



# MEMORANDUM

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TO: Members, Joint Committee on Information Technology  
FROM: Scott Frank, Legislative Post Auditor  
DATE: January 19, 2012  
SUBJECT: Background Information on Systems Implementation Audits and Senate Bill 254

## Background on Systems Implementation Audits

As of September 2011, the State of Kansas had 30 IT projects under development that were each expected to cost at least \$250,000, including nine that were expected to cost at least \$20 million. Currently, these projects are overseen at three different levels. First, all such projects are overseen centrally by the Enterprise Project Management Office within the Department of Administration. Second, each branch of government has a Chief Information Technology Officer (CITO) who is responsible for overseeing the projects within his or her own branch. Each CITO is also responsible for working with the other CITOs to coordinate IT projects across all three branches. Finally, the Legislative Branch CITO provides periodic progress reports on the status of all large projects to the Legislature's Joint Committee on Information Technology (JCIT).

Despite these three layers of oversight, several recent projects within the state have run significantly behind schedule, come in over budget, or have not delivered the functionality that was expected. For example, the Legislature's KLISS project (\$13.5 million) and the Department of Administration's SMART accounting system (\$46.4 million) were both implemented in fiscal year 2011 but have not functioned as expected. Perhaps most notable is the Department of Labor's Unemployment Insurance Modernization project (\$46.7 million) which began in 2004, stopped and restarted several times, and was finally cancelled in 2011.

Unfortunately, unsuccessful government IT projects are common. Various articles in the online literature suggest that 25-50% of all government IT projects run over budget, are not completed on time, or fail to deliver the functionality that was expected. In 1995, our office developed a guidance document for agencies that summarizes many of the reasons why IT projects under deliver or completely fail. Those reasons included failing to conduct an adequate needs assessment before the project, putting staff who lack adequate project management training and experience in charge of overseeing the project, and not implementing an adequate quality control process to check the vendors' work. A copy of the 1995 document is attached.

Historically, the audit offices in most states only get involved in evaluating government IT projects after the fact, and only evaluate projects that have failed. Such audits help determine who was at fault and what went wrong with the project. However, because these audits tend to be limited to a single project, they have limited ability to prevent future problems.

Joint Committee on Information Technology  
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Attachment 1

The state audit offices in at least two states—Virginia and Colorado—now conduct continuous audits of ongoing IT projects, also known as “systems development audits,” to help head off problems before the projects fail. Rather than wait until after a project is completed to evaluate it, these states assign trained project management auditors to monitor high-risk IT projects from the beginning. The auditors attend all project planning and status meetings, and review bi-weekly status reports to monitor the progress of their assigned projects. They look for potential red flags that indicate the project might be in trouble, such as the vendor consistently failing to meet key milestones and the agency making contract payments without sufficient deliverables. If a project appears to be at risk, the audit office communicates the problems to agency management, to the central IT agency, and if necessary, to the Legislature. The goal is to identify the problems early, at a time when there are more options for addressing them, rather than allowing the problems to compound and have the project fail.

### Senate Bill 254

Senate Bill 254 would give Legislative Post Audit the authority to conduct ongoing systems implementation audits of information technology projects. The bill is currently in the Senate Ways and Means Committee, and has a hearing scheduled for later today.

### Provisions

Our office currently conducts IT security audits and data mining audits under the financial-compliance audit provisions of the Legislative Post Audit Act. Senate Bill 254 would add a new category of audits to the Legislative Post Audit Act—information technology audits. This new class of audits would include the security and data mining audits we already conduct, as well as the proposed systems implementation audits. All information technology audits would be conducted at the direction of the Legislative Post Audit Committee.

Senate Bill 254 also gives the Post Auditor flexibility in reporting on the results of a systems implementation audit. If the Post Auditor were to determine that a project was at risk of failure, Senate Bill 254 would give him or her authority to immediately communicate these problems to the Legislative Post Audit Committee, JCIT, and the three CITO's. This provision would be unique to systems implementation audits, but is very important. Without it, any results from the systems implementation audits would be confidential, and could not be communicated to anyone other than the agency itself until after they were presented to the Legislative Post Audit Committee in an open meeting. Waiting until the next committee meeting could significantly slow down the ability of those who govern these IT projects to respond to problems.

### Implementation

**Resources** – We would plan to devote at least two auditors to systems development audits, which should give us the ability to continuously audit about 8-10 projects at a time. Based on our conversations with Virginia and Colorado, these auditors should be certified as Project Management Professionals (PMP) to make sure they have the necessary expertise and credibility. In order to preserve the continuity of the function, it would be important to have two certified auditors (to facilitate collaboration as well as preserve the function if one auditor were to leave).

These would not necessarily need to be two additional positions—they could come from within our existing staff—but shifting resources would reduce the staff available for regular performance audits.

**Selecting Projects** – Because our office would not have the resources to monitor all of the large IT projects in the state, the Legislative Post Audit Committee would need a process to select the projects that would be audited. Virginia uses a risk-based approach, focusing its efforts on projects that are expensive, have a longer timeframe, are especially complicated, or involve agencies that have a poor history with IT projects. We would suggest a similar approach for Kansas.

## **Some Common Problems Noted In Computer-Related Audits**

The Legislative Division of Post Audit

June 1995

### **Problems With Project Planning**

- Often agencies started a computer development project without adequately assessing their needs. This led to time-consuming and costly modifications to the projects during their development.
- When planning projects, agencies did not sufficiently involve the end users of the systems in the decision making process.
- When agencies did a needs assessment, they often relied on software vendors who had a product to sell, rather than using an independent consultant.
- Significant costs—such as the time of State staff involved in the project—often were overlooked when establishing the budget and presenting it to the Legislature.

### **Contracting Problems**

- When private contractors have been used, poorly written contracts have allowed vendors to be paid for systems that didn't work, or for work that was not satisfactory.

### **Staffing Problems**

- Agency staff assigned to systems development projects didn't always have the necessary expertise.
- Agency staff were supposed to be provided to work on systems development, but often were not provided in sufficient numbers or for enough time for the project to be successfully completed.
- Agency staff, including project managers, often were expected to continue with their other duties and work on complex computer projects "on the side."

### **Management and Oversight Problems**

- Project managers sometimes were given responsibility for a project, without being given authority to make crucial decisions or to commit the necessary resources to the project.
- Top management did not always lend their full endorsement to the project which led to disagreements and in-fighting among lower-level managers about what the system was supposed to do, what was to be done, and by whom.
- On many projects there was no quality-control review to assess the quality of the work vendors had provided before the vendor was paid.

## Some Suggestions for Good Practices to Follow When Developing or Acquiring a New Computer System

The following list of good practices comes from recent audits of State computer systems, suggestions from State officials, and various references dealing with the planning and implementation of new computer systems. These good practices can and should be followed when developing a system in-house or when contracting with a private vendor, but sometimes have been lacking in computer systems developed by State agencies. References that may be helpful when developing a computer system are listed at the end of this document.

### PLANNING THE PROJECT

First, do a needs assessment. Clearly defining what you need will reduce the number and magnitude of project changes and revisions after the project is under way. A needs assessment involves examining current operations and deciding exactly what you want the new computer system to do. A good needs assessment includes an evaluation of the existing agency manual and computer business processes; new automation may be just one way to improve those processes.

If possible, have the needs assessment done by someone who is not trying to sell you a specific product. It is best to use an independent consultant, or in-house staff if they have the expertise, rather than a computer vendor. This can help ensure that the needs assessment is objective. Also, while computer vendors may give reasonable assessments, their knowledge may be limited to their own products and may not take into account other vendors' products that are more suited to your agency's needs.

Extensively involve those who will be using the computer system in all stages of planning and development. Administrators and managers often don't have a good sense of the day-to-day needs of the people who actually use the system. In the past, important pieces have been left out of systems because users were not involved.

Consider whether an existing software package will fit your needs. Computer vendors often have software packages that they have developed for agencies in other states. These packages often can be modified to fit your needs for less than it might cost to develop a system from scratch. Again, always involve the users in this assessment. Only opt for custom software, with its higher development and maintenance costs, when there is a clear business case for doing so.

Ensure that the system's infrastructure is adequate. Network design and capacity, data security, user help, data backup and storage, and disaster recovery all are important considerations. Also, system designers should develop standards for acceptable response times and other service levels. Those standards should be approved by the system's users.

## SETTING THE PROJECT BUDGET

Establish a budget for each phase of the project and a budget for the total project. Always prepare a budget that considers staff time to be provided as well as dollars to be spent. A working budget provides a comparison of staff time spent and actual costs with planned time and expenditures. This tool provides accountability for staying within the budget, and a systematic basis for deciding whether to modify activities to control costs.

Be sure that all costs are included in the budget. Costs such as salaries and benefits of State personnel assigned to the project and costs of training agency personnel frequently are forgotten.

## STAFFING THE PROJECT

Assign a full-time manager to the project with clearly defined responsibilities. Computer development projects are very complex and difficult to manage. The manager should not be expected to work on other agency projects while managing the development of a computer software project.

Give the project manager sufficient authority over the people and other resources provided for the project. A project manager cannot successfully complete a project if he or she has to compete with other managers for limited staff resources. The manager needs to know what resources have been committed to the project, and that they can be used as needed.

Ensure the in-house staff assigned to the project have the expertise needed to effectively carry out the role assigned to them. In the past, assigning inexperienced staff to projects has been a major reason why system implementation was delayed. In addition, on joint development projects, if an agency does not supply people with the necessary expertise to do certain tasks, contractors can claim that this affected their ability to complete the project on time.

Define the work and responsibilities of all project staff. This helps to make sure that tasks are not forgotten, and that everyone who works on the project knows what his or her responsibilities are.

Make sure project staff are able to devote the required time without being expected to fulfill their other full-time duties. A frequent mistake is to expect staff to work on a computer development project and fulfill their regular duties at the same time. This generally causes poor results in both areas.

## MAKING SURE THE AGENCY AND THE CONTRACTOR KNOW WHAT WILL BE PROVIDED AND WHEN

Write detailed project specifications in your request for proposals and the final contract. In the past, some agency contracts have not contained sufficient detail to specify exactly what the contractor was to provide. Because the contract language was so vague, the contractors were paid even though they had not provided a workable product.

Evaluate proposals against the agency's needs assessment. A common mistake is to compare proposed software systems against each other, instead of trying to get the best match with the agency's needs.

Contract for completed products rather than "time and materials." This helps control project costs and ensure that you receive the product you wanted. There have been cases where projects cost millions more than expected and the agency still did not receive a computer system that worked.

When a contractor is used to develop software, make sure agency staff are familiar enough with the system to be able to maintain it. This may eliminate the need to contract with the vendor to make minor modifications or adjustments to the system.

Create a quality assurance review process. The review process ensures the contractor delivers a product that meets the contract criteria before releasing payment. This step could save time and money that would be required to fix a non-working system later.

Create project milestones and timeframes to be met by the contractor before releasing payment. This helps ensure that the project stays on schedule.

Specify realistic penalties for contractor non-performance or delays. This also will help ensure that delays are kept to a minimum.

Create a joint management team of outside consultants/vendor officials and State employees to make important policy decisions. This combination of viewpoints and knowledge helps ensure that the best possible decision is made.

## OVERSEEING THE PROJECT

Involve top agency management. Without top management support, the project may not have adequate staffing, or it may become overwhelmed by disagreements between departments.

Require the project manager to make regular progress reports. These reports should go to a management team or to the top agency managers. It is important that frequent reviews of the project progress be made so problems can be identified quickly, or avoided.

Address problems in software development or system configuration before moving on to the next step. Making sure each stage of development is done completely and correctly prevents costly time delays spent in diagnosing problems and rewriting programs at the end, when the system is much more complicated to unravel.

Top management should hire or assign a Project Architect to monitor the overall design of new systems. The Architect ensures that the system is designed to specifications and that it works with the existing agency structures. The Architect is a senior technician who prepares a plan for the entire scope of the project, including operations, networking, security, user help, and so forth. The Architect also monitors compliance with the plan.

#### **Additional References**

- Information Technology: A Model to Help Managers Decrease Acquisition Risks; United States General Accounting Office, August 1980.
- Executive Guide: Improving Mission Performance Through Strategic Information Management and Technology; United States General Accounting Office, May 1994.
- Information Resources: Summary of Federal Agencies' Information Resources Management Problems, United States General Accounting Office, February 1992.