

# INFORMATION TECHNOLOGY

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## ***The State Needs to Improve the Leadership and Management of Its Information Technology Efforts***

REPORT NUMBER 2000-118, JUNE 2001

Employment Development Department, Franchise Tax Board, Department of Transportation, and Department of Information Technology's responses as of June 2002 and Department of Health Services' response as of August 2002

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### *Audit Highlights . . .*

*Our review of the State's leadership and management of its information technology (IT) projects revealed the following:*

- The Department of Information Technology (DOIT), which is responsible for overseeing the State's efforts to plan, develop, and evaluate IT, needs to provide stronger leadership and guidance to state departments.*
  - DOIT has not sufficiently met other responsibilities such as completing a statewide inventory of projects, releasing key standards that establish common rules for projects, and using state-mandated advisory councils consistently.*
  - Four major projects we reviewed experienced varying degrees of cost overruns and delays, but two of these projects had significant project management problems.*
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**A**s requested by the Joint Legislative Audit Committee, the Bureau of State Audits presents its audit report concerning the State's management of information technology (IT). We were asked to review a number of specific areas, including strategic planning for IT activities, the project approval process, and coordination of similar IT activities. In addition, we were asked to compile an inventory of the State's major IT projects. We found that:

### **Finding #1: The statewide IT plan is out-of-date and does not communicate priorities for projects.**

The Department of Information Technology (DOIT) has not revised the existing statewide IT plan since it was issued in 1997. The existing plan does not deal with several critical IT issues and changes in technology, including the governor's electronic government (eGovernment) initiative that requires all departments to consider ways to deliver services to citizens over the Internet. Because most objectives in the plan are outdated, the State is left with few relevant measures to gauge its progress. Further, unlike the plans of other organizations, the statewide IT plan does not include priorities for large projects to ensure that the most important projects are considered first.

We recommended that DOIT, in conjunction with the departments, the governor, the Legislature, the Department of Finance, and other relevant parties, update the statewide IT plan and ensure that the plan includes current measurable objectives and communicates priorities for approval and funding of projects.

*DOIT Action: DOIT closed as of June 30, 2002.*

We will discuss the extent to which the State is implementing recommendations that were directed to DOIT and are still relevant in our report on the State's IT governance structure, report number 2002-111, which is to be issued in February 2003.

**Finding #2: DOIT has not sufficiently reviewed and approved departments' IT strategic plans.**

Although state law directs DOIT to approve departments' IT strategies, DOIT indicates that it has only sporadically reviewed these plans in the past, because higher priorities, including the year 2000 effort, merited the assignment of its resources. Of eight departments we reviewed, all had prepared plans between 1997 and 2000, but DOIT had reviewed none. Consequently, it has not consistently guided departments' planning efforts at the earliest stages to ensure the development of viable projects. Without DOIT approval and review, departments' IT strategic plans may have weaknesses, be inconsistent with the statewide IT plan, or in the absence of an updated statewide plan, reflect philosophies that DOIT believes are inappropriate.

DOIT should implement a process to review departments' IT strategic plans to ensure they are consistently evaluated for their compliance with the statewide IT strategy.

*DOIT Action: DOIT closed as of June 30, 2002.*

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**Finding #3: Departments receive unclear guidance for managing their IT projects from DOIT.**

Because DOIT does not always consolidate, update, or clarify its IT policies, departments receive unclear guidance. State law charges DOIT with updating its policies to reflect the State's changing IT needs and publishing them in the State Administrative Manual or in Management Memos. Although DOIT has published policies, it has not consolidated them to improve departments' ability to follow its direction and still publishes some rescinded policies that conflict with current policies. Such practices can create confusion and misunderstanding. In addition, DOIT has not clarified its guidance to evaluate and formalize the alternative procurement process.

We recommended that DOIT consolidate the various sources of policy and guidance, remove outdated policies from published documents, and revise policies as needed to reflect changing state needs. In addition, we recommended that DOIT clarify the applicability of the alternative procurement process, evaluate the process in conjunction with the Department of General Services, and provide information to departments about how the process could be most effectively used.

***DOIT Action: DOIT closed as of June 30, 2002.***

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**Finding #4: DOIT has not adequately documented its basis for approving projects or ensured that departments properly assess risks.**

DOIT cannot demonstrate it has consistently and sufficiently analyzed whether departments are properly conceiving and planning IT projects because it often does not document the basis for its decisions to approve IT projects. For 10 proposed IT projects we reviewed, with development costs totaling \$35 million, DOIT could not provide sufficient evidence that it thoroughly analyzed them. In addition, despite the fact that IT projects are inherently risky, DOIT does not ensure that departments appropriately assess their risks. In fact, in our review of the 10 projects, we found little evidence that DOIT evaluates departments' risk assessments. Further, DOIT allows departments to assess risk late in the approval process of large, critical IT projects that are required to use the alternative procurement process. DOIT began in May 2001 to improve this process; however, the weaknesses in DOIT's review of feasibility and risk for proposed IT projects could result in it failing to detect poorly conceived efforts.

We recommended that DOIT continue its efforts to improve its project review and approval process. However, it should ensure that the changes result in a thorough evaluation of proposed projects and that it documents the basis for approval decisions. As part of this process, DOIT should properly analyze departments' risk assessments. In addition, DOIT should require departments to assess risks at the beginning of the alternative procurement process.

*DOIT Action: DOIT closed as of June 30, 2002.*

We will discuss the extent to which the State is implementing recommendations that were directed to DOIT and are still relevant in our report on the State's IT governance structure, report number 2002-111, which is to be issued in February 2003.

**Finding #5: DOIT could improve its oversight of departments' IT efforts.**

Based on our review of the project reports for nine projects, we found limited evidence that DOIT used the reports as tools to monitor departments' IT projects. The project reports include periodic progress reports to summarize the status of the project, which DOIT typically requires the department to submit, and independent validation and verification (IV&V) reports from consultants that evaluate the primary vendor's performance. Further, DOIT does not require departments to report two critical pieces of information on projects' progress: monthly costs and revised estimates of total costs compared with the budget, and actual and revised project completion dates for project phases compared with the original schedule. Additionally, departments do not always submit special project reports—required when projects experience or expect to experience significant changes—when they should, making it difficult for DOIT to properly oversee their efforts. When departments do not report to DOIT as they should, they frustrate the intent of DOIT's oversight role.

DOIT has not ensured that departments submit reports evaluating their IT projects after completion. Moreover, for the relatively small number of post-implementation evaluations it has reportedly received, DOIT has not performed the analysis necessary to ensure that projects are meeting departments' goals. As a result, departments have not been held accountable for the promised benefits from planned IT projects. DOIT believes that the current post-implementation evaluation process does not provide value, and it plans to reengineer the process by fiscal year 2003–04.

DOIT should improve its project oversight by requiring that project progress reports include the project's monthly actual costs and revised estimates of total projected costs compared with the budget, and actual and revised projected completion dates for project phases compared with the original schedule. In

addition, DOIT should ensure that analysts sufficiently review and document their oversight of projects and track the receipt of required reports. It should also hold departments accountable for the benefits expected and incorporate lessons learned from their IT project development by ensuring that they submit post-implementation evaluation reports and then review these reports.

***DOIT Action: DOIT closed as of June 30, 2002.***

We will discuss the extent to which the State is implementing recommendations that were directed to DOIT and are still relevant in our report on the State's IT governance structure, report number 2002-111, which is to be issued in February 2003.

**Finding #6: DOIT has not taken sufficient action to coordinate information technology projects.**

Despite the mandate of state law, DOIT does not have an established process to ensure that departments do not independently develop statewide IT applications or duplicate other departments' efforts. Instead, departments have mostly relied on informal networking to identify similar projects at other departments. In addition, DOIT has not continuously maintained an IT project inventory as required by state law. The project inventory, if properly designed and updated, would help coordinate activities and enhance the State's ability to make a conscious, proactive evaluation of how it allocates its limited resources for IT projects. To gather information for this inventory, DOIT surveyed departments about their IT projects in November 2000, but had not published a project inventory as of June 2001. Without consistent coordination, the State lacks assurance that it can identify overlapping or redundant IT efforts, and departments do not benefit from each others' knowledge of technology and development approaches.

To promote coordination and avoid redundant efforts, DOIT should establish a formal mechanism to initiate discussions between departments that are developing projects based on similar technologies or processes. To facilitate this coordination and improve project oversight, DOIT should complete its IT project inventory, ensure that departments' reported data are accurate, and update this information. DOIT also needs to consider how departments and the Legislature can effectively access this information, taking into consideration privacy issues and other concerns that may limit its release.

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**Finding #7: DOIT has not finalized several key standards and plans to develop others.**

State law directs DOIT to develop standards to guide departments' IT efforts. Standards establish common rules and can encourage the use of best practices for collecting, sharing, protecting, and storing data, as well as ensuring the accessibility and usability of systems. Although DOIT indicated in June 2001 that security and infrastructure standards are final drafts, it does not expect these standards to be through the review and approval process until October 2001. Because the application development and accessibility standards are in preliminary draft form and the data standard is not yet started, it is unclear when DOIT will issue these standards. DOIT also plans to develop standards for software licensing and asset management, e-mail, office automation, and document exchange. Until standards are finalized, departments will continue to conceive and develop IT projects without the framework needed to ensure that their efforts meet common rules and are consistent with best practices.

We recommended that DOIT expedite its work on implementing standards by determining which standards need to be addressed first and focusing their efforts accordingly. Further, DOIT should work with departments to ensure that all necessary standards have been implemented.

***DOIT Action: DOIT closed as of June 30, 2002.***

We will discuss the extent to which the State is implementing recommendations that were directed to DOIT and are still relevant in our report on the State's IT governance structure, report number 2002-111, which is to be issued in February 2003.

**Finding #8: DOIT has inconsistently used its advisory councils.**

DOIT has not consistently used two state-mandated advisory councils established to provide advice on its activities. One required council—the private commission—should consist of IT practitioners from private, academic, nonprofit, and governmental sectors and is intended to provide advice on long-term

trends and strategies, key policies, emerging technologies, and best practices. The second required council—the public committee—should consist of representatives from state agencies and is intended to advise DOIT on successful IT management, identify critical success factors, and recommend policy changes. It is unclear if DOIT regularly met with the private commission in 2000, but DOIT has more recently begun meeting with it regularly to discuss pressing issues. DOIT did not meet with the public committee for most of 2000. In addition, DOIT could not provide us any written findings or recommendations made by the public committee, even though state law indicates they must be made available to interested parties. Further, DOIT did not sufficiently document its meetings with the private commission or public committee, so we could not verify if DOIT met with them or ensured that they provided DOIT the advice intended by law.

We recommended that DOIT continue to meet with the private commission and the public committee on a regular basis to guide its strategic planning efforts, provide input on new policies, and ensure that the State follows best practices. Additionally, DOIT should ensure that the public committee makes all findings and recommendations in writing, as required by state law.

***DOIT Action: DOIT closed as of June 30, 2002.***

We will discuss the extent to which the State is implementing recommendations that were directed to DOIT and are still relevant in our report on the State's IT governance structure, report number 2002-111, which is to be issued in February 2003.

**Finding #9: DOIT has not fulfilled promised IT initiatives or sufficiently addressed its statutory responsibilities.**

Since its inception, DOIT has pledged action on key initiatives or planned tasks in its annual reports to the Legislature. However, DOIT has not fulfilled all of its promises or sufficiently addressed its statutory responsibilities. For example, DOIT indicated in its 1998 annual report that it would enable departments to update the statewide project inventory over the Internet, but this capability still does not exist. DOIT states that these initiatives were established by the previous administration and that the current administration cannot be held accountable for the promises and initiatives of that administration. DOIT's lack of progress on its promised initiatives and responsibilities may lessen its credibility.

We recommended that DOIT establish timelines and goals for meeting future initiatives. If DOIT does not believe it can complete initiatives within established guidelines, it should communicate its priorities and resource requirements to the Legislature. In addition, it should notify the Legislature when changes in the State's IT environment prompt adjustments to these priorities or resource requirements.

***DOIT Action: DOIT closed as of June 30, 2002.***

We will discuss the extent to which the State is implementing recommendations that were directed to DOIT and are still relevant in our report on the State's IT governance structure, report number 2002-111, which is to be issued in February 2003.

**Finding #10: DOIT has not consistently used an internal strategic plan to guide its efforts and maximize its use of resources.**

Although good management practices suggest that DOIT develop and implement an internal strategic plan to guide its efforts and maximize the efficient use of its resources, it has not consistently used one. DOIT's authorizing legislation requires that it be involved in a variety of activities, and meeting these responsibilities stretches its resources. In addition, DOIT lost 8 of 11 key managers during fiscal year 2000-01, which hurts its ability to identify strategic priorities. Without the direction of an internal strategic plan to define what it needs to do and what activities it should address first, DOIT's efforts have been scattered over a variety of initiatives, and it has performed inconsistently.

DOIT should adopt an internal strategic plan to identify key responsibilities and establish priorities. This plan should clearly describe how the organization would address its many responsibilities and build on past efforts to the extent possible.

***DOIT Action: DOIT closed as of June 30, 2002.***

We will discuss the extent to which the State is implementing recommendations that were directed to DOIT and are still relevant in our report on the State's IT governance structure, report number 2002-111, which is to be issued in February 2003.



**Finding #11: Although the Tax Engineering and Modernization (TEAM) project of the Employment Development Department was generally better managed than others we reviewed, it still experienced some problems during development.**

The TEAM project is a redesign of the Employment Development Department's processing of employer tax returns and payments. Its projected cost is \$71.7 million, which is 6 percent more than the original projected cost. The project began in June 1997 and was completed in April 2001, 22 months later than originally planned.

We found that the high turnover of critical vendor staff—the project manager and the quality assurance manager—and the lack of sufficient vendor staff as well as their inadequate skills, likely contributed to most of the nearly two-year delay in development of TEAM and contributed to the vendor delivering poor quality products. The Employment Development Department was also inconsistent in its development of a clearly defined and documented project management plan. For example, the initial plan did not include certain critical elements such as a schedule of all tasks necessary to complete the project. Prior to February 1999 the department also did not have any formal process to properly control and monitor project changes. The current process allows the project team to appropriately track and monitor changes. We also observed certain weaknesses in the IT security over TEAM. The department intends to implement appropriate security procedures by June 2002.

The Employment Development Department should take the following actions to improve the management of IT projects and to help ensure that projects are completed on time and within budget:

- Ensure that the vendor provides sufficient staff with the necessary training and experience.
- Use an effective project management plan before beginning to develop each project so it can monitor the progress of the projects.
- Ensure that it establishes and uses a process to control and monitor project scope changes that requires changes be adequately reviewed before they are made.
- Correct the IT security weaknesses we identified.

***Employment Development Department Action: Partial corrective action taken.***

The Employment Development Department reports that based on the lessons learned from the TEAM project and our recommendations, it has updated its project management practices. Additionally, to ensure that vendors provide sufficient and appropriate staff on IT projects, it has developed standard contract provisions related to staffing and a checklist to use during contract negotiations. Further, the Employment Development Department reports that it has updated its security policies, procedures, and guidelines to address the security weaknesses we identified. It plans to have a contractor perform a security review, but does not expect to hire the contractor until early 2003.

**Finding #12: The Accounts Receivable Collection System (ARCS) of the Franchise Tax Board was generally better managed than other projects we reviewed and experienced only minor problems during development.**

The ARCS project consolidates various automated and manual collection systems into one system with the intent of making the Franchise Tax Board's collection efforts more effective and efficient. ARCS cost \$36.3 million, 10 percent more than the original estimate. The project began in April 1998 and was completed in March 2001, nine months later than originally planned.

ARCS is complete and generally functioning as intended; however, the Franchise Tax Board could have minimized potential problems by employing an IV&V consultant. Instead, the Franchise Tax Board chose to hire an oversight consultant, whose review focused on the project's finances, personnel, schedule, and documentation rather than a review of project requirements, design, testing, or implementation in detail, as an IV&V consultant would have done. Lacking this detailed review, the Franchise Tax Board did not have the benefit of information that would have enabled it to make better-informed decisions had problems developed with the quality of the vendor's work.

We recommended that the Franchise Tax Board use IV&V consultants as well as project oversight consultants throughout the development of its complex projects.

***Franchise Tax Board Action: Corrective action taken.***

The Franchise Tax Board reports that it is now employing IV&V vendors on its complex projects.

**Finding #13: The Department of Health Services (Health Services) had significant weaknesses in its Children's Medical Services Network Enhancement 47 Project (CMS Net E47) because it did not always plan and develop its project appropriately.**

The CMS Net E47 project is intended to enhance an existing system by linking it with the State's medical and dental fiscal intermediaries. CMS Net E47 is currently estimated to cost \$10.2 million and is 82 percent over the original estimate. CMS Net E47 began in January 1998 and is expected to be completed in December 2002, 15 months later than originally planned. However, certain elements, which 46 counties currently use, were implemented in April 2001.

We observed that Health Services' primary weakness in planning and procurement was how it obtained the services of vendors to develop CMS Net E47. For example, rather than following the best practice of outlining its business problem and requesting solutions from vendors, Health Services developed the specifications itself. In addition, instead of selecting the vendor on the basis of best value—the best combination of experience, solution, and cost—Health Services awarded the contract to the vendor with the lowest bid. Health Services also did not structure the contract to withhold a portion of the payments to the vendor until the vendor performed satisfactorily.

We had several concerns regarding Health Services' design, development, and implementation of CMS Net E47. For instance, we had concerns that certain basic project management tasks were not performed consistently and Health Services did not initially assign a project manager with appropriate training or authority. We also observed certain weaknesses in the IT security over CMS Net E47. Health Services is studying how to implement appropriate security procedures. Finally, because Health Services used two individuals from the same consulting firm to help it manage CMS Net E47 and to provide IV&V services over CMS Net E47, it may have made it difficult for the IV&V consultant to objectively oversee the performance of the project manager. These problems have likely contributed to the project's cost increase and delay.

Health Services should take the following actions to improve the management of IT projects and to help ensure that projects are completed on time and within budget:

- Select vendors that propose the best solutions at the best value.
- Structure contracts with vendors to protect the interests of the State, including provisions to pay vendors only after deliverables have been tested and accepted.
- Use sound project management practices during the design, development, and implementation phases of projects and specifically ensure that it assigns project managers with the appropriate training and authority.
- Correct the IT security weaknesses we identified.
- Ensure independent oversight of its projects by hiring IV&V consultants from firms that are different from those providing other services to the project.

***Health Services' Action: Partial corrective action taken.***

Health Services indicates that it established a separate unit to oversee IT project management and planning. This unit's oversight responsibilities will also include vendor selection and contracts process for IT projects. To assist Health Services in developing project management procedures, it hired a consultant to recommend the structure for a project management office. The consultant completed the study in March 2002, and Health Services is implementing the recommendations. In addition, Health Services reports that it is modifying its practices to ensure that contracts are deliverable-based and that payment is made only upon successful completion of project deliverables. Further, it has developed standard tasks and deliverables for use in hiring IV&V contractors. Finally, Health Services indicates that it is currently revising its information security policy to include a more comprehensive policy on protecting IT assets.

**Finding #14: The Department of Transportation (Caltrans) had significant weaknesses in its Advanced Toll Collection and Accounting System (ATCAS) because it did not always plan and develop its project appropriately.**

The ATCAS project will replace the existing toll collection and accounting system and install electronic toll collection on all state-owned toll bridges. The current projected cost is \$56.1 million, 102 percent more than the original projected cost of \$27.8 million. ATCAS began in June 1993 and was expected to be completed in December 2001, 59 months later than originally planned.

The main weakness in Caltrans' planning approach was that it failed to develop a supportable justification and a well-defined problem statement for ATCAS. In addition, it did not employ a project management plan to help it identify and resolve problems until two years after development of ATCAS began. Further, Caltrans developed the technical specifications to the proposed project rather than letting vendors propose their designs and therefore shifting more responsibility for ATCAS's success to the vendor. These planning omissions likely played a part in ATCAS's cost and schedule overruns.

During the development of ATCAS, Caltrans did not always use sound project management practices. Caltrans did not always perform testing of project components as it should have and went ahead with the partial deployment of ATCAS without completing acceptance tests to ensure that the vendor's prototype functioned as intended. Caltrans repeatedly assigned project managers who had little or no experience or training managing an IT project of this size or complexity. Further, Caltrans could not demonstrate that it had sufficiently monitored ATCAS's progress. Finally, despite the fact that it was a complex and costly project, Caltrans failed to employ an IV&V consultant for almost the entire project. Using an IV&V consultant earlier in the project might have avoided some of the cost overruns and delays that ATCAS experienced.

We recommended that Caltrans take the following actions to improve its management of IT projects and to help ensure that projects are completed on time and within budget:

- Develop a problem statement for each IT project that adequately describes the problem the project is intended to solve with quantifiable goals, and a supportable business case for each project that justifies its funding.
- Develop an effective project management plan before beginning to develop each project so it can monitor the progress of the project.
- Allow vendors to propose solutions and the technical specifications for its large and complex IT projects.
- Ensure that testing is completed at appropriate phases to identify and resolve problems before moving ahead.
- Ensure that it uses sound management practices during the development of each project, such as assigning qualified individuals with appropriate experience and training to manage the project, documenting key discussions and decisions, and monitoring progress through periodic reports.
- Use IV&V consultants on complex IT projects.

***Caltrans' Action: Partial corrective action taken.***

To improve and standardize its project management practices, Caltrans reports establishing a separate project management division. This division is in the process of standardizing Caltrans' project management and development procedures. In addition, Caltrans reports that the division has provided awareness presentations to its districts and headquarters IT staff on departmental IT policies and procedures. Further, Caltrans states that it intends to allow vendors to propose solutions and the technical specifications for its large and complex projects. Finally, Caltrans states that it will use IV&V consultants on specific IT projects as it deems appropriate.