Audit of the State of Hawai‘i’s Information Technology: Who’s in Charge?

A Report to the Governor and the Legislature of the State of Hawai‘i

Report No. 09-06
March 2009

THE AUDITOR
STATE OF HAWAI‘I

Office of the Auditor

The missions of the Office of the Auditor are assigned by the Hawai‘i State Constitution (Article VII, Section 10). The primary mission is to conduct post audits of the transactions, accounts, programs, and performance of public agencies. A supplemental mission is to conduct such other investigations and prepare such additional reports as may be directed by the Legislature.

Under its assigned missions, the office conducts the following types of examinations:

1. Financial audits attest to the fairness of the financial statements of agencies. They examine the adequacy of the financial records and accounting and internal controls, and they determine the legality and propriety of expenditures.

2. Management audits, which are also referred to as performance audits, examine the effectiveness of programs or the efficiency of agencies or both. These audits are also called program audits, when they focus on whether programs are attaining the objectives and results expected of them, and operations audits, when they examine how well agencies are organized and managed and how efficiently they acquire and utilize resources.

3. Sunset evaluations evaluate new professional and occupational licensing programs to determine whether the programs should be terminated, continued, or modified. These evaluations are conducted in accordance with criteria established by statute.

4. Sunrise analyses are similar to sunset evaluations, but they apply to proposed rather than existing regulatory programs. Before a new professional and occupational licensing program can be enacted, the statutes require that the measure be analyzed by the Office of the Auditor as to its probable effects.

5. Health insurance analyses examine bills that propose to mandate certain health insurance benefits. Such bills cannot be enacted unless they are referred to the Office of the Auditor for an assessment of the social and financial impact of the proposed measure.

6. Analyses of proposed special funds and existing trust and revolving funds determine if proposals to establish these funds are existing funds meet legislative criteria.

7. Procurement compliance audits and other procurement-related monitoring assist the Legislature in overseeing government procurement practices.

8. Fiscal accountability reports analyze expenditures by the state Department of Education in various areas.

9. Special studies respond to requests from both houses of the Legislature. The studies usually address specific problems for which the Legislature is seeking solutions.

Hawai‘i’s laws provide the Auditor with broad powers to examine all books, records, files, papers, and documents and all financial affairs of every agency. The Auditor also has the authority to summon persons to produce records and to question persons under oath. However, the Office of the Auditor exercises no control function, and its authority is limited to reviewing, evaluating, and reporting on its findings and recommendations to the Legislature and the Governor.

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OVERVIEW

Audit of the State of Hawai‘i’s Information Technology: Who’s in Charge?

Report No. 09-06, March 2009

Summary

The State Auditor conducted this audit pursuant to Section 23-4, Hawai‘i Revised Statutes (HRS), which requires the Auditor to conduct postaudits of the transactions, accounts, programs, and performance of all departments, offices, and agencies of the State and its political subdivisions.

The use of IT is pervasive in today’s business environment, including the numerous offices of state government. Computer systems, networks, and electronic records are integral components of nearly every state program. We procured the services of Accuity LLP to assist us in reviewing the IT governance structure of the state executive branch, excluding the University of Hawai‘i, for fiscal years 1995-96 through 2006-07. We focused on eight large departments.

Using criteria developed by the IT Governance Institute, we found that the State’s IT leaders provide weak and ineffective management and as a result, the State no longer has a lead agency for information technology. While strategic leadership had admittedly been lacking in previous administrations, this administration has not initiated or implemented meaningful resolution even as the need for effective “IT governance” has become more critical. In 2004, the appointment of a state CIO and the subsequent appointment of IT governing bodies and officials appeared to be an acknowledgment by the executive branch of the importance of IT and the necessity of its effective, coordinated management. But, we found that both the CIO position and the IT governing bodies that were formed were established without clearly defined roles, duties, and responsibilities. In addition, the job of CIO is a part-time position and participation in the IT governing process is voluntary. Moreover, the decisions that result from the IT Executive Committee’s deliberations are non-binding. As a result, meetings are poorly attended and policy decisions are rare.

When the CIO accepted his new position in 2004, he was already the State’s comptroller, a position with numerous duties and responsibilities. As comptroller, his primary responsibility is to oversee the Department of Accounting and General Services, which consists of ten divisions, three district offices, and seven administratively attached agencies. We found these duties take priority over those of the CIO, whose role and responsibilities have never been clearly defined. The majority of the roles and responsibilities expected of a CIO are not performed by the Hawai‘i CIO and the few that are performed are done only partially. Several state leaders, including departmental IT managers, have described the CIO’s focus as “operational” rather than “strategic.” This approach thus leaves out the critical IT governance duties such as IT strategic planning or setting statewide IT policies.

The Information and Communication Services Division (ICSD), the State's official lead agency for IT, was transferred from the Department of Budget and Finance to the Department of Accounting and General Services in 1997. After this transfer, ICSD concentrated on the maintenance of the State's data center and computer networking, leaving departments without guidance and direction. We found that ICSD has not maintained up to date technology standards, no longer enforces or monitors compliance with this requirement, and does not provide necessary guidance to departments for critical processes such as disaster recovery. During interviews, several department IT managers indicated that ICSD does not offer the relevant services and support to effectively assist them in carrying out their missions. Department managers have lost confidence in ICSD's ability to provide specific support for their applications.

Without an effective CIO and effective governing bodies, the State cannot ensure that its IT investments are cost effective, optimally utilized, adequately planned for future growth, or have the operational flexibility to easily adapt to changing requirements. If the State's IT management does not improve, the State will eventually be compelled to outsource or co-source it's IT functions, a complicated and expensive undertaking.

Recommendations and Response

We recommended that the governor formally assign responsibility for the development and execution of the IT strategic plan to the State CIO. We also made several recommendations to the Legislature to explicate the responsibilities of the various IT governance entities.

The department responded that the current CIO position does not have the authority to utilize the financial or personnel resources of the executive branch departments and that ICSD's budget has been reduced over the past years and initiatives have not been funded. The department also provided two alternative recommendations that entail a return to the centralized control model of the 1960s and 1970s.

The department's position misses the point. A major objective of IT governance in the distributed environment of today's model is to advocate the needs of the various departments and provide value and support in the departments' continued IT efforts. Had IT strategic planning been completed, for example, the need for recovery plans and an alternate data center in case of system-wide failure might have been better understood in the competition for scarce resources.

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A Report to the Governor and the Legislature of the State of Hawai‘i

Conducted by

The Auditor
State of Hawai‘i
and
Accuity LLP

Submitted by

THE AUDITOR
STATE OF HAWAI‘I

Report No. 09-06
March 2009

Foreword

We conducted this audit pursuant to Section 23-4, Hawai‘i Revised Statutes, which requires the Auditor to conduct postaudits of the transactions, accounts, programs, and performance of all departments, offices, and agencies of the State and its political subdivisions. The audit was conducted by the Office of the Auditor and the certified public accounting firm of Accuity LLP.

We wish to express our appreciation for the cooperation and assistance extended to us by the director and staff of the Department of Accounting and General Services and others whom we contacted in the course of the audit.

Marion M. Higa
State Auditor

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Chapter 1
Introduction

The State Auditor conducted this audit pursuant to Section 23-4, Hawai‘i Revised Statutes, which requires the Auditor to conduct postaudits of the transactions, accounts, programs, and performance of all departments, offices, and agencies of the State and its political subdivisions.

This is the first statewide audit of information technology (IT) performed by our office, and it is designed to provide a broad overview of key IT management issues and challenges in the state executive branch. Future audits of information technology will explore in further detail some of the issues identified in this report. Since the field of IT uses many terms and acronyms that are specific to this area, we have included a glossary of terms in Appendix A.

Background

The efficient delivery of quality programs and services to Hawai‘i’s citizens is a primary goal of state government. To help realize this goal, the State has invested heavily in computer-based information systems, more commonly known as information technology. In 1965, that investment largely involved the purchase of a single mainframe computer and the employment of staff to operate and maintain it. Today, a state government office could hardly be considered an office without a computer of some kind somewhere on the premises. Thanks to the development of the microprocessor, local area networks, the Internet, and a host of other technologies, today’s state employee has access to more processing power and communications capability than did entire departments just a decade ago.

As a result, most aspects of the State’s business are now dependent on electronic processing of information and transactions. The State of Hawai‘i has a long history in the use of computers since the installation of the first IBM mainframe in 1963. Processes in state programs that rely heavily on the use of information technology include paying benefits, issuing licenses and permits, and collecting taxes and other revenues. Much of the success of these activities depends on the proper use of information technology. Appendix B displays a timeline of major events in the statewide adoption of information technology.

Because of this heavy reliance on technology, it is critical that the State’s IT operations remain uninterrupted in the normal business environment and that services can be quickly reestablished in the case of catastrophic failure. The costs associated with permanently or even temporarily

losing capability or data are nearly impossible to calculate but would certainly be immense. In addition, the State must also ensure that the significant benefits provided by IT are not eroded by inadequate planning for and poor selection and implementation of technology.

Information technology

Information technology includes the development, implementation, support, and management of computer-based information systems. Among other components, information technology includes computers (desktop computers, servers, mainframes, etc.), operating systems, application software, network interfaces (routers, switches, etc.), the human resources needed to manage the technology, and other physical elements such as data centers, cables, and the like. Information technology has become so integral to the State that it has changed the fundamental way business is conducted; manual processes have given way to automated processing and real-time transactions. Exhibit 1.1 gives examples of how IT is used in various state departments.

Exhibit 1.1
Examples of Statewide Uses of Technology

Department	Example IT Uses
Department of Accounting and General Services (DAGS)	Provides central payroll; financial reporting; and data center services
Department of Budget and Finance (B&F)	Monitors financial and operational performance via the executive budget
Department of Education (DOE)	Tracks, analyzes, and reports teacher and student performance
Department of Health (DOH)	Maintains vital statistics and a bioterrorism tracking system
Department of Human Resources Development (DHRD)	Maintains state employment records and ensures compliance with the employment laws
Department of Taxation (TAX)	Tracks and collects taxes
Department of Human Services (DHS)	Delivers and manages state welfare benefits
Department of Transportation (DOT)	Manages harbor traffic and shipping services

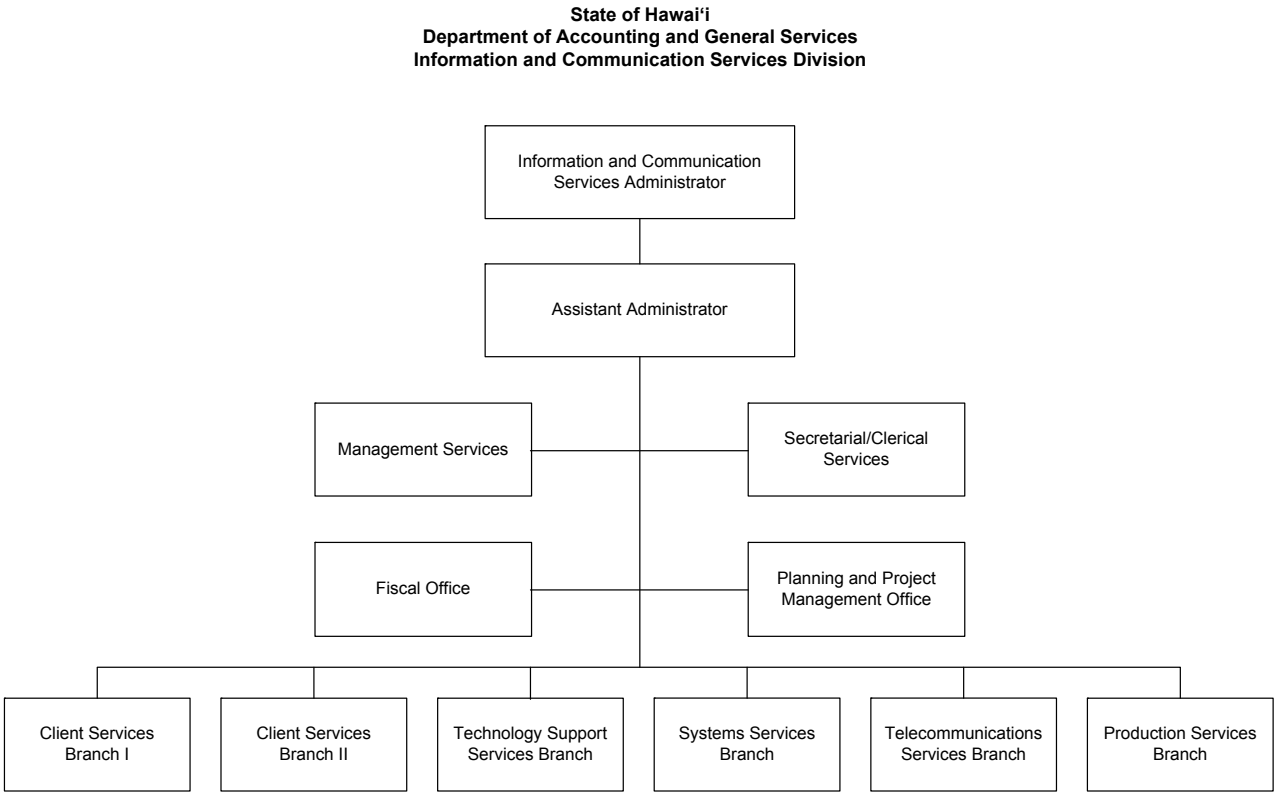
Source: Office of the Auditor

State IT governing bodies and officials

Information and Communication Services Division

The Information and Communication Services Division (ICSD), a division of the Department of Accounting and General Services, is responsible for the management of information processing and communication systems for the State. The division is tasked with planning, coordinating, organizing, directing, and administering IT services. It also provides systems development support and coordination for the departments. ICSD manages the State's central data processing center at the Kalanimoku building, where many departments house their mission critical applications. The department manages and maintains the Next Generation Network (NGN), which is the connectivity backbone for the State's information communications between state agencies as well as the main connection to the Internet. Exhibit 1.2 shows the organization chart for the Information and Communications Services Division.

Exhibit 1.2
Information and Communication Services Division Organization Chart



Source: Office of the Auditor

Comptroller

The comptroller's primary responsibility is to oversee DAGS, which consists of ten divisions, three district offices and seven administratively attached state agencies. In addition to oversight of the State's fiscal services, the comptroller is responsible for building maintenance, custodial services, land surveys, state records preservation, administration of the statewide election systems, and the King Kamehameha Celebration Commission.

In 1996, the IT duties of the director of finance were inherited by the comptroller with the transfer of ICSD from B&F to DAGS. In addition, in 2004, the governor appointed the comptroller to also serve as the State's chief information officer.

Chief information officer

The chief information officer, or CIO, is the head of an organization's information technology group. This is a senior executive position that usually reports directly to the chief executive of the organization. While a CIO must clearly understand equipment and software, a more important role of the CIO is one of leadership. As IT and systems become more significant and critical in an organization, the CIO has become a key contributor in formulating strategic plans and goals and objectives that support the organization as a whole.

According to Info-Tech Research Group, a technology research organization, the CIO's role is to provide vision and leadership for developing and implementing information technology initiatives. The CIO directs the planning and implementation of enterprise IT systems in support of business operations in order to improve cost effectiveness, service quality, and business development. This individual is responsible for all aspects of the organization's information technology and systems.

In the State of Hawai‘i, the CIO's duties are carried out on a part-time basis. As noted above, the current CIO was appointed by the governor in 2004 and also serves as the state comptroller.

IT Executive Committee

The IT Executive Committee is comprised of the deputy directors from each of the executive branch's 15 departments and is chaired by the state comptroller in his capacity as the State's chief information officer. Its primary role is to coordinate, address, and develop solutions for common IT policy issues such as standards, security, architectural infrastructure, and the implementation of an alternative data center. The committee is tasked with providing centralized coordination and solutions for executive department agencies in light of a decentralized staff and budget

environment. The committee, which meets monthly, was established by the comptroller through a 2004 memorandum. Membership is voluntary, attendance is highly encouraged but not required, and the committee's decisions are not binding.

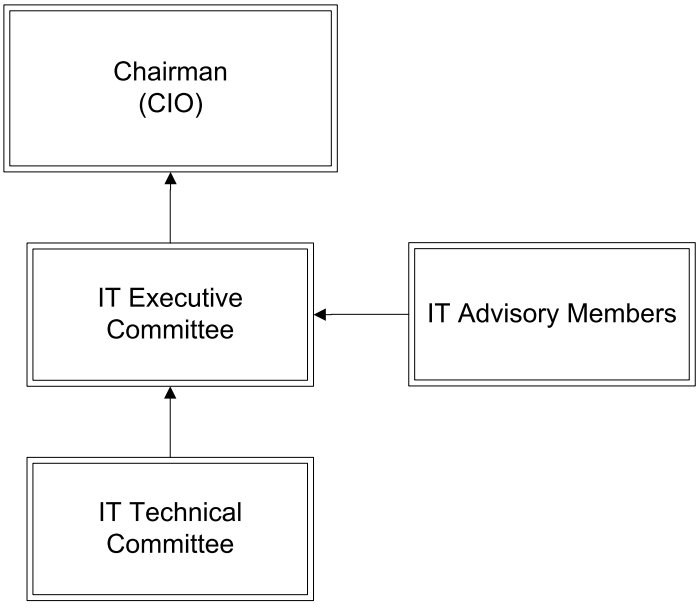
IT advisory members

Representatives from the DOE, the University of Hawai'i, and the Judiciary serve as IT advisors. They support the CIO and the rest of the IT Executive Committee by providing and passing along external communications and other information and recommendations from other agencies and organizations. The members are not required to attend the monthly IT Executive Committee meetings.

IT Technical Committee

The IT Technical Committee is comprised of the IT managers of the executive branch departments and is headed by the ICSD administrator, the head of the division responsible for the management of information processing and communication systems for the State. This committee's role is to support the IT Executive Committee by implementing its initiatives. The committee, which meets monthly, was established by the comptroller through a 2004 memorandum. Exhibit 1.3 shows the relationship between the various IT governance committees.

Exhibit 1.3
IT Governance Committees Organization Chart



Source: Office of the Auditor

Objectives of the Audit

1. Assess management of IT in the State of Hawai‘i Executive Branch.

2. Assess the adequacy of IT governing bodies and officials in delivering:

   - Cost-effective use of IT,
   - Effective use of IT for asset utilization,
   - Effective use of IT for growth,
   - Effective use of IT for operational flexibility.

3. Review and compare other states' IT governance structures with Hawai‘i's.

4. Make recommendations for improvement.

Scope and Methodology

We reviewed the information technology governance structure within the state executive branch, excluding the University of Hawai‘i, from fiscal year ending June 30, 1996 to fiscal year ending June 30, 2007. We focused on the large information technology user departments including the departments of Accounting and General Services (DAGS), Budget and Finance (B&F), Education (DOE), Health (DOH), Human Resources Development (DHRD), Human Services (DHS), Taxation (TAX), and Transportation (DOT).

We procured the services of Accuity LLP to assist us with the conduct of our work. Our field work included interviews with the comptroller/CIO, the governor's senior policy advisor, various department deputy directors, and IT managers. We reviewed pertinent laws, rules, policies, and procedures. We also reviewed planning documents, strategic and business plans, memoranda, correspondence, and meeting minutes.

To establish a baseline of information, we researched and evaluated information technology governance structures in other states where the use of information technology was considered successful and compared these to the State of Hawai‘i. The following summarizes the two-step approach we took to establish this baseline:

1. To evaluate Hawai‘i's IT governance environment we examined data compiled by the National Association of State Chief Information Officers (NASCIO). NASCIO is an organization representing state CIOs and IT executives from state governments across the U.S. Among other services, the organization fosters the exchange of information and promotes the adoption of IT best practices and

innovation. In 2005, NASCIO released "The Compendium of Digital Government in the States," which surveyed the 50 states' CIOs and IT executives in the executive branch, focusing on IT authority and enterprise IT management. We used statistics from the compendium to compare Hawai'i's IT governance structure with those of the other states.

2. We also performed extensive research on the IT governance structures for 11 states that have been recognized for their achievements in IT governance. We focused on the establishment of the CIO role, the composition of an IT governing body, and the strategic planning process. Those states identified as leaders in IT governance were Arizona, California, Delaware, Georgia, Michigan, Nebraska, New York, North Carolina, Texas, Virginia, and Washington (henceforth referred to as the "IT Leadership Group"). These states have taken an active approach in defining the role of the CIO and the composition of an IT steering committee, and in establishing a process to maintain a relevant IT strategic plan. The IT Leadership Group became the standard against which we compared the IT practices of the State of Hawai'i. As an example, see Exhibit 1.4, IT Governance in Action. This exhibit illustrates how the Commonwealth of Virginia practices IT governance.

Exhibit 1.4
IT Governance in Action
Virginia Information Technology Agency (VITA)

VITA is the Commonwealth of Virginia's consolidated, centralized information technology organization. VITA's responsibilities fall into three primary categories:

- Operation of the IT infrastructure
- Governance of IT investments
- Procurement of technology

VITA was created to establish Virginia as a leader in the use of information technology in government. VITA's core goals are to: create value, improve the Commonwealth's competitive position, create accountability for how public funds are spent on technology, grow the employees, and serve as a model for transforming state government.

The same legislation that created VITA in 2003 also created the Information Technology Investment Board (ITIB) to provide oversight over VITA and to ensure the sound use of IT funds.

VITA provides strategic oversight by:

- Working with customers to understand their business requirements
- Considering both the Commonwealth's current technology portfolio and its strategic direction
- Collaborating with customers to expedite projects and obtain the best possible value by addressing issues - and opportunities - sooner rather than later
- Working with stakeholders to prioritize and select technology investments that optimize benefit to citizens within the Commonwealth
- Seeking continuous improvement, evaluating both existing IT investments and new technologies to more effectively meet increasing business demands

Source: Commonwealth of Virginia

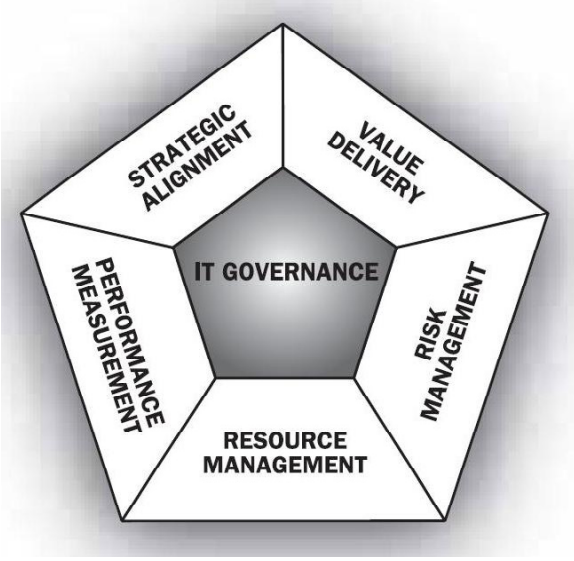
As specific evaluation criteria we utilized two documents developed by the IT Governance Institute (ITGI): 1) *Control Objectives for Information and Related Technology* (CobiT) and 2) *Board Briefing on IT Governance*, which is itself based on CobiT. ITGI and its sister organization, the Information Systems Audit and Control Association, give the following overview of CobiT:

> Successful organizations understand the benefits of information technology (IT) and use this knowledge to drive their shareholders' value. They recognize the critical dependence of many business processes on IT, the need to comply with increasing regulatory compliance demands and the benefits of managing risk effectively. To aid organizations in successfully meeting today's business challenges, the IT Governance Institute® (ITGI) has published version CobiT® 4.1.

CobiT is an IT governance framework and supporting toolset that allows managers to bridge the gap between control requirements, technical issues, and business risks. CobiT enables clear policy development and good practice for IT control throughout organizations. CobiT emphasizes regulatory compliance, helps organizations to increase the value attained from IT, enables alignment and simplifies implementation of the CobiT framework.

Exhibit 1.5 illustrates the governance components of CobiT.

Exhibit 1.5
Governance Components of CobiT



Source: CobiT 4.1, IT Governance Institute, 2007

In addressing IT governance, the major focus areas of CobiT are strategic alignment, value delivery, risk management, resource management, and performance measurement. The purpose of each of these components is described below:

Strategic Alignment ensures the linkage of the organization itself and the IT plans. Major activities include defining, maintaining and validating the IT value proposition as well as aligning the IT operations with the organization's general operations.

Value Delivery ensures that IT delivers the promised benefits consistent with the strategy, while concentrating on optimizing costs and proving the value of IT.

Risk Management ensures leaders are aware of the risks, have a clear understanding of the organization's appetite for risk, compliance requirements, and the required transparency about the significant risks to the organization. It also ensures that risk management is a management responsibility that is embedded into the organization.

Resource Management ensures the optimal investment in, with proper management of, critical IT resources. Critical IT resources include hardware, system software, applications software, information, infrastructure and people.

Performance Measurement ensures that organizations track and monitor strategy implementation, project completion, resource usage, process performance, and service delivery. An example of a performance measurement in IT is the balanced scorecard that translates strategy into action plans to achieve measurable goals beyond the conventional accounting methods.

Our work was performed from June 2007 to January 2008 according to generally accepted government auditing standards.

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Chapter 2
The State of Hawai‘i’s Management of Information Technology Lacks Leadership and Direction

The leaders of the State’s information technology (IT) have been remiss in providing overall leadership and direction. While strategic leadership had admittedly been lacking in previous administrations, this administration has not initiated or implemented meaningful resolution even as the need for effective “IT governance” has become more critical. Instead, in 2004 the administration assigned the title and function of chief information officer (CIO) to the state comptroller but left unclear the position’s role, responsibility, and authority. Making that assignment meant adding to the comptroller’s primary responsibilities as the director of the Department of Accounting and General Services (DAGS), a department of multiple organizational units providing an expansive range of services. And the entities created to assist the comptroller/CIO—the IT executive committee, the IT advisors, and the IT technical committee—each in its turn has not met expectations for assisting the CIO in core responsibilities of IT governance.

Striking the appropriate balance between a highly centralized control environment and a widely distributed one is the management challenge. The consequence of not overcoming the challenge is outsourcing or co-sourcing IT management, if in the meanwhile the State has not had to confront any catastrophic failures from unaddressed disaster recovery and business continuity issues.

Summary of Findings

1. The State’s IT leaders provide weak and ineffective management.
2. The State no longer has a lead agency for information technology.

The State’s IT Leaders Provide Weak and Ineffective Management

In 2004, the appointment of a state CIO and the subsequent establishment and appointment of IT governing bodies and officials appeared to be an acknowledgment by the executive branch of the importance of IT and the necessity of its effective, coordinated management. Opening the first meeting of the Information Technology Executive Committee in October 2004, the newly minted CIO described the upcoming challenge of creating common IT policy and standards as “making order of chaos.”

However, three years later, we found that the CIO and his committees have brought little order to the State’s IT world. We found that both

the CIO position and the IT governing bodies that he formed were established without clearly defined roles, duties, and responsibilities. In addition, the job of CIO is a part-time position, and participation in the IT governing process is voluntary. Moreover, the decisions that result from the IT Executive Committee's deliberations are non-binding. As a result, meetings are poorly attended, and policy decisions are rare. Instead of an acknowledgment of the primary importance of proper management of technology, the State's foray into IT governance has only underscored its continual neglect of this essential resource.

The state chief information officer's role, authority, and responsibility are not clearly defined

In 2004, the State comptroller requested that he be named CIO, and the governor quickly did so. This appointment process is unusual for any organization given the importance of IT. Organizations typically perform rigorous due diligence, research, and evaluations of qualified candidates in order to find the right person to fill the position. The selection process is critical to ensure that the selected candidate possesses the skills and experience necessary to accomplish the roles and responsibilities of a CIO.

More importantly, the State has not formally established, documented, or communicated roles and responsibilities of the CIO. To ensure accountability, the roles, responsibilities, and authority of the CIO need to be established and communicated. Most state CIO roles and responsibilities are established by statute or by other formal means, unlike Hawai'i's CIO. For example, nine of 11 states in the IT leadership group created their CIO by state law or legislation—Arizona, California, Delaware, Georgia, Michigan, North Carolina, Texas, Virginia, and Washington. Appendix C, Exhibit C.1, shows how various states established their CIO.

Without a clear understanding of the Hawai'i CIO's roles and responsibilities, we noted that departments are uncertain as to the CIO's authority. Departmental IT managers are unsure whether the CIO's policies and directives are mandates or suggested practices. Further, departments have difficulty distinguishing between the actual and perceived roles of the CIO. Specifically, department IT managers commented that IT projects are sometimes approved by the CIO and at other times by the comptroller.

Since the CIO's role remains undocumented, we found his authority is derived from his position as comptroller, not as CIO. For example, the CIO, using his authority as comptroller, conditionally approved the Department of Transportation, Highways Division's current project to implement its own accounting system (primarily federally funded) provided that the Information Communication and Systems Division (ICSD) is involved. In addition, the CIO required the system to be

capable of replacing the State's aging accounting system (FAMIS), which is under the purview of the comptroller. While the CIO's efforts to leverage federal funds to benefit the State may be noteworthy, the use of a conditional approval as comptroller confuses the departmental IT managers.

Comptroller duties take priority to the detriment of IT

When the CIO accepted his new position in 2004, he did not step down as comptroller, nor did he surrender any of his current duties and responsibilities, which are numerous. As comptroller, his primary responsibility is to oversee the Department of Accounting and General Services, which consists of ten divisions, three district offices, and seven administratively attached agencies. In addition to oversight of the State's fiscal services, the comptroller is also responsible for building maintenance, custodial services, land surveys, state records preservation, administration of the statewide election systems, and the King Kamehameha Celebration Commission.

We found these duties take priority over those of the CIO, whose roles and responsibilities have never clearly been defined. After interviewing several IT administrators, we conclude that it appears that the CIO dedicates only a few hours per month to the job. As a result, IT management issues have not been adequately addressed.

Based upon the extensive duties recommended by CobiT, we have determined that the position of CIO requires a full-time commitment. In that respect, we would join the majority of states that have established full-time CIOs. Further, each one of the states in our IT Leadership Group is led by a dedicated CIO.

The CIO has not fulfilled his core responsibilities

The *Board Briefing on IT Governance*, 2nd Edition, of the IT Governance Institute, the publisher of CobiT, identifies 16 specific roles and responsibilities expected of a CIO. The 16 roles and responsibilities are:

1. Drive IT strategy development and execute against it, ensuring value is being delivered.
2. Implement IT standards and policies.
3. Educate managers on dependence on IT, IT related costs, technology issues and insights, and IT capabilities.
4. Clarify and demonstrate the value of IT.
5. Proactively increase IT value contribution.
6. Link IT budgets to strategic aims and objectives.
7. Manage expectations of IT.
8. Establish strong IT project management disciplines.

9. Provide IT infrastructures that facilitate creation and sharing of information at optimal cost.
10. Ensure the availability of suitable IT resources, skills, and infrastructure to meet strategic objectives.
11. Ensure that critical IT roles are appropriately defined and staffed.
12. Standardize architectures and technology.
13. Assess, efficiently mitigate, and communicate risks to stakeholders.
14. Implement an IT control framework.
15. Ensure the day-to-day management and verification of IT processes and controls.
16. Implement performance measures linked to IT strategies.

We compared the Hawai‘i’ CIO’s performance with the 16 recommended roles and responsibilities; 11 are not performed by the Hawai‘i CIO (nor by anyone else), and the remaining five are only partially performed. The five partially performed roles and responsibilities are:

1. Implement IT standards and policies.
2. Educate managers on dependence on IT, IT related costs, technology issues and insights, and IT capabilities.
3. Provide IT infrastructures that facilitate creation and sharing of information at optimal cost.
4. Ensure critical IT roles are appropriately defined and staffed.
5. Ensure day-to-day management and verification of IT processes and controls.

We found the CIO focuses on the operation and maintenance of the State’s network infrastructure and data center instead of statewide IT governance. In fact, several state leaders, including departmental IT managers, have described the CIO’s focus as “operational” rather than “strategic.” This approach thus omits the critical IT governance duties that would benefit the State such as IT strategic planning or setting statewide IT policies. Details of the specific CIO roles and responsibilities are included in Appendix D, Exhibit D.1 of this report.

Without an effective CIO to develop the necessary IT governance structures and processes, the State risks ineffective and inefficient utilization of IT resources. The administration has proposed creating a chief information technology officer in its 2007 initiatives to lead the State’s innovation projects such as digitizing administrative functions; however, these duties do not address the strategic requirements of a CIO as noted in Appendix D, Exhibit D.1.

The IT Executive Committee is poorly planned, supported, and managed

In a September 29, 2004 memorandum, the CIO announced the establishment of the Information Technology Executive Committee, which he formed to develop and champion statewide technology standards and IT initiatives, such as security and infrastructure. Chaired by the CIO, the Executive Committee is comprised of deputy directors from 15 departments and advisory members from the Department of Education (DOE), the University of Hawai‘i, and the Judiciary. Membership in the IT Executive Committee, however, is voluntary and committee members are allowed to delegate their responsibilities to their subordinates. In addition, the committee’s subsequent decisions are non-binding.

To support the IT Executive Committee’s efforts, the CIO also established the Information Technology Technical Committee, whose membership includes the IT managers of the executive branch departments and is headed by the ICSD administrator.

Because the IT Executive Committee’s decisions are not mandates, many deputy directors choose not to participate. In a review of the committee’s meeting minutes from October 6, 2004 to June 13, 2007, we found that by the third meeting on December 10, 2004, only four deputy directors were in attendance. The following month, only one deputy director attended with five of the vacancies being filled by members of the IT Technical Committee, which, as a result, saw its membership dwindle to five. The IT Technical Committee usually has more than a dozen people present.

At its next meeting, held on April 13, 2005, the IT Executive Committee had only three members in attendance, including the CIO, who directs the proceedings. During the meeting, the CIO and other committee members expressed concern about the committee’s waning enthusiasm. In addition, a member of the IT Technical Committee pointed out that by allowing the IT Executive Committee members to delegate responsibilities, technical staff have “borne responsibilities in both committees.” However, the CIO responded that he would continue to allow deputy directors to have subordinates attend meetings in their place, but would reiterate their responsibility to both form and implement IT policy.

While participation at the next meeting improved, with five deputy directors present, our review of the meeting minutes found that the committee continued to suffer from chronically poor attendance. During the period of our review, we found that nine of 15 deputy directors had not attended the committee’s monthly meetings since its inception in 2004.

Not surprisingly, such spotty participation has yielded few results. The IT Executive Committee has never measured its progress against the initiatives it originally adopted or assessed the relevance of these initiatives to the State's overall goals and initiatives. We found that nine

Exhibit 2.1
Original Executive Committee Initiatives

Initiative	Status	Observation
1. **IT Reclassification** – Reclassify IT staff to reflect current staffing needs and to raise pay scales in order to assist in recruiting and retaining staff	Incomplete	IT staffing titles changed; however, pay scales remain the same
2. **Application Inventory** – A listing of all critical business systems to be used for disaster recovery purposes	Completed	Key applications compiled from each department; disaster recovery effort still pending
3. **Project Approval Process** – Revamp and streamline IT project approval process performed by ICSD	Incomplete	An approval policy was drafted but never formally adopted; therefore benefits not realized
4. **IT Inventory / Asset Management** - Inventory applications and systems to be used as a tool to coordinate future projects as well as potentially share resources. Included establishing an asset management system	Incomplete	Dropped from the Executive Committee agenda without explanation
5. **Disaster Recovery** – Establish an alternative data center site to continue mission critical applications and processing in the event of disaster	Incomplete	Appropriated Gartner Group study in 2005 but no funding for alternate site
6. **Security** – Establish IT security policies and standards in order to address security concerns such as viruses, data protection, etc.	Incomplete	An acceptable use policy was drafted but never formally adopted; therefore benefits not realized
7. **Standards** – Collaboration and adoption of statewide IT standards	Incomplete	Dropped from the Executive Committee agenda without explanation
8. **Time and Attendance / Leave Accrual** – Solutions to replace manually-intensive, time consuming process	Incomplete	Dropped from the Executive Committee agenda without explanation
9. **Financial System** – Update or replace the current financial system used by the State (FAMIS)	Incomplete	Project was redefined by DAGS/ICSD to establishment of a Service Oriented Architecture (SOA). SOA has not been established
10. **Training** – Continuously update IT staff technical skills with current technology	Incomplete	A formal training program was never established; therefore benefits not realized

Source: ICSD

of the ten initiatives adopted by the IT Executive Committee remain incomplete. Exhibit 2.1 shows the current status of the IT Executive Committee’s original ten initiatives.

To become an effective IT governing body, the IT Executive Committee must have the authority to set policy and make decisions that affect technology across the State. In addition, IT Executive Committee membership should be mandated to ensure key decision-making stakeholders are involved with the committee’s decisions. Without these key foundational components, the IT Executive Committee will remain ineffective in providing IT leadership for the State.

The CIO, as the head of the IT Executive Committee, bears responsibility for allowing the committee’s poor performance and inability to recognize its shortcomings. Department leaders with sufficient authority to establish standards and set statewide priority should be actively involved in the IT Executive Committee.

The IT Executive Committee does not operate as an IT governing body

Typically, an IT steering committee prioritizes projects, ensures their alignment with the goals of the organization, and monitors their performance. Additionally, an IT steering committee is usually comprised of decision-making stakeholders of an organization who work together to ensure technology investments provide a beneficial return for the organization.

We reviewed 13 recommended roles and responsibilities for an IT steering committee from the IT Governance Institute and found that Hawai‘i’s IT Executive Committee performed or partially performed only two of the 13 identified roles and responsibilities: defining project priorities, and reviewing, approving, funding, and assessing how IT initiatives improve the business process. The remaining 11 roles and responsibilities are not performed at all. The roles and responsibilities not performed include assessing strategic fit, performing reviews for continuing strategic relevance, ensuring identification of all costs to fulfill cost/benefit analyses, performing reviews for cost optimization, balancing investments between supporting and growing state programs, ensuring projects are evaluated for risk management, acting as a sponsor of the control, risk, and governance framework, making key IT governance decisions, defining project success measures, monitoring progress on major IT projects, and monitoring and directing key IT governance processes. See Appendix D, Exhibit D.2 for more detail.

For example, we found that Hawai‘i’s Executive Committee is not involved with statewide IT strategic planning. In contrast, most of the IT

steering committees from our IT Leadership Group are involved with the IT strategic planning process for their states (Appendix C, Exhibit C.2). These states include: California, Georgia, Michigan, Nebraska, Texas, Virginia, and Washington. Because of its non-involvement in the IT strategic planning process, Hawai'i's IT Executive Committee cannot perform as an effective IT governance body for the State. In addition, the IT Governance Institute recommends six major strategic planning objectives, of which none are performed by the State of Hawai'i. These six strategic planning objectives are: ensuring value management, establishing business-IT alignment, assessing current capability and performance, developing IT strategic plans, developing IT tactical plans, and managing the IT portfolio of investments. As shown in Appendix D, Exhibit D.3, Hawai'i's strategic planning process includes none of the six strategic planning objectives.

The lack of a statewide IT strategic view limits benefits and increases the risk of waste and inefficiency

Departmental technology investment decisions lack a statewide perspective because departments independently prioritize and request funding for their individual technology initiatives. Technology expenditures for departments are reviewed by the Department of Budget and Finance and then the Legislature, based on the ability to secure funding rather than statewide strategic merit. Additionally, although ICSD reviews IT projects over $10,000, its review only assesses the technical soundness and feasibility of the project, not its strategic value or alignment with state priorities. Without a statewide perspective on IT investments, Hawai'i cannot ensure technology projects provide the best value for the State's limited resources.

The effort to consolidate the State's Geographical Information Systems (GIS) demonstrates the benefit of statewide coordination and the proper function of the IT Executive Committee. At a March 8, 2005, IT Executive Committee meeting, the then-director of the Office of State Planning spoke to the committee about the necessity for consolidating the State's 130 GIS licenses. GIS systems overlay a variety of information into a geographic map (either computer image or aerial photograph) that allows users to extract information.

According to the then-director, the State spent an average of $680,000 per year for its 130 GIS licenses as well as for the maintenance and support of the system. She strongly supported the pursuit of an enterprise license, which would cover the State as a group. To pursue this effort, the then-director requested that committee members speak to their directors to determine their current and future needs for GIS-type services. According to the meeting minutes, the then-director attended several more meetings to get feedback and recommendations from committee members.

This approach shows how reviewing IT projects with a broader perspective can benefit the State. We would expect a statewide IT strategic perspective could produce other benefits such as reducing development time, leveraging underutilized infrastructure and equipment, and maximizing the State’s IT expertise that may exist in the various agencies instead of using costly third-party vendors.

Other potential areas in which the State would benefit from statewide coordination of IT resources include the consolidation of document management systems. We found that at least six departments have independently procured and implemented document management systems to increase efficiency. While each department has its own requirements, the State can realize savings by leveraging existing computers, programs, and knowledge. The same may also apply to the Department of Human Resources Development’s (DHRD) human resource management system. While the system, called PeopleSoft, is capable of allowing each department to manage its own personnel records, most departments manage this information through their own stand-alone systems and paper forms. Human resources information is then imported and exported to the DHRD database creating duplicate, disparate, and disjointed systems.

No one is responsible for performing statewide IT strategic planning

The State lacks an effective process to coordinate the development of a statewide IT strategic plan. The State’s current process of prioritizing IT through the budgeting process does not ensure higher priority projects are funded.

IT strategic planning is an important process, which drives the creation of new capabilities, improves processes, and reduces inefficiencies. Proper planning is crucial to ensure public moneys spent on IT initiatives will provide a beneficial return on investment. Strategic planning aligns IT resources with organizational priorities and addresses risks. An IT strategic plan should present how its stated goals and initiatives will contribute to the State’s strategic objectives, lower costs, and mitigate risk. Additionally, an IT strategic plan should include clear objectives, tasks, criteria to monitor progress, and sufficient detail to guide the development of action plans.

Currently, there is little focus on statewide priorities. Rather, Hawai‘i’s budgeting process, which is driven by individual departments’ abilities to secure funding for technology, sets priorities. Lacking a statewide perspective, Hawai‘i risks squandering limited resources on IT projects of lesser value. This fragmented planning approach driven by

department initiatives increases the risk that projects are poorly aligned with the State’s goals and objectives, resources are wasted, and program results are not achieved.

Despite IT’s importance to the State’s operations and services, the administration has not tasked an individual or group of individuals with coordinating and planning the strategic use of technology. As a result, Hawai‘i does not have a formally established IT strategic-planning process.

Instead of following a strategic-planning process, IT planning for the State of Hawai‘i is conducted as part of the annual budgeting process with little input from statewide IT leaders. The IT Governance Institute provides six recommended processes for successful IT strategic planning. The recommended strategic processes include value management, business-IT alignment, performance assessment, IT strategic plans, IT tactical plans, and management of IT portfolios. As mentioned earlier, none of the six recommended processes have been addressed.

Previous attempts at developing IT strategic plans have resulted in incomplete results. In 1997, ICSD published an “IT Overview” and in 2000 the governor’s office issued its “IT Strategic Plan.” Neither of these documents, however, were complete IT strategic plans. IT strategic plans generally include an assessment of prioritized needs and current capabilities to identify gaps, include long-term goals, and lay out processes and timetables. Both documents lacked these critical elements. In addition, the 1997 IT Overview focused on the responsibilities of ICSD but not on the comprehensive needs of the State.

In 2006, the IT Executive Committee attempted to develop a new IT strategic plan. However, rather than draw upon the extensive knowledge of the State’s IT department, the work was performed by a volunteer from the Department of Budget and Finance, who merely updated the 2000 IT Strategic Plan by adding current IT projects. The update perpetuated the flaws of the previous plan and was never officially published, again leaving the State without a strategic IT direction.

Our review of a survey of state CIOs conducted by the National Association of State Chief Information Officers found that a majority of states have a formal process to update their strategic plans on an annual (55 percent) or bi-annual basis (32 percent) and have published a plan within the past three years (Appendix E, Exhibit E.5). Typically, the CIO sponsors the strategic planning process for technology. We found all 11 states of our IT Leadership Group require the CIO to develop and publish an IT strategic plan with established updates (Appendix C, Exhibit C.1). In comparison, Hawai‘i’s CIO has neither allocated the resources nor provided the leadership for developing an IT strategic plan for the State.

State’s highest technology risk remains unaddressed

The continual absence of an alternate data center in the State’s IT infrastructure is emblematic of the State’s mismanagement of its IT resources. Alternate data centers back up an organization’s critical applications and data in case of a system-wide failure. As we discussed earlier, because of IT’s pervasiveness and importance to the functioning of government, the costs associated with losing critical capabilities and data would be immense. However, the executive branch fails to communicate the urgency of this matter to the Legislature, nor has it adequately pursued temporary alternatives that could mitigate the damage that would result from a system-wide failure.

In 2004, DAGS requested funding for an alternate data center; however, the comptroller was unable to garner sufficient support, and the funding request was not fulfilled. In 2005, DAGS again requested funding for an alternate data center. However, lacking sufficient information from the comptroller, the Legislature appropriated funds to assess the State’s need for such a facility rather than committing funds to build the center.

The Gartner Group, an independent technology consultant, was contracted in 2005 to assess the State’s need for an alternate data center. The study found the State critically needed an alternate data center in the event services were disrupted at the State’s data center. It found Hawai‘i has become dependent on technology, and a disruption of the data center’s operations would severely diminish the State’s ability to deliver critical public services such as health, public safety, child protective services, and homeland security. Moreover, a failure at the facility would significantly impact the State’s financial accounting, payroll issuance, welfare, and tax collections, stopping an estimated $1 million per day from entering Hawai‘i’s economy.

A summary of the Gartner Group’s final report is included in Appendix F of this report. The complete Gartner report, “Assessment of Central Data Center Business Continuity and Disaster Recovery Strategies” can be downloaded from the DAGS website at http://hawaii.gov/dags/rpts/disaster051219/view?searchterm=disaster%20recovery. Despite the study’s findings, in 2006 and 2007 the CIO was unable to obtain sufficient support from the administration to include a request for an alternate data center in the Executive Budget.

Despite having identified the lack of an alternate data center as the State’s highest technology risk, the State has failed to develop and implement an adequate solution.

The State No Longer Has a Lead Agency or Leader of Information Technology

The brief history of information technology follows a simple arc: the movement from highly centralized systems and services often located at a single site to smaller, individualized systems widely dispersed throughout an organization and geographic area. The development of powerful mainframe computers in the 1960s and 1970s was followed by the invention of the microprocessor, which gave desktop computers the same processing power as the room-size mainframes. The development of networking and the Internet not only increased the computer’s power but vastly expanded its reach.

During the early years of this information revolution, the State was able to keep pace with the changing technology, altering organizational structures and creating new policies. In 1976, the handful of state computers was consolidated into a single facility, the Kalanimoku building, where the State’s data center is located today. Two years later, state officials established the Electronic Data Processing Advisory Committee, which was tasked with establishing statewide priorities for computer systems. In 1993, with IT staff spreading throughout government along with the computers they were servicing, the State transferred hiring responsibility of IT staff from the Department of Budget and Finance to each department.

Since those early years, however, the State has failed to respond to this rapid expansion and dispersion of technology. We found that the Information Communication Services Division, the State’s traditional lead organization for IT, remains focused on the management and maintenance of the State’s data center and communication infrastructure, leaving departments without guidance and direction. In addition, the State’s new IT governing officials and bodies, without clear duties and authority, have completed only one of their ten initiatives in their three years in existence.

ICSD does not provide the necessary statewide IT coordination and planning

When ICSD was transferred to DAGS, that department became responsible for the coordination and use of all information processing equipment, software, facilities, and services in the executive branch of the State. ICSD is responsible for the State’s overall technology plan for the executive branch.

When the division was transferred to DAGS, Section 26-6(b), Hawai‘i Revised Statutes (HRS), was amended to include that the comptroller shall:

> 9. Provide centralized computer information management and processing services, coordination in the use of all information

processing equipment, software, facilities, and services in the executive branch of the State, and consultation and support services in the use of information processing and management technologies to improve the efficiency, effectiveness, and productivity of state government programs; and

10. Establish, coordinate, and manage a program to provide a means for public access to public information and develop and operate an information network in conjunction with its overall plans for establishing a communication backbone for state government.

In addition, Section 26-6(c), HRS, provides that the state communication system shall be established to:

1. Facilitate implementation of the State's distributed information processing and information resource management plans;
2. Improve data, voice, and video communications in state government;
3. Provide a means for connectivity among the state, university, and county computer systems; and
4. Provide a long-term means for public access to public information.

ICSD was originally tasked to compile an overall State technology plan from annual technology plans submitted by the various departments. However, ICSD no longer enforces or monitors compliance with this requirement.

In fact, the division has actively discouraged departments from submitting these distributed information processing and information resource management plans. The division instead relies upon its technical review process to assess the technical soundness of projects. However, this process does not assess the merits of projects based on the State's needs. Without knowledge of the department technology plans, ICSD cannot effectively coordinate statewide IT services nor prevent redundant and costly systems. Additionally, since funding for IT projects is provided within department budgets, agencies have significant autonomy from ICSD to build systems to support their needs. As a result, the division has not issued a statewide technology plan in several years.

In a related matter, we found that ICSD has not provided the necessary guidance to address the comprehensive disaster recovery needs of the State. ICSD has focused on obtaining an alternate data center for the systems it hosts and has not addressed the risk of disruptions to departmental data centers that provide many State services. Departments have not established disaster recovery sites due to resource and space limitations. Government must be able to provide essential services during and after a disaster. Given the negative impact if government services are disrupted, the State needs to ensure critical services can be

restored as rapidly as possible. Further, allowing each department to build its own disaster recovery center would be very costly. As the lead IT agency, ICSD could provide a central and cost-effective solution to the departments and the State.

ICSD ceased being an effective standards-making organization two decades ago

During our audit, we downloaded the "Index of IT Standards Manuals" from ICSD's website, which is the organization's conduit from which it disperses information to the departments. We found that out of the 93 standards manuals posted, 74 were under development and not available to the constituent departments or the public for review. An additional six manuals were available for review but were not approved. Therefore, nearly 90 percent of ICSD's standards manuals are incomplete, representing a vast policy void that continues to grow as technology advances.

Some of these incomplete manuals date back to the mid-1980s, while others are supposed to address critical issues in today's workplace, such as networking, security, and wireless technology. After a review of the age of these incomplete manuals and the nature of the issues that they are supposed to address, we concluded that ICSD has not actively administered state IT standards policy in more than two decades. Not surprisingly, this period of inactivity begins during the time IT began transitioning to distributed systems, moving away from highly centralized facilities and resources, such as the mainframe computers that ICSD houses and maintains.

Over the years, departments have organized, planned, and managed their own systems and consequently developed their own IT standards. Considering the advancement of technology during that time, much of this dispersal of computer resources was inevitable. However, as the State's lead IT organization, ICSD should have kept statewide IT standards up to date. In addition, the division should be ensuring that IT standards developed by individual state agencies do not conflict with established statewide standards, few as there are. We found that ICSD does neither of these duties. Instead, it remains focused on the management and maintenance of the State's data center and communication infrastructure.

Department IT managers have lost confidence in ICSD

The ICSD data center and operations are capable of providing departments with 24-hours-a-day, seven-days-a-week hosting services. This includes providing power, Internet connectivity, backups, and continuous support with minimal charges. However, poor customer focus has forced many departments to manage their own technology needs because ICSD has been unable or unwilling to provide adequate support. Departmental IT managers have expressed frustration with

ICSD's inflexible support options for application and system support requirements. As a result, departmental IT managers generally prefer to develop and host their own mission critical applications or contract with third-party vendors.

The division bases its authority and responsibilities on a 30-year old directive, which originally established the division. At that time computing services were heavily centralized, as most departments relied upon mainframe technology that was managed by ICSD. However, despite the rapid changes in technology and departments' adoption of distributed systems, ICSD has not significantly adapted its original service model.

Departmental IT managers have expressed several concerns with ICSD's services. Some report that the division resists accountability requirements. ICSD does not provide service-level agreements for systems hosted in its central data center. Service level agreements define the responsibilities of ICSD and the departments and establish performance standards. However, without such agreements, ICSD can avoid being held accountable.

In addition, ICSD does not provide comprehensive or flexible services. While it does provide application maintenance services to ensure system availability and data backup, the division does not offer general data center services such as application services and database management. As a result, departments have to hire their own application administrators and operators. For example, for services such as email support, the division prefers to provide only basic services. Departmental IT managers have recognized the value of consolidating similar systems and have requested ICSD to manage their email needs. However, ICSD is unwilling to support some of the more advanced features used by other departments. As a result, some departments have decided the benefits of maintaining their own email systems outweigh their costs.

Finally, ICSD projects are not completed within reasonable timeframes. Departmental IT managers found the time required for ICSD to complete projects is far greater than relying on a contractor or on department IT staff. As a result, departmental IT managers have continued to decentralize the State's IT resources. Departments have become more self-reliant by expanding their infrastructure and staff to support their own goals and objectives. While this distributed approach provides benefits since users understand their needs best and can react more quickly to changing requirements, it makes coordinating, managing, and governing IT more difficult.

As IT demands have increased, departments have taken greater responsibility and developed their own IT staff and computer resources,

which complement ICSD. In 1998, DAGS, including ICSD, had 126 IT professionals, while the seven departments we reviewed had 161 (total of 287). By 2007, DAGS, including ICSD, had 119 professionals, while the same seven departments had 325 (total of 444). The importance of IT is highlighted by the 157-count growth over ten years. Additionally, the decrease in IT professionals in DAGS (7) and increase in the same seven departments (164) further demonstrates the preference for and trend toward decentralized IT services. Exhibit 2.2 shows the number of IT professionals for each of the eight departments we reviewed.

Exhibit 2.2
Number of IT Professionals Within Their Respective Departments

Department	DAGS	B&F	DOE	DHS	DHRD	DOH	TAX	DOT
1997 IT Staff	126*	188	55*	42	3	28	12	16
2007 IT Staff	119	17	99	63	4	82	26	34
% Change	-6%	-91%	80%	50%	33%	193%	117%	113%

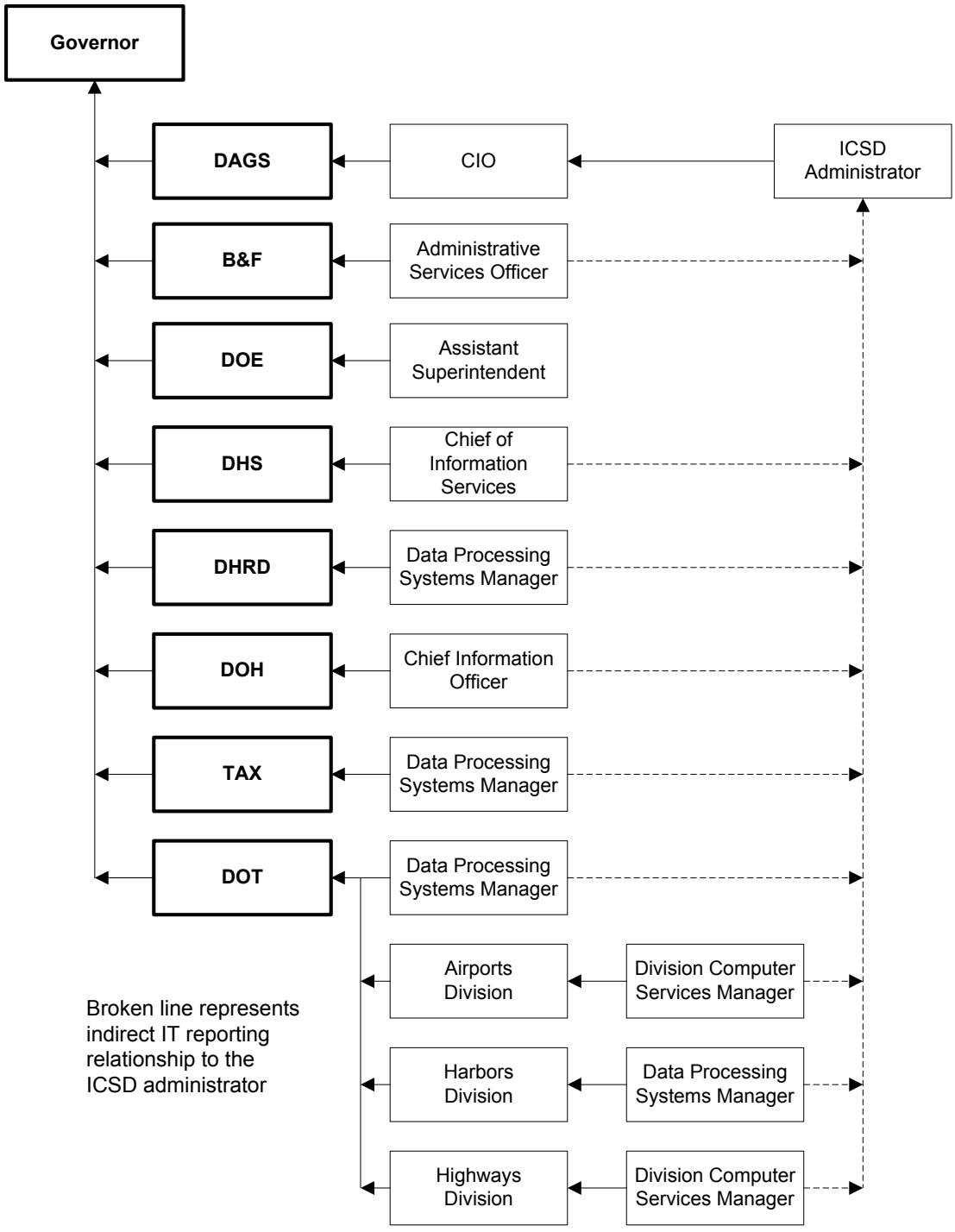
*Numbers are from 1998 as 1997 staffing numbers were unavailable.

Source: Office of the Auditor based on information provided by the Departments of Accounting and General Services, Budget and Finance, Education, Human Services, Human Resources Development, Health, Taxation, and Transportation.

However, ICSD is still somewhat important to the various departments. All major IT initiatives by the departments, except the DOE (which is exempt from ICSD directives and requirements since it became autonomous), must undergo a technical review by ICSD. The departments are required to comply with ICSD standards and policies as they relate to IT and rely on ICSD for data center services and a connection to the State's network infrastructure and the Internet. Exhibit 2.3 illustrates the indirect IT reporting relationship between ICSD and the departments included in this audit. Note that department IT staff, with the exception of the Department of Education, report indirectly to the ICSD administrator and CIO.

The division is aware of its shortcomings. In its 2004 through 2007 annual goals and objectives, it identified the need to "assess and redefine ICSD's services to support the State's current and future business requirements." A key issue for the division is developing the staff skills required to provide the kinds of services departments need and want. Despite the division's statements, however, departmental IT managers continue to remain unsure of ICSD's ability to provide essential services.

Exhibit 2.3
Departmental Relationship With ICSD



Source: Office of the Auditor based on information provided by the Departments of Accounting and General Services, Budget and Finance, Education, Human Services, Human Resources Development, Health, Taxation, and Transportation.

Conclusion

The executive branch's ability to manage its information technology fell behind as highly centralized data centers and applications gave way to today's networks and distributed systems. While distributed systems provide useful benefits, they are more difficult to manage and control. Overall, we found that while the CIO has established IT governing bodies, they have been ineffective. Their roles, responsibilities, duties, and authority require extensive clarification and re-design. We also noted that lacking the proper processes and tools, the State cannot ensure that its IT investments are cost effective, optimally utilized, adequately planned for future growth, or have the operational flexibility to easily adapt to changing requirements. Defining and delineating clear duties between centralized versus department responsibilities is a necessary first step. Finding the right balance between centralized and decentralized management of IT will be a challenge.

If the State's management does not improve, the State will eventually be compelled to outsource or co-source IT functions, a complicated and expensive undertaking. Based on the issues that have been raised, future focus areas include data security and business continuity. Lack of an alternate data center and general lack of business continuity and disaster recovery plans tempt fate, since a major disruption of State IT services is not a matter of if, but when.

Recommendations

IT Strategic Planning Process

1. The governor should formally assign responsibility for development and execution of the IT Strategic Plan to the State CIO.

2. A dedicated CIO should:

    - Adopt an IT strategic planning process based on nationally recognized best practices such as CobiT;
    - Ensure the IT Steering Committee is involved with the State's IT strategic planning process;
    - Ensure the State's IT strategic plans are linked to the State's goals and objectives, and take into consideration risks to the State's operations; and
    - Ensure the plans include objectives with sufficient detail so that adequate action plans, tasks, and criteria to monitor progress can be established.

3. An IT Steering Committee should:

    - Work closely with the CIO to develop and implement the State's IT strategic plans;
    - Continuously assess the administration's progress in accomplishing the objectives defined in the State's IT strategic plans;
    - Use the State's IT strategic plans to make management decisions;
    - Periodically update the State's IT strategic plans, at least every two years; and
    - Ensure technology projects are selected based on their potential impact and risk to the State, as well as their strategic value.
    - Ensure departments maintain sufficient tools to assess the value and benefit of technology initiatives.

CIO

4. The Legislature should consider establishing a full time, dedicated, CIO to organize, manage, and oversee statewide IT governance, including the roles and responsibilities recommended by CobiT.

5. The CIO should:

    - Report directly to the governor and in conjunction with the IT Steering Committee:

        - Develop, implement, and manage statewide IT governance;
        - Develop, implement, and manage the State's IT strategic plans; and
        - Develop and implement statewide technology standards; and

    - Ensure the IT Steering Committee is evaluated periodically.

6. The governor should:

    - Thoroughly evaluate the necessary knowledge, experience, skills and abilities in selecting the State CIO;
    - Define and communicate the roles, responsibilities, and authority of the CIO to the executive departments, considering CobiT recommendations; and
    - Formally evaluate the performance of the State CIO.

IT Steering Committee

7. The Legislature should consider establishing an IT Steering Committee, including roles and responsibilities recommended by CobiT. The committee should:

    - Be chaired by the CIO;

- Include representatives from each executive department, the Legislature, and private individuals; and
- Have clear roles, responsibilities and authority for shaping IT governance and steering the State's priorities.

8. The IT Steering Committee should:

    - Assist the CIO in the development the State's IT strategic plan;
    - Monitor and assess the State's implementation of the State's IT strategic plan;
    - Assist the CIO in developing the State's IT standards and policies; and
    - Review, approve, and monitor large scale IT projects for the State.

ICSD

9. The Legislature should consider clarifying the roles, responsibilities, and authority of ICSD, specifically as it relates to its statewide duties.

10. ICSD should:

    - Adopt a customer focus;
    - Assess and modify its operating model and service offerings based on its roles and responsibilities and departmental needs;
    - Assess its staffing and training needs and develop a plan to recruit and train appropriate staff to accomplish its mission;
    - Provide value to the departments by further developing its core competencies, taking advantage of its unique position as a statewide IT organization, providing:

        - Centralized computing solutions;
        - Network and Internet connectivity;
        - Data center services; and
        - Disaster recovery services; and

    - Establish processes to ensure technology investments provide the greatest value to the State.

Appendix A – Glossary

The following is a glossary of terms and expressions as used throughout this report.

Application
A computer program or related programs that processes business data though activities such as data entry, update, or query to meet specific objectives and to provide information for decision making.

Chief Information Officer (CIO)
Lead individual over information technology and computers systems; supports enterprise goals in an organization.

Control Objectives for Information and Related Technology – (CobiT)
A highly regarded and widely accepted set of best practices for IT governance. A framework and supporting toolset that can be utilized by management to improve IT governance within an organization.

Database
Collection of data organized for convenient access of an application.

Departments:
In-scope departments (8) that fall under the Executive Branch of the Government that were identified and studied for the Statewide IT governance assessment:

- B&F – Department of Budget and Finance
- DAGS – Department of Accounting and General Services
- ICSD – Information Communication Services Division
- DHRD – Department of Human Resources Development
- DHS – Department of Human Services
- DOE – Department of Education
- DOH – Department of Health
- TAX – Department of Taxation
- DOT – Department of Transportation
  - Airports Division
  - Harbors Division
  - Highways Division

Financial Accounting Management Information System (FAMIS)
State of Hawai‘i’s financial accounting system.

HAWAIIAN
The predecessor of the Next Generation Network (see NGN), the Hawai‘i Wide Area Integrated Information Access Network was the initial network infrastructure established in 1988 which connected all departments under the executive branch of the State of Hawai‘i.

Information Technology (IT)
Encompasses development, implementation, and communication of electronically stored information and applications as well as the hardware, software, and people used to support computer systems within an organization.

Internet portal
Gateway for public access to a broad array of resources and services hosted by the organization.

IT control framework
Correlates closely to IT Governance framework as part of CobiT. Design and implementation of an environment that has adequate controls over systems.

Mainframe
Powerful centralized computing system relied upon for mission critical-applications and storage for an organization.

Maintenance
Modification to computer systems intended to eliminate faults and keep programs in working condition.

Mission critical applications
Applications without which organizations would be unable to operate and provide important services.

Next Generation Network (NGN)
Upgrade to the HAWAIIAN network designed to provide enhanced connectivity between all departments under the Executive Branch of the State of Hawai‘i.

Performance measurement
A component of IT governance that ensures organizations track and monitor strategy implementation, project completion, resource usage, process performance and service delivery, using, for example, balanced scorecards that translate strategy into action to achieve goals measurable beyond conventional accounting.

Resource management
A component of IT governance that ensures the optimal investment in, and proper management of, critical IT resources: applications, information, infrastructure and people.

Risk management
A component of IT governance that ensures senior leaders are aware of risks, have a clear understanding of the organization’s appetite for risk, compliance requirements; requires transparency about the significant risks to the organization and embedding of risk management responsibilities into the organization.

Server
A computer that is configured to share its resources or run applications for the other computers on the network. A server may be setup for a single purpose such as to run applications, databases, electronic mail, or web services or could provide multiple services on the same hardware.

Service Oriented Architecture (SOA)
A framework for orchestrating and combining business processes from current and legacy systems.

Statewide Information Technology Committee-Hawai‘i (SWITCH)
Committee formed in 1998 as an outgrowth of an informal group that met to discuss, plan, and set the initial goals for a significant update to the HAWAIIAN communication infrastructure, continued on as a platform for departmental managers to discuss IT initiatives within the State.

Strategic alignment
A component of IT governance that ensures the linkage of the organization and IT plans; defines, maintains and validates the IT value proposition; and aligns IT operations with the organization’s operations.

Value delivery
A component of IT governance that ensures that IT delivers the promised benefits against the strategy, concentrating on optimizing costs and proving the value of IT.

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Appendix B - Significant Events in the History of IT Adoption

Year	Technology (■) and Organization (□) Changes	
1963	■	State acquires first mainframe computer
1965	□	Statewide Information System (SWIS) administratively attached to the Department of Budget and Finance (B&F)
1966	■	Department of Education (DOE) acquires mainframe computer
1968	□	Control of the DOE's computer center transferred to B&F
1970	□	SWIS reorganized as the Electronic Data Processing Division (EDPD) in B&F
1976	■	State computer centers consolidated to a single facility
1977	□	Control over all State data processing equipment and personnel transferred to B&F
1978	□	Electronic Data Processing (EDP) Advisory Committee established to develop statewide priorities for computer systems
1984	□	EDPD reorganized to improve communications, accountability, and service as well as changes in IT
1986	■	First Data Processing (DP) Standards published regarding the use of IT
1988	■	Implementation of the Hawai'i Wide Area Integrated Information Access Network (HAWAIIAN) began
1989	□	EDPD was renamed the Information and Communication Services Division (ICSD) and reorganized to include the Telecommunications Division
1991	■	State of Hawai'i Electronic Mail (SOHEM) network implemented
1993	□	Hiring responsibility of IT staff transferred to each respective department from B&F
1994	□	Procurement responsibility of IT systems and services less than $10,000 transferred to each respective department from B&F
1995	■	State central website created
1997	□	ICSD transferred to the DAGS from B&F
1999	□	Special Advisor for Technology position created within the Office of the Governor by Act 178, Session Laws of Hawai'i 1999
2000	■	State began implementing the faster Next Generation Network (NGN) to replace HAWAIIAN
2003		Senate bill proposed but not enacted that would have created and defined a State CIO position including responsibility for development of an IT strategic plan
2004	□	State Comptroller designated Chief Information Officer
	□	IT Governance Executive Committee established to coordinate and develop IT use, security, architectural, and infrastructure policies and standards
	□	IT Governance Technical Committee established to implement the initiatives of the Executive Committee
2005	■	Virtual firewalls installed on the NGN

Source: Office of the Auditor, based on information from the ICSD website

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Appendix C - IT Leadership Group Details

Results of our detailed study of the IT Leadership Group consisting of Arizona, California, Delaware, Georgia, Michigan, Nebraska, New York, North Carolina, Texas, Virginia, and Washington are displayed below:

Exhibit C.1 - IT Governance Structures by State for the IT Leadership Group (11 states)

Arizona

CIO	IT Steering Committee	IT Strategic Plan
• Established under ARS 41-3503. • Governor appoints the CIO. • Serves on the Governor's Cabinet, meets monthly. • Chairs several key executive initiatives including the Governor's Council on 2-1-1, the Governor's IT Security Advisory Committee, and co-chairs the Arizona Health-e Connection Board of Directors.	Information Technology Authorization Committee (ITAC) • CIO is leader of the IT Steering committee. • Comprised of 4 members from the executive branch including the State CIO and Two Agency Directors, 1 Supreme Court Administrator, 2 Legislative Branch representatives, 1 local government representative, 1 public education representative, 4 private sector representatives and 1 other representative. • ITAC has jurisdiction to approve or reject IT projects with development costs exceeding $1 million for all three branches of government. • ITAC also provides important advice on IT issues.	• Strategic plan is to be updated annually. • Improve statewide planning and oversight processes to increase agencies' abilities to deliver. • Government Information Technology Agency responsible for Arizona's IT planning, oversight, coordinating and consulting. • The Chief Information Officer Council is a working technical advisory committee that serves as a communication vehicle on statewide IT subjects and provides opportunities to share information that has common or universal interest for State agencies.

California

CIO	IT Steering Committee	IT Strategic Plan
• CIO position was created under Government code 11700-11702. • CIO position is appointed by the Governor. • CIO acts as senior advisor to the Governor. • Provides leadership for all statewide IT initiatives, including the definition and adoption of IT vision, strategic planning and coordination, policies, data management, security and development of standards.	Information Technology Council • CIO is leader of the IT Steering Committee. • Membership: Includes members from several constitutional offices, the State's support agencies (Departments of Finance, General Services, Personnel Administration and Technology Services), Agency Information Officers (AIO), departmental CIOs, the judiciary and local and federal governments. • Advises the State CIO on all matters related to information technology in the Executive Branch, including the development of statewide IT strategic plans and the adoption of enterprise-wide IT standards and policies.	• Information Technology Council is responsible for publishing a strategic IT plan annually (2005-2009). • Approval by the Governor's Office.

Delaware

CIO	IT Steering Committee	IT Strategic Plan
• CIO authority established by Legislation. • Acts as chief advisor to the Governor on issues relating to technology. • Reports to Governor. • Serves as the Cabinet level executive for the Department of Technology and Information (DTI). • Chair the Technology Investment Council. • Acts as primary Information Technology liaison to the Legislature and Judiciary. • Develops a statewide IT Plan and submits IT funding recommendation to the Budget Office.	Technology Investment Council (TIC) • CIO is leader of the IT Steering committee. • Membership consists of 2 Executive Branch agency department representatives, 1 Executive Branch elected official, 1 judicial Branch representative, 4 private-sector/citizen representatives. • Makes recommendations and communicates findings on feasibility, suitability and compliance to standards to the TIC.	• A new strategic plan is to be revised annually. • Created by Department of Technology and Information.

Georgia

CIO	IT Steering Committee	IT Strategic Plan
• Established by Legislation SB 495 (Passed in 2000). • The Governor and legislature appoints the IT governing board; which in turn appoints an IT Director by majority vote. • Creates 3 year IT strategic plan and submits to GTA for approval.	Georgia Technology Authority (GTA) • Appointed by Governor and Legislature. • Comprised of Non-voting, ex officio member appointed by Chief Justice (Judicial Branch Representative), 2 members appointed by the Speaker of the House; 2 members are appointed by the Lt Governor (4 legislative representatives), 7 private sector representatives appointed by the Governor. • Charged with establishing policies and standards for IT and development and operation of the state portal. • Creates State technology plan.	• Georgia Technology Authority approves CIO's 3 years strategic plan (2007-2010). • State Technology Plan is prepared by GTA.

Michigan

CIO	IT Steering Committee	IT Strategic Plan
• Established by Executive Order 2001-3. • (Power established through various other executive orders and Acts). • CIO position is a cabinet level position appointed by the Governor. • CIO is the director of the MITEC.	Michigan Department of Information Technology (MITEC) • CIO chairs the committee. • Comprised of the Deputy Directors or equivalent level administrators from each of the 19 Departments. • Advise and assist the state CIO in addressing current business, service technology support needs, as well as to develop long-term IT goals and a strategic and tactical direction.	• Strategic plan is revised annually (2006-2008). • IT strategic plan developed to support the Governor's priority areas (Economy, Education, Health Care, Efficient Government, Environment, and Hometown Security). • CIO works with MITEC to establish to establish Strategic Plan.

Nebraska

CIO	IT Steering Committee	IT Strategic Plan
• Appointed by the Governor. • CIO reports to the Lt. Governor. • Responsible for the Governor's Business Portal Initiative and coordinating implementation of the state's e-government strategic plan developed by the state Government Council. • Responsible for implementing a strategic, tactical process for government IT.	Nebraska Information Technology Commission (NITC) • Lt. Governor chairs the NITC. • Comprised of 1 Executive Branch elected official, 1 Local Government representative, 2 Public Education representatives, and 5 Private Representatives. • Provides strategic direction for information technology.	• Strategic plan is revised annually. • Published by the NITC.

New York

CIO	IT Steering Committee	IT Strategic Plan
• Position established by New York State. Executive Order #117. • Appointed by the Governor. • Director of NYS Office for Technology. Reports directly to the CIO. • Publishes annual statewide strategic plan.	New York State CIO Council. • CIO chairs the IT Steering committee. • State CIO council has 7 standing committee on Leadership, Fiscal, HR, Intergovernmental Communications, Security, Strategic Planning and Technology. • Comprised of 80 members. • Each state agency and authority, as well as SUNY and CUNY, within the jurisdiction of the CIO has designated a single point of contact to the CIO's office and is a member of the CIO Council.	• CIO publishes an annual enterprise-wide statewide strategic plan. • Optimize technology investments and value through improved coordination of enterprise IT procurements.

North Carolina

CIO	IT Steering Committee	IT Strategic Plan
• Established by SB991; 2004 Session G.S. 147-33 75 through G.S. 147-33 103. • Appointed by the Governor. • CIO reports directly to the Governor. • Sets technical and security standards for IT. • Develops Statewide IT plan from departmental plans.	Information Technology Advisory Board. • State CIO has leadership role on the IT Steering committee. • 4 Members appointed by the governor and 12 other members that are knowledgeable in subject area and have experience in IT deployment in state government or large organizations. • Develops standards, procedures and processes to implement policies.	• Strategic plan is updated every 2 years. • Departments prepare IT plan and submit to the CIO.

Texas

CIO	IT Steering Committee	IT Strategic Plan
• Established by Texas Government Code, Section 2054 0285. • The Department of Information Resources Board appoints an Executive Director, who is effectively the Chief Technology Officer for the State (equivalent to state CIO). • Has authority over all State agencies with respect to IT.	Department of Information Resources Board (DIR) • CTO has leadership role on the IT Steering committee. • Consists of a 10 member board that develops and sets policies, 7 of which are apart of the Executive Branch agency, 3 rotating, non-voting ex-officious from various departments within the State. • The DIR is a state agency that coordinates the use of IT throughout the State.	• To be updated every two years. • Agencies submit agency strategic plans for review by CIO. • State CIO submits strategic IT plan for approval of the DIR Board. • Boards submits plan to the Legislative Budget Board. • The plan consists of critical IT projects.

Virginia

CIO	IT Steering Committee	IT Strategic Plan
• Established by the 2003 General Assembly. • The CIO is hired by the IT Investment Board to a 5-year contract. • CIO performance reviewed by the Governor.	Information Technology Investment Board • Comprised of 10 members including the Secretary of Technology, The Auditor of Public accounts, 4 non-legislative citizen members appointed by the Governor, and 4 non-legislative citizen members appointed by the Joint Rules Committee. • Virginia Information Technologies Agency (VITA) is the state's centralized IT organization. • VITA works at the pleasure of the Information Technology Investment Board.	• Prepared by VITA. • The Strategic plan is revised annually. • Contains VITA's mission statement, vision, and five-year objectives.

Washington

CIO	IT Steering Committee	IT Strategic Plan
• Appointed by the Governor. • CIO is Director of the Department of Information Services, which is a cabinet position. • Reports to the Governor and to the Information Services Board. • Has authority to terminate projects.	Information Services Board (ISB) • The chair position is currently vacant. • CIO serves as vice-chair of the IT Steering committee. • Comprised of 15 members that include technology leaders from the executive, judicial, and legislative branches. • Sets policy for the State. • Information Services Board. Provides direction, duties, and responsibilities to the Department of Information Services.	• Department of Information Services prepares the IT strategic plan. • Submitted to the Information Services Board for approval and subsequently sent to the Governor for approval.

Exhibit C.2 - Summary Detail for the IT Leadership Group (11 states)

State	State CIO by Law	Governing Body	IT Strategic Plan Prepared By
Arizona	Yes ARS 41-3503	The Information Technology Authorization Committee	GITA and the Chief Information Council
California	Yes Govt. Code Sec 11700-11702	Information Technology Council	Information Technology Council and CIO
Delaware	Yes	Technology Investment Council	Created by Department of Technology and Information
Georgia	Yes S.B. 495	Georgia Technology Authority	CIO – approved by Georgia Technology Authority
Michigan	Yes Executive Orders and various acts	Michigan Information Technology Executive Committee	CIO and Michigan Information Technology Executive Committee
Nebraska	No Appointed by Governor	Nebraska Information Technology Commission	Nebraska Information Technology Commission
New York	No New York State Executive Order #117	New York State CIO Council	CIO
North Carolina	Yes SB991; 2004 Session G.S. 147-33.75 through G.S. 147-33.103	Information Technology Advisory Board	CIO
Texas	Yes Established by Texas Government Code, Section 2054.0285	Department of Information Resources Board	Department of Information Resources
Virginia	Yes Established by the 2003 General Assembly	Information Technology Investment Board	Virginia Information Technologies Agency
Washington	Yes Authority established by Legislation RCW 43.105.047	Information Services Board	Department of Information Services

Exhibit C.3 summarizes the CIO organizational structures for the IT Leadership Group compared to Hawai‘i’s.

Exhibit C.3 - Detailed IT Structure for the IT Leadership Group and Hawai‘i

State	Organizational Structure	CIO Department Type	CIO Reports to
Arizona	Department head	IT	Governor
California	Attached to governor’s office	Other	Governor
Delaware	Department head	IT	Governor
Georgia	Department head	IT	Governor
Michigan	Department head	IT	Governor
Nebraska	Division leader	Other	Lt. Governor
New York	Department head	IT	Governor
North Carolina	Attached to governor’s office	Other	Governor
Texas	Department head	IT	Governor
Virginia	Department head	IT	Governor
Washington	Department head	IT	Governor
Hawai‘i	Department head	Other	Governor

Exhibit C.4 identifies the IT steering committee composition of the 11 states in the IT Leadership Group compared to Hawai‘i.

Exhibit C.4 - Detailed IT Steering Committee Membership for IT Leadership Group Compared to Hawai‘i

State	# of Agencies and/or Departments	Elected Officials	Judicial Branch	Legislative Branch	Local Government	Public Education	Private Sector	Other	CIO Role
Arizona	4	1	4	1	1	1	4	1	Chairs
California	17	-	1	1	2	1	2	2	Chairs
Delaware	2	1	1	1	-	-	4	-	Chair
Georgia	-	-	1	4	-	7	-	-	Other
Michigan	19	-	1	3	-	-	-	1	Chair
Nebraska	-	1	-	-	-	1	2	5	Other
New York	-	-	-	-	-	-	-	80*	Chair
North Carolina	4	-	-	-	-	-	-	12	Other
Texas	7	-	-	-	-	-	-	3	Other
Virginia	1	-	-	1	-	-	8	-	Advisory Capacity Only
Washington	1	-	1	4	-	2	2	5	Voting Member
Hawai‘i	16	-	1	-	-	2	-	-	Chairs

*New York has 7 separate committees comprised of approximately 80 members.

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Appendix D – Hawai‘i’s IT Governing Officials, Bodies, and Process

Exhibit D.1 compares the roles and responsibilities of the State of Hawai‘i’s CIO with those recommended by CobiT.

Exhibit D.1 - Comparison of State CIO with CobiT Recommended Roles and Responsibilities

CIO Roles and Responsibilities per CobiT	Performed by CIO?	Observations
1. Drive IT strategy development and execute against it, ensuring value is being delivered.	No	No formal IT strategic planning process exists
2. Implement IT standards and policies.	Partially	IT policies remain largely incomplete; departments have taken the initiative to develop policies on their own
3. Educate the managers on dependence on IT, IT-related costs, technology issues and insights, and IT capabilities.	Partially	Executive Committee established; however, effectiveness of the Committee is questionable
4. Clarify and demonstrate the value of IT.	No	No performance metrics to quantify the value of IT exist
5. Proactively increase IT value contribution.	No	No performance metrics to quantify the value of IT exist
6. Link IT budgets to strategic aims and objectives.	No	Budget for IT investments not linked with statewide IT strategic plan
7. Manage expectations of IT.	No	Executive Committee established; however, expectations are not well defined
8. Establish strong IT project management disciplines.	No	Continued reliance upon outdated project management standards
9. Provide IT infrastructures that facilitate creation and sharing of information at optimal cost.	Partially	Increasing utilization of the State Internet portal, however, no formal cost-benefit analysis exists
10. Ensure the availability of suitable IT resources, skills, and infrastructure to meet strategic objectives.	No	No formal process to understand the IT resource, skills or infrastructure requirements
11. Ensure that critical IT roles are appropriately defined and staffed.	Partially	Staffing continues to be an issue. Roles need to be better defined that meet customer expectations.
12. Standardize architectures and technology.	No	No formal architecture and technology standards
13. Assess, efficiently mitigate, and communicate risks to stakeholders.	No	No formal risk management process
14. Implement an IT control framework.	No	No formal IT control framework
15. Ensure the day-to-day management and verification of IT processes and controls.	Partially	No formal IT control framework or process to monitor internal controls of departments other than DAGS and ICSD
16. Implement performance measures linked to IT strategies.	No	No formal performance metrics linked to an IT strategic plan

Exhibit D.2 compares the roles and responsibilities of the State of Hawai'i's IT Executive Committee with those recommended by CobiT.

Exhibit D.2 - Comparison of IT Executive Committee with CobiT Recommended Roles and Responsibilities

Roles and Responsibilities of IT Steering Committee per CobiT	Performed by IT Executive Committee?	Observations
1. Define project priorities	Partially	Formally defined priorities in the first few meetings; however no prioritization subsequently performed
2. Assess strategic fit of proposals	No	No formal process to ensure proposals meet the strategic needs of the Administration
3. Perform reviews for continuing strategic relevance	No	No formal process to review long-term initiatives for continued relevance
4. Review, approve, and fund initiatives, assessing how they improve business processes	Partially	Reviewed and approved a few initiatives. No evidence of funding or assessment was performed
5. Ensure identification of all costs and fulfillment of cost/benefit analysis	No	Not performed by Executive Committee; performed at Department level
6. Perform reviews for cost optimization	No	Cost optimization reviews not established
7. Balance investments between supporting and growing State programs	No	IT investment review process not established
8. Ensure all projects are evaluated for risk management	No	No formal risk management process
9. Act as sponsor of the control, risk, and governance framework	No	Did not establish a control or risk framework
10. Make key IT governance decisions	No	Without processes to assess and review strategic relevance of initiatives and low attendance, we cannot determine if key IT governance decisions were made
11. Define project success measures	No	No performance measurement framework or a formal post-implementation evaluation process established
12. Monitor progress on major IT projects	No	Executive Committee delegation of attendance to Technical Committee members results in no accountability
13. Monitor and direct key IT governance processes	No	Executive Committee did not establish a formal project evaluation process

Exhibit D.3 compares the State of Hawai‘i’s strategic planning process with that recommended by CobiT.

Exhibit D.3 - Comparison of Hawai‘i’s Strategic Planning Process to CobiT Recommended Practices

Strategic Planning Objectives per CobiT	Process in Place?	Observations
1. Ensure Value Management	No	No formal review for business case, no service level agreements or accountability for IT investments
2. Establish Business-IT alignment	No	No process in place to align IT projects to the administration’s stated goals and objectives
3. Assess current capability and performance	No	No process in place to assess the current capabilities or performance of IT investments; last IT strategic plan did not assess
4. Develop IT Strategic Plans	No	No process in place for developing a statewide IT strategic plan
5. Develop IT Tactical Plans	No	IT tactical plans developed by departments; however, not linked to IT strategic plan
6. Manage IT Portfolio of Investments	No	No process to actively manage the IT portfolio of investments

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Appendix E – NASCIO Report Details

NASCIO surveyed all state CIOs in 2005. The resulting report was generated through responses from 45 state CIOs. Exhibit B.1 summarizes the results of the NASCIO report.

Exhibit E.1 - NASCIO Information for 45 states

State	CIO Established Via	Location of CIO	Head of Statewide IT Planning	CIO appointment	Frequency of IT Strategic Plan	CIO Role on Steering Committee
Alabama	Statute	Division	CIO	Other entity	Annually	Chair or leader
Arizona	Statute	Department	CIO	Governor	Annually	Chair or leader
Arkansas	Statute	Department	CIO	Governor	Every 2 years	Member (voting)
California	Exec Order	Governor's office	CIO	Governor	Annually	Chair or leader
Connecticut	Statute	Department	CIO	Governor	Every 2 years	Chair or leader
Delaware	Statute	Department	CIO	Governor	Annually	Chair or leader
Florida	Statute	Governor's office	CIO	Governor	No strategic process	None
Georgia	Statute	Department	CIO	Other entity	Annually	Other leadership role
Hawai'i	Exec Order	Division	CIO	Other entity	Every 3 years	Other leadership role
Idaho	Statute	Division	CIO	Governor shares authority	Every 2 years	Chair or leader
Iowa	Statute	Division	CIO	Governor	Every 2 years	Advisory capacity only
Kansas	Statute	Division	CIO	Governor	Annually	Member (voting)
Kentucky	Exec Order	Division	CIO	Other entity	Every 2 years	Chair or leader
Louisiana	Statute	Division	CIO	Governor	Annually	Other leadership role
Maine	Statute	Division	CIO	Other entity	Annually	Chair or leader

State	CIO Established Via	Location of CIO	Head of Statewide IT Planning	CIO appointment	Frequency of IT Strategic Plan	CIO Role on Steering Committee
Maryland	Statute	Division	CIO	Other entity	Annually	Other leadership role
Massachusetts	Statute	Division	CIO	Other entity	Annually	Other leadership role
Michigan	Exec Order	Department	CIO	Governor	Annually	Chair or leader
Minnesota	Statute	Division	CIO	Governor shares authority	Every 2 years	Member (voting)
Mississippi	Statute	Department	CIO	Other entity	Annually	Member (non-voting)
Missouri	Exec Order	Governor's office	CIO	Governor shares authority	Annually	Member (non-voting)
Montana	Statute	Division	CIO	Other entity	Annually	Member (voting)
Nebraska	Statute	Division	CIO	Governor shares authority	Annually	Other leadership role
Nevada	Statute	Department	CIO	Governor	Every 2 years	Member (voting)
New Hampshire	Statute	Department	CIO	Governor	Every 2 years	Other leadership role
New Jersey	Exec Order	Governor's office	CIO	Governor	Every 3 years	Chair or leader
New Mexico	Statute	Governor's office	CIO	Governor shares authority	Annually	Advisory capacity only
New York	Exec Order	Department	CIO	Governor	Annually	Chair or leader
North Carolina	Statute	Governor's office	CIO	Governor	Every 2 years	Other leadership role
North Dakota	Statute	Department	CIO	Governor	Every 2 years	Chair or leader
Ohio	Exec Order	Governor's office	CIO	Governor	Annually	Chair or leader
Oregon	Statute	Division	CIO	No information provided	Every 2 years	Other leadership role

State	CIO Established Via	Location of CIO	Head of Statewide IT Planning	CIO appointment	Frequency of IT Strategic Plan	CIO Role on Steering Committee
Pennsylvania	Exec Order	Department	CIO	Other entity	Other	No information provided
Rhode Island	Statute	Division	CIO	Other entity	Every 2 years	Chair or leader
South Carolina	Other	Division	CIO	Other entity	Annually	Advisory capacity only
South Dakota	Statute	Department	CIO	Governor	Annually	Chair or leader
Tennessee	Statute	Division	CIO	Other entity	Annually	Other leadership role
Texas	Statute	Department	CIO	Other entity	Every 2 years	Other leadership role
Utah	Statute	Governor's office	CIO	Governor	Annually	Other leadership role
Vermont	Statute	Division	CIO	Governor	Annually	Chair or leader
Virginia	Statute	Department	CIO	Other entity	Annually	Advisory capacity only
Washington	Statute	Department	CIO	Governor	Other	Member (voting)
West Virginia	Statute	Governor's office	CIO	Governor	Annually	Other leadership role
Wisconsin	Statute	Division	CIO	Other entity	Every 2 years	Advisory capacity only
Wyoming	Statute	Division	CIO	Governor	Other	Advisory capacity only
Totals	Statute(35) Exec Order(9) Other(1) Total (45)	Dept.(16) Div.(20) Gov.(9) Total(45)	100% CIO	Gov.(23) Shared(5) Other(16) Total(44)* *No data for Oregon	Annually(25) 2 years(14) 3 years(2) None(1) Other(3) Total(45)	C/L(16) OLR(13) Advisory(6) Voting(6) Non-voting (2) None(1) Total(44)* *No data for Pennsylvania

Summary of NASCIO Results:

Exhibit E.2 - Breakdown of How CIO Position is Established Within the States

CIO Position Establishment	Percentage	Totals from NASCIO
Legislature	78%	35
Executive Order	20%	9
Other	2%	1

Exhibit E.3 - Breakdown of Placement of CIO Within the Executive Branch

CIO Position Placement Within the Executive Branch	Percentage	Totals from NASCIO
CIO manages department unto itself	36%	16
CIO is located within the office of the governor	20%	9
CIO manages a division within a department	44%	20

Exhibit E.4 - Breakdown of CIO Appointment

CIO Appointment	Percentage	Totals from NASCIO
Governor appoints the CIO	53%	23
Governor and another body appoints the CIO	11%	5
Other – CIO is appointed by another means	36%	16

Exhibit E.5 - Breakdown of Frequency of IT Strategic Plan Update

Frequency of IT Strategic Plan Updates	Percentage	Totals from NASCIO
Statewide IT strategic plan is updated annually	55%	25
Statewide IT strategic plan is updated every two years	32%	14
Statewide IT strategic plan is updated every three years	4%	2
There is no strategic planning process	2%	1
State follows another means of updating their Statewide IT strategic plan	7%	3

Exhibit E.6 - Breakdown of Role of CIO on IT Steering Committee

CIO's Role on the IT Steering Committee	Percentage	Totals from NASCIO
Chair or leader	36%	16
Other leadership role	30%	13
Advisory capacity only	14%	6
Voting member	14%	6
Non voting member	5%	2
None	2%	1

Appendix F – Gartner Summary

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Gartner

19 December 2005

Russ K. Saito
Comptroller, CIO
State of Hawaii
Department of Accounting and General Services (DAGS)
Kalanimoku Building
1151 Punchbowl Street
Honolulu, HI 96813

Re: Gartner Report-Assessment of Central Data Center; Business Continuity and Disaster Recovery Strategies

Dear Mr. Saito:

Gartner is pleased to submit for your review and acceptance the following report: Assessment of Central Data Center-Business Continuity and Disaster Recovery Strategies. This report was developed pursuant to the requirements outlined in ACT 178, Section 78 Proviso. The attached report is detailed and addresses the specific criteria detailed in the ACT. The following represents a summary of our findings and observations:

Risk: The State of Hawaii is in a critical and precarious environment without access to an alternate data processing services when the central data center is out of service. Should the central data center become inoperable, the State will experience an extended disruption of its ability to continue and/or restore its daily business processes after a disaster or other disruptive event. State agencies are highly dependent on their computers and networks to provide services to the public and conduct their daily business, and are essentially ineffective without them. The State would not be able to perform financial transactions, nor would the State be able to ensure continuity of health and safety services without operational computers and networks.

Risk Mitigation-Immediate term: To address the lack of an alternate data center and to provide some back-up to the State's critical data and computer applications, DAGS has implemented a storage program that provides for on-site and off-site storage of its data assets and critical computer programs. Data is backed up daily providing the State with the ability to restore data and operations with minimal impact and loss of historical data.

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Risk Mitigation-Medium to Long Term (Six months to Five years and beyond): While the State has done well in implementing a data storage/data recovery program, the State will continue to have significant exposure due to the absence of an alternate data center. The State remains unable to restore its electronic processing capability in the event its primary data center becomes inoperable. Without the ability to restore its processing capability, and initiate recovery of its backup data and programs, State agencies are handicapped in their ability to deliver and restore critical services, to expend operating funds, and to contribute to the recovery of the State.

The State cannot afford to continue its business operations without a facility to restore its electronic processing capability. We believe this should be a high priority item for the State. Based on our analysis of the strategies available to the State, we believe that the State's most viable strategy is to immediately develop a plan to provide for a permanent alternate data center site equipped with sufficient processing capability, daily updated copies of critical data and computer programs, alternate plans and means of network connectivity, and business continuity plans to ensure the timely restoration of public services, especially those related to health and public safety.

While the permanent alternate data center site is being developed, the State would be well-advised to establish an interim alternate data center. We understand there are interim sites that are immediately available to the State to provide an alternate data center. The Bank of Hawaii Building at Kapolei, proposed by DAGS as the interim facility, is a prudent choice for the near term. DAGS has estimated the annual operating cost of the alternate data center to be $2.3 million. This estimate, relative to the specifications of the proposed State alternate data center, is reasonable within the industry.

Over the longer term, we believe it is fiscally and operationally prudent to develop a permanent alternate data center that is State managed, and controlled. We believe the Maui High Technology Park in Kihei best meets the financial and operational criteria for a permanent alternate data center site. While the establishment of this facility may span multiple years, implementing an interim strategy with a long-term solution provides the State with near-term risk mitigation and safeguards the State's critical applications and IT infrastructure for many years to come.

In closing, the report reflects a collaborative initiative between Gartner and State resources, primarily staff from the Information and Communication Services Division (ICSD). We understand that this report will be submitted to the State Legislature as

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required by ACT 178. We look forward to supporting DAGS in future Legislative hearings to discuss the attached report.

Sincerely,

Ken Tiratira
Gartner, Senior Director

cc: Gary Drake, Gartner
Attachment

The complete Gartner report, "Assessment of Central Data Center Business Continuity and Disaster Recovery Strategies" can be downloaded from the DAGS website at http://hawaii.gov/dags/rpts/disaster051219/view?searchterm=disaster%20recovery

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Response of the Affected Agency

Comments on Agency Response

We transmitted a draft of this report to the Department of Accounting and General Services on March 1, 2009. A copy of the transmittal letter to the department is included as Attachment 1. The response from the Department of Accounting and General Services is included as Attachment 2.

The department maintains that two conditions prevent the CIO from attaining a level of effectiveness in IT governance: 1) the current CIO position does not have the authority to utilize the financial or personnel resources of the executive branch departments, and 2) the ICSD's budget has been reduced over the past years and initiatives have not been funded. Most recently, the ICSD budget was reduced by $1 million for fiscal year 2009 and the alternate data center has not been funded.

However, to say that the current CIO position does not have the authority to utilize the financial and personnel resources of the other departments totally misses the point of this report. The decentralized IT infrastructure that we have in the Hawai'i executive branch has been the trend in IT for the past twenty years. With proper IT governance in place, the modern CIO should provide leadership and guidance to the departments to ensure that the State's investment in IT are cost effective, optimally utilized, adequately planned for future growth, and have the operational flexibility to easily adapt to changing requirements. The current CIO began his appointment in the right direction by establishing the appropriate IT governing bodies: the IT executive committee and the IT technical committee. However, these bodies were established without clearly defined roles, duties, and responsibilities. As a result, they never provided the IT governance and leadership required by the State. Moreover, despite the reductions in ICSD's budgets, effective IT governance could have communicated the urgency of such issues as the lack of an alternate data center. A system-wide failure could stop $1 million per day from entering Hawai'i's economy.

The department's two alternate recommendations would not address the findings of this report. We stand on our report.

ATTACHMENT 1

STATE OF HAWAI'I
OFFICE OF THE AUDITOR
465 S. King Street, Room 500
Honolulu, Hawai'i 96813-2917

MARION M. HIGA
State Auditor

(808) 587-0800
FAX: (808) 587-0830

March 16, 2009

COPY

The Honorable Russ K. Saito
State Comptroller
Department of Accounting and General Services
Kalanimoku Building
1151 Punchbowl Street
Honolulu, Hawai'i 96813

Dear Mr. Saito:

Enclosed for your information are three copies, numbered 6 to 8, of our confidential draft report, *Audit of the State of Hawai'i's Information Technology: Who's in Charge?* We ask that you telephone us by Wednesday, March 18, 2009, on whether or not you intend to comment on our recommendations. If you wish your comments to be included in the report, please submit them no later than Monday, March 23, 2009.

The Governor and presiding officers of the two houses of the Legislature have also been provided copies of this confidential draft report.

Since this report is not in final form and changes may be made to it, access to the report should be restricted to those assisting you in preparing your response. Public release of the report will be made solely by our office and only after the report is published in its final form.

Sincerely,

Marion M. Higa
State Auditor

Enclosures

LINDA LINGLE
GOVERNOR

Russ K. Saito
Comptroller

Barbara A. Annis
Deputy Comptroller

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING
AND GENERAL SERVICES
P.O. BOX 119
HONOLULU, HAWAII 96810-0119

March 23, 2009

Marion M. Higa
State Auditor
Office of the Auditor
465 S. King Street, Room 500
Honolulu, HI 96813-2917

Dear Ms. Higa:

Thank you for the opportunity to provide comments on the Audit of the State of Hawaii's Information Technology: Who's in Charge? conducted by the State Auditor pursuant to Section 23-4, Hawaii Revised Statutes.

Overall, I understand the conditions noted and the recommendations made. From a broader perspective, the overarching issues preventing the CIO from attaining the level of effectiveness in IT governance are the result of the following two conditions.

1. The current CIO position does not have the authority to utilize the financial or personnel resources of the executive branch departments.

2. Based on the availability of funds, the ICSD's budget has been reduced over the past years and initiatives have not been funded. Most recently, the ICSD budget was reduced by $1 million for fiscal year 2009 during the 2008 legislative session and the alternate data center has not been funded.

I offer the following comment and alternative recommendations which leverage fiscal resources to address the audit conditions. These recommendations can be implemented by legislature or the executive branch.

1. It is not necessary to create a full time CIO position. Rather, the current CIO's authority could be expanded to include utilization of staff and financial resources of all executive branch agencies.

2. ICSD could be provided the operational governance structure to execute the CIO's expanded authority to utilize staff and funding from the executive agencies.

We commend your staff and Accuity LLP's staff for the cooperative and professional manner in which they conducted themselves during this audit.

If you have any questions, please call me at 586-0400.

Sincerely,

RUSS K. SAITO
State Comptroller