

*A REPORT BY THE NEW YORK STATE
OFFICE OF THE STATE COMPTROLLER*

**Alan G. Hevesi
COMPTROLLER**



***NEW YORK CITY SCHOOL CONSTRUCTION
AUTHORITY***

***IMPLEMENTATION OF THE ENTERPRISE
RESOURCE PLANNING SYSTEM***

2002-N-6

DIVISION OF STATE SERVICES

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Report 2002-N-6

Mr. William H. Goldstein
President
New York City School Construction Authority
30-30 Thompson Avenue
Long Island City, New York 11101-3045

Dear Mr. Goldstein:

The following is our audit report addressing the New York City School Construction Authority's implementation of its Enterprise Resource Planning system.

This audit was performed pursuant to the State Comptroller's authority as set forth in Article X, Section 5 of the State Constitution and Section 2803 of the Public Authorities Law. Major contributors to this report are listed in Appendix A.

Office of the State Comptroller
Division of State Services

September 25, 2003

EXECUTIVE SUMMARY

NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

SCOPE OF AUDIT

In the New York City public school system, the construction and major rehabilitation of buildings is guided by a capital plan developed by the New York City Department of Education. The individual projects on the capital plan are performed by contractors that are hired and overseen by the New York City School Construction Authority (SCA). SCA uses a number of different automated information systems to monitor various aspects of these construction projects. Since many of these systems are old and not fully compatible with other systems, SCA officials felt they were cumbersome and inefficient to use. Accordingly, in June 2000, SCA initiated the implementation of a new system (the Enterprise Resource Planning System – ERP) that would replace its older fragmented systems. Our audit addressed the following question about the actions taken by SCA in planning and implementing this system during the period January 1, 1999 through September 30, 2002:

- Has the system been planned and implemented in a manner consistent with generally recognized standards for the development and implementation of computer systems?

AUDIT OBSERVATIONS AND CONCLUSIONS

We found that, during the first two years of implementation activities, ERP system implementation has fallen behind schedule and the expected cost of the system has doubled. We also found that, in a number of critical respects, the ERP has not been planned or implemented in accordance with generally recognized standards for the development and implementation of computer systems. We recommend that significant improvements be made in the implementation of the remaining parts of the system.

SCA's ERP was to be implemented in two phases, with the first phase to be completed by April 2001 and the second phase to be completed by June 2003.

The cost of implementation was initially estimated by SCA at \$5 million. However, we found implementation is behind schedule, as it appears that Phase One of the process was completed more than a year late. Due to fiscal constraints, contract work for Phase Two was placed on hold and an estimated final completion date for the work was not established. We also found that the expected cost of implementation has doubled to at least \$10 million. We determined that SCA has not formally monitored the cost and progress of implementation (e.g., written reports are not produced comparing actual project costs and the progress to-date against estimated costs and scheduled completion dates), and the project's cost reported to upper management in the agency's budget have not been fully disclosed. We recommend that the remainder of the system's implementation be formally monitored by SCA management, and complete project costs be reported to upper management and the governing Board of Trustees. (pp. 5-7)

Certain critical actions should be taken by government agencies when they plan and implement major computerized systems. These actions are described in guidelines published by the United States General Accounting Office. However, we found that SCA either did not take, or did not adequately take, many of these actions. For example, when SCA planned for the type of system that it would implement, it did not perform a cost benefit analysis and did not formally consider different alternatives for implementation. As a result, SCA's new enterprise resource planning system is more likely to be delayed, and the cost of system development is more likely to be higher than necessary. (pp. 8-10)

The first phase of SCA's new enterprise resource planning system was implemented by a contractor. We examined the RFP for this contract and found that it was not sufficiently specific in its description of SCA's requirements. As a result, SCA was less able to define the actions that needed to be taken by the contractor in its system development activities and less able to hold the contractor accountable for any system failures. We also examined the process used by SCA to approve the work performed by the contractor. We found that the actions taken by SCA in approving much of this work were not documented. In the absence of such documentation, there is less assurance that SCA was as thorough as it should have been in evaluating the functionality of certain parts of the system. If SCA's evaluations of system functionality were not as thorough as they should have been, there is less assurance that the Phase One systems will function as intended and meet the needs of their users. We note that some of these users told us they are not receiving all the reports and data they had expected to receive from the new system. We made recommendations to SCA to reduce the potential problems noted above in any future like contracts. (pp. 15-19)

COMMENTS OF DEPARTMENT OFFICIALS

SCA officials generally agreed with our recommendations and stated that many of the recommendations have already been implemented.

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INTRODUCTION

Background

The New York City School Construction Authority (SCA) is responsible for the design, construction and major rehabilitation of New York City's public schools. These activities are guided, for the most part, by five-year capital plans that are developed by the New York City Department of Education (which was formerly known as the New York City Board of Education).

SCA, which was created by the State Legislature in 1988, is governed by a three-member Board of Trustees: The members are the DOE chancellor or acting Chancellor, one appointee of the governor and one appointee of the mayor. The appointee of the mayor serves as the chairman of the board of trustees. The construction and major rehabilitation projects administered by SCA are performed by contractors that are hired and overseen by SCA.

The first five-year capital plan for New York City's public schools covered the five years ended June 30, 1994. This plan totaled \$4.3 billion and focused on major construction projects. The second capital plan, which covered the five years ended June 30, 1999, totaled \$4.9 billion and focused primarily on capital improvement projects. The third capital plan, which covers the five years ending June 30, 2004, originally totaled \$7.2 billion but had been reduced to \$5.1 billion as of December 2002.

These capital plans include hundreds of individual projects, each with its own estimated cost and estimated completion date. SCA is responsible for monitoring the cost and progress of each individual project. SCA has been criticized because many of these projects have not been completed on time or within budget. For example, a number of projects in the 1999-2004 five-year plan have significantly exceeded their budgets. As a result, all the projects on the plan cannot be completed, and the New York City Department of Education now has to determine which projects can be completed with the funds that remain.

SCA uses various automated information systems to monitor the cost and progress of its projects. The various systems track different aspects of different projects, and are not always compatible with one another. Beginning in 1996, SCA engaged a series of consultants to evaluate the functionality of its computer systems. At the time of these assessments, SCA used at least 79 such systems, including many older legacy systems. The consultants determined that the many systems were cumbersome and recommended that they be centralized or consolidated to some extent.

In accordance with these recommendations, SCA officials decided to consolidate their various information systems and, in particular, implement the type of system that was recommended by one of the consultants: an enterprise resource planning system. This system consists of individual modules that are focused on major business processes, such as human resource management and budgeting, while providing for organizational standardization and a single organization-wide database.

SCA's new Enterprise Resource Planning (ERP) system was to contain two types of modules: financial system modules and project management system modules. In Phase One of the system's implementation, the financial system modules were to be developed and installed using Oracle Corporation software; in phase two of the implementation, the project management system modules were to be developed using Primavera Expedition software. In June 2000, one of the Big Four accounting firms was contracted to implement phase one of the project (the financial system modules). According to the contract, the implementation of this phase was to be completed by April 2001. Phase Two of the project (the project management system modules) was to be implemented through a separate contract.

SCA's initial estimate presented to its Board stated that it would cost \$5 million to develop and implement the ERP system. However, this was subsequently increased, and as of September 30, 2002, these costs were expected to total at least \$10 million. At that time, SCA indicated that Phase One of the project was substantially completed, and the contract for Phase Two was about to be put out to bid.

Audit Scope, Objective and Methodology

We audited the actions taken by SCA in planning and implementing the ERP system during the period January 1, 1999 through September 30, 2002. The objective of our performance audit was to determine whether this system has been implemented in a manner consistent with the United States General Accounting Office and the Information Systems Audit and Control Foundation (COBIT) guidelines generally recognized for the development and implementation of computer systems. These guidelines are used by government and private industry as information technology standards.

To accomplish our objective, we interviewed employees of SCA and the New York City Department of Education. In addition, we reviewed SCA's contract for the implementation of Phase One of the project, documentation relating to actions taken in implementing Phase One and Phase Two of the project, minutes of meetings and reports relating to the ERP system, and bylaws and meeting minutes for the SCA Board of Trustees.

We conducted our audit in accordance with generally accepted government auditing standards. Such standards require that we plan and perform our audit to adequately assess those operations of SCA that are included in our audit scope. Further, these standards require that we understand SCA's internal control structure and compliance with those laws, rules and regulations that are relevant to the operations that are included in our audit scope. An audit includes examining, on a test basis, evidence supporting transactions recorded in the accounting and operating records and applying such other auditing procedures as we consider necessary in the circumstances. An audit also includes assessing the estimates, judgments and decisions made by management. We believe that our audit provides a reasonable basis for our findings, conclusions and recommendations.

We use a risk-based approach when selecting activities to be audited. This approach focuses our audit efforts on those operations that we have identified through a preliminary survey as having the greatest probability for needing improvement. Consequently, by design, finite audit resources are used to identify where and how improvements can be made. Thus, we devote little audit effort to reviewing operations that may be

relatively efficient or effective. As a result, our audit reports are prepared on an “exception basis.” This report, therefore, highlights those areas needing improvement and does not address activities that may be functioning properly.

Response of SCA Officials to Audit

A draft copy of this report was provided to SCA officials for their review and comment. Their comments have been considered in preparing this final report and are included as Appendix B.

SCA officials generally agreed with our recommendations and stated that many of them have already been implemented.

Within 90 days after final release of this report, as required by Section 170 of the Executive Law, the President of the New York City School Construction Authority shall report to the Governor, the State Comptroller, and the leaders of the Legislature and fiscal committees, advising what steps were taken to implement the recommendations contained herein, and where recommendations were not implemented, the reasons why.

PROJECT PLANNING AND IMPLEMENTATION

Certain actions should be taken by government agencies when they plan and implement major computerized systems such as the ERP project costing system. However, we found that SCA either did not take, or did not adequately take, many of these actions. For example, when SCA planned for the type of system that it would implement, it did not formally consider different alternatives for implementation, and once the decision was made to implement the ERP system, there was little documentation of either senior management or system users involvement in its development. In addition, the cost and progress of the ERP project was not formally monitored.

Our audit shows that the cost of the ERP Project was already doubled from \$5 million to \$10 million and Phase One was completed at least one year later than expected. The completion date for Phase Two was not set at the time of our audit.

Project Cost and Progress

The cost and progress of a multi-million dollar project, such as the ERP project, should be formally monitored by management. Budgets and expected completion dates should be established for the various component parts of the project, actual costs and progress should be compared to these estimates, and corrective action should be taken when the actual costs significantly exceed the budgets or the completion of critical tasks falls significantly behind schedule. In the absence of such monitoring activities, project costs are less likely to remain within their budgets and critical tasks are less likely to be completed according to schedule.

We examined the actions taken by SCA management in monitoring the cost and progress of the ERP project. We found that SCA has not established a formal system for monitoring the project's cost and progress. For example, SCA officials informed us they do not produce written reports comparing actual project costs and the progress to-date against estimated costs and scheduled completion dates. In addition, we found no

indication SCA initially established either a total cost estimate or scheduled completion dates for the various stages of the project, nor did they establish a cost code for the ERP project so that they could account for all the costs incurred in relation to the project. In the absence of a formal monitoring system, SCA officials were less able to exercise control over the cost and progress of the ERP project. As was previously noted, the expected cost of the ERP project has increased significantly and the completion of the Project is behind schedule. The following summarizes the cost and progress of the ERP project from its inception in June 2000 through September 30, 2002.

According to the fiscal year 2000-01 budget for SCA the development and installation of the entire ERP system, was to cost \$5 million. SCA records indicate that \$1.7 million was spent during that year. An additional \$6.5 million was budgeted for the following year, increasing the total expected costs for the project to about \$8.2 million. However, the amounts budgeted by SCA only covered Phase One of the project. These implementation costs were further increased in August 2002 when a \$1.1 million amendment was added to the contract with the CPA firm for the implementation of Phase One. In response to our preliminary findings, SCA officials indicated that the ERP costs for Phase One totaled \$9,985,187.

In September 2002, SCA officials were preparing to issue a request for proposal (RFP) for Phase Two of the ERP project. At that time, SCA officials estimated that this contract would cost at least \$600,000. Adding the preliminary estimate of \$600,000 for Phase Two to the costs already identified for Phase One, brought the overall estimate of costs for the ERP project as of September 30, 2002 to almost \$10.6 million; double what was originally presented to the SCA Board.

According to the contract, the scheduled completion date for Phase One of the project was April 2001. However, SCA did not accept all the work on Phase One until over a year later (August 2002). According to SCA's Strategic Plan for Information Technology, which was prepared in June 2002, as a result of the completion of Phase One, 22 non-integrated computer applications had been replaced by 10 fully integrated ERP modules, thereby reducing the total number of applications from 79 to 67.

When the ERP Project was initiated in June 2000, no plans or reports were prepared to establish a final project completion date that would cover Phase Two work. However, an August 7, 2002 Authorization Letter for the modification to SCA's agreement with the contractor states that the interfaces between the Phase One systems (financial management) and Phase Two systems (project management) were to be completed by June 2003.

SCA officials indicated that, due to current fiscal constraints, Phase Two contract work has been put on hold. SCA now plans to complete this work using its in-house resources. No separate cost estimates have been developed for this work, nor has an estimated completion date been determined.

SCA officials responded that project cost is controlled through the annual agency wide budget process. In this process, cost estimates are developed for the agency's major activities, and these budgeted amounts must be approved by SCA's management, including the Board of Trustees. We agree that a certain level of management control can be exercised through such a budgeting process. However, this level of control is far more general than the control provided by a detailed monitoring system focusing on the specific costs and specific activities of the ERP project.

In addition, the control provided through the annual budget process was not as effective as it could have been, even on a general level, because the full cost of the ERP project was not reported in the budget. While the amount reported in the budget included the cost of the contract for Phase One and the cost of the hardware and software needed for Phase One of the project, it did not include the cost of Phase Two of the project and the cost of using in-house staff. As a result, the SCA Board of Trustees and SCA's upper management could not rely on the budget to inform them about the extent of the costs that were likely to be incurred in the implementation of the ERP project.

We recommend that a formal system be developed for monitoring the cost and progress of Phase Two of the ERP project, and that the system account for and monitor all costs related to the Project. We further recommend that this system be used to keep the Board of Trustees and upper management fully informed about the cost and progress of the ERP project.

Initiating System Development

Certain actions should be taken by a government agency before it initiates the development of a multi-million dollar computer system, such as the ERP project. These actions are described in guidelines published by the United States General Accounting Office (GAO). If these actions are not taken, the cost of system development may be higher than necessary, the implementation of the system may take longer than necessary, and the system that is implemented may not fully meet the needs of its users.

According to the GAO guidelines, the system development process should be clearly linked to the agency's program needs, the agency's overall strategies, and government-wide policies and standards. To meet these goals, the guidelines recommend that an agency planning to implement a new computer system perform the following actions:

- **Define agency needs** - The agency should develop a formal needs statement. This statement should describe the information technology needs of the agency's users as identified through the agency's formal strategic planning process. The needs statement should include a description of existing system architecture and functions to be supported, and justification for proposed changes, such as correcting deficiencies in existing capabilities, complying with new or changed program requirements, or taking advantage of opportunities for increased economy and efficiency.
- **Define system requirements** - The agency should formally define its requirements for the new system. These requirements should be based on needs that have been identified and validated by users, and should be expressed primarily in functional terms.
- **Identify and assess alternatives** - After identifying its requirements, the agency should identify and assess alternatives for cost-effectively meeting those requirements. The approach selected should reflect an understanding of what is available in the commercial market as well as what is available within the government. Approaching the acquisition this way will lessen, but not eliminate, the risk that an agency may

select an alternative that does not fully meet user requirements or that is unnecessarily complex and expensive. The identification and assessment of alternatives should be documented in a format such as a decision paper. Economic and risk analyses should accompany or be a part of the decision paper.

- **Conduct market research** - The agency's efforts to identify alternatives should include market research of available products and services.
- **Analyze cost/benefits** - The agency's decision should be justified by a cost/benefit analysis.

SCA officials stated that they did not formally identify and assess alternatives, and did not perform a cost/benefit analysis to support their decision to implement an ERP system. They indicated that they did define the agency's information technology needs and did define the system's requirements in terms of these needs. However, the documents provided to us in support of these actions indicate that SCA did not fully comply with the GAO guidelines. For example, the documents did not have the system's workload requirements detailed out, nor did they have evidence to what user needs were considered.

In the absence of a cost benefit analysis and a formal assessment of alternatives, SCA officials cannot be reasonably assured that the ERP system will meet the needs of the agency's users and will be consistent with the overall system strategies and architectures used by SCA. In the absence of an analysis of alternatives, SCA officials lack assurance that their implementation decisions were justified and prudent.

In response to our preliminary findings, SCA officials indicated that they relied on the contractor's implementation methodology for the ERP project. We reviewed the documentation that SCA officials provided to us for this methodology and did not find support that this methodology addressed critical system development initiation activities such as involvement of end users in the planning phase and preparing and working from a needs analysis.

Moreover, in July 2001, more than one year after the Phase One contract had been initiated, SCA engaged Gartner Consulting to assess the risks associated with the ERP project

and to recommend ways of minimizing these risks. The results of this assessment are discussed in detail later in this report. However, one of the major observations made was that the scope of the ERP project was not adequately defined. The scope of a system development project is less likely to be properly defined when the needs of the system's users are not adequately identified and the system's requirements are not defined in accordance with the GAO guidelines.

Guiding System Development

Once a decision has been made to implement a particular computer system, further actions are needed during the system development process if management is to maintain adequate control over the cost, progress and effectiveness of the process. According to the GAO guidelines, the following actions should be taken by a government agency after it initiates the development of a computer system:

- **Ensure the involvement of senior management** - The agency should establish a steering committee or other oversight body that is composed of senior managers (such managers are defined as those who have overall agency responsibility for strategic objectives). The committee should oversee the system development process to ensure that the process is consistent with agency's development goals and overall strategic objectives. The responsibilities of the committee's members should be specified in writing. In addition, one or more senior managers should act as system sponsors, with sufficient authority to ensure that applicable resources are available for the project. The involvement and support of senior management throughout the development process is essential for success.
- **Ensure the involvement of system users** - Users are those who will operate or rely on the system under development. They should be involved and provide support throughout the development process to ensure that their requirements are understood and that the resulting system is both accepted and used. User involvement should be sustained from the needs determination phase through final acceptance and implementation. User involvement will help avoid the

development of products that ultimately do not meet agency requirements.

- **Assign a qualified project management team** - The system development process should be undertaken by a project management team that is headed by a project manager. The project manager should have sufficient authority and an appropriate mix of skills and experience to successfully manage the project. The other members of the team should be assigned clear roles and responsibilities, which should be specified in writing. The team should include members who are skilled in the information technology procurement process, understand the technology, and have experience in managing contracts. The team should also have members knowledgeable about the programs that the new system is to support.

The GAO guidelines also recommend that the agency develop formal policies and procedures for the entire system development process.

We examined the actions taken by SCA officials in managing the system development process for the ERP project to determine whether they were consistent with the actions recommended by the GAO guidelines. We found that SCA did assign a project management team to the development process, as recommended by the guidelines. However, SCA officials did not provide us with any decision papers, memoranda, or other records of senior management oversight and approval of system development objectives and plans and SCA officials did not provide us with any program management directives or other written directives from senior managers stating goals and objectives for the development process and delegating authority to carry out the process. While there were indications that officials from the New York City Department of Education had input into the development of Phase One, these officials stated they did not have any input in its acceptance.

We also found that SCA has not established formal policies and procedures to guide its system development activities. In particular, SCA has not established policies or guidelines addressing the role and structure of steering committees or other oversight bodies. If senior management and system users were not significantly involved in the development of the ERP

project, as appears to be the case, the project is far less likely to meet the goals of the agency and the needs of the users. We note that, in its assessment of the ERP project, Gartner Consulting found indications that neither senior management nor system users were sufficiently involved in the system development process, as it observed that:

- Decisions were made without management understanding and support.
- Users were not sufficiently involved in the testing process.
- The project management team was staffed with inexperienced employees by SCA and the Phase One contractor.
- There were significant gaps in training, testing, and conversion planning and execution.
- User training was held too early, and the content was too general.
- Communication among SCA management, users and the project team was poor.

These weaknesses in the system development process may have been caused, in part, by SCA's lack of formal policies and procedures for the process.

In response to our preliminary findings, SCA officials indicated that the President of the SCA had ordered the Gartner Group study to provide an independent review of the status and risk of going live with the ERP Project at the fiscal year end. They indicated that Gartner provided an overall opinion that the project was 20-30 percent under funded and under staffed based on similar projects. SCA also agreed that it did not have policy or guidelines related to the structure of steering committees or other oversight groups.

Recommendations

1. Formally monitor the cost and progress of Phase Two of the ERP project, and any other major system development projects that are undertaken in the future, by establishing cost estimates and scheduled completion dates for the various stages of the project and producing periodic written reports comparing actual project costs and progress to-date against the estimated costs and scheduled completion.
2. Take corrective action when the actual costs significantly exceed the budgeted costs and when the completion of critical tasks falls significantly behind schedule.
3. For Phase Two of the ERP project, and any other major system development projects that are undertaken in the future, regularly distribute to SCA's Board of Trustees and upper management written reports comparing actual project costs and progress to-date against the estimated costs and scheduled completion dates.
4. When monitoring and reporting the cost of Phase Two of the ERP project, and any other major system development projects that are undertaken in the future, identify and account for all project costs, including the cost of the time spent by SCA staff.
5. Before initiating the development of new computer systems, define the agency's needs and identify and assess alternatives in a manner consistent with the GAO guidelines for system development.
6. Establish formal written policies and procedures for the development of computer systems that are consistent with the GAO guidelines for system development.
7. In Phase Two of the ERP project and all future system development projects, monitor the development process to ensure compliance with the GAO guidelines for system development, and involve senior management and system users in the process.

PHASE ONE CONTRACT

System development projects often require the services of one or more contractors. These contractors often adapt or install specialized software for the system and test the functionality of the system. If adequate control is to be maintained over the cost, progress and effectiveness of an agency's system development efforts, the contracts with the consultants who participate in the efforts must be adequately controlled.

We examined SCA's controls over its contract for Phase One of the ERP project (the financial systems). We identified control weaknesses in two critical aspects of this contract: (1) the Request for Proposal (RFP) in which SCA was to specify what was to be required of the contractor and (2) the process used to approve the work performed by the contractor. As a result, SCA has been required to process changes to the original contract, at a potentially increased cost.

Contract RFP

The GAO guidelines for computer system development recommend that solicitation documents such as RFPs provide the information necessary for vendors to propose equipment, software and services that will meet the agency's requirements. Since the RFP becomes part of the binding contract once a proposal is made and accepted, it is particularly important that the RFP be as clear and comprehensive as possible. If the RFP does not accurately and clearly specify the agency's requirements, or if the factors used by the agency in evaluating responses to the RFP do not accurately reflect the agency's priorities, then the system that is developed by the contractor may not fully meet the agency's needs.

We examined the RFP for Phase One of the ERP project. We found that this RFP was not sufficiently specific in its description of SCA's requirements. The need for additional information is shown by the written comments that were submitted by potential bidders, examples of which follow:

- The RFP did not explain what project completion entailed.
- The RFP did not indicate the expected phase of installation for the seven Oracle modules and the sequence of the installation of the modules.
- The RFP did not state what SCA legacy applications would require integration with the Oracle modules and which legacy systems were to be replaced by the Oracle ERP implementation. It also did not explain what “evaluation of Legacy systems” would entail. It also did not explain what interfaces were envisioned, and between which systems.
- The RFP did not explain what data was to be converted, from what source, and to which destination. It also did not indicate the format, location and data base source of the data to be converted.
- The RFP did not identify SCA reporting requirements.
- The RFP did not explain how many people were to be provided with implementation training and what roles and duties these people would be filling. The training time period was not identified.
- The RFP did not explain the time period for the provision of support services and the expected nature of the support services.

We further note that the ERP project manager told us he also believes the RFP was too general.

We believe the lack of specific requirements in the RFP may be due in part to certain weaknesses that were previously noted in this report. In particular, SCA did not fully identify the needs of the system’s users contrary to the GAO guidelines for computer system development. As a result, these specific needs were not available for use in the RFP. We also note that while SCA engaged a consultant, it did not hold any pre-solicitation or pre-proposal conferences with potential vendors in order to seek industry views on its planned project. Such conferences can be used to obtain information about what is available and to encourage competition for the contract.

In the absence of an appropriately detailed RFP, SCA was less able to define the actions that needed to be taken by the contractor in its system development activities, and is less able to hold the contractor accountable for any failures in system performance. For example, the original contract stated only that there would be an “interface with DSF”. The RFP did not define how this interface would or would not occur. It was subsequently determined that this would be accomplished by constructing a new intake system for DSF. This was a large project.

Contract Deliverables

The contractor for Phase One of the project was expected to perform certain work. Generally, the contractor was expected to install and test certain financial systems (e.g., general ledger, accounts payable, budgeting, purchasing, grants, and asset management systems), provide user manuals for these systems, and train SCA staff in the use of the systems. According to the terms of the original contract, the work performed by the contractor was to be documented in various reports and other types of documents that are specified in the contract, and this documentation was to be submitted for SCA’s approval before the contractor could be paid. These packages of documentation were referred to as the contract deliverables, and the contractor was required to provide SCA with a total of 79 separately defined deliverables. The 79 deliverables were to be accepted, and paid for, by SCA on the following basis:

- 1) acceptance criteria to be established in the initiation phase of the project;
- 2) the acceptance process as described in the contractor’s formal proposal;
- 3) a written notice of substantial completion signed by SCA upon the contractor achieving substantial completion, which was to be sent to the contractor with a list of outstanding items; and
- 4) a letter of completion signed by SCA after the outstanding items were completed.

Our audit of the documentation that SCA provided (for the 71 deliverables) indicated that 46 of the 71 deliverables were

accepted in accordance with contract requirements. However, the status of the 25 remaining deliverables was not adequately accounted for by this documentation. For 18 of the 25 deliverables, the documentation did not indicate whether the deliverable had been accepted or rejected by SCA; for 7 of the 25 deliverables, the documentation indicated that the deliverable had been rejected by SCA, because the required work had not been completed to SCA's satisfaction. Despite our repeated requests for documentation relating to any follow-up action that might have been taken in response to the seven rejections, no further documentation was provided in relation to these seven deliverables.

Therefore, on the basis of the documentation that was provided to us, we were able to confirm SCA's acceptance for only 46 of the 79 contract deliverables. Moreover, in the absence of due dates, we were unable to evaluate the timeliness of any of the deliverables.

SCA officials informed us that they modified the method by which they approved the contract deliverables by amending the contract. This was caused by SCA's concerns about the operation of the system as they approached the date the system was intended to start operating. These concerns caused them to hold the contractor in default, which in turn led to negotiations with the contractor. During negotiations, an alternative method was agreed upon for the review and acceptance of the work. In effect, the contractor and SCA met and reviewed the system's functionality. SCA officials state that as of April 2003, they have accepted all of the Phase One work from the contractor.

The SCA Vice President for Information Technology told us that Phase One of the ERP project was essentially completed and all work was accepted as of April 2003. He stated that the only work that remained to be done by the contractor in relation to Phase One was to develop the interface links between the Oracle-based Phase One systems and the Primavera-based Phase Two systems, and these links cannot be developed until the Phase Two systems have been completed. He stated that SCA's acceptance was not documented for some deliverables because a change was made in the process that was used by SCA to evaluate the work performed by the contractor. As a result of this change, the contractor was no longer required to submit documents or reports showing that the deliverables had been completed as required. Instead, the contractor was

required to demonstrate to SCA that the various aspects of the Phase One financial system modules performed as required. Once this was done, SCA accepted the work performed by the contractor.

Although the changes to the contract allowed SCA to accept the work without all of the documentation called for by the original contract, we question why SCA's evaluations of system functionality were not documented. We also question whether evaluations of this nature can be sufficiently thorough if the evaluation process is not formal, and accordingly, documented to some extent. In the absence of such documentation, there is less assurance that SCA was as thorough as it should have been in evaluating the functionality of certain parts of the system.

Recommendations

8. Future system development RFPs should include complete and specific descriptions of SCA's requirements. These descriptions should include a needs statement and a requirements analysis prepared consistent with guidelines for system development such as those of GAO.
9. Document the acceptance of contract deliverables for system development projects.
10. Make sure that due dates for the project deliverables are prepared and become part of system development contracts. Document the contractor's performance in meeting these dates.

MAJOR CONTRIBUTORS TO THIS REPORT

Steven Sossei
Michael Solomon
Tony Carbonelli
Keith Dickter
Keith Murphy
Bebe Hussain Belkin
Joseph Giaimo
Dana Newhouse

NEW YORK CITY SCHOOL
CONSTRUCTION AUTHORITY



August 8, 2003

Mr. Steven E. Sossei
Audit Director
Office of the State Comptroller
110 State Street
Albany, NY 12236

Re: Draft Audit Report on the Implementation of
the Enterprise Resource Planning System by
the New York City School Construction
Authority (2002-N-6)

Dear Mr. Sossei:

Enclosed is the Authority's response to the above report.

We welcome the outside review of the Phase I Oracle ERP implementation and are committed to improving our processes and controls for major projects of this type. We agree that major IT projects should have complete project budgets that include internal costs, as well as the consultant costs from the implementation RFP.

The SCA recognized the need for improvements during the ERP implementation, which led to hiring a Vice President for Information Technology, who was given the responsibility of completing the ERP project and engaging an independent evaluation of the ERP status by the Gartner Group. Many of the audit recommendations have already been completed, including the initiation of a Quality Assurance function within Information Technology. The new ERP system enhances the ability to meet the full reporting of project costs, while the former financial system did not lend itself to reporting full costs on a project basis. The SCA is reexamining its policies and procedures with regard to developing major systems with the intent of creating a Systems Development Life Cycle.

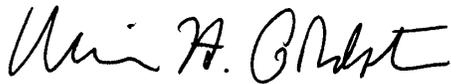
30-30 Thomson Avenue
Long Island City, NY 11101-3045
718 472-8000
FAX 718 472-8840

Appendix B

We agree that the SCA should inform its Trustees of the full cost of major projects such as the ERP project. As information, the KPMG ERP implementation contract was awarded for \$4.8 million. The final KPMG consultant labor cost was \$6.0 million, an increase of approximately 25%, which included a new system to interface with the Division of School Facilities and a re-engineered "requirements contract management system", neither or which were in the original scope of work. The new ERP system went live and replaced the legacy systems effective July 1, 2001, which was three months later than planned. Final payment negotiations and reporting enhancements did extend an additional year.

A detailed response and status is attached for each of the audit recommendations. We are pleased to report that many of these are underway as specific IT initiatives. These enhancements and systems efforts will address the issues raised in the report.

Sincerely,



William H. Goldstein
President and CEO

Enclosure

cc: Chancellor Joel Klein
Kathleen Grimm
LaVerne Srinivasan
Bruce Feig
Andrew Levine
Francis Nader
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NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

PAGE 3 OF 12

RESPONSE DATE: 08/08/2003

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

A. RECOMMENDATION WHICH THE AUTHORITY HAS IMPLEMENTED

Recommendation 1: Formally monitor the cost and progress of Phase Two of the ERP project, and any other major system development projects that are undertaken in the future, by establishing cost estimates and scheduled completion dates for various stages of the project and producing periodic written reports comparing actual project costs and progress to-date against the estimated costs and scheduled completion

RESPONSE TO RECOMMENDATION – IMPLEMENTATION PLAN

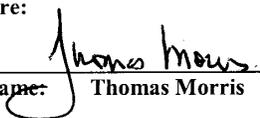
By implementing the ERP system the Authority now has the ability to budget by major project and capture actual encumbered and/or vouchered amounts. Reports of estimated vs. actual costs will be produced from the ERP system. The IT department currently uses Microsoft Project to track timings for major projects and keep Baseline vs. Estimated vs. Actual dates. Weekly meetings between the project manager and the VP of IT are used to monitor progress.

IMPLEMENTATION DATE

July 31, 2003

RESPONSIBLE AREA

Signature:



Print Name: Thomas Morris

8-8-03

Date

Print Title: Director, Special Projects

NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

PAGE 4 OF 12

RESPONSE DATE: 08/08/2003

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

A. RECOMMENDATION WHICH THE AGENCY HAS IMPLEMENTED

Recommendation 2: Take corrective action when the actual costs significantly exceed the budgeted costs and when the completion of critical tasks falls significantly behind schedule.

RESPONSE TO RECOMMENDATION – IMPLEMENTATION PLAN

Information Technology Directors meet on a weekly basis with the Vice President of Information Technology to review all projects with regard to timelines, progress and cost. If the cost significantly exceeds the budget the VP of Information Technology will decide, based on funds availability and the project priority, if more funds should be added to the project or not based on the effect on the schedule. All significant cost overruns outside of the allocation of personal services expenses need to be approved by senior management.

If project tasks and or milestones fall significantly behind schedule, actions are taken based on the criticality of the project and the reasons that caused the schedule delays. Alternatives can take the form of adding overtime to catch-up, adding more resources to the project, changing the priorities of tasks within the project, changing project scope, or transferring the project to another project manager. Based on the importance and the size of the project the alternatives may be presented to senior management.

IMPLEMENTATION DATE

December 01, 2002

RESPONSIBLE AREA

Signature:



Print Name: Don Cantwell

8/8/03
Date

Print Title: Vice President, Information Technology

RESPONSE DATE: 08/08/2003

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

**C. RECOMMENDATION WHICH THE AUTHORITY
AGREES WITH BUT IS PENDING IMPLEMENTATION**

Recommendation 3: For Phase Two of the ERP project, and any other major system development projects that are undertaken in the future, regularly distribute to SCA's Board of Trustees and upper management written reports comparing actual project costs and progress to-date against the estimated costs and scheduled completion dates.

RESPONSE TO RECOMMENDATION

The executive office of the SCA does and will retain the decision making on what is presented to the Board of Trustees. If a technology project has an important impact on SCA operations or if there is a significant cost associated with the project, the President's office will determine how these projects are presented to the Trustees. The Information Technology Division is implementing in the ERP and Special Projects group a detailed budget based on its planned projects. All major projects will have detailed budgets for Personal Services expenses and Other than Personal Services expenses. These budgets will track and report total project costs. Reports will be developed for these projects comparing actual project costs and progress to budgets. They will be presented quarterly to the SCA senior management.

TARGET IMPLEMENTATION DATE

First Report October 2003

RESPONSIBLE AREA

Signature:



Print Name: Don Cantwell

8/8/03
Date

Print Title: Vice President, Information Technology

NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

PAGE 6 OF 12

RESPONSE DATE: 08/08/2003

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

**C. RECOMMENDATION WHICH THE AUTHORITY
AGREES WITH BUT IS PENDING IMPLEMENTATION**

Recommendation 4: When monitoring and reporting the cost of Phase Two of the ERP project, and any other major system development projects that are undertaken in the future, identify and account for all project costs, including the cost of time spent by SCA staff.

RESPONSE TO RECOMMENDATION

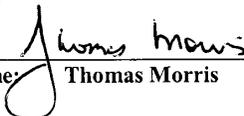
Prior to the SCA implementing the ERP system it did not have an automated way of capturing expenses associated with administrative projects such as Information Technology projects. With the implementation of the Projects and Grants modules of the ERP, the IT division now plans OTPS expenses by project. The SCA is in the process of implementing a timekeeping system that will allow contract employees to allocate their time to different projects and modifying the employee timekeeping system so IT employees will report their time by project. While this system is being implemented, the data are currently being captured in spreadsheets. The Information Technology Division is implementing in the ERP and Special Projects group a detailed budget based on its planned projects. All major projects will have detailed budgets for Personal Services expenses and Other than Personal Services expenses. Reports will be developed for these projects comparing actual project costs and progress to budgets. They will be presented quarterly to the SCA senior management.

TARGET IMPLEMENTATION DATE

October 2003

RESPONSIBLE AREA

Signature:



Print Name: Thomas Morris

Print Title: Director, Special Projects

8-8-03
Date

NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

PAGE 7 OF 12

RESPONSE DATE: 08/08/2003

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

**C. RECOMMENDATION WHICH THE AUTHORITY
AGREES WITH BUT IS PENDING IMPLEMENTATION**

Recommendation 5: Before initiating the development of new computer systems define the agency's needs and identify and assess alternatives in a manner consistent with the GAO guidelines for system development.

RESPONSE TO RECOMMENDATION

The SCA has purchased the IBM Rational suite of software to improve the SDLC process. Rational Requisite Pro is one of the modules included in the suite. Requisite Pro is a recognized tool for gathering and documenting business, user and technical requirements for technology projects.

The documentation of user needs and analysis of options is a goal of the enhanced SCA SDLC and a major driver for the acquisition of the Rational tool suite.

The SCA plans on implementing Requisite Pro as part of its fiscal 2004 plan.

A review of the GAO system development implementation guidelines will be completed to determine if additional changes are required.

TARGET IMPLEMENTATION DATE

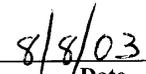
June 2004

RESPONSIBLE AREA

Signature:



Print Name: Carol Bass



Date

Print Title: Director, Applications Development

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

B. RECOMMENDATION WHICH THE AUTHORITY HAS PARTIALLY IMPLEMENTED

Recommendation 6: Establish formal written policies and procedures for the development of computer systems that are consistent with the GAO guidelines for system development.

WHAT HAS BEEN IMPLEMENTED?

The SCA has established a standard operating procedure for systems development for new systems and enhancements to existing systems. This procedure is monitored by the QA area of IT Operations for all projects to insure the steps of this procedure are carried out for all IT projects. The policy covers all the documentation needed for projects including feasibility studies, requirements documents, functional specifications, technical specifications, testing documents and user signoffs where appropriate. This is a precursor to a formal System Development Life Cycle document for the SCA. This policy has been in place since November 2002.

WHAT HAS TO BE IMPLEMENTED?

The current Systems Development procedure needs to be compared with the GAO guidelines for gaps and differences. The procedure will need to be updated to be compliant with GAO guidelines and a formal SDLC needs to be prepared for the SCA.

EXPECTED IMPLEMENTATION DATE

This will be implemented in phases ending in June 2004

RESPONSIBLE AREA

Signature:


Print Name: Fred Silva
Print Title: Director, Operations

8-8-03
Date

NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

PAGE 9 OF 12

RESPONSE DATE: 08/08/2003

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

**C. RECOMMENDATION WHICH THE AUTHORITY
AGREES WITH BUT IS PENDING IMPLEMENTATION**

Recommendation 7: In Phase Two of the ERP project and all future system development projects, monitor the development process to ensure compliance with the GAO guidelines for system development, and involve senior management and system users in the process.

RESPONSE TO RECOMMENDATION

Phase II of the ERP, Expedition implementation and linkage to Oracle, is underway. The system development process has been updated to address the recommendations, specifically:

- Ensure Senior Management Involvement,
- Ensure User Involvement,
- Ensure Required Expertise is Assigned to the Project.

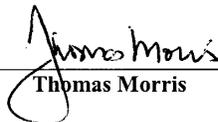
A review of the GAO system development implementation guidelines will be completed to determine if additional changes are required.

TARGET IMPLEMENTATION DATE

June 2004

RESPONSIBLE AREA

Signature:



Print Name: Thomas Morris

8-8-03

Date

Print Title: Director, Special Projects

NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

PAGE 10 OF 12

RESPONSE DATE: 08/08/2003

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

A. RECOMMENDATION WHICH THE AUTHORITY HAS IMPLEMENTED

Recommendation 8: Future system development RFPs should include complete and specific descriptions of SCA's requirements. These descriptions should include a needs statement and requirements analysis prepared consistent with guidelines for system development such as those of GAO.

RESPONSE TO RECOMMENDATION – IMPLEMENTATION PLAN

There has been one RFP developed subsequent to the ERP project from the IT Special Projects unit for consulting services in Expedition. That RFP contained detailed requirements based on technical and business needs. All RFPs are created with a decision paper that is approved by the President and the RFPs are reviewed by the VP of the respective area submitting the RFP and by the Contracts Administration Department. This review process is expected to ensure that RFPs contain adequate specifications.

IMPLEMENTATION DATE

July 11, 2002

RESPONSIBLE AREA

Signature:



Print Name: Don Cantwell

Print Title: Vice President, Information Technology

8/8/03
Date

NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

PAGE 11 OF 12

RESPONSE DATE: 08/08/2003

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

A. RECOMMENDATION WHICH THE AUTHORITY HAS IMPLEMENTED

Recommendation 9: Document the acceptance of contract deliverables for system development projects.

RESPONSE TO RECOMMENDATION – IMPLEMENTATION PLAN

The SCA determined that the KPMG’s delivery of the ERP system was not acceptable and issued a “cure letter” on May 11, 2001. The SCA & KPMG jointly determined that the contract deliverables as defined in the original contract were inadequate to measure the delivery of system functionality and mutually agreed to cease using them as the documentation of system implementation. SCA and KPMG established a joint task force, which included the SCA Executive Director; VP, Finance; VP, Information Technology; SCA ERP Project Manager; KPMG Managing Director; and KPMG ERP Project Manager. The Task Force determined that completion of the contract would be measure on “delivered” (operating) system functionality as determined by final acceptance by the VP of the functional area.

The functionality deliverables were identified and payment was made for what had been completed to the SCA’s satisfaction. This was documented in various “system functionality” tracking sheets and finalized in the contract amendment approved August 7, 2002.

It was deemed unnecessary to address the remaining deliverable documents, as defined in the original contract, since they were replaced by the contract amendment.

The SCA will document the acceptance of contract deliverables for systems development projects, by specifically approving each major contract deliverable and documenting interim progress during periodic reviews.

IMPLEMENTATION DATE

August 7, 2002

RESPONSIBLE AREA

Signature: 

Print Name: Don Cantwell

8/8/03
Date

Print Title: Vice President, Information Technology

NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY

PAGE 12 OF 12

RESPONSE DATE: 08/08/2003

AUDIT TITLE: IMPLEMENTATION OF THE ENTERPRISE RESOURCE PLANNING SYSTEM

AUDITING AGENCY: OFFICE OF THE STATE COMPTROLLER

DIVISION: INFORMATION TECHNOLOGY

DRAFT REPORT DATE: JULY 2, 2003

AUDIT NUMBER: 2002-N-6

**C. RECOMMENDATION WHICH THE AUTHORITY
AGREES WITH BUT IS PENDING IMPLEMENTATION**

Recommendation 10: Make sure that due date for the project deliverables are prepared and become part of system development contracts. Document the contractor's performance in meeting these dates.

RESPONSE TO RECOMMENDATION

The SCA will make every attempt to include deliverable due dates as part of contracts.

In many cases the implementers are contracted for their expertise, using "requirements contracts." The implementers are managed by specific sub-tasks, which use their expertise to create a reasonable schedule for the specific deliverables. For these "requirements contracts," the overall schedule of deliverables is not known until after the contract is signed and the various sub-tasks are defined. The SCA will include deliverables and due dates in the work authorizations, and have the contracted party agree to these due dates prior to starting work.

TARGET IMPLEMENTATION DATE

September 2003

RESPONSIBLE AREA

Signature:



Print Name: Thomas Morris

8-8-03

Date

Print Title: Director, Special Projects