Appendix

A. State Profiles

New York

<table>
<thead>
<tr>
<th>State size rank</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>Highest-level state IT office</td>
<td>Office of the New York State Chief Information Officer</td>
</tr>
<tr>
<td>Reporting structure</td>
<td>The Chief Information Officer reports to the Office of the Governor, but is not cabinet level. The Office for Technology (OFT), reports to the CIO as do other IT-related agencies, such as the Office for Cyber Security, that are not part of the IT office.</td>
</tr>
<tr>
<td>Advisory bodies</td>
<td>Two advisory bodies serve the CIO: the CIO Advisory Counsel comprised of agency CIOs who give feedback on proposed new technologies, and the Architecture Board representing stakeholders in enterprise-wide systems.</td>
</tr>
<tr>
<td>Technical authority</td>
<td>The OFT reviews agency IT project proposals and grants technical authority. The CIO is responsible for developing and enforcing IT policies and strategic plans. (Agencies must prepare strategic plans that are consistent with the state’s plan and reflect its directions and priorities.) The CIO also decides on standards for basic platforms and enterprise-wide technology.</td>
</tr>
<tr>
<td>Operational authority</td>
<td>The IT office is responsible for the operation of the data centers as well as telecommunications and networks, including e-commerce. It is also responsible for training and mentoring client agencies in IT project management.</td>
</tr>
<tr>
<td>Procurement authority</td>
<td>The Office of General Services is responsible for most procurement, including smaller IT procurements following approval by the IT office. However, the IT office handles IT procurement when many or all agencies are involved. Additionally, the IT office reviews smaller IT procurement requests for consistency with planned or existing tools and platforms, and it approves all IT contractual agreements with vendors.</td>
</tr>
<tr>
<td>Financial authority</td>
<td>Financial authority rests with the Division of the Budget, which reviews the business case for IT projects and makes funding decisions. The state maintains a $10 million Technology Enterprise Fund from which the CIO and IT office can seed certain IT projects without going through the formal budget process.</td>
</tr>
<tr>
<td>Exemplary achievements</td>
<td>Won an award for its e-government web site, “Government without Walls.”</td>
</tr>
</tbody>
</table>
Key Observations

Procedural

Project planning

• Agencies file Intent to Procure for each proposed project that is reviewed by the IT office; this is migrating to an Annual Technology Plan for each department or agency. Once implemented, all proposed projects will be included in the annual plan.

• The IT office created a “Project Management Guidebook”; client agencies contributed lessons learned to its development.

Approval (technical and budget)

• The IT office places projects in three categories: (1) strategic; (2) continuing expenditure; (3) attrite/retire. OFT decides whether it will grant technical approval based on the status of a project in one of these three categories.

• “Agency budgets tend to dominate in normal times.” Generally, agencies must work with the Office of Budget to receive IT project funding. For special initiatives such as Y2K preparation, however, agencies received allocated funds from OFT.

Procurement

• The Office of General Services has many products covered by standing contracts, which can be ordered directly. For example, standing contracts cover 20 different brands of personal computers. Services/technology can also be obtained on broad, existing contracts. These standing contracts have standard “boilerplate” terms and conditions, which, if used, speed the procurement process.

• There is a “mini-bid” process; vendors are preapproved (up to about $250,000) for consulting services. This greatly speeds procurement of such services.

Project oversight

• Project oversight is primarily the responsibility of client organizations, except when interagency coordination is needed by the Office of the Chief Information Officer.
**Management**

Enterprise-wide governance across state agencies

- The new CIO has plans to consolidate three data centers into one (with backup; there were 25). He plans to standardize much of the office automation software, e-mail, personnel software, etc.
- The state has a “Technology Entrepreneurial Fund,” with about $10 million that the IT office can allocate to some projects, and roll over funding to subsequent years.

**Strategic planning**

- The state is using Ohio’s five-page IT strategic plan as a template; individual agency strategic plans will be required to be much more detailed, and will be reviewed by the CIO’s office for consistency with the statewide strategic plan prepared by the IT office.

**Leadership style**

- Consolidated Control. The CIO believes he has authority from the governor to act boldly in creating standards, centralization, and consistency across agencies and departments, and eliminating waste and redundancy. Client agencies argue, “one size fits all isn’t going to work.”

**Workforce issues**

- New York lost many state employees age 55 and older from an “early retirement initiative” program.
- Agencies complain they can’t compete for IT skills.

**Technology**

**Infrastructure development**

- The IT office has an annual budget of about $250 million. Most of the budget is for data center and telecommunication services provided to other agencies and billed to the agencies. About $50 million a year is internal to the IT office.
Standards, technology forecasting

- The state is organizing an “Architectural Board,” which will serve as an advisory board to the CIO council on standardization issues.
- The “Project Board” is involved in large project management.

### Illinois

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<thead>
<tr>
<th>State size rank</th>
<th>5</th>
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<tbody>
<tr>
<td>Highest-level state IT office</td>
<td>Illinois Technology Office</td>
</tr>
<tr>
<td>Reporting structure</td>
<td>Chief Technology Officer (CTO) sits within the governor’s office and reports to him directly.</td>
</tr>
<tr>
<td>Advisory bodies</td>
<td>The Chief Technology Officer is served by an advisory body of agency CIOs.</td>
</tr>
<tr>
<td>Technical authority</td>
<td>Client agencies develop IT project proposals with input and guidance from the CTO, but projects receive approval from the Strategic Planning Office and Office of Performance Review in the Bureau of Budget. Project evaluation is carried out by the Office of Performance Review.</td>
</tr>
<tr>
<td>Operational authority</td>
<td>Operational authority for data center services are mostly decentralized; agencies manage (almost) all operations, many of which are outsourced.</td>
</tr>
<tr>
<td>Procurement authority</td>
<td>Central Management Services (CMS) has authority for all procurement. Although the CTO has no authority for procurement, it is working with CMS in its effort to establish standards that have major implications for procurement.</td>
</tr>
<tr>
<td>Financial authority</td>
<td>The Bureau of Budget has authority for all funding requests.</td>
</tr>
</tbody>
</table>
| Exemplary achievements | • Received “Digital State” award in 2001 for use of technology in government  
• In the few years since its creation, it has managed to establish 22 state-level IT projects |

**Key Observations**

**Procedural**

Project planning

- Projects are initiated by agencies, with guidance from the CTO.

Approval (technical and budget)

- Some projects are approved for multiyear appropriations up front so agencies do not have to request funds repeatedly.
Procurement

- Central Management Services established master contracts with vendors that reduce the time and effort required by agencies to purchase hardware and software.

Project oversight

- The Performance Review Office uses the Illinois Technology Enterprise Planning System (ITEPS), a software system used to measure progress on projects by tracking agency IT plans and requests; performs project oversight.

Management

Enterprise-wide governance across state agencies

- The CTO has a Special Information Technology (SIT) Project Fund, which is used to fund IT projects proposed by agencies that make a compelling business case for the improvement of customer service or increased efficiency or economy for the state. The Office of the Chief Technology Officer reviews the proposals, ranks the projects by priority, and approves the funding. The central fund was appropriated $26 million in 1999 as a revolving fund, which means that it does not have to be reappropriated each year. The funds have been used for a variety of projects. According to the Illinois CTO, the money has been very useful in jumpstarting new initiatives, such as in the area of e-government where the money is combined with other sources of funds. The CTO’s office reports quarterly on the status of the fund and projects to the Bureau of Budget, Central Management Services, the agencies, and the Executive Office of the Governor.

- The CTO facilitates communication and collaboration among state agencies by:
  - formally involving agency CIOs through an advisory board that meets regularly;
  - hosting an internal seminar series for agencies to share IT activities with each other; and,
  - sponsoring “Tech Town,” an exhibit hall at the annual state fair where agencies present to the public how they are using IT to deliver services.
Strategic planning

- Agencies are required to address IT in their strategic business plans; the Strategic Planning Office integrates these plans into the statewide plan within the Bureau of Budget (a cabinet-level department).

Leadership style

- Advocacy. The CTO has no formal authority, but has made progress by brokering strong relationships with the budget and procurement departments, the agencies and the Legislature.

- The placement of the Technology Office within the governor’s office gives the CTO access to executive support and the ability to influence in the absence of formal power; the disadvantage of the arrangement is the greater susceptibility of political entanglements.

Workforce issues

- The state is losing many employees age 55 and over because of the Early Retirement Initiative (ERI); critical knowledge about legacy systems will be lost and ability to hire replacements is in question.

- Some look at the ERI as an opportunity to boost innovation in state government.

Technology

Infrastructure development

- Bids were due in November 2002 on a CTO-developed RFP for centrally funded Public Key Infrastructure initiative for use by state agencies. The purpose of this initiative is to establish an enterprise-wide infrastructure for facilitating government services by verifying the identity of users and the authenticity of documents.

- Illinois achieved de facto standardization through the use of a master contract for the purchase of Geographic Information System (GIS).

- The CTO established web accessibility standards for agency websites.

Standards, technology forecasting

- Master contracts create de facto standards by providing an incentive for agencies to use standard terms and conditions with selected vendors.
The Technology Office is tasked with identifying appropriate standards for the state, but has encountered difficulty because of procurement concerns about fairness.

Pennsylvania

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<tr>
<th>State size rank</th>
<th>6</th>
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</thead>
<tbody>
<tr>
<td>Highest-level state IT office</td>
<td>Office for Information Technology (OIT)</td>
</tr>
<tr>
<td>Reporting structure</td>
<td>The CIO, as a Deputy Secretary, reports to the cabinet-level Office of Administration Secretary. The OIT, comprised of seven organizational units, reports to the CIO.</td>
</tr>
<tr>
<td>Advisory bodies</td>
<td>The CIO has a advisory body comprised of 18 private-sector CIOs that provide guidance on enterprise-wide projects.</td>
</tr>
<tr>
<td>Technical authority</td>
<td>The Office for Information Technology reviews and approves agency project plans and makes recommendations to the Office of Budget for funding. OIT sets the guiding vision for IT in the state and develops standards for IT products and procedures with substantial feedback from agencies.</td>
</tr>
<tr>
<td>Operational authority</td>
<td>OIT has operational authority over data centers and basic computer and network infrastructure as well as enterprise-wide initiatives.</td>
</tr>
<tr>
<td>Procurement authority</td>
<td>The cabinet-level Department of General Services (DGS) is responsible for statewide policies and procedures for procurement. Hardware procurement is managed by DGS, which maintains a list of prequalified vendors. Small acquisitions are done by agencies themselves from those vendors; large acquisitions are handled by DGS via bidding to achieve economies of scale. DGS delegates routine procurement of IT services to OIT, which developed a master services contract and method for pre-qualifying vendors. Large software and system integration procurements are also delegated to OIT; DGS helps guide and review the bids and contracts.</td>
</tr>
<tr>
<td>Financial authority</td>
<td>The Office of Budget has financial authority for IT projects. Although OIT formally has an “advisory role” to OB, in practice “the Budget Office usually concurs.”</td>
</tr>
<tr>
<td>Exemplary achievements</td>
<td>• Received the National Association of State Chief Information Officers 2001 Recognition Awards for Outstanding Achievement for the Commonwealth’s e-mail and software standardization effort, “Commonwealth Connect” • Received “Best of Breed” award from the Center for Digital Government for e-government portal in 2002 Successfully consolidated data centers from 23 to 1 • Standardized e-mail and desktop applications statewide • Technology Investment Program</td>
</tr>
</tbody>
</table>
**Key Observations**

**Procedural**

Project planning

- IT initiatives for agency-specific applications are planned and managed by agencies but comply with policy planning guides (from OB) and IT standards (from OIT/OA). Concept plans and draft budgets are submitted early for feedback, with detailed plans and budgets to follow.

- Enterprise-wide initiatives may be generated by OIT or bottom up—when multiple agencies submit concept plans reflecting shared needs. OIT is responsible for enterprise-wide projects, with formal guidance from agency representative.

Project oversight

- Agency-specific initiatives are overseen by the agencies; methods vary.

- Large or enterprise-level projects require quality assurance by the IT provider, with oversight from an advisory body of agency representatives (may use measurable milestones or benchmark against other states); a consulting firm may do an independent review.

**Management**

Enterprise-wide governance across state agencies (“Breaking Through Barriers,” a 1996 strategic plan, announced this aim)

- OIT led consolidation of data centers from 23 to 1; it outsources center operations but retains oversight and management.

- OIT standardized desktop technologies and implemented a common, centralized email system; this saves over $9 million a year in technology costs (not including savings on maintenance, support, training, and integration).

- OIT has “Technology Investment Program” (TIP) money—seed funds for investing to “kick start” agency initiatives, especially ones that may diffuse beyond the originating agency. $20–30 million is set aside annually by the Office of the Budget and the legislature for the program. OIT gives the legislature a list of types of projects it thinks will be covered by the funds, but it is given significant flexibility to move the funds around as it sees fit.
Strategic planning

- While “Breaking Through Barriers” is still a guiding vision, Pennsylvania no longer requires annual strategic plans (invariably will need mid-course corrections). Now OIT develops brief guiding principles and direction-setting objectives.
- Individual agencies vary in approaches: some do regularly updated IT strategic plans; others argue that strategic plans should focus on mission performance (no need for an IT strategic plan separate from the business strategy).

Leadership style

- Collaborative, participatory. Agency CIOs have “dotted line” relationships to state CIO, who meets quarterly with them and also encourages informal communication (“open door” policy). Enterprise projects have agency representatives on advisory boards with formal voting rights. State CIO “really empowers” agency CIOs, maintains strong collegial ties to counterparts in OB and DGS.

Workforce issues

- Concern over civil service hiring and salary constraints (can’t compete with private sector for IT talent).
- “The graying of the mainframers” will create problems for maintaining big systems.
- Outsourcing of back-end system operations works well, with OIT performing highly skilled oversight. With consulting advice from KPMG, OA/OIT decided to consolidate its data centers and outsource the operational functions but to keep applications development and ownership in the agencies. OA/OIT, however, continues to act as the permanent oversight organization. “Back-end” functions include mainframe upgrades, both in hardware, software, and services; data processing and hosting of data processing systems; and backup and security.

Technology

Infrastructure development

- Centralized funding for enterprise-wide projects to accommodate needs of small and large agencies (plus “incubator” TIP).
• Strong push toward modular development (e.g., enterprise resource planning modules) and incremental implementation (deploy in selected subsets of agencies over time) to yield steadily growing functionality and promote “positive change orientation, fed by small successes” visible in relatively short periods. The Enterprise Resource Planning (ERP) software that Pennsylvania has chosen (SAP) can, like most ERP systems, be implemented and used in relatively self-contained but subsequently integratable parts (for instance, the financial accounting package might be implemented first, then the payroll system, and so on).

Standards, technology forecasting

• Standards (procedural, product-oriented, or hybrids) are circulated in draft Information Technology Bulletins (ITB) by OIT for response before finalization; agency comments can affect the final standard. Standardization is generally welcomed now.

• Agencies track IT developments in mission-specific areas by participation in professional societies, use of consulting groups, and benchmarking against counterparts in other states. OIT is charged with promoting IT innovation; a council of private sector CIOs reviews and comments on proposed new initiatives.
Virginia

<table>
<thead>
<tr>
<th>State size rank</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest-level state IT office</td>
<td>Secretariat of Technology</td>
</tr>
</tbody>
</table>

**Reporting structure**

The Secretary of Technology is part of the cabinet and reports to the governor. The Secretariat of Technology consists of four agencies, headed by the Secretary, which include the Department of Technology Planning (DTP), the Department of Information Technology (DIT), the Center for Innovative Technology, and the Virginia Information Providers Network Authority.

**Advisory bodies**

Council on Technology Services (COTS) board consists of CIOs of some state agencies and members of local government, and advises the Secretary of Technology. Advice tends to be conceptual rather tactical. Some members don’t participate on a regular basis; they argue that the COTS board is not as involved as it could be. CIO advisory board is comprised of CIOs in the private sector and meets infrequently.

**Technical authority**

For projects over $100,000 but less than $1 million, the Secretary of Technology or his designate (usually the Department of Technology Planning) has project approval authority. For projects over $1 million, the Secretary of Technology must give approval. The Secretary of Technology has veto power. The Department of Technology Planning sets guidelines for IT development, which are voluntary, as well as standards, which are required for agencies to follow.

**Operational authority**

The Department of Information Technology (DIT) runs the data centers and telecommunications.

**Procurement authority**

The Acquisition Services Department in the Department of Information Technology has procurement authority for IT purchases.

**Financial authority**

The Department of Planning and Budget has financial authority for IT projects.

**Exemplary achievements**

- Received “Best of Breed” award from the Center for Digital Government for e-government portal in 2002
- Innovative public/private partnership for IT projects

**Key Observations**

**Procedural**

**Project planning**

- Projects are initiated by agencies and submitted to DTP annually.
- DTP handles enterprise-wide strategic planning.
Procurement

• Previously, agencies handled their own procurement with the Department of General Services. On July 1, 2002, a new law was passed that delegated all of IT procurement to the Acquisition Services Division in the Department of Information Technology.

Project oversight

• Project oversight is largely decentralized. For large projects, DTP has oversight responsibility, but it has been inconsistent. In some cases, DTP was involved from the beginning of project; in others, it was not involved until the project was in trouble.

Management

Enterprise-wide governance across state agencies

• Agencies are responsible for their own equipment and applications. They have access to DIT services, but large agencies often have in-house expertise. Currently, project governance is highly decentralized.

Strategic planning

• Strategic planning is currently decentralized. Some agencies do regularly updated IT strategic plans; others argue that IT should support the business plan.

• The Secretary of Technology recently announced a sweeping IT strategic plan to centralize all IT resources, systems, and control; it is described as the most ambitious in the country. It will eliminate DIT and DTP and integrate them with IT personnel and resources from all agencies (this will involve consolidating 2300 personnel) into a new IT control agency.

Leadership style

• Centralized control. The Secretary of Technology has designed an extensive strategic plan with little input from agency heads and CIOs. His office is drafting legislation to gain increased control over IT policy. Agency IT personnel are concerned about the “one size fits all” plan.
Workforce issues

- There are some concerns about the graying of the IT workforce, particularly for legacy systems.

Technology

Infrastructure development

- Agencies are responsible for implementation.
- Secretary of Technology’s office is considering a plan for an enterprise-wide fund to assist agencies.

Standards

- DTP develops guidelines and standards. Guidelines are voluntary, unless an agency is rated obsolescent in an IT area. Standards are required, and agencies must determine how to implement them.
B. California Interview Summaries

Organizations Interviewed

Control Agencies and Departments

• Current CIO
• Department of Finance
• Department of General Services

Client Agencies and Departments

• Franchise Tax Board
• Employment Development Department
• Board of Equalization
• Youth and Adult Correctional Agency
• Business, Transportation and Housing
• Department of Transportation
• Department of Motor Vehicles
• Health and Human Services Agency

Technical Agencies

• Teale Data Center
• Health and Human Services Data Center

The following is a listing of key comments received during our interviews within the above California departments and agencies. They represent a range of opinions offered by interviewees. We have mainly included comments that had support from more than one interviewee, but they cannot, of course, be considered as statistically representative of the opinions of IT-relevant personnel across all of California governmental agencies.
Procedural

Project Planning

- Some agencies/departments are relatively mature with respect to internal governance processes; they employ a series of procedures to judge and assess IT projects before an FSR is submitted. This helps to ensure that the proposals are better.
- Executives must be knowledgeable and proficient in the role and decision process for IT. Previous formalized attempts did not last.
- IT is supported at the high levels of government: there is awareness and support, but there is some misunderstanding of the topic of IT and what it takes to implement it.
- Up-front coordination (pre-FSR delivery) between control and client is considered a useful step to mitigate surprises once the FSR is delivered. This process has seen limited use and limited success. Clients are concerned that DOF will not have an appreciation for the project if they are not involved in the conceptual development, while DOF is concerned about compromising its authority.
- FSRs are done with extreme detail and care as they determine funding approval and project baseline. However, at this point the project is in the early definition stage and there may be undue confidence in the accuracy of these details (by control organizations).

Approval (technical and budget)

- There was significant ambiguity of DOIT’s role and responsibilities relative to other control organizations for approval. This eroded trust and confidence in them from the agency/department perspective.
- The approval process appears to client organizations at times preferential, arbitrary and unilateral. Control, however, identifies key questions that guide approval. A statewide entity could work with DOF to direct which things should be funded.
- Accountability for project performance is not perceived as commensurate with authority for approval, funding, and oversight by client organizations. However, control organizations indicate that under DOIT, department directors had responsibility for project success, unlike its predecessor OIT, where there was confusion about responsibility.
• Departments and agencies are frustrated with the additional time the approval and budgeting process adds to getting a project initiated.
• The challenges associated with the control processes motivate behaviors to avoid the control process.
• A statewide entity could include roles related to approval and budgeting that balance the fiscal project assessment perspective.

Procurement

• Departments/agencies are exploring nontraditional procurement strategies that leverage industry knowledge and resources (business based, performance based). However, these efforts have not been widely embraced due to challenges associated with funding and procurement.
• The tension between enterprise efforts for cost efficiency and effectiveness and competitive procurements for equity and public trust makes it difficult for the state to leverage its buying power.
• The state must provide training programs for procurement vehicles so departments understand the intent of each one. Departments didn’t understand the intent of CMAS and they started using it for IV&V and other ongoing work. These efforts were intended to reduce procurement time and minimize redundant purchasing actions.

Project Oversight

• Project oversight occurs at many levels internal and external to departments/agencies, but there are varied opinions on how much is necessary and where it should occur. DOF is currently revising the oversight structure to allow a hierarchical, graduated process.
• As a result of highly publicized failures with political implications, the oversight process has evolved and expanded with the objective of preventing the next fiasco. However, a broader oversight definition includes both a control and collaborative perspective.
• “Failed IT” as a label may be overused, because the definition of failure (variance to budget or schedule) is too narrow.
Management

Enterprise-Wide Governance Across State Agencies

- California needs an enterprise-wide structure for IT; the federated nature of the state will make that difficult. Policy needs to accommodate the diversity of agencies and departments.

- A statewide entity could provide a forum for the IT community to address many of the common issues, such as sharing data, common (redundant) applications, and a project repository (method to identify like objectives) for leverage.

- A statewide entity could provide strategic thinking from an enterprise perspective. Leverage the departments collectively for buying power and statewide systems evolution. (See also Procedural—Procurement)

- A statewide entity could communicate the challenges and benefits of IT.

- A statewide entity could be responsible for centralized functions that are ubiquitous, that touch all aspects of government rather than one that analyzes the details of projects. If not, the ability to see the bigger perspective is lost. It is going to be essential to have a centralized or statewide entity that could speak to, fund, advance, advocate, and vet some of the initiatives that are in interest of the state as whole.
  - Centralize the security function.
  - Centralize the evaluation of advanced technology products.
    Departments are duplicating efforts. There should be pilot efforts to test new technology that could be used by multiple departments.
  - Centralize the project management function.

- The promise of enterprise IT governance may benefit from agency reorganization, which offers opportunities for efficiencies.

Strategic Planning

- IT strategic planning must be done in concert with business planning, based on the mission.

- Statewide strategic planning is challenging because California is a huge conglomerate, no single authority for all agencies/departments, no pool of funding to support it.

- The strategic plan should have broad stakeholder involvement with objectives for improving California and how IT supports that goal.
• A statewide entity could centralize and establish the statewide IT direction (strategy) and policy.

Leadership

• DOIT was not recognized as a leader (ineffective coordination of statewide strategic plan, limited utility of agency/department information management plans and activity reports, inconsistent responses to inquiries, staff turnover and limited agency/department knowledge, standards development wasn’t responsive to department/agencies).

• Three incarnations of IT governance (SOIT, OIT, DOIT) all had similar constructs and all faced with similar challenges—achieving collaboration.

• Leadership challenges for DOIT included perceptions of ineffectiveness, political turf battles, and limited authority.

• A statewide entity that does policy and vision should be separate from project approval and oversight.

• A statewide entity must be knowledgeable, have integrity and the authority for the “voice” of IT to include recommending where California should direct funding, minimizing approval time and look at enterprise-wide issues such as departments going it alone, with others, or via data centers.

Workforce

• Outsourcing and training are strategies to compensate for unique skills, aging skill base, and workforce shortages.

• The state is unable to compete for IT staff (industry, on-line testing, job classifications).

• The state’s system for personnel is major challenge (person years allocation).

• A statewide entity could address delivering services when the systems we depend on are losing people.

Technology

Infrastructure Development

• Agencies/departments develop their own systems when a central organization cannot meet their critical need, but data centers could be used to provide common needs, economies of scale, and security.

• A statewide entity could include the data centers.
Standards, Technology Forecasting

- Standards are needed, but this is politically problematic.
C. A Summary of the Department’s Progress

The Bureau of State Audits made a variety of recommendations to the Department of Information Technology (DOIT) in its June 2001 report. The table shows the bureau’s recommendations and DOIT’s progress in implementing those recommendations as of its sunset date of July 1, 2002.

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>DOIT’s Progress</th>
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<tbody>
<tr>
<td>To provide strategic guidance for the State’s IT activities, DOIT, in conjunction with the departments, the governor, the Legislature, the Department of Finance, and other relevant parties, needs to update the statewide IT plan to address the current IT environment. In particular, the plan should establish measurable objectives to show how the State intends to reach its goals. Also, the plan should communicate priorities for approval and funding of projects. To facilitate the establishing of such priorities, DOIT should work in collaboration with the entities previously mentioned.</td>
<td>Not fully implemented. DOIT drafted a statewide IT plan. However, DOIT management stated that this plan was still incomplete.</td>
</tr>
<tr>
<td>To ensure departments’ IT strategic plans are consistently evaluated for their compliance with the statewide IT strategy, DOIT should implement a process to review department plans.</td>
<td>Not fully implemented. DOIT made some progress in developing a way to review departments’ IT strategic plans through the use of an enhanced strategic plan review checklist. However, after developing this enhanced checklist, DOIT granted the departments until August 2002 to bring their strategic plans into compliance. Since the August 2002 deadline was after DOIT’s sunset date, this checklist was never used.</td>
</tr>
<tr>
<td>Recommendations</td>
<td>DOIT’s Progress</td>
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<tr>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>To provide appropriate department guidance and direction for the IT development process, DOIT should 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, DOIT should resolve the contradiction between its management memorandum and the State Administrative Manual over the applicability of the alternative procurement process. Finally, DOIT should work with General Services to evaluate the alternative procurement process and provide information to departments about how the process could be most effectively used.</td>
<td>Not fully implemented. DOIT developed a framework to manage its policies, procedures, and guidelines to update its guidance issued to state departments. The framework defined whether such documents would be maintained in the State Administrative Manual or the Statewide Information Management Manual. In addition, DOIT stated that it had reviewed IT policies, procedures, and guidelines and provided recommendations to consolidate or remove specific outdated documents. However, DOIT did not implement these recommendations. DOIT rescinded the management memorandum that conflicted with the State Administrative Manual and deferred all future policy decisions regarding the alternative procurement process to General Services.</td>
</tr>
<tr>
<td>DOIT should continue its efforts to improve its project review and approval process. However, it should ensure that the changes result in a process that will subject proposed IT projects to a thorough evaluation. Further, DOIT should ensure that departments are properly assessing IT projects by comparing departments’ feasibility study reports with established criteria, such as the fundamental decision criteria. Moreover, to ensure that it can defend its approval of costly IT projects, DOIT should thoroughly document its approval decisions.</td>
<td>Not fully implemented. DOIT did not ensure it fully documented its project review decisions. In all twelve of the projects we reviewed, DOIT could not provide evidence that it tracked the departments’ compliance with the conditions it included in the project approval letters DOIT sent notifying them of its concerns.</td>
</tr>
<tr>
<td>To ensure departments assess and mitigate project risks, DOIT should require complete risk assessment reports from departments. Further, DOIT should properly analyze the responses and document how it resolves any concerns. Finally, DOIT should require departments using the alternative procurement process to assess risks at the beginning of their projects. If DOIT believes its current model is inappropriate for alternative procurements, it should modify its risk model to more appropriately address alternative procurements.</td>
<td>Not fully implemented. DOIT stated that it had enhanced the Risk Assessment Model (RAM) and ensured that it applied to all projects, regardless of the procurement process. However, DOIT could not provide consistent evidence that it reviewed the RAMs the departments submitted. In addition, we could not see a strong linkage between the risk-related comments submitted by the departments in their RAMs and the risk-related comments made by DOIT for those RAMs it reviewed.</td>
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<td>To ensure that it receives and effectively uses the proper information to monitor departments’ IT projects, DOIT should take the following actions: • Continue with its efforts to restructure the oversight process to ensure that the process allows DOIT to properly monitor and guide projects. • Modify the required progress reports to include two types of critical information: 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. DOIT should use this modified progress reporting to closely monitor projects that may be required to submit special project reports. • Ensure that analysts sufficiently review and document their oversight of projects and track the receipt of required reports.</td>
<td>Implemented. DOIT modified its project status report to include approved budget, budget variance, expenditures to date, and planned and actual start and completion dates for major project milestones. DOIT adequately accounted for these reports. DOIT also modified the project approval letter that required certain conditions be met.</td>
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<td>To hold departments accountable for the benefits expected from their IT projects, DOIT should ensure that departments submit post implementation evaluation reports (PIER). Further, DOIT should continue with its effort to reengineer the evaluation process including the incorporation of lessons learned from project development.</td>
<td>Not implemented. DOIT management stated that they did not track projects for the purpose of ensuring that departments submitted their PIER documents.</td>
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<td>To promote coordination on IT projects 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 based on its survey of departments. DOIT should ensure that departments’ reported data are accurate and should update this information when departments report new information so that the project inventory stays current. 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 the release of this information.</td>
<td>Not fully implemented. To fulfill this recommendation DOIT facilitated meetings with two groups. The first was the Information Technology Coordination Council/Enterprise Coordination Council (ITCC/ECC), which consisted of Agency Information Officers and Chief Information Officers (CIO) Workgroup chairpersons. The second was the CIO meetings. The primary items discussed in these meetings focused on policy decisions. More specifically, according to the meeting notes, DOIT seemed to be using these meetings to get input on developing IT standards and policies. While this was a valuable activity, our recommendation specifically calls for a formal mechanism to initiate discussion between departments that are developing projects based on similar technologies or processes. In addition, DOIT did not complete its IT project inventory. Although DOIT conducted a survey of departments, at the time of its sunset none of this information had been reviewed for accuracy or completeness.</td>
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<td>To improve compatibility and properly guide IT development, DOIT should 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.</td>
<td>Not fully implemented. As of its July 1, 2002 sunset date, DOIT had not developed and issued standards for security, infrastructure, accessibility, data or applications development. Rather, DOIT issued general policies for three of the five categories it identified—security, infrastructure, and accessibility. These policies offered general objectives but did not provide the standards that are needed to ensure consistency, compatibility, and effectiveness among departments.</td>
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<td>To ensure that DOIT is fully employing the IT advisory councils and receiving the benefits intended by law, DOIT should 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. DOIT should ensure that the public committee makes all findings and recommendations in writing, as required by state law. DOIT should also monitor the progress of its CIO work groups to ensure that they reach their established goals.</td>
<td>Implemented. To fulfill this recommendation DOIT met with three groups: the ITCC/ECC, CIO, and the California Information Technology Commission (CITC). Based on our review of DOIT’s agendas and notes from those meetings, we found that DOIT met with these groups (the ITCC/ECC and CIO groups served as the public committees while the CITC served as the private commission) on a regular basis to receive guidance for its strategic planning efforts, to receive input on new policies, and to discuss best practices issues.</td>
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<td>To ensure that it completes initiatives, DOIT should 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 a change in the State’s IT environment prompt adjustments to these priorities or resource requirements.</td>
<td>Not implemented. DOIT management stated that, as of its July 1, 2002 sunset date, it would cease operations. In order to protect the State’s $1.7 billion IT portfolio, DOIT stated that the administration was committed to establishing a short-term interim IT oversight agency. This interim agency will continue to assess how to reorganize the operation and management of California’s IT systems after July 1, 2002, and will continue to communicate with the Legislature regarding changes in the IT environment that require adjustments to priorities and resources.</td>
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<td>To organize and focus its efforts, 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, particularly those that we observed it has not sufficiently accomplished. Further, it should build on past efforts to the extent possible rather than reinventing processes and practices when planning its future activities.</td>
<td>Not fully implemented. DOIT management stated that it completed much of this recommendation with the publication of its 2001–2004 Strategic Plan, but did not complete its business plan as part of that effort before its sunset date.</td>
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D. Literature Review

In our literature search, we used the following databases and keywords.

**Databases**

ECO, EconLit, Wilson Business Periodicals, Social Science Abstracts, Business Management Practices, PAIS, ERIC

**Search Strategy**

In Subject/Descriptor field: Information Systems Departments or Information Technology or Information Systems Planning AND In Keyword, Subject/Descriptor, or Title fields: management or governance or strategy or strategic planning or procurement or e-govern!

**Dates: 1996–Current**

We made a second search of the same databases, with the addition of the database PsycINFO, using “best practices” in the Keyword, Subject, or Title fields. Several themes emerged from the literature, which we discuss under separate headings below.

**Public Sector IT Investment and Productivity**

There are many more private sector studies on IT investment than there are public sector studies. The public sector studies are consistent, however, in concluding that it investment pays off. Studies at local, county, state, and federal levels all show that public sector IT investment has a direct, positive effect on productivity and performance (Brown, 2001; Brown, O’Toole, and Brudney, 1998; Heintze and Bretschneider, 2000; Lee and Perry, 2002; Lehr and Lichtenberg, 1996 [cited in Lee and Perry, 2002]). A study of IT investment by state governments, based on data from all 50 states, showed a direct, positive effect on economic productivity, as measured by Gross State Product (GSP). This held true whether IT investment was measured in financial terms or by a
performance index based on total computer processing power (Lee and Perry, 2002).

**Leadership**

The active attention and support of top management for IT has been found to be critical to its success, across organizations of all sizes in both public and private sectors. In studies at the local and county levels, researchers found that management support and leadership had a direct, positive influence on the commitment of employees to IT projects, organizational performance after IT implementation, and the realization of expected benefits from IT projects (Brown, O’Toole, and Brudney, 1998; Heintze and Bretschneider, 2000). A study of Fortune 1000 companies and government agencies found a significant positive relationship between top management leadership and the sophistication of IT infrastructure (Ravichandran and Rai, 2000). In a collection of small studies of IT failures in public agencies in California, one of the most consistent conclusions was that when new software is adopted, management support for the application and the employees learning to use it is essential (Northrop, 2002). (The small studies described in this paper were student projects assigned over a six-year period by a single professor; conceivably the student conclusions were influenced by the views of the professor.)

Private sector studies have found that senior management support, championship, and commitment is critical for IT assimilation (Armstrong and Sambamurthy, 1999), for meeting procurement goals in large organizations (Avery, 2001), and for successful implementation of IT security (Internal Auditor, 1997). Similarly, a study of tens of thousands of software projects concluded that there is most success where senior executives have a clear vision of the goals of a project and communicate their vision throughout the company (Ware, May 2001).

**Management Styles**

In a study of IT investment in all 50 states of the United States, Lee and Perry compared four different management structures: a single CIO, an Information Resources Management (IRM) commission (typically made up of top managers in state agencies with a stake in IT), a combination of the two, or no formal IT management functions at all. They found that states with a single CIO got a better return on their investment (in terms of economic benefits to the state) than states with any other kind of formal structure; in addition they found that states
with an IRM commission alone did no better than states with no formal IT management functions.

The primary role of business units or agencies in determining the goals of IT is emphasized in several studies. A program to introduce IT in the Charlotte-Mecklenberg Police Department began with several rounds of interviews and focus groups to find out what kind of information officers and other employees thought they needed in order to do their work better; once the resulting IT system was implemented, between half and three-quarters of officers perceived a threefold or better improvement in performance, efficiency, call-response, and problem-solving productivity (Brown, 2001). Several studies emphasize the importance of letting business units or agencies who will use the IT set the agenda by proposing initiatives, controlling the financing, and being continuously involved in the planning and testing of IT projects (Radosevich, 2001; Internal Auditor, 1997; Kiely, 1997; Northrop, 2002; Avery, 2001).

One additional frequent observation is that in planning and managing IT projects, the adoption of clear, short-term sub-goals within each project, with regular testing and early, frequent involvement of users, is an important factor in the successful completion of large projects (Ware, May 2001; Internal Auditor, 1997; Radosevich, 1999).

**Strategic Planning**

Several studies of strategic planning for IT emphasize the importance of committing sufficient resources to the planning process, in terms of time, money, and the personal attention of top managers (Management Review, 1999; Ramanujam, Venkatraman, and Camillus, 1986; Ware, Nov. 2001). A large study of Fortune 1000 companies and government agencies found that using an integrated planning strategy that makes use of all identified success factors is far more likely to succeed than the implementation of a single tool or management practice (Ravichandran and Rai, 2000).

While not many organizations make effective use of metrics in their planning, the use of appropriate metrics has been found to be an important success factor across firms of all sizes; in general the collection and analysis of relevant information is an important factor (Dean and Sharfman, 1996).

Two negative factors in strategic planning have been identified: the degree of resistance to planning, or anti-planning bias, within an organization (Ramanujam, Venkatraman, and Camillus, 1986), and the extent to which
politics, defined as “intentional acts of influence in the service of individual rather than organizational goals,” plays a role (Dean and Sharfman, 1996).

**Procurement and Outsourcing**

There is some consensus on several recommendations having to do with procurement practices and outsourcing. A case study of IT procurement in three large firms recommends having a central, global system for keeping track of IT expenditures (Avery, 2001). Two studies found that involving people with both business and technical expertise in procurement and outsourcing decisions is better than either group operating alone (Avery, 2001; Lacity and Willcocks, 1998). In a study of outsourcing in 40 U.S. and U.K. corporations, Lacity and Willcocks found that outsourcing selectively is more effective in reducing cost than either total outsourcing or no outsourcing at all. Also, short-term contracts using multiple vendors, with detailed fee-for-service agreements, result in greater cost reductions than long-term, open-ended contracts. Finally, all of these findings seem to hold regardless of the size of the IT function within an organization (Lacity and Wilcocks, 1998).