. In addition, many tasks under the cost contract could be separated into different contracts that could be individually monitored to minimize costs.

Therefore, we made the following recommendations to improve controls over the remainder of the ERP implementation project.

We recommended that the Chief Financial Officer request the realignment of budgetary resources from the Office of the Chief Information Officer to the Office of the Chief Financial Officer to assist in the remaining financial modules and establish the ERP financial system implementation as a cost center or project in order to accumulate and track project costs for management and asset capitalization purposes.

We recommended that the Chief Information Officer coordinate with the Chief Financial Officer to establish a formal process to track and resolve implementation quality control issues and recommendations; comply with the Smithsonian Institution's life cycle management policy by establishing implementation controls to formalize the requirements approval and acceptance process; and obtain a status assessment of all current ERP-defined financial needs, including training and reporting, and prioritize them to meet Institution needs.

Also, we recommended that the Chief Information Officer coordinate with the Director of the Office of Contracting to review and assess the current contract oversight and type and determine if a different contract structure is necessary to adequately support the development and implementation of the remaining modules of the ERP.

The Chief Financial Officer and the Chief Information Officer concurred with our recommendations and provided implementation plans. We believe that these implementation plans are responsive to our recommendations.

Although management concurred with the recommendations, they disagreed with some aspects of the report. They claimed that the financial system was in an operational maintenance mode and disagreed with our conclusion that development and integration were being performed simultaneously during fiscal year 2003. They also disagreed with our financial analysis and with our conclusion that Office of Management and Budget and congressional reports were inaccurate concerning amounts spent on implementation and development. In addition, they disagreed with our conclusion that there was no significant decrease in implementation and development spending during the fiscal year 2003 continuing resolution period. They claimed a 25-percent reduction during the continuing resolution period from November 2002 through March 2003.

We believe that the system development team continued to perform implementation and development work during fiscal year 2003, based on the contract integrator's reports that showed continued work involving new and unfilled requirements such as data conversion, purchase order and payment processes, and incomplete Treasury and user reporting requirements. Also, we believe that our financial analysis clearly and correctly depicts the appropriations and expenditures. Finally, we stand by our analysis and conclusion that there was no significant decrease in costs as was reported to the Congress and the Office of Management and Budget. Our analysis identified an 8-percent decrease in costs from October 2002 through February 2003, the period of the fiscal year 2003 continuing resolution.

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ABBREVIATIONS AND ACRONYMS

ERP	Enterprise Resource Planning
OCFO	Office of the Chief Financial Officer
OCIO	Office of the Chief Information Officer
SD	Smithsonian Directive

INTRODUCTION

A. Purpose

Our purpose was to evaluate the planning, controls over, and implementation of the ERP financial system.

B. Scope and Methodology

The audit scope covered the ERP financial system implementation and was conducted from April 16, 2003, to December 24, 2003, in accordance with generally accepted government auditing standards. The audit methodology consisted of the following:

- Identifying and reviewing applicable Institution policies and procedures related to the system development life cycle and project management
- Evaluating project planning and budgetary and schedule controls

As part of our review, we conducted interviews with staff from the Office of the Chief Financial Officer (OCFO); the Office of the Chief Information Officer (OCIO); the Office of the Treasurer; the Office of Sponsored Projects; and staff representing the Deputy Secretary and Chief Operating Officer, the Under Secretary for Science, and the Under Secretary for Art. Through interviews, we gained an understanding of the processes used to plan and monitor the ERP financial system project.

C. Background

The Institution is in the midst of replacing and modernizing its financial and human resources management systems. The initial focus was on replacing the fragile and unreliable Smithsonian Financial System by October 1, 2002, with an ERP, a modern commercial financial management software product. The Smithsonian Financial System was technologically obsolete and has not been vendor-supported since 1997.

An ERP Team has been established to manage the financial system implementation and is composed of representatives of the OCFO, OCIO, and working groups representing Smithsonian staff and the implementation contractor. Ensuring financial requirements are identified and that the system is useful, as well as overseeing the overall project, is the responsibility of the sponsor, the OCFO. Budgeting, technical implementation of the sponsor financial requirements and oversight of the contractor is the responsibility of the OCIO.

The ERP Team planned to implement the financial system in two phases budgeted at $16.2 million.[1]

- Phase I: financial modules including General Ledger, Accounts Payable and Purchasing were to be deployed by October 2002 and were budgeted at $6.2 million for 2001 and 2002.
- Phase II: financial modules including Procurement, Projects, Budget, Grants, Accounts Receivable, and Asset Management were to be deployed by October 2003 and were budgeted at $10 million for 2002 and 2003.

[1] The May 2001 System Boundary Document for the Enterprise Resource Planning System contains the Phase I and Phase II deployment schedule. The budgeted amount for Phase I and II are from the annual Office of Management and Budget appropriation submissions.

The mission of the ERP financial system is to help the Chief Financial Officer and Smithsonian Institution management at all levels manage financial information successfully. This information will be used by managers throughout the Institution for proactive decision-making to support investment decisions and core financial activities that include:

- Budget formulation, justification, execution, and financial accounting
- Preparation of financial statements and reports, payroll, purchasing, and asset management

The goals of the Smithsonian ERP system are to:

- Eliminate individual unit financial systems (known as cuff records)
- Streamline labor-intensive processes and improve the quality, timeliness, and accuracy of financial data
- Provide real-time financial and human resources management reporting

Smithsonian ERP project success is contingent on meeting the following critical success factors, as defined in the May 2001 Smithsonian Institution *System Boundary Document*:

- Business Process: Adapting Smithsonian processes to the ERP software product to streamline business processes and assure speedy, cost-effective implementation.
- Funding: Adequately funding the project to support production and enhancements.
- Usefulness: Implementing an ERP system that serves the needs of all users from the lowest unit financial manager to the Secretary.
- Training: Providing training and support to staff administering and using the ERP system, and providing administrative workforce training in moving from paper processing to electronic processing.

RESULTS OF AUDIT

A. Financial System Implementation Budget and Schedule

The ERP financial system has not been fully implemented within budget or on schedule. The Institution budgeted approximately $16.2 million to implement nine financial modules by October 2003. As of November 2003, approximately $18.6 million has been spent, with only three of the nine modules implemented. The actual completion is now estimated to be December 2005 for the remaining six financial modules. Several circumstances contributed to the system not being implemented within budget or on schedule. These circumstances include:

- Insufficient staff resources to fully support the project
- Lack of budget control
- Contractor's lack of experience in implementing the latest ERP version
- Weak implementation system controls

The ERP project cost overrun and schedule slippage will require the Institution either to obtain additional funding to complete the remaining modules or to accept fewer financial modules than planned, thereby not realizing the full accounting, financial, and reporting benefits of the new system.

Background

Smithsonian Directive (SD) 115, *Management Control*, revised July 23, 1996, lists standards that apply to Institution units. In particular, the directive requires managers to take systematic and proactive actions to develop and implement appropriate, cost-effective management controls to ensure that assets are safeguarded against waste, loss, and misappropriation.

SD 920, *Life Cycle Management*, August 5, 2002, requires that certain steps in the design, development, and implementation of a system be logically and sequentially planned. There are six defined implementation steps:

1. Initiation
2. Concept and requirements definition
3. Detailed analysis and design
4. Development and testing
5. Deployment
6. Operations

SD 920 specifies that end-users should participate early in life cycle activities in order to validate financial requirements. In other words, those who will be using the system should be consulted early on to make sure that the system will meet their needs.

The General Accounting Office publication, *Creating Value through World-Class Financial Management*, GAO/AIMD-00-134, April 2000, states that to be meaningful, financial information should be useful, relevant, timely, and reliable. Relevant financial information should be presented in an understandable, simple format with appropriate amounts of detail and explanation. Best practices for accounting and financial management require accurate and timely financial information for planning and decision-making.

Results of Review

The ERP financial system has not been fully implemented within budget or on schedule. The Institution budgeted approximately $16.2 million to implement nine financial modules by October 2003. As of November 2003, however, approximately $18.6 million has been spent with only three of the modules implemented.[2] The actual completion is now estimated to be December 2005 for the remaining six financial modules. (See appendix A for the new schedule.) Several circumstances contributed to the system not being implemented within budget or on schedule. These circumstances include insufficient staff resources to fully support the project; lack of budget control; contractors' lack of experience in implementing the latest ERP version; and weak implementation system controls.

Staff Resources. During the establishment of the ERP project, several circumstances regarding staff resources negatively impacted and delayed the ERP project implementation. For example, OCFO systems staff was reassigned to the OCIO; some staff that remained within the OCFO and some system staff that were transferred to the OCIO left the Institution; the ERP project required the OCFO to assume more tasks and responsibilities with fewer staff; and no additional funding was provided to the OCFO to support the project. In addition, the Institution did not have a Comptroller in place for several months. Only one Office of the Comptroller person was available full-time to work on the ERP project. One person alone without supporting staff was insufficient to provide the management oversight necessary to keep such a complex project on schedule and within budget. Also, staff with institutional knowledge that remained within the OCFO were unable to dedicate their attention full-time to the ERP project while also performing their daily responsibilities.

Budget Control. There were no detailed cost and schedule project management reports by phase or module as would normally be used for project management and variance cost monitoring. It is the Institution's policy that controls be established to assure assets are safeguarded and managed properly. The ERP implementation was not established as a cost center or project, even though it was noted in the April 2, 2003, KPMG Management Letter supporting the 2002 fiscal year financial statements to the Audit and Review Committee of the Board of Regents. Establishing the ERP implementation as a cost center or project would have been a means to monitor costs and schedule.[3]

Latest ERP Version Implemented. The Institution chose to implement the latest version of the ERP system because the ERP team believed that, in the long run, it would be simpler and less costly. However, implementing that version increased project cost and lengthened the development schedule. According to the ERP Team, the latest version lacked system documentation, and the technical experts did not have experience with it. In essence, the experts were learning how to use the new release at the same time as the Institution's staff.

System Implementation Controls. In addition to the lack of project budgetary controls, system implementation controls were weak, increasing implementation costs and

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[2] See appendix A for a budget-to-actual financial analysis.

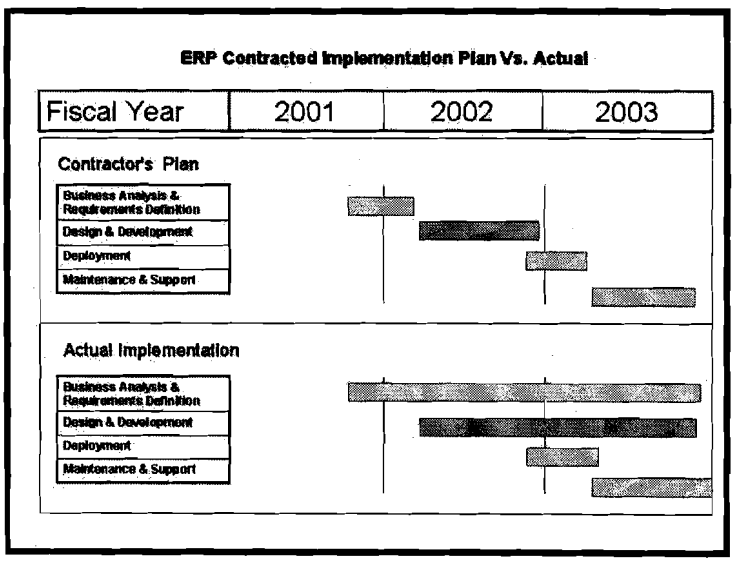
[3] The Institution was unable to effectively calculate its 2003 annual capitalization of the ERP as an asset for the annual financial statements audit.

schedule overruns. The audit identified three structural weaknesses that undermined controls over the implementation of the system.

First, the ERP team did not address weaknesses identified by the independent quality assurance contractor during implementation.[4] Because these weaknesses were not addressed, additional time and funding were necessary to meet the financial system phase I requirements after the deployment in October 2002. Throughout the implementation process, the quality assurance contractor revealed significant deficiencies and made recommendations in the project requirements and system documentation. Specifically, the contractor identified a risk that the system would not meet user requirements.[5] Also, there was no process to track the status of the quality assurance contractor's recommendations or how the identified weaknesses were resolved. Because these weaknesses were not addressed while the system was being implemented, additional development and implementation time and funds were needed. For example, additional time and funds were expended to address data conversion from the previous financial system to the ERP, and to address implementation of user requirements such as reporting, wire transfers, payroll and system interfaces. (See appendix D for examples of previous audit reports issued by this office on requirement and user needs deficiencies.)

Second, the ERP financial system development and implementation stages were being performed simultaneously, and the requirements approval and acceptance process was not formalized.

Life cycle management requires that certain events be systematically planned, managed, and monitored before moving forward to the next phase. The accompanying chart illustrates the contractor's planned and actual implementation. Implementing a system while the requirements are being defined increases the risks that the system being implemented will not meet user needs and that subsequent modifications will be necessary after implementation.



[4] As part of the development and implementation plan, the Institution hired a contractor to perform independent validation and verification as a form of implementation quality assurance. The contract was to provide a layer of quality control for the development, detailed design, requirements verification, configuration, testing, and deployment phases. This independent technical assessment was to ensure the system being developed was following a formal system development life cycle; to identify errors and exceptions; and to recommend changes to avoid or minimize future occurrences.

[5] For example, the quality assurance contractor found that requirements were not traced to components of the technical design or test cases; delivered documentation was incomplete; system interfaces validation was limited to "observance" as opposed to evaluating the interface in a test environment; requirements were fluid and changing; and interfaces and other system components will require modifications.

Third, the requirements approval and sponsor acceptance processes were either not documented or non-existent. The ERP steering committee that is responsible for overseeing the ERP implementation did not formally document its minutes and, therefore, there is no record of how important decisions were made or what issues were discussed.

According to the Chief Information Officer, the ERP financial system did not need to follow the traditional life cycle management process because the ERP was a commercially developed system and the traditional development and implementation documentation process normally used for software development was not necessary.[6] In addition, according to the Chief Information Officer and the ERP Project Manager, documenting the approval process is not necessary because, in their experience, the act of a sponsor approving requirements and accepting a system is an unnecessary paper transaction. Nevertheless, we were informed that there was some level of requirements approval and user acceptance by means of electronic mail and undocumented interviews by different levels of staff across the Institution. However, some of these staff may not have been in a position to understand all of the Institution's financial requirements.

The ERP cost overrun and schedule slippage have also had the following significant impact for the Institution:

1. Either more funding will be needed to complete the remaining modules and modify what has been implemented, or the Institution will have to accept fewer financial modules than planned, thereby lessening the financial, accounting, and reporting benefits. Moreover, the Institution's prior recordkeeping systems (cuff records) will need to be maintained.
2. The system is not meeting user expectations and needs. Previous audits by this office have identified examples of how the ERP system has failed its intended users. (Refer to page 11 and appendix D in this report for further details.)
3. The lack of documentation of system development and implementation has resulted in the system sponsor being unsure of the status of requirements. (See appendix B for a suggested status report format example.)
4. System implementation status reports to the Office of Management and Budget and Congress were not accurate. For example, the Institution's 2004 ERP budget request inaccurately reported the amounts for development and maintenance costs,[7] and the August 6, 2003, quarterly ERP progress report to the Committee on Appropriations, U.S. House of Representatives, inaccurately reported the reason why the ERP financial system phase II was not started on time. (See appendix C for details.)

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[6] The ERP system is a commercial off-the-shelf system that has gone through a level of software development and testing. However, integrating such a system would still require tailoring it to the Institution's specific needs.

[7] The fiscal year 2004 budget request to the Office of Management and Budget did not accurately represent amounts for development and maintenance. Our financial analysis, which was reviewed by the independent financial auditors for the 2003 Institution financial statements, determined that approximately $7.1 million was spent for development and asset capitalization purposes and approximately $3.8 million for maintenance expenses.

Conclusion

The Smithsonian Institution's strategic plan goal for achieving management excellence is in jeopardy because of the lack of project management controls over the implementation of the ERP system. The users are extremely frustrated with the current status of the new system, lack confidence that the system will meet their financial needs, and have not given up their "cuff records." We believe that the impact of these issues could have been minimized by proper oversight and project tracking. Although this report's emphasis is on the ERP project, the Institution has been systematically unsuccessful in managing and tracking complex projects. (See appendix D for further information.)

The following chart summarizes the initial Smithsonian Institution critical success factors, as defined in its *System Boundary Document*, and offers an assessment of four areas.

Smithsonian ERP Project Success Will be Contingent on Meeting the Following Critical Success Factors:		Met	Partially Met	Not Met
Business Process	Adapting Smithsonian Institution processes to the ERP software product in order to streamline business processes and assure speedy, cost-effective implementation.			•
Funding	Adequately funding the project to support production and enhancements. (Phase I only.)		•	
	Adequately funding the project to support production and enhancements. (Phase II only.)			•
Usefulness	Implementing an ERP system that serves the needs of all users from the lowest unit financial manager to the Secretary.			•
Training	Providing training and support to staff administering and using the ERP system.		•	
	Providing administrative workforce training in moving from paper processing to electronic processing.		•	

Recommendations

We recommended that the Chief Financial Officer:

1. Request the realignment of budgetary resources from the OCIO to the OCFO to support and assist the OCFO in implementing the remaining financial modules.

2. Establish the ERP financial system implementation as a cost center or project to accumulate and track project costs for management and asset capitalization purposes.

3. Ensure that future congressional and Office of Management and Budget status reports are more accurately prepared and presented.

Management Comments

1. Concur. Funds will be realigned within the ERP program from the OCIO ERP Project to establish a dedicated functional team to support the implementation of the remaining financial system software modules and to guide the enhancement of the financial system software modules in operation. This action will further increase the project's overall cost and cause further schedule slippage. However, this action is essential to the system's future success. The program will be re-baselined and a new budget and schedule developed once the details of the realignment are complete. Target completion date: July 30, 2004.

2. Concur. The Office of Planning, Management, and Budget in collaboration with the OCIO will establish the necessary Institutional project codes to assign obligations and expenditures directly to the ERP project by phase (both financials and human resources) and by development and operations and maintenance. Target completion date: July 30, 2004.

3. Concur. Management agreed that reports to the Congress should be accurate. However, management strongly disagreed with the audit report conclusion that the implementation status reports to the Office of Management and Budget and the Congress were not accurate. Each quarterly report included a general description of the project, progress against plan, and the Federal funds obligated during the reporting period. The Institution provided accurate information and did not hide problems. The third quarter report cited by the audit report was prepared in June 2003 and was accurate when it was written. Management is committed to ensuring that these reports are issued more timely and reflect the latest information available about the program. Management will also add the tracking of cost vs. budget by ERP Project phase to the monthly performance reports provided to the Deputy Secretary and Chief Operating Officer. Target completion date: June 30, 2004.

Office of the Inspector General Response

Management's comments and planned actions are responsive to the report's recommendations. Management disagreed with the audit conclusion that reports to Congress were inaccurate. Management reported to Congress that ERP phase II implementation plans were scaled back due to uncertainties with the 2003 budget during the continuing resolution period. Our analysis of the implementation costs shows that there was no significant decrease in average monthly implementation costs during the continuing resolution period. (Appendix F summarizes management's disagreements and our response.)

Recommendations

We recommended that the Chief Information Officer coordinate with the Chief Financial Officer to:

1. Establish a formal process to track and resolve implementation quality control issues and recommendations.

2. Obtain a status assessment from the ERP contractor of all current ERP-defined financial requirements to date and require a formal implementation status report at least monthly.

3. Evaluate the current status of outstanding requirements to prioritize them to meet the Institution's needs.

4. Comply with the Smithsonian Institution's life cycle management policy by establishing both a formal process to ensure requirements are approved by an OCFO designee and a formal user acceptance process for the remainder of the project.

Management Comments

1. Concur. The OCIO has established a formal system development life cycle management process that includes processes to track and resolve implementation quality control issues and recommendations. The life cycle management processes are defined in SD 920 and a series of supporting technical standards and guidelines published between December 2002 and August 2003. The OCIO also established a Technical Review Board as part of the process. The Board's objectives are to: (1) improve the overall level of project success, system quality, and productivity; and (2) ensure that risk is reduced to an acceptable level by completing assessments at key project milestones. We will ensure that future ERP Financial System Phases are reviewed by the Board. ERP Human Resource Management System progress has already been reviewed by the Board. Target completion date: completed.

2. Concur. The OCIO will rely on the quality assurance contractor to assess the current ERP-defined financial requirements and prepare a Technical Analysis Report on the findings. In addition, the system integration contractor will provide a monthly status assessment report. Target completion date: July 30, 2004.

3. Concur. The OCIO and OCFO will jointly review all outstanding issues, problems, and requirements, and the OCFO, with technical guidance from the OCIO, will prioritize them. Target completion date: September 30, 2004.

4. Concur. The OCIO and OCFO will work together to develop a Service Level Agreement that defines the requirements approval and user acceptance processes. The Agreement will follow the guidance contained in the Life Cycle Management

Manual TSG-IT-920-01 dated December 6, 2002. Target completion date: July 30, 2004.

Office of the Inspector General Response

Management's planned actions are responsive to the report's recommendations.

B. Phase I Financial System Implementation Usefulness

Current ERP financial system management reports are cumbersome, inefficient, and do not meet internal or external management needs. This condition existed because there was a fundamental misunderstanding of how reporting and operational training requirements would be met. In addition, two ERP plans, the "train the trainer" plan and help-desk plan, were not fully established, making the system less useful. As a result, the system is not meeting user needs, Institution staff are frustrated, and confidence in the system has deteriorated significantly.

Background

System Boundary Document for the Enterprise Resource Planning System, May 2001 -- The objective of the ERP system is to achieve management excellence by October 2005 through modernizing Smithsonian financial and accounting controls, human resource management processes, and management information systems by:

- Implementing an ERP system that serves the needs of all users from the lowest unit financial manager to the Secretary
- Bringing to the Institution best practices for administrative processes and thoroughly training staff in order to accept the new electronic work environment

ERP Training Plan, June 7, 2002 -- The purpose of the training plan for the ERP system was to ensure a properly trained workforce that can process financial transactions and access financial management data for analysis and reporting in a timely and efficient manner. Users need to be able to enter and get data from the system so that they can better perform their day-to-day functions. The training plan also required that the contractor provide "train the trainer" courses to Institution representatives and professional trainers. The trainers would then deliver training to end-users through classroom instruction and hands-on exercise sessions. Training manuals would also be developed and provided. In addition to the training, a help-desk support system was to have been implemented for end-users and operational staff both at the time the system was deployed and afterward.

Results of Review

Discussions with the Comptroller, Treasurer, Sponsored Projects, and museum financial staffs revealed that several critical financial reporting needs have not been met. For example, the Office of the Comptroller required the ERP system to produce reports for the U. S. Treasury as well as reports to support the annual financial statements audit. The Office of the Treasurer required the ERP system to produce reports on endowments and major Institution projects for investment and cash flow management. The Office of Sponsored Projects required the ERP to produce grant expenditure reports and an accounts receivable aging report. The museums required the ERP to produce museum-level balance sheets, profit and loss statements, and project-level reports. The ERP contractors have provided numerous reports to address these requirements but, according to these offices, the reports that were provided do not meet user needs and have been inaccurate.

During November 2003, we provided a questionnaire to the Under Secretary for Science, the Under Secretary for American Museums and National Programs, and the Director of

the International Art Museums Division. We asked these offices to forward the questionnaire to unit representatives who would be in a position to provide constructive feedback regarding the ERP financial system implementation and complete the questionnaire. The following table presents the results of this survey:

ERP User Summary Statistics		
	Not satisfied	Satisfied
Easy to Use		
Have you found the ERP system friendly and easy to use?	71%	29%
Training		
Are you satisfied with the training you received?	62%	38%
Meet Financial Needs		
Does the ERP system meet your financial needs as implemented?	62%	38%
Data Quality		
Does the ERP system provide you with current and timely data and information to meet your responsibilities?	57%	43%

We believe the OCFO, the OCIO, and the user community had fundamentally different understandings of how reporting and operation training requirements would be met. For example, according to the OCIO, the ERP system can provide the type of reports the users need, and it is the responsibility of the users to learn how to use ERP to produce the needed reports. On the other hand, the Office of the Comptroller and other unit users believed that the OCIO would provide training specific to their needs and that ERP would deliver the reports they require. Moreover, the "train the trainer" plan and the help-desk were not fully implemented, making the ERP system less useful and causing confusion and frustration among users.

These misunderstandings and the deficiencies in training have resulted in the following:

- The Office of the Comptroller has been unable to meet federal reporting and trial balance requirements on time, and required financial reports to support the annual financial statement audit have been difficult to obtain.
- The Office of Sponsored Projects and the Office of Development, which manage approximately $204 million a year in grants, contracts, and gifts, are unable to accurately and timely bill grants and contracts. If expenses incurred are not identified timely to a grant or contract these expenses must be absorbed by the Institution.[8] For example, according to the Office of Sponsored Projects, the office manually prepared approximately 1,012 grant reports during fiscal year 2003, of which 571 (56.4 %) were billed late. In addition, there is a risk that grantors will perceive the Institution as unable to manage its grants and therefore reconsider future grants to the Institution.
- The museums are unable to easily determine their financial position and manage projects effectively.
- The Office of the Treasurer has a diminished ability to manage cash flow on major projects.

[8] The fiscal year 2002 annual Smithsonian audited financial statements show $96.1 million in government grants and contracts and $108.1 million in contributions.

Reports that have been available require manual manipulation to fully meet internal and external needs. In addition, Institution staff revealed that the units are dissatisfied with the training program and confused about how to obtain help-desk assistance.

Conclusion

The inability of users to obtain accurate and timely financial reports to meet their management responsibilities has hampered the Institution's effort to remove unit cuff records. Institution units are more inclined to maintain their cuff records or even develop new records systems because the ERP system is not providing the necessary financial information.

Recommendations

We recommended that the Chief Information Officer, in coordination with the Chief Financial Officer:

1. Determine which ERP reporting requirements have not been fully addressed and establish a plan that prioritizes these outstanding needs to meet the reporting needs of the Office of the Comptroller, the Office of Sponsored Projects, the Office of Development, the Office of the Treasurer, and the other units.

2. Establish a process for reviewing user help-desk assistance requests to determine what remedies are necessary to address user needs, such as additional training or Chief Financial Officer bulletins.

Management Comments

1. Concur. The Chief Information Officer will work with the Chief Financial Officer to determine which financial reporting requirements have not been met and establish a prioritized plan to meet the Institution's financial reporting needs. Target completion date: September 30, 2004.

   Management pointed out that there are now 114 reports available in PeopleSoft (ERP), half of which have been custom-developed. Management agreed, however, that the PeopleSoft-provided financial reports do not meet internal management needs or federal reporting needs.

   Management claimed it is an overstatement that there was a "fundamental misunderstanding" between the Office of the Chief Financial Officer and the Office of the Chief Information Officer on how reporting requirements would be met, and that staffing shortfalls in the Comptroller's Office meant that subject matter experts were not readily available to define reporting requirements. Management does agree that communication between the two offices would have benefited from a more formal reports requirements and review process.

   Management also agreed that additional training is needed on standard and customized reports. Management disagreed that there was a fundamental misunderstanding between the Office of the Chief Financial Officer, the Office of the Chief Information Officer, and the units on how training was to be conducted.

Management stated that the "train the trainer" approach failed because the ERP Work Group members did not have the time or requisite skills to develop and deliver ERP training. Although there were 131 formal ERP training classes provided to 1,661 ERP users, management agreed that the training did not meet certain Institution needs.

2. Concur. The Chief Information Officer will work with the Chief Financial Officer to establish a process for reviewing user help-desk assistance requests to identify widespread problems and to determine whether the problem can be resolved through training, Frequently Asked Questions, and/or CFO Bulletins, or whether revisions to the ERP Financial System software are needed to correct errors and make enhancements. Target completion date: August 31, 2004.

   Management noted that Help Desk assistance was communicated by CFO Bulletin #09-005 and CFO Bulletin #00-005 in October 2002. These bulletins provided information about help desks available to ERP users, using the Help Desk automated problem reporting tool, and the ERP web site. Support was also available by telephone, e-mail, and using the automated help desk tracking system. The ERP Support function was transitioned to the central OCIO Help Desk in September 2003, as the support volume decreased, and the OCIO Help Desk staff was trained to support the ERP. This transition was conveyed to the user community by Smithsonian-wide e-mail and by notices on the ERP web site.

Office of the Inspector General Response

Management's planned actions are responsive to the report's recommendations.

C. Implementation Contract

The current ERP contract elements of design, development, implementation, training, and maintenance support changed from a fixed-price contract to a cost-reimbursement contract. This change was requested by the OCIO because it was believed necessary to respond flexibly to the Institution's system implementation requirements. However, this change increased the Institution's risk of project cost overruns since the responsibility for monitoring cost controls and efficiency shifted from the contractor to the Institution. In addition, the current contract scope now includes many tasks that could be separated into different contracts and monitored separately to minimize costs.

Background

The *Federal Acquisition Regulation* prescribes policies and procedures unique to the acquisition of commercial items. A commercial item is any item that is of a type customarily used by the general public or by non-governmental entities for purposes other than governmental purposes, or has been offered for sale, lease, or license to the general public. *Federal Acquisition Regulation* section 12.107 requires agencies to issue firm-fixed-price contracts for the acquisition of commercial items.

The *Federal Acquisition Regulation* states at section 16.101 that a wide selection of contract types is available to the Government and contractors in order to provide needed flexibility in acquiring the large variety of supplies and services required by agencies. The contract types are grouped into two broad categories: fixed-price contracts and cost-reimbursement contracts. A time-and-materials contract is a type of cost-reimbursement contract. In the course of an acquisition program, changing circumstances may make a different contract type appropriate in later periods than that used at the outset. In particular, contracting officers should avoid protracted use of a cost-reimbursement or time-and-materials contract after experience provides a basis for firmer pricing.

Under fixed-price contracts, the contractor has full responsibility for the performance costs and resulting profit (or loss). A time-and-materials contract provides no profit incentive to the contractor for cost control or labor efficiency. The *Federal Acquisition Regulation* states at section 16.301 that a cost-reimbursement contract may be used only when appropriate Government surveillance during performance will provide reasonable assurance that efficient methods and effective cost controls are used.

Results of Review

The Institution awarded an initial fixed-price contract for ERP business analysis and requirements definition on June 29, 2001, for $1.6 million. The contract required financial system requirements analysis and the development of documentation to support an ERP system that will satisfy the Institution's financial needs. The contract also included many options. Option 1 included the design, development, and implementation of an ERP system in accordance with the Institution's requirements for $3.7 million. Together, the initial award and Option 1 costs were estimated to be $5.3 million.

During June 2002, the OCIO recommended to the Office of Contracting that the fixed-price contract be converted to a time-and-materials contract beginning when Option 1 was exercised. Option 1 was exercised on July 31, 2002, and a time-and-material type

contract was awarded, increasing the contract cost by approximately $700,000 to $4.4 million.

According to the OCIO, exercising Option 1 as a cost-reimbursement contract as opposed to a fixed-price contract was necessary for the Institution and contractor to have the ability to respond flexibly as the business processes for the Institution were still being defined. In addition, the OCIO believed the interests of the Institution would be protected by the close and careful management by the project manager and contracting officer's technical representative, and by the independent validation and verification process.

The contract change provides little incentive for the contractor to control costs and increase efficiencies. We believe that the contract change contributed to the ERP project cost overrun.[9]

In addition, the current contract, under which the Institution is charged on an hourly basis, includes many aspects of the development, implementation, and maintenance of the ERP project that could be more economically and efficiently contracted for under separate contracts and different contract types.

Another result of the change in contract type was that it required the Institution to monitor and control contract performance and costs more aggressively. The ERP project manager was not only responsible for overseeing the technical ERP implementation but was also required to oversee and manage the ERP contract. We believe that having one person responsible for so many project aspects, including areas outside their expertise, diminished that person's ability to perform all these functions effectively and increased the potential for error. These risks could be mitigated by adding additional resources and expertise to the project.

Conclusion

An evaluation of the risks, controls, and contract type for the contract services of design, development, implementation, and maintenance would be beneficial to ensure costs and monitoring controls are in place for the six remaining financial and the human resource modules of the ERP project.

Recommendations

We recommended that the Chief Information Officer coordinate with the Director of the Office of Contracting to:

1. Review the current contract structure and type and determine whether a different contract structure is necessary to adequately support the development and implementation of the remaining modules of the ERP.

2. Assess the current contract oversight process to determine if additional contract expertise is needed for monitoring the development and implementation of the remaining modules of the ERP.

[9] As of November 2003 only three of the nine financial modules have been implemented, even though funds appropriated for the nine modules have been spent.

Management Comments

1. Concur. The Chief Information Officer will work with the Director of the Office of Contracting to identify work that can be issued as fixed-price task orders and use fixed-price task orders wherever practical. Target completion date: May 31, 2004.

   Management noted that for a system development project, a cost-plus-award contract allows for unknowns as requirements are defined and refined during the development process. According to management, neither the Office of Contracting nor OCIO has the staff necessary to administer such a contract. Nevertheless, management changed the contract type. Management agreed that a review of tasks such as developing and providing training can be issued as fixed-price task orders.

2. Concur. The Institution will strengthen reviews of the contract system integrator's progress and performance through monthly reviews. The OCIO ERP Financial System Project Manager will lead the monthly reviews. The reviews will be attended by the Institution's contract system integrator, representatives of the ERP team of functional and technical experts, the CFO and/or CFO designated staff, and users from Smithsonian units as appropriate. Target completion date: April 30, 2004.

   The purpose of the monthly review will be to assess progress and adherence to the schedule and budget; to identify problems; and to direct any necessary corrective actions. Examples of issues to be addressed are: (1) the status of modification requests or discrepancy reports; (2) implications on the cost and schedule of requested changes; (3) technical problems encountered by the contract system integrator; (4) implications and trade-offs for implementing requested customizations to the commercial software; and (5) problems encountered by the contract system integrator with obtaining functional requirements.

Office of the Inspector General Response

Management's planned actions are responsive to the report's recommendations.

Appendix A. Financial System Budget to Actual Analysis

ERP Financials Budget and Actuals Analysis (000)

	2001		2002		2003		Total			
	Budgeted	Actuals (Obligated)	Budgeted	Actuals (Obligated)	Budgeted	Actuals (Obligated)	Budgeted *	Actuals (Obligated)	Difference	Percentage Increase
Financials										
Phase I										
Integration (a)	$2,419	$2,475	$1,809	$5,454		$6,587	$4,228	$14,516	$10,288	243.32%
In House Salaries (b)	$388	$296	$891	$636		$2,154	$1,279	$3,086	$1,807	141.27%
IVV Quality Assurance			$600	$619		$110	$600	$729	$129	21.51%
Training (c)	$138	$147		$124			$138	$271	$133	96.71%
Total Phase I	$2,945	$2,918	$3,300	$6,833		$8,851	$6,245	$18,602	$12,357	197.87%
Phase II										
Integration			$837		$5,665		$6,502	$0		
In House Salaries			$412		$1,590		$2,002	$0		
IVV (d)					$800		$800	$0		
Training (e)			$200		$455		$655			
Total Phase II	$0	$0	$1,449	$0	$8,510		$9,959	$0		
Totals Financials	$2,945	$2,918	$4,749	$6,833	$8,510	$8,851	$16,204	$18,602		
HR I + TLS								$0		
Training					$75		$75	$0		
In House Salaries					$264		$264	$0		
Integration					$941	$1,000	$941	$1,000		
Total HR I	$0	$0	$0	$0	$1,280	$1,000	$1,280	$1,000		
IT Infrastructure, ERP (Licences & SW Maintenance) (f)	$1,986	$1,954	$1,451	$1,313	$2,176	$1,861	$5,613	$5,128		
Grand Total	$4,931	$4,873	$6,200	$8,146	$11,966	$11,712	$23,097	$24,730		

Notes:

* Phase I budgeted amount of $6,245,0000 and Phase II of $9,959,000 is from OCIO Office of Management and Budget annual appropriation submittals.

a. The 2003 actual Phase I integration cost of $6,587,000 represents contracted effort, which includes costs for maintenance, enhancement, development, and trouble-shooting that could not be separated for each category.

b. The 2003 actual salaries of $2,154,000 could not be separated between Phases and is composed of:

$1,682,000	Salaries
$430,000	Benefits
$42,000	Awards/Bonuses
$2,154,000	

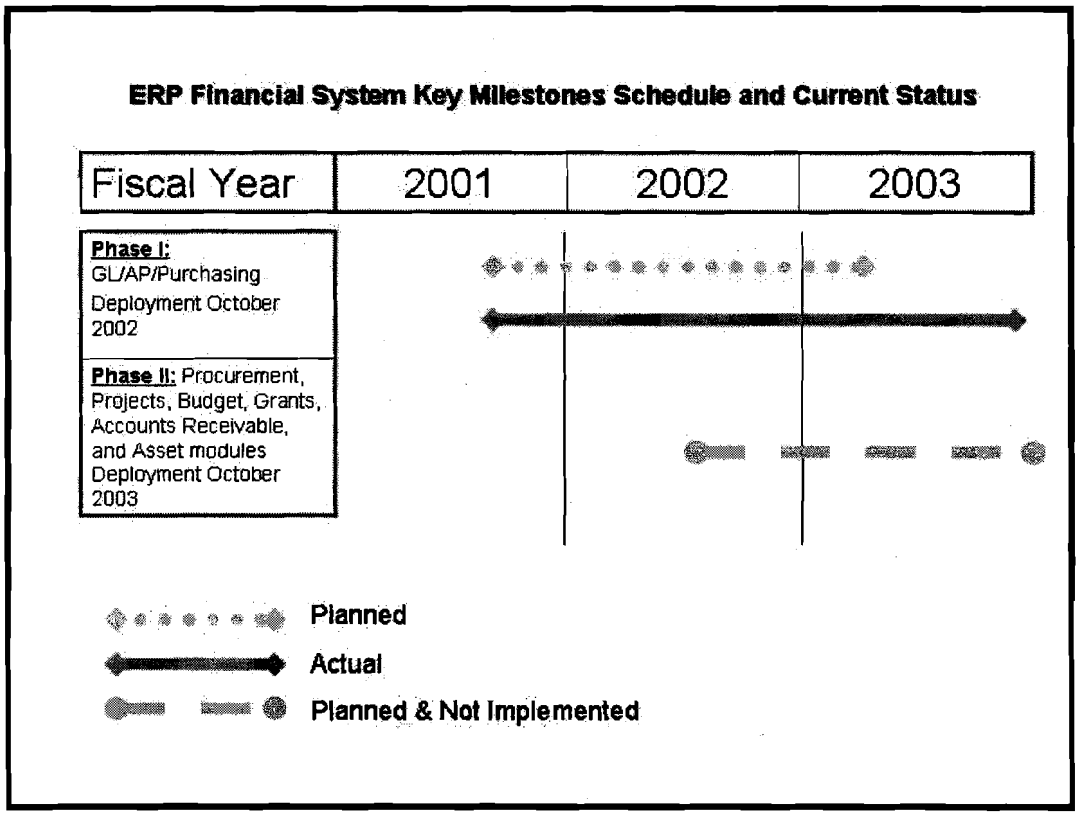
c. The 2002 actual training amount of $124,000 was included in Phase I because Phase II efforts had not started in 2002. The actual training costs incurred during 2003 were undeterminable for training associated with Phase I, Phase II, or HR.

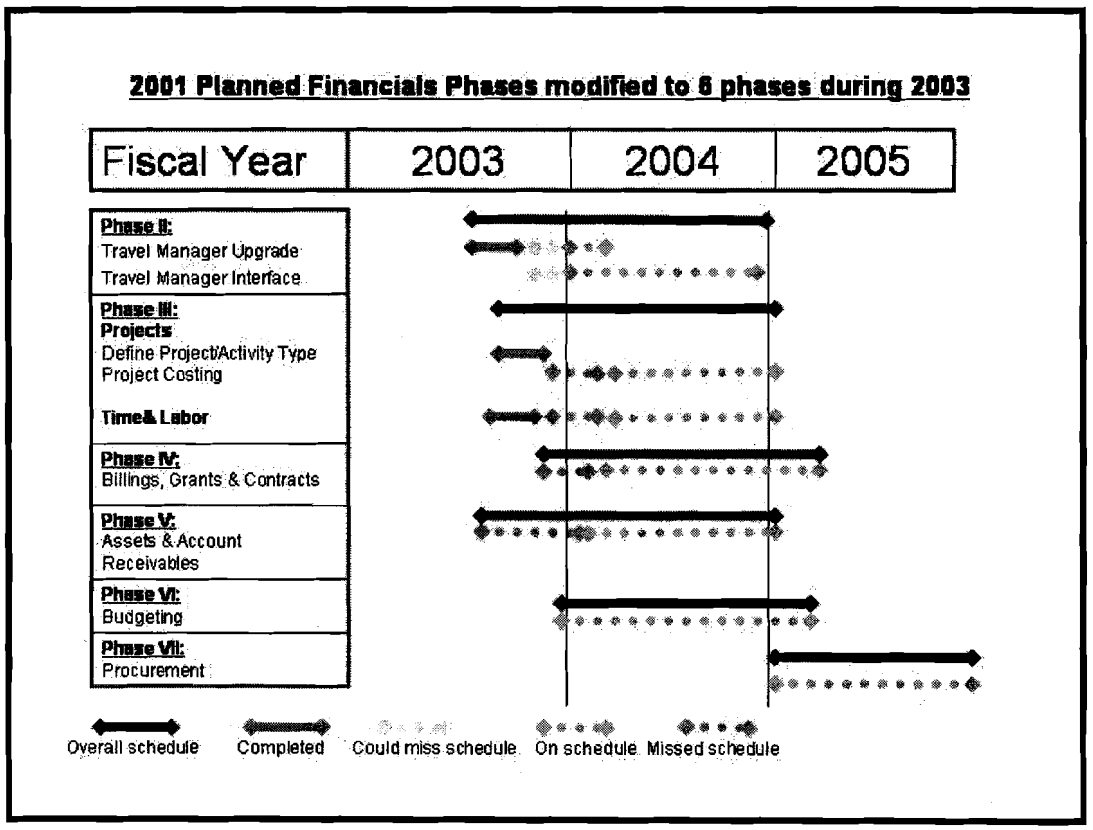
d. The $800,000 budgeted amount in 2003 was excluded from the Phase I 2003 budget column because Phase I was planned to be completed by October 2002 and Phase II efforts would have started, therefore requiring Phase II and IVV reviews in 2003.

e. The 2002 budget amount of $200,000 was included in the Phase II budget column because it was planned that Phase II efforts would have begun during 2002.

f. The amounts include PeopleSoft software licenses and maintenance fees.

Appendix A. Financial System Planned Budget to Actual Analysis (continued)





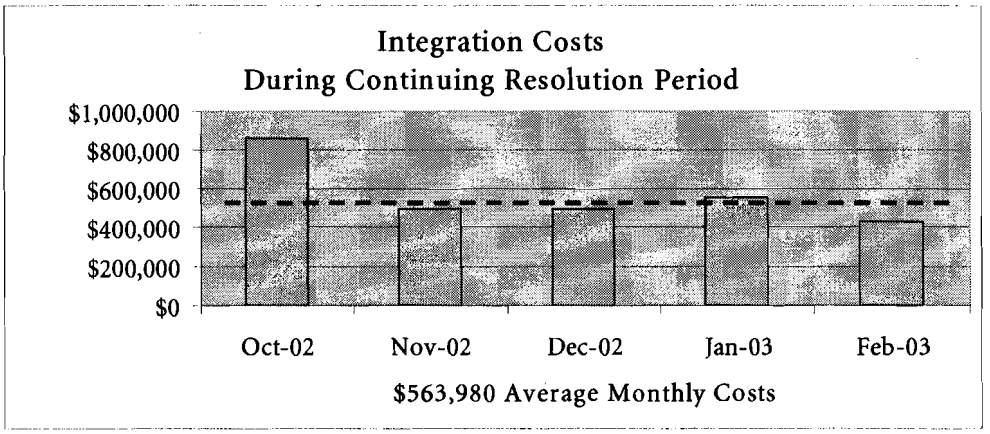
Appendix B. Implementation Status Report Example

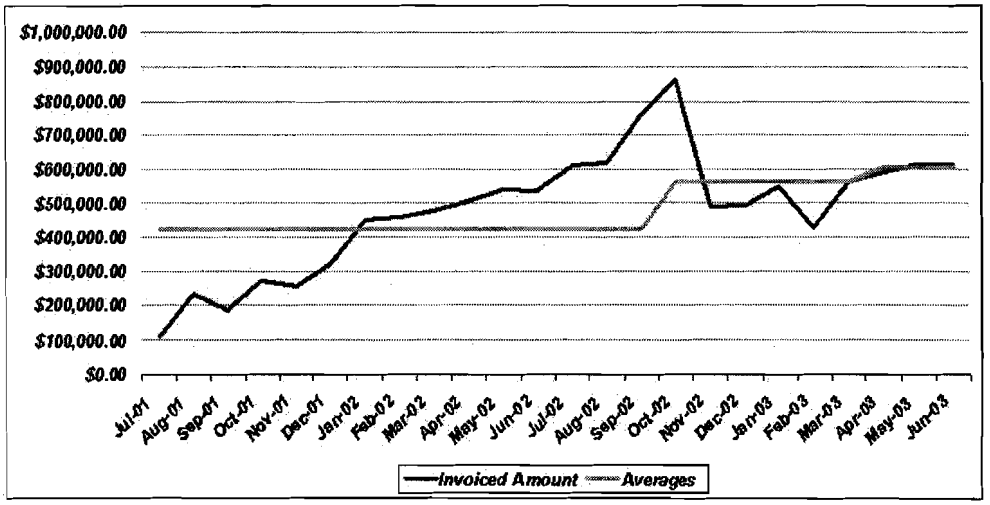
Financial System Requirement Monthly Status Report for the Period Ending										
Module Requirement ID	Requirement Description (High Level)	Requirement Definition Date	Sponsor Approval Date	Designated Point of Contact	Priority	Status: (a). Implemented (b). Tested (c). Approved (d). Customization (e). Rejected (f). Deferred	Schedule Implementation Date	Actual Implementation Date	Total Module	
									Budget Cost	Cost to Date

Appendix C. Fiscal Year 2003 Continuing Resolution Effect on Implementation

The Institution reported on August 6, 2003, to the House Committee on Appropriations that the reason why the ERP financial system phase II was behind schedule was because of funding uncertainties caused by the 2003 continuing resolution and the lack of information on when and how much the Institution would receive in its 2003 appropriation.[10] However, our review determined that although phase II work did not begin, there was continued development and implementation work on phase I.

In fact, during the continuing resolution period, the contractor's billings were within the average of monthly costs during the normally funded period. As the graph shows, the average development and implementation costs were $563,980, with no significant change in contract billing.[11]





[10] The continuing resolution covered the period of October 2002 through February 2003 as identified in the Omnibus Appropriations Bill and signed into law on February 20, 2003, Public Law 108-7.

[11] In July 2002, the OCIO requested that the contractor's contract type be changed from a fixed-price to a time-and-materials type contract. The impact of this contract change to the project cost is discussed separately in this report. In essence, the new contract is an hourly-based contract as opposed to a fixed-price contract. See page 15 for additional information.

Appendix D. Prior Office of the Inspector General Audits

Financial System Reports

Audit of *Restricted Gifts,* December 18, 2003. In addition to findings specific to restricted gifts, we determined that

(1) controls could be improved for recording restricted gifts revenues and other funds that the Institution receives through wire transfers,
(2) system interface modification prevented posting payroll during the period October 2002 through March 2003,
(3) petty cash expenses were not promptly posted,
(4) centrally billed travel was not posted in a timely manner, and
(5) beginning balance reports were not made available to the units until July 2003, nine months after the October 2002 Phase I implementation date. As of September 24, 2003, units across the Institution were still verifying their respective beginning balances.

Audit of the *Purchase Card Program,* December 3, 2003. We determined that the Chief Financial Officer did not ensure that the ERP working group that developed the purchase card functional requirements included cross-functional experts. Also, cardholders and fund managers could not use the ERP system to determine whether available fund balances existed prior to making purchases because the system provided inaccurate fund balances. Inaccurate fund balances have contributed to the erosion of confidence in the ERP financial system information.

Audit of the *Smithsonian Financial System,* July 12, 1999. We determined that the Smithsonian Financial System was not meeting internal management and reporting needs of Institution units. The Smithsonian Financial System was not a user-friendly system and did not provide the units with the financial information needed to manage their various projects and activities related to project accounting, ad-hoc reporting, and monthly reports.

Project Management Reports

Audit of the *Project Management of the Steven F. Udvar-Hazy Center*, July 31, 2003. We identified improvements needed in financial management and project controls for monitoring budget-to-actual project revenues and expenses; planning system user requirements; and procedures for monitoring contract modifications.

Audit of *Project Management of the National Museum of the American Indian Mall Museum*, September 30, 2002. We determined that the Office of Facilities Engineering and Operations was not completing reconciliations of its internal project financial tracking system records to the Institution's financial system in a timely manner. We recommended that financial and management controls be strengthened by the ERP project team defining requirements and reports needed for monitoring construction projects.

Appendix D. Prior Office of the Inspector General Audits (continued)

Audit of *Trust Fund Budget Process*, September 28, 2001. We determined that significant management control weaknesses existed in the trust fund budget process. We recommended improvements in two areas: (1) completeness of the trust fund budget process and (2) controls to ensure that budgeted expenditures are not exceeded.

Audit of *Financial Management of Traveling Exhibits*, September 26, 2001. We determined that controls were inadequate due to inaccurate managerial cost accounting information. We recommended that policies and procedures be established for accumulating and reporting costs regularly, consistently, and reliably. Such cost information is necessary for the Institution to manage its operations and to carry out its fiduciary duties and responsibilities effectively. Routine cost information is fundamental to any well-managed, cost-effective organization.

Audit of *Project Management Related to the Purchase of the Victor Building*, February 21, 2001. We determined that there was no dedicated project manager to ensure that prudent business practices and generally accepted project management procedures were in place and operating properly. As a result, there was a high risk of cost overruns on the projects, delays in their completion, and added costs inevitably occasioned by such delays.

Appendix E. Management's Comments

Smithsonian Institution

Memo

Date March 5, 2004

To Tom D. Blair, Inspector General

Through Sheila Burke, Deputy Secretary and Chief Operating Officer

cc Lawrence M. Small, Secretary

From Dennis R. Shaw, Chief Information Officer
Alice C. Maroni, Chief Financial Officer

Subject Response to the Draft Report, Office of the Inspector General Audit A-03-07, Implementation of Enterprise Resource Planning Financial System

Thank you for the opportunity to comment on the draft audit report on the Institution's implementation of the Enterprise Resource Planning (ERP) Financial System. While we disagree with some of the audit findings and conclusions with respect to the causes of the difficulties the Institution encountered in the development, implementation, and operation of the ERP Financial System, we do agree that the audit's management-related recommendations will strengthen the ERP project as we move forward with implementing additional modules and enhancing the financial modules already in operation. It is our intention to implement the audit's recommendations in combination with a broader set of management improvements that we have developed in response to our own internal review.

In the attachment, each issue presented in the audit report is addressed in order. For the record, it is worth noting that the Institution has been supported for the last 18 months by the new financial system. The Institution deployed ERP Financials Phase 1 for production use on October 1, 2002, consisting of *PeopleSoft's* general ledger, accounts payable, and purchasing modules and portions of the projects, asset management, and accounts receivables modules. In FY 2003, Smithsonian Institution units created 32,724 purchase orders and 78,994 vouchers, processed 89,705 purchase card transactions, and made payments totaling $881 million using the ERP Financial System. There are currently 1,220 active ERP user accounts.

Please direct any questions you may have regarding this response to Dennis Shaw, Chief Information Officer, at 202-633-2800 or Alice Maroni, Chief Financial Officer, at 202-275-2020.

Attachment 1

Issue 1: ERP Financial System Implementation Budget and Schedule

"The ERP financial system has not been fully implemented within budget or on schedule. ...Several circumstances contributed to the system not being implemented within budget or on schedule. These circumstances include insufficient staff resources to fully support the project; lack of budget control, contractor's lack of experience in implementing the latest ERP version; and weak implementation system controls."

Response: We agree that the implementation and operation of the overall ERP Financial System is behind schedule and over budget, but we believe that the draft audit report does not adequately explain why that is so. We disagree with the assertion that the Institution's quarterly reports were not accurate with respect to the ERP Project budget and the reason for the delayed implementation. A complete discussion of the Institution's ERP Financial System implementation needs to reflect the following circumstances, which are briefly stated here and discussed in depth in Attachment 2:

- The Institution faced an urgent need to replace the Smithsonian Financial System, which was on the verge of failure.
- The Institution experienced unanticipated delays in starting the project, which compressed the time available to implement the system using best practices.
- The Office of the Comptroller experienced significant Trust funding reductions and unexpected turnover of key Federal staff.
- The Institution did not fully anticipate the poor quality of the data resident in the Smithsonian's legacy financial system.
- The Institution did not budget adequately for user training or adequately conceive all the training required.
- The Institution did not budget for application software maintenance for ERP Financial System Phase 1 operations in FY 2003.
- The unanticipated failure of the Payroll Accounting and Distribution System (PAYES) in October 2002 made it impossible to complete the payroll system integration with the ERP Financial System in Phase 1.
- The Smithsonian was an early adopter of *PeopleSoft* version 8.4, and the first Federal organization to do so.
- The lengthy continuing resolution and the uncertainty over the FY 2003 budget well into the spring of 2003 delayed work on Phase 2 Financials or Phase 1 Human Resources until April 2003.

The IG audit report correctly identifies inadequate staffing of the Office of Comptroller (OC) as one of the causes of the schedule delay and cost overruns. However, the report incorrectly attributes the realignment of OC Information Technology (IT) staff and the subsequent departure of some of the

former OC IT staff as a reason for the staffing shortage. The realignment was part of a consolidation of IT staff within the Under Secretary of Finance and Administration organization. The realigned OC staff performed SFS and PAYES application software maintenance, local area network operations, and desktop services under the auspices of the OCIO. Five IT staff did not leave on their on accord, but were dismissed because of a reduction of Trust funding. One was rehired as a Federal employee and continued to participate on the ERP technical team.

The IG audit report correctly asserts that there were no detailed cost and schedule project management reports by phase or module as would normally be used for project management and variance cost monitoring. However, the Institution did track and report project progress and funds, obligated funds and actual Federal IT staff costs to the Office of Management and Budget (OMB) and the Congress on a quarterly basis.

The Smithsonian would need to implement a true earned value management system to track project deliverables against cost and to monitor and report cost variances by phase or module. In order to do this effectively, the *PeopleSoft* projects and time and labor modules must be fully deployed. Otherwise, variance cost monitoring and reporting is a cumbersome manual process at best.

Monthly review of cost and schedule project management reports would have provided the senior leadership with additional evidence of the distress that the financial system implementation was experiencing. However, we disagree with the IG audit report that the lack of such reports by phase or module contributed to the ERP Financial System schedule slippage or cost overruns. We will add the tracking of cost vs. budget by ERP Project phase to monthly performance reports provided to the Deputy Secretary and Chief Operating Officer.

We agree with the IG audit report finding that full implementation of the ERP Financial System has experienced significant cost and schedule overruns. However, when comparing budget vs. actual cost, the IG audit report relies on the FY 2004 OMB Exhibit 300 submission for budget information, admittedly the only public document available. The Exhibit 300 does not include the Trust funds that have been spent on implementation.

As a consequence, the IG audit report's analysis, which includes Trust expenditures, is incorrect. In addition, the IG audit report does not include the cost of the development and production hardware and software or the cost of the *PeopleSoft* software licenses. Failure to include these costs in the total cost denominator of the calculation overstates the percentage of total budget expended and the extent to which the project is over budget.

We also disagree with the IG audit report's categorization of development vs. operational costs and the assertion that FY 2004 OMB Exhibit 300 for the ERP

Project inaccurately reported the amounts for development and maintenance. The FY 2004 OMB Exhibit 300 was prepared in July 2002 and submitted to OMB in September 2002. The Exhibit 300 was accurate at the time of submission and prepared consistent with guidance contained in OMB Circular A-11. OMB defines an operational asset to mean "an asset or part of an asset that has been delivered and is performing the mission." The cost to develop and implement Phase 1 of the ERP Financial System totaled $11,033,773, and the cost to operate and maintain it through FY 2003 totaled $9,297,272. Expenditures for ERP Financial System Phase 2 activities through FY 2003 totaled $779,861. The budget to develop and implement Phase 1 of the ERP Financial System totaled $10,023,558, and the budget to operate and maintain it through FY 2003 totaled $1,427,499. A detailed breakout comparing the ERP Financial System Phase 1 budget with the actual costs is provided in Appendix 2. A summary breakout is provided in the following chart.

Financials Phase 1 Modules (Implementation and Operation)								
Description	FY 2001 Budget	FY 2001 Actual	FY 2002 Budget	FY 2002 Actual	FY 2003 Budget	FY 2003 Actual	Total Budget	Total Actual
Implementation	$4,342,897	$4,205,672	$5,680,661	$6,756,286	---	$71,815	$10,023,558	$11,033,773
Operations	---	---	---	---	$1,427,499	$9,297,272	$1,427,499	$9,297,272
Total	$4,342,897	$4,205,672	$5,680,661	$6,756,286	$1,770,259	$9,369,087	$11,461,080	$20,331,045

Chart 1—ERP Financials Phase 1 Budget vs. Actual

We agree with the IG audit report finding that the ERP team did not address weaknesses identified by the independent quality assurance contractor, but only with respect to the specific technical analysis reports cited in the report. We disagree with the rest of the assertion. The ERP team did take continuous action on quality assurance recommendations throughout the project as appropriate. The IG audit report cited an August 2002 review of the quality of the system documentation.

Recommendations from the quality assurance contractor were only one factor used in the decision to deploy the first phase of the ERP Financial System on October 1, 2002. The urgent need to replace SFS, the primary financial system, before it failed was the overriding factor. This sense of urgency contributed to deploying the ERP Financials Phase 1 on schedule rather than delaying implementation another fiscal year. We also gave more weight in making our decision to deploy to the quality assurance contractor report on the successful ERP system pilot conducted in the July 2002, as this was an evaluation of the system in operation by users. The quality assurance contractor concluded, based on the success criteria agreed to by the development team and the user community that the ERP Financial System pilot was an overall success and that analysis of test results indicated that 94% of the test cases executed passed

successfully, confirming that the delivered *PeopleSoft* functionality was performing as intended. We determined that the documentation could be completed at a later date.

We disagree with the IG audit report conclusion that, through more rigorous system controls, we could have avoided the expenditure of additional time and funds associated with the conversion to the ERP of data from the previous financial system. The data conversion software routines worked, but the SFS data was of poor quality. One way or another data had to be corrected, and there was no alternative to researching each entry. The ERP Financial System employs far more rigorous financial controls than SFS. The delays in the conversion of the spending authority information caused delays in completing the purchase order conversion and delays in paying vouchers. While earlier availability of the chartfield information and the crosswalks to SFS, and more rigorous testing could have revealed the scope of the problems, only manual research of each rejected transaction could resolve the data quality problems.

We disagree with the IG audit report conclusion that, through more rigorous system controls, we could have avoided the expenditure of additional time and funds required to address payroll and system interfaces to the ERP. The delays associated with defining the chartfields precluded building crosswalks for all employees for payroll cost distribution through PAYES before the ERP Financial System Phase 1 was deployed. The unanticipated failure of PAYES in October 2002 made it impossible to complete integration with the ERP Financial System Phase 1 or conduct independent tests by the quality assurance contractor. Units were unable to obtain accurate payroll information because of the failure of PAYES, not the ERP Financial System.

We disagree with the IG audit report conclusion that the ERP Financial System development and implementation stages were being performed simultaneously. The ERP Financial System was in operation during FY 2003, not development. No system is 100 percent complete or error free when it is first deployed. Discrepancy reports and modification requests are a normal part of application software maintenance and do not constitute development by another name. We did not anticipate the resources that would be required to resolve data quality problems and develop customized reports. There was one major software error that required correction, and it was associated with the incorrect posting of general ledger entry events, critical to the system's ability to support the Institution's Federal reporting requirements.

We do not believe that the IG audit report accurately portrays the context of the statement attributed to the Chief Information Officer and the ERP Project Manager that documenting the approval process is not necessary because in their experience, the act of a sponsor approving requirements and accepting a system is an unnecessary paper transaction. The discussion with the IG auditors centered on the need for signatures. To be more accurate, the IG audit

report should state that the process of signed "System Decision Papers" at major milestone decision points as prescribed in the Defense Department system life cycle management process did not work. Additionally, even with signed requirements, if the user identifies additional requirements or a business need to change the requirements once in production, the changes will need to be made. There was an approval process in place as noted by the quality assurance contractor in their February 2002 technical report – "the development team is doing a good job but is behind schedule because requirements and configurations require concurrence from various end-users and approval from the Steering Committee." We recognize that we need to improve the method for documenting decisions.

We strongly disagree with the IG audit report conclusion that the quarterly implementation status reports to the Office of Management and Budget and Congress were not accurate with respect to the ERP Project budget and the reason for the delayed implementation. Each quarterly report included a general description of the project, progress against plan, and the Federal funds obligated during the reporting period. The Institution provided accurate information and did not hide problems.

For example, the 1st quarter FY 2003 report stated that the Institution encountered problems with migrating data from the SFS and the problems caused delays in paying the Institution's bills. The 3rd quarter FY 2003 report cited problems with financial reporting. The IG audit report cites the 3rd quarter FY 2003 report as not being accurate because the Institution stated that because of the lengthy continuing resolution (CR) and the uncertainty over the FY 2003 budget well into the spring of 2003, the Institution did not begin work on Phase 2 Financials or Phase 1 Human Resources until April 2003. The same statement was made in the 1st quarter FY 2003, and the statement is accurate. The most recent status report, sent in August 2003, provided progress through June 2003. The report for the fourth quarter of 2003 was not sent pending completion of the OCFO implementation review that proceeded through December 2003.

To support the conclusion that the Institution misled the Congress and OMB, the IG audit report presents two charts in Appendix C of the report that analyze the effect of the CR on the ERP implementation. This analysis is based on contractor billings from July of 2001 through June of 2003. A closer analysis comparing spending in the months leading up to the implementation to spending in the months following the system's deployment demonstrates a significant reduction following the system's deployment in October 2002.

Comparing the five-month period of June—October 2002 with the November 2002—March 2003 period shows a 25% reduction in spending during the CR period. Because of the continuing resolution and the uncertainty of the FY 2003 budget, the Institution dramatically scaled back planned system integration contractor work in November 2002. To support the planned ramp up of ERP

work in FY 2003, the ERP budget was budgeted to be twice as large as the FY 2002 budget ($12 million vice $6.2 million). The continuing resolution and ongoing budget debate made it uncertain whether the planned FY 2003 budget increase would occur.

Also, by including in the analysis the early months of the contract period when there was little system integrator activity, the IG audit report skews the data by reducing the overall average billings for comparison purposes. The following chart compares the spending before and during the continuing resolution period.

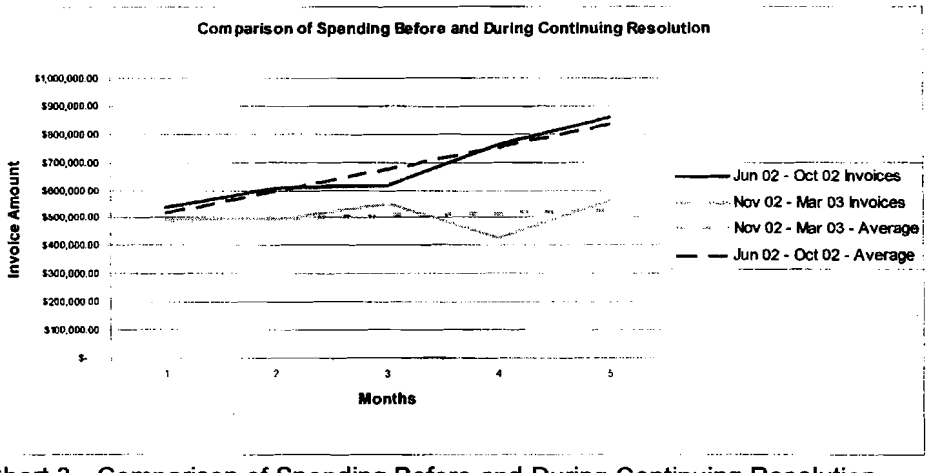


Chart 3—Comparison of Spending Before and During Continuing Resolution

Appendix C also makes the assertion that the level of contractor billings was due to the change in the contract type from fixed-price to a time and materials type contract. It is inappropriate to make this assertion since the work performed by the contractor during this period (primarily data conversion, end-user support, and issue resolution) was not appropriate for a fixed price type of contract. (See discussion of Issue 3 for details.)

The statement in Appendix C that there was continued development work on Phase I during this period is also misleading. Several reports were developed but not released for use by the Institution until after the system was deployed, with the contractor staff costs being picked up after the system was deployed; however, the contractor staff costs associated with those activities represent only a small percentage of the contractor billings during the CR period. The level of the contractor billings during the CR period was higher than anticipated due to the issues that were presented in the reports to Congress for this period.

We respectfully request that Appendix C be deleted from the final report.

Issue 1 Recommendations

It is recommended that the Chief Financial Officer:

Recommendation 1: Realign budgetary resources from OCIO to OCFO to support and assist OCFO in the remaining financial modules.

Comment: Concur. Funds will be realigned within the ERP program from the OCIO ERP Project to establish a dedicated functional team to support the implementation of the remaining financial system software modules and to guide the enhancement of the financial system software modules in operation. This action will further increase the project's overall cost and cause further schedule slippage. However, this action is essential to the system's future success. The program will be re-baselined and a new budget and schedule developed once the details of the realignment are complete.

Recommendation 2: Establish the ERP financial system implementation as a cost center or project to accumulate and track project costs for management and asset capitalization purposes.

Comment: Concur. The Office of Planning, Management, and Budget in collaboration with the OCIO will establish the necessary institutional project codes to assign obligations and expenditures directly to the ERP project by phase (both financials and human resources) and by development and operations and maintenance.

Recommendation 3: Ensure that future congressional and Office of Management and Budget status reports are more accurately prepared and presented.

Comment: We concur that reports to the Congress should be accurate. However, we strongly disagree with the IG audit report conclusion that the implementation status reports to the Office of Management and Budget and Congress were not accurate. Each quarterly report included a general description of the project, progress against plan, and the Federal funds obligated during the reporting period. The Institution provided accurate information and did not hide problems. The third quarter report cited by the IG audit report was prepared in June 2003 and was accurate when it was written. We commit to ensuring that these reports are issued more timely and reflect the latest information available about the program. We will also add the tracking of cost vs. budget by ERP Project phase to the monthly performance reports provided to the Deputy Secretary and Chief Operating Officer.

It is recommended that the Chief Information Officer coordinate with the Chief Financial Officer to:

Recommendation 4: Establish a formal process to track and resolve implementation quality control issues and recommendations.

Comment: Concur. The OCIO has established a formal system development life cycle management process that includes processes to track and resolve implementation quality control issues and recommendations. The life cycle management processes are defined in SD 920 and a series of supporting technical standards and guidelines published between December 2002 and August 2003. The OCIO also established a Technical Review Board (TRB) as part of the process. The TRB's objectives are to: (1) improve the overall level of project success, system quality, and productivity; and (2) ensure that risk is reduced to an acceptable level by completing assessments at key project milestones. We will ensure that future ERP Financial System Phases are reviewed by the Board. ERP Human Resource Management System progress has already been reviewed by the TRB.

Recommendation 5: Obtain a status assessment from the ERP contractor of all current ERP-defined financial requirements to date and require a formal implementation status report at least monthly.

Comment: Concur. The OCIO will rely on the quality assurance contractor to assess the current ERP-defined financial requirements and prepare a Technical Analysis Report on the findings. We will require the system integration contractor to provide a status assessment report as part of the monthly review meetings.

Recommendation 6: Evaluate the current status of outstanding requirements to prioritize them to meet Institution needs.

Comment: Concur. The OCIO and OCFO will jointly review all outstanding issues, problems, and requirements, and the OCFO, with technical guidance from the OCIO, will prioritize them.

Recommendation 7: Comply with the Smithsonian Institution life cycle management policy by establishing both a formal process to ensure requirements are approved by an OCFO designee and a formal user acceptance process for the remainder of the project.

Comment: Concur. The OCIO and OCFO will work together to develop a Service Level Agreement (SLA) that defines the requirements approval and user acceptance processes. The SLA will follow the guidance

contained in the Life Cycle Management Manual TSG-IT-920-01 dated December 6, 2002.

Issue 2: Phase 1 Financial System Implementation Usefulness

"Current ERP financial system management reports are cumbersome, inefficient, and do not meet internal and external management needs. This condition existed because there was a fundamental misunderstanding of how reporting and operational training requirements would be met. In addition, two ERP plans, the "train the trainer" plan and help-desk plan, were not fully established, making the system less useful. As a result, the system is not meeting user needs, Institution staff are frustrated, and confidence in the system has deteriorated significantly."

Response: We agree with the IG audit report finding that *PeopleSoft*-provided financial reports do not meet all the Institution's internal financial management reporting needs and none of the Federal reporting needs—no commercial financial management software product meets Federal reporting needs. As part of the initial implementation a core set of 14 customized and 56 *PeopleSoft*-provided financial reports were developed to support the needs of the units and of various Smithsonian organizations with special reporting requirements. Since the ERP implementation, there has been a steady request for additional reports and enhancements to existing reports based on users experience with the system and evolving business needs. There are currently 114 reports available in *PeopleSoft*. Of 114 reports, 57 are *PeopleSoft*-provided reports and 57 have been custom-developed.

In addition to the on-line reports, a significant number of online-queries have been developed using the *PeopleSoft Query* tool to support various reporting needs. The use of the *PeopleSoft Query* reporting tool has been expanded beyond specialized needs within central offices such as Office of Planning, Management, and Budget and the Office of the Comptroller to include queries for unit needs as well. An added benefit of using the Query tool is that query results can be downloaded into *Microsoft Excel*.

It is an overstatement that there was a "fundamental misunderstanding" between the Office of the Chief Financial Officer and the Office of the Chief Information Officer on how reporting requirements would be met. But we agree that communication between the two offices would have benefited from a more formal reports requirements and review process. We believe that the primary cause was that subject matter experts were not readily available to define reporting requirements because of the severe staffing shortfalls in the Comptroller's Office.

Issue 2 Recommendations

It is recommended that the Chief Information Officer coordinate with the Chief Financial Officer to:

Recommendation 1: Determine which ERP reporting requirements have not been fully addressed and establish a plan that prioritizes these outstanding needs to meet the reporting needs of the Office of the Comptroller, the Office of Sponsored Projects, the Development Office, the Office of the Treasurer, and the units.

Comment: Concur. The Chief Information Officer will work with the Chief Financial Officer to determine which financial reporting requirements have not been met and establish a prioritized plan to meet the Institution's financial reporting needs.

Recommendation 2: Establish a process for reviewing user help-desk assistance requests to determine what remedies are necessary to address user needs, such as additional training or Chief Financial Officer Bulletins.

Comment: Concur. The Chief Information Officer will work with the Chief Financial Officer to establish a process for reviewing user help-desk assistance requests to identify widespread problems and to determine whether the problem can be resolved through training, Frequently Asked Questions (FAQs), and/or CFO Bulletins, or whether revisions to the ERP Financial System software are needed to correct errors and make enhancements.

Issue 3: ERP Implementation Contract

"The current ERP contract elements of design, development, implementation, training, and maintenance support changed from a fixed-price contract to a cost-reimbursement contract. This change was requested by the OCIO because it was believed necessary to respond flexibly to the Institution's system implementation requirements. However, this change increased the Institution's risk of project cost overruns since the responsibility for monitoring cost controls and efficiency shifted from the contractor to the Institution. In addition, the current contract scope now includes many tasks that could be separated into different contracts and monitored separately to minimize costs."

Response: The first task of the ERP system integration contract was awarded as a fixed-price contract. The use of a fixed price contract is appropriate when requirements are well defined. In the case of a system development project, a

cost-plus-award contract should be used as that contract type allows for unknowns as requirements are defined and refined during the development process. However, neither the Office of Contracting nor OCIO has the staff necessary to administer such a contract. The IG audit report correctly identifies the reasons for the change from a fixed-price contract to a cost reimbursable contract. We agree with the IG audit report conclusion that some tasks such as developing and providing training can be issued as fixed price task orders.

Issue 3 Recommendations

It is recommended that the Chief Information Officer coordinate with the Director of the Office of Contracting to:

Recommendation 1: Review the current contract structure and type and determine whether a different contract structure is necessary to adequately support the development and implementation of the remaining modules of the ERP.

Comment: Concur. The Chief Information Officer will work with the Director of the Office of Contracting to identify work that can be issued as fixed-price task orders and use fixed-price task orders wherever practical.

Recommendation 2: Assess the current contract oversight process to determine if additional contract expertise is needed for monitoring the development and implementation of the remaining modules of the ERP.

Comment: Concur. The Institution will strengthen reviews of the contract system integrator's progress and performance through monthly reviews. The OCIO ERP Financial System Project Manager will lead the monthly reviews. The reviews will be attended by the Institution's contract system integrator, representatives of the ERP team of functional and technical experts, the CFO and/or CFO designated staff, and users from Smithsonian units as appropriate.

The purpose of the monthly review will be to assess progress, adherence to schedule and budget, identify problems and to direct any necessary corrective actions. Examples of issues to be addressed are: (1) the status of modification requests (MRs) or discrepancy reports (DRs); (2) implications on the cost and schedule of requested changes; (3) technical problems encountered by the contract system integrator; (4) implications and trade-offs for implementing requested customizations to the commercial software; and (5) problems encountered by the contract system integrator with obtaining functional requirements.

Attachment 2

Understanding the Issues Associated with ERP Financial Implementation

A complete discussion of the Institution's ERP Financial System implementation needs to reflect the following circumstances:

- In FY 2001, the Institution faced an urgent need to replace the Smithsonian Financial System (SFS). SFS, the Institution's primary financial system, was in a fragile state, and the Institution's leadership was concerned that SFS could fail. SFS was based on a technologically obsolete, commercial financial management software product purchased in 1986 and implemented by the Smithsonian in 1996. Upon implementation, the Smithsonian customized the commercial software product it purchased and never completed its documentation, which meant it could not be modified without serious risk of failure. The version operated by the Smithsonian had not been supported by its vendor since 1997. In addition, the vendor was experiencing financial difficulty and was de-listed from NASDAQ. This sense of urgency contributed to a decision to deploy the ERP Financial System Phase 1 on schedule with some known deficiencies rather than delaying implementation another fiscal year. It also led to a compromise of best practice procedures for rigorous independent testing and quality assurance.

- Delays in establishing ERP Work Groups, obtaining reprogramming authority, and reaching consensus among Smithsonian units on chart fields including program codes, and department ID codes compressed the time available to perform more rigorous unit, system, and independent testing and complete system documentation and added to the system integration costs.

- The Office of the Comptroller (OC) experienced substantial reductions in Trust funding in FY 2001-2003 and unexpected turnover of key Federal staff. The unanticipated loss of Trust funds compounded the problem of supporting the ERP implementation with the appropriate number of dedicated staff with the requisite functional expertise. The absence of functional support during implementation led to delays in finalizing requirements for the general ledger and accounts payable modules. Subject matter experts were not readily available to define functional requirements or to perform acceptance testing in a timely manner. These delays compressed the time available to perform more rigorous unit, system, and independent testing and complete system documentation and added to the system integration costs.

- The Institution encountered severe problems because the quality of the data resident in SFS was far worse than suspected. The data conversion software routines worked, but information required to complete conversion was in many instances missing or incorrect in SFS. The data migration process required the conversion of about 44,000 vendors and 16,583 open purchase orders, and the conversion of available spending authority for certain Federal no-year funds and non-allocated Trust funds requiring inception-to-date budget and expense information. The ERP Financial System employs far more rigorous financial controls than SFS, and as a consequence, was intolerant of missing or incorrect data. The delays in the conversion of the spending authority information caused delays in completing the purchase order conversion and delays in paying vouchers. The "learning curve" associated with deploying the new system also contributed to the delays in resolving data-related problems. Manual research of each rejected transaction was required to resolve the problems. The Institution relied on the system integration contractor to help resolve the data quality problems, which contributed to unanticipated costs following the completion of Phase I.

- The Institution did not adequately budget for user training or adequately conceive all of the training required. As a consequence, the training that was provided was inadequate for the Institution's needs. The ERP project-training budget was estimated based on a "Train the Trainer" approach prior to knowing who would be available to make the concept a reality. One of the responsibilities of the ERP Work Groups was to develop and deliver end-user training for each ERP software module. This approach was never implemented because the ERP Work Group members were not dedicated fulltime to the project and did not have the requisite skills to develop and deliver ERP training. While the system integrator, Office of the Chief Information Officer (OCIO) staff, and SAO staff prepared and provided 131 formal ERP training classes that covered purchasing, commitment control, accounts payable, unit specific training to 1,661 ERP users, additional training is needed on what customized reports and *PeopleSoft* provided reports are available and how to use them. Additional training is also needed for sophisticated users, including unit and OCFO staff, on how to use the system most effectively. The revised training approach and the use of the system integration contractor to prepare and deliver the bulk of the training contributed to unanticipated costs following the completion of Phase 1.

- The Institution did not budget for application software maintenance for ERP Financial System Phase 1 operations in FY 2003. Most of the funds spent on system integration support in FY 2003 were to provide user operational support, perform system modifications, fix software errors, prepare custom reports, deliver training, and resolve data quality problems. These activities, except for resolving data quality problems and delivering initial training, are generally classified as application software maintenance. The need to redirect funds from ERP Financial System Phase 2 development to perform Phase 1 application software maintenance reduced the funds available for Phase 2 implementation.

- The unanticipated failure of the Payroll Accounting and Distribution System (PAYES) in October 2002 made it impossible to complete the payroll system integration with the ERP Financial System during Phase 1. As a consequence, Smithsonian units were not able to obtain actual payroll expenses for the first 8 months of FY 2003. The urgent need to correct this situation and the labor-intensive nature of the fix necessitated the redirection of OCFO and OCFO staff resources, which contributed to the delay in Phase 2 and unanticipated project costs. Additionally, units could not authoritatively forecast their FY 2003 budget position for most of the fiscal year because information establishing unit FY 2003 starting balances was not available. The extraordinary effort required to validate unit starting balances diverted OCFO and OCIO staff and resources, which contributed to the delay in Phase 2 and unanticipated project costs.

- The Institution decided to implement *PeopleSoft Financials* version 8.4 vice version 7.5. The Smithsonian was an early adopter of *PeopleSoft* version 8.4 and the first Federal organization to do so. Version 8.4 was the preferred version for the Smithsonian because it combined the functionality of *PeopleSoft's* Commercial and Government and Education software into a single, web-based product. We knew that the PeopleSoft software met the published government standard for basic financial management requirements, but would not support U.S. Treasury reporting requirements. No commercially available financial software does. The Institution decided to deploy *PeopleSoft Financials* version 8.4 instead of version 7.5 to: (1) avoid costly customizations as the version 8.4 satisfied some of the Institution's requirements that were not satisfied in version 7.5; (2) avoid future migration costs in the out-years; and (3) avoid desktop deployment costs. Implementation of version 8.4 required training for both contractor and in-house staff. Unfortunately, *PeopleSoft*-provided documentation was incomplete and the delivered software contained errors. These delays compressed the time available to perform more rigorous unit, system,