

Performance audit of the consolidation of Executive Branch Information Technology

March 2012

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Members of the Legislative Audit Committee:

This report contains the results of a performance audit of the Governor's Office of Information Technology's efforts to consolidate the Executive Branch's information technology resources, planning, management and procurement. The audit was conducted pursuant to Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions and agencies of state government. The State Auditor contracted with Ernst & Young Young, LLP ("Ernst & Young") to conduct this audit. This report presents our findings and recommendations, and the responses of the Governor's Office of Information Technology.

Respectfully submitted,

Ernst & Young LLP

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Table of contents

- Glossary of terms and abbreviationsi
- Recommendation locator iii
- Agency addressed: Governor’s Office of Information Technology iii
- Chapter 1 - Overview1
 - Models of IT service delivery1
 - From shared services to consolidation2
 - The benefits and challenges of moving toward consolidation2
 - Colorado’s consolidation initiative4
 - Governor’s Office of Information Technology5
 - Audit scope and methodology7
- Chapter 29
 - Overall status of Colorado’s consolidation initiative10
 - Consolidation governance and oversight11
 - Consolidation of statewide IT budgets16
 - IT asset management.....19
 - Human resources and organizational change22
- Chapter 326
 - Cost allocation model.....26
- Appendix31

Glossary of terms and abbreviations

Abbreviation	Definition
C2P	Colorado Consolidation Plan
CCIT	Colorado Contracts Improvement Team
CFO	Chief Financial Officer
CIO	Chief Information Officer
CoBIT	Control Objective for Information and related Technology
DoIT	Department of Information Technology
FTE	Full Time Equivalent
GGCC	General Government Computer Center
HR	Human Resources
IT	Information Technology
ITGI	IT Governance Institute
ITIL	Information Technology Infrastructure Library
NASCIO	National Association of State Chief Information Officers
OIT	Governor's Office of Information Technology
OMB	Office of Management and Budget
PMBOK	Project Management Institute's Project Management Body of Knowledge
PMI	Project Management Institute
RACI	Responsibilities, Accountability, Consulted, and Informed model
SLA	Service Level Agreement

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Recommendation locator

Agency addressed: Governor's Office of Information Technology

Rec. No.	Page No.	Recommendation summary	Agency response	Implementation date
1	15	Strengthen governance and oversight of the State's consolidation initiative by: (a) Developing a strategy and tactical plans for IT consolidation that aligns with the overall goals of OIT and the goals of the agencies involved in the consolidation, (b) Developing strong risk criteria to adequately identify and assess risks at the consolidation project level, (c) Developing a standard set of metrics across consolidation projects and implementing a means of tracking such metrics, and (d) Implementing a comprehensive communications plan to guide the effective communication of consolidation project goals, benefits and status to key stakeholders; in addition, the communication plan should include methods for receiving feedback from stakeholders.	Agree	June - October 2012
2	18	OIT should work with the Governor's Office of State Planning and Budgeting, Joint Budget Committee, and General Assembly to move all Executive Branch IT appropriations so as to be under the control of OIT. In addition, OIT should determine whether IT spending is in line with organizational IT goals by; (a) Collaborating more effectively with agencies during the budget process to determine their IT needs, (b) Developing policies and procedures that address IT investment and funding decisions, and (c) Centralizing IT procurement of overlapping IT projects and services.	Agree	October - December 2012

Recommendation locator

Agency addressed: Governor's Office of Information Technology

Rec. No.	Page No.	Recommendation summary	Agency response	Implementation date
3	21	OIT should perform a full physical inventory and reconciliation of hardware and software assets, including accounting for and reconciling records to inventory and inventory to records, as needed. In addition, OIT should implement mechanisms to keep this inventory current and remain fully informed of all key IT assets across the State to improve decision-making, reduce overall risk, effectively manage costs and improve operational efficiencies. OIT should also consider implementing more stringent policies for managing IT assets and, if funding becomes available, consider the cost and benefits of implementing an integrated IT asset management system.	Partially Agree	July 2012
4	24	OIT could improve its HR function and more aggressively manage organizational change by: (a) Performing a RACI like analysis of OIT staff roles and responsibilities to properly align the functional and reporting structure, standardize job titles and identify inefficiencies that impact the OIT consolidation initiative, (b) Implementing resource management planning to handle staff attrition and aging of the workforce, identify skill gaps and implement training and tools to mitigate skill gap, and (c) Implementing robust knowledge management tools to allow staff the flexibility to perform multiple functions and address succession planning	Agree	July - October 2012

Recommendation locator

Agency addressed: Governor's Office of Information Technology

Rec. No.	Page No.	Recommendation summary	Agency response	Implementation date
5	29	OIT could improve its cost allocation model by implementing billing based on real-time consumption of services. OIT could consider eliminating the process of billing based on estimated consumption and implement mechanisms to track, document and report actual utilization for services outlined in the service catalog. Alternatively, OIT could consider implementing a true up of consumption on a more frequent basis (e.g., quarterly).	Partially Agree	December 2012

Overview of the State's efforts to consolidate information technology within the Executive Branch

Chapter 1 - Overview

Information technology (IT) forms the backbone of the infrastructure that enables the State of Colorado to provide a variety of services to its citizens and to the business community. In a time of severe and worsening fiscal constraints, it is imperative that IT services be provided in the most cost-effective manner possible. Generally, that entails moving from a decentralized model to either a shared services model or a consolidated model, a process the State of Colorado began in earnest with the passage of Senate Bill 08-155 in February 2008.

Models of IT service delivery

Historically, the State of Colorado has relied upon a *decentralized* model - until 2008, each principal department within the Executive Branch had its own IT function, headed by a chief information officer (CIO) who reported to the department's executive director. Budgeting, procurement and operational decisions were made at the departmental level; interaction with other departments and planning across the Executive Branch was limited. Predictably, on a statewide level this model tends to be the most expensive and fragmented, but it also is typically the most responsive to a given agency's needs.

Over the past decade, states around the country have adopted a *shared services* model, where various functions common to all departments (e.g., payroll) are grouped together under a single virtual roof. Moving to a shared services model results in greater efficiency because duplication of systems or processes - often involving relatively incompatible IT systems - is eliminated. In addition, a shared services arrangement can simplify the planning process and lead to economies of scale.

The *consolidated* model encompasses the State's entire spectrum of IT services. It generally involves taking existing organizations, applications and services and merging them into a single operation.

From shared services to consolidation

According to the National Association of State Chief Information Officers (NASCIO), the terms “shared services” and “consolidation” are often used interchangeably; this presents a challenge because each is a stage on the road to increased efficiency in service delivery.

Shared services comprise a limited amount of the total IT services used by state governments - those that have historically been performed across all state agencies in roughly the same way. The services provided are defined in agreements, known as service level agreements or SLAs, negotiated between the shared services center and the customer.

Consolidation, on the other hand, involves a fundamental transformation of the way in which IT is governed, managed and operated. A state’s IT services are centralized in a single operation - a process that typically is mandated by statute or an executive order.

One useful way to look at the migration of IT services from decentralization to consolidation is as a continuum, with “no specific beginnings and no specific ends,” as NASCIO noted in a brief on the future of IT consolidation.¹ The path to consolidation depends on the needs of the state, the means it uses to get there and, last but not least, the political will to make change happen.

The benefits and challenges of moving toward consolidation

The drive to consolidate has gained momentum in several states, including Texas, Utah, Michigan and Virginia, among others. In Texas, the Department of Information Resources was given significantly expanded authority in 2005; it now provides services to state and local governments, as well as public school and higher education systems.⁴ In Utah, the Department of Technology Services, established in 2005, is tasked with consolidating the state’s IT resources and services;⁵ Utah has been listed, along with Michigan, as a leading digital state.⁶

The journey from decentralization to shared services to consolidation can result in considerable cost savings because overlap and redundancy are reduced or eliminated, and because the use of common hardware and software platforms can maximize the state’s purchasing power. And as states move along the continuum toward consolidation, IT planning becomes simpler at the statewide level, and service delivery and resource utilization become increasingly optimized (see the table on page 3.)

Among the benefits enumerated by NASCIO:

- ▶ **Improved decision-making** - This is a result of greater access to information across agencies and functions.
- ▶ **Resource savings** - Economies of scale are easier to achieve as redundant systems are consolidated or shared.

- ▶ **Enhanced service delivery** - States are increasingly moving to “one-stop shops” offering seamless delivery to citizens.
- ▶ **Improved security** - Consolidation reduces the end points open to attack while it simplifies the creation of an effective disaster recovery and business continuity plan.⁷

But such journeys have their complexities. For the move from decentralization toward shared services, buy-in from the affected agencies is vital because service level agreements are generally the product of voluntary negotiations. Agencies can choose, and often have chosen, to avoid shared services, thereby limiting the overall effectiveness of such initiatives. And while the consolidated model provides the lowest cost to users of services, it is also the most inflexible and unresponsive to individual users’ needs; such is the price of standardization.

Still, the benefits of maximizing the use of taxpayers’ dollars while providing improved, more seamless services to the citizens are undeniable - and consolidation of IT services is a transformative journey from which both the state and its citizens can benefit.

Decentralized IT, shared services, and consolidation models cost, challenges and flexibility			
Considerations	Decentralized IT services	Shared services model	Fully consolidated IT services
Cost	<ul style="list-style-type: none"> ▶ Highest cost ▶ Low economies of scale ▶ Fragmented planning, budgeting and investment ▶ Limited purchasing leverage due to decentralized procurement 	<ul style="list-style-type: none"> ▶ Lower cost ▶ Increase in economies of scale ▶ Planning, budgeting and investment is coordinated ▶ Capital investment dollars are more centralized 	<ul style="list-style-type: none"> ▶ Lowest cost ▶ Cost equalization across agencies ▶ Centralized procurement processes ▶ Decrease in cost of operations, maintenance, and support due to standardization
Challenges	<ul style="list-style-type: none"> ▶ Services are highly diverse and therefore difficult to coordinate ▶ Standards and policies are dissimilar ▶ Variable staff skills ▶ Duplication of effort ▶ Higher costs across the State as a whole ▶ Level and quality of services individual agencies can afford can vary widely 	<ul style="list-style-type: none"> ▶ Services need to be continuously promoted in order to achieve economies of scale ▶ Agency success is dependent upon effective management of service-level agreements 	<ul style="list-style-type: none"> ▶ Slow process to implement ▶ Individual agency needs may not always be fully understood ▶ Viewed as unresponsive to agency needs ▶ Changes needed at individual agency may be harder to implement quickly ▶ Funds needed to initiate this model may be higher
Flexibility	<ul style="list-style-type: none"> ▶ Highly flexible at the individual agency level ▶ Agencies have primary control over planning, policy, budget and operations 	<ul style="list-style-type: none"> ▶ Ability to measure service results across agencies is easier ▶ Service level flexibility is varied 	<ul style="list-style-type: none"> ▶ End user flexibility can be low ▶ Agency-level influence can be limited ▶ Highly flexible at the central agency

Source: “IT Consolidation and Shared Services: States Seeking Economies of Scale,” March 2006, National Association of State Chief Information Officers.

Colorado's consolidation initiative

Given the benefits of consolidation, in 2008, the Governor, Department of Information Technology (DoIT) and the Colorado General Assembly facilitated the passage of Senate Bill 08-155, which folded all Executive Branch IT functions into the Governor's Office of Information Technology (OIT), effective July 1, 2008. The State's consolidation initiative is a huge undertaking, including the consolidation of 17 different agency IT departments composed of more than 1,100 full-time-equivalent (FTE) staff, 500 systems (of which more than 150 are considered critical), 319 primary applications, a wide variety of network infrastructures, several thousand vendor contracts to oversee, and more than \$250 million in operating dollars to manage. A timeline of critical events associated with the consolidation is listed below.

Summary of key IT consolidation activities	
Time frame	Milestone
January 2007	Governor Bill Ritter, Jr. announces a multi-year IT consolidation plan to fold the State government's decentralized IT operations into OIT. The plan calls for centralized IT management, purchasing, spending and planning. The plan also creates a statewide enterprise structure compared with the current, decentralized department-by-department model. The successful consolidation efforts of other states were studied as part of the planning process.
May 2007	Governor Ritter issues Executive Order D 016 07, which, among other things, elevates the position of the State of Colorado CIO to a cabinet-level position and addresses a number of administrative changes to IT management processes.
June 2007- January 2008	The State of Colorado engages third parties to assist in developing an Enterprise Architecture program to address key technology and business issues, enable a consolidated IT discipline throughout the State, and conduct various assessments. The results from these activities contributed to the development of the Colorado Consolidation Plan (C2P or Consolidation Plan), the roadmap for moving the State's government from a highly decentralized IT structure to a statewide consolidated organization.
January 2008	The Consolidation Plan is finalized and made publicly available. The plan called for centralized information technology management, purchasing, spending and planning. The plan laid out a four-phase consolidation framework and defined an enterprise architecture function and accompanying governance to guide enterprise technology decisions throughout the organization.
February 2008	Senate Bill 08-155, the "IT Consolidation Bill," is introduced during the 2008 legislative session. The legislation was intended to centralize the management, budgeting and procurement of State agency IT resources in OIT.
May 2008	On May 22, 2008, Governor Ritter signs the IT Consolidation Bill into law. The bill takes effect July 1, 2008.
June 2010	A change in the State CIO results in the appointment of an interim CIO.
July 2010	IT personnel consolidation is completed.
November 2010	A new governor is elected.
February 2011	A new State CIO is appointed.

Source: Analysis of legislative records, executive orders and related documents maintained by OIT.

Governor's Office of Information Technology

OIT is responsible for the operation and delivery of information and communications technology services and innovation across all Executive Branch agencies in the State of Colorado. The Executive Branch includes 17 agencies and approximately 26,000 FTEs. OIT's mission is to increase the effectiveness of government through the use of shared information and technology. OIT oversees technology at the state level and recommends strategies to maximize efficiencies and improve service delivery to the State's taxpayers. Encompassed in OIT's operational domain is the State's IT infrastructure, including data centers, servers, mainframe operations, personal computers, data storage, operating systems, communications and the public safety network.

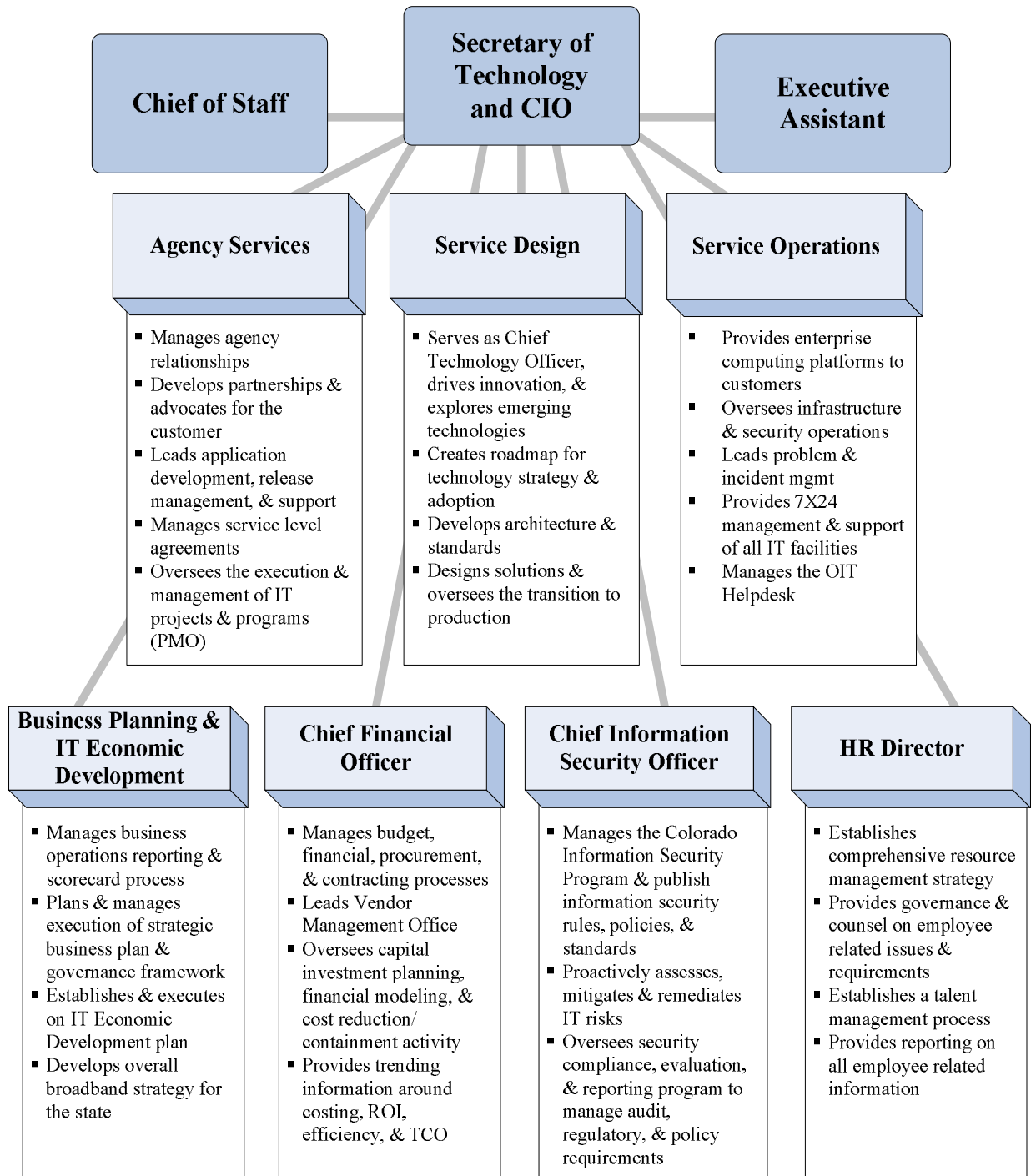
According to statute (Section 24-37.5-106, C.R.S.), OIT is responsible for the following:

- ▶ Centralizing the management, coordination and delivery of IT services within the Executive Branch of state government.
- ▶ Initiating and managing procurements of and contracts for technology resources for state agencies.
- ▶ Aggregating IT procurements for one or more state agencies.
- ▶ Directing and approving a comprehensive plan for the acquisition, management and use of IT.
- ▶ Managing statewide technology resources.
- ▶ Preparing and submitting budget requests for IT resources to be utilized by state agencies.
- ▶ Coordinating, monitoring and overseeing state IT projects and advising on any risks and issues.
- ▶ Coordinating statewide Geographic Information Systems.

As shown in the organizational chart below, OIT is headed by the Secretary of Technology and State CIO, who is responsible for increasing the effectiveness of government through the use of shared information and technology in addition to leading technology economic development for the State. About 85% of OIT's 935 employees report up through the Agency Services Director or Service Operations Directors. The Agency Services Director is primarily responsible for maintaining agency relationships, leading application development and overseeing the execution and management of IT projects and programs. Employees under the leadership of the Service Operations Directors are responsible for operating and maintaining the

State's computing platforms, data centers and network infrastructure. Finally, the Service Design Director creates roadmaps for technology strategy and adoption and develops statewide architecture standards.

Office of Information Technology



OIT operates as an internal service provider and is almost exclusively funded through reappropriated funds. OIT bills state departments for the services it provides just as any third-party vendor would bill a state department.

The table below shows the total Executive Branch IT expenditures and OIT's FTEs between fiscal years 2009 and 2011. OIT's administrative/overhead expenditures are included in the total Executive Branch IT expenditures. As the table shows, Executive Branch IT expenditures increased by approximately 5% during this time period. IT expenditures include all personnel services, operating and professional services expenditures related to IT, whether or not the actual funds were appropriated to OIT or other state agencies. Due to the statutorily mandated consolidation of IT personnel on July 1, 2010, OIT's FTEs have increased significantly during this time. It's important to note that the additional FTEs represent the transfer of existing IT staff from Executive Branch agencies to OIT and not newly created positions.

Executive Branch/Governor's Office of Information Technology IT expenditures and FTE appropriations Fiscal years 2009 through 2011				
	2009	2010	2011	Percentage change 2009 to 2011
Total Executive Branch IT expenditures	\$ 287,960,204	\$ 301,346,587	\$ 303,066,550	5.24%
OIT FTE	15	227	896	5,870%

Source: Analysis of information from the Colorado Financial Reporting System and long bills.

Audit scope and methodology

The Colorado Office of the State Auditor contracted with Ernst & Young to conduct this performance audit pursuant to Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions and agencies of state government. Audit fieldwork was performed from June through July 2011. The results of this report are bound by requested data received and interviews conducted in this time period. Data or other information received outside this time period is considered beyond the scope of this report. We acknowledge and appreciate the cooperation and assistance provided by OIT and Executive Branch agency management and staff during the course of this audit.

The objective of this audit was to evaluate OIT's progress in consolidating IT resources, procurement and operations within the Executive Branch. Specifically, the audit evaluated:

- ▶ Whether the State's IT consolidation initiative was on schedule and delivering the benefits anticipated by the General Assembly.

- ▶ Whether OIT's cost allocation model for calculating service rates and billing state agencies was reasonable and appropriate and compliant with state and federal standards, including the federal Office of Management and Budget's (OMB) Circular A-87, *Cost Principles for State, Local and Indian Tribal Governments*.

Audit work included structured interviews, surveys, data analytics and documentation reviews. Our methodology incorporated standards such as the Control Objective for Information and related Technology (CoBIT), Information Technology Infrastructure Library (ITIL), and the Project Management Institute's Project Management Body of Knowledge (PMBOK). In total, we collected and processed 45 separate data files and analyzed the following key documents:

- ▶ The Colorado Consolidation Plan.
- ▶ "Update to the Colorado Contracts Improvement Team (CCIT) on IT Consolidation Activities," dated November 18, 2009.
- ▶ OIT 2010 report, "Transforming Colorado Government for Today and the Future".
- ▶ Colorado Senate Bill 08-155.
- ▶ OIT strategic plans for fiscal years 2011-2014.
- ▶ Executive Order D 016 07, *Improving Information Technology*.
- ▶ OMB Circular A-87, *Cost Principles for State, Local and Indian Tribal Governments*.
- ▶ OIT fiscal year 2012 initiatives.

In addition to the review of certain documentation, we also conducted 14 separate interviews with OIT staff, held meetings with key OIT management, and surveyed consumers of the State's IT services to gain insights into the progress of the consolidation from their points of view. Additional details about audit samples and testing results are discussed in each of the individual audit findings and recommendations.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Progress of Colorado's information technology consolidation initiative

Chapter 2

According to industry leading practices and research conducted by NASCIO, a nonprofit association representing state CIOs and IT executives and managers from government and private entities, the following are the keys to successfully consolidating IT within state government:

- ▶ **Governance** - An effective governance model guides decision-makers in building an organizational structure that effectively supports the enterprise. Governance models include formal and informal components. Formal aspects include executive or legislative mandates, memoranda of understanding, charters and administrative directives. Informal aspects include collaboration, culture and effective communication.
- ▶ **Common objectives** - Consolidations can only happen when an organization's leaders agree on the purpose and potential for sharing to achieve statewide business outcomes. State CIOs play a critical role in initiating legislative and executive policy changes. It is therefore incumbent upon CIOs to explain to senior executives across the enterprise the common objectives of better service and support as well as more cost effective and efficient use of information and IT.
- ▶ **Transitioning changes in the business process** - CIOs need to be cognizant of the types of business process changes that typically are associated with a transition towards consolidated IT operations. Types of business process changes that typically change with transitioning from a decentralized model to a centralized model include planning, budgeting and procurement, as well as the operational business processes required to work with departments in a new way. Consolidation requires a transition from planning as individual departments to planning as a collaborative community with shared IT goals and objectives. Instead of budgeting as individual departments and working with departmental purchasing agents, consolidation requires the budgeting and funding of IT operations as a unified body and working with centralized purchasing agents. Consolidation also involves transitioning from individual departmental service operations to consolidated services.
- ▶ **Communications** - Communication is crucial to a successful consolidation. Through periodic meetings and written communications with organization heads

and staff, the CIO can help instill a sense of common goals and trust within and between the organizations involved in the effort.

Overall status of Colorado's consolidation initiative

The Consolidation Plan, the original roadmap for consolidation, recommended that consolidation activities should be undertaken in a logical order starting with organizational preparation, followed chronologically by the consolidation of infrastructure, services and business (or program) functions. The Consolidation Plan included the following evolutionary or stepwise phases:

- ▶ **Phase I: Enterprise standards/processes** - Examples of work activities to be completed during this phase included the development of hardware and software standards, staffing analysis, establishment of a project governance structure, establishment of performance metrics, collection of service requirements, completion of a statewide IT asset inventory, development of an organizational change plan, and development of a communications plan.
- ▶ **Phase II: Infrastructure consolidation** - Work activities for this phase included data center consolidation, network consolidation, disaster recovery implementation, and server, device and asset management consolidation.
- ▶ **Phase III: Service consolidation** - During this phase, the plan called for the consolidation of electronic mail, content management, identity management network services, support desk services, procurement, and the implementation of statewide data governance.

OIT has made progress in completing certain work activities within the phases of the Consolidation Plan as described above. In addition, OIT continues to consider and is working towards more fully implementing other initiatives and activities to deliver the intended benefits of consolidation within the Executive Branch.

While there have been accomplishments, the consolidation process has been slow and hampered by leadership changes, budget and resource constraints, an undeveloped governance framework and organizational resistance. For example, two of the consolidation's largest infrastructure projects, email and data center consolidation, have made little progress. The consolidation of the State's 39 data centers into 2 data centers (part of Phase II) was first initiated in early 2010. Additionally, in January 2011, OIT began working on the consolidation of the State's disparate email systems (part of Phase III). To date, no decisions have been made for moving forward with email consolidation, and the State continues to utilize redundant and incompatible email systems. Both of these infrastructure projects may have significant potential cost savings to the State. While OIT tracks and reports that it will have generated \$32 million in cost avoidance and cost savings for fiscal years 2010-2012, we were unable to obtain sufficient evidence to validate that the state has indeed realized all of these

costs savings. Since OIT does not have the ability to transfer the savings they have not maintained the level of detail that we would require to substantively audit these savings amounts. Finally, as reflected in our findings below, we believe OIT has opportunities to further enhance its planned consolidation activities in the areas of governance, budget consolidation, asset management, organizational change and its cost allocation models.

It should be noted that in August 2011, the State's new Secretary of Technology and CIO replaced the Consolidation Plan with the Colorado Playbook. The Colorado Playbook lays out a new and aggressive approach for consolidating IT within the Executive Branch. As part of the Colorado Playbook, OIT projects that its consolidation activities will result in cost savings, and/or cost avoidance, of approximately \$42 million to the State over the next three years. If these savings are to be realized by the State, it is important that OIT implements the recommendations included in the remainder of this chapter.

Consolidation governance and oversight

According to the IT Governance Institute (ITGI), governance models enable the organization to make decisions in the best interest of the larger organization as well as provide prescriptive methods to initiate and manage work throughout the organization. Governance is the discipline that creates both the structure and practices to guide projects and provide executive leadership, oversight, coordination and control. Governance establishes accountability from the strategic planning process throughout project delivery, implementation and service management.

IT governance focuses on the following key areas:

- ▶ **Strategic alignment** - Ensuring alignment between agencies and IT such that the agencies are able to use IT effectively to achieve business objectives, which are typically improved performance or better meeting customer needs.
- ▶ **Value delivery** - Ensuring that IT delivers the promised benefits, such as improved service delivery, with an emphasis on quantifiably minimizing costs and proving the intrinsic value of IT.
- ▶ **Resource management** - Optimizing investment in, and the proper management of, critical IT resources, including applications, infrastructure and staff.
- ▶ **Risk management** - Clear understanding of the organization's tolerance for risk and how decisions should be made to minimize risk.
- ▶ **Performance measurement** - Tracking and monitoring strategy implementation, project completion, resource usage, process performance and service delivery.

What was the purpose of the audit work?

The purpose of the audit work related to governance was to determine if effective governance structures and adequate oversight mechanisms are in place to direct and monitor the consolidation effort as recommended in Phase I of the Consolidation Plan.

What audit work was performed and how were results measured?

We requested that OIT provide us with documentation and evidence to demonstrate that appropriate governance had been established for the State's consolidation effort, including strategic plans, tactical plans, risks identified, performance goals and measures and communication plans.

Industry-leading practices, such as those referenced by the ITGI and Gartner, suggest that a strong governance model be implemented before embarking on IT consolidation projects to assist in achieving the desired benefits. Project Management Institute (PMI) guidelines indicate that implementation of an effective governance framework requires that mechanisms be in place that can:

- ▶ Provide strategic direction; make decisions that are impactful; and handle any issues, risk and corrective actions.
- ▶ Design, engineer, manage and operate the defined strategic initiatives from initiation to completion.
- ▶ Align all the work into deliverable components called "projects and programs" and measure performance based on those components.

Based on indicators of an effective and formal governance structure and oversight mechanisms, we expected the following to be in place for the consolidation initiative:

- ▶ Documentation to explain how the State's IT consolidation strategy aligns with OIT's overall IT strategy and individual agency IT strategies.
- ▶ Documentation indicating how risks across the consolidation initiatives are managed.
- ▶ Evidence of established criteria for evaluating and validating IT consolidation investments or projects, such as business cases.
- ▶ Performance measurements to track and identify performance deficiencies.
- ▶ Evidence of how resources are managed to help identify the proper staffing mix to support consolidation projects.
- ▶ Cost savings or cost avoidance goals and mechanisms for substantiating those savings.

What did the audit work find?

The governance framework for the consolidation has yet to be fully implemented and formalized. More specifically, we noted the following:

- ▶ **Strategic and tactical plans are not documented.** OIT has not defined how the strategy of IT consolidation aligns with OIT's overall IT strategy or individual agency IT strategies, what goals need to be achieved and how, who is responsible for achieving the results, what risks can impact the consolidation efforts, how to mitigate such risks, and how performance will be measured. In addition, OIT does not have documented short-term actions and tactical plans to govern day-to-day operations.

Strategic plans help make it possible for various work units within an organization to align themselves with common goals. In addition, since the consolidation effort comprises many sub-projects (e.g., performing asset inventories, collecting standards requirements, defining metrics), the creation of tactical plans is critical to the overall direction.

- ▶ **Performance measurements lack relevance to consolidation.** IT performance management metrics currently used by OIT have little context with regard to actual IT consolidation-driven performance. Monthly, OIT prepares a project synopsis report tracking items such as:

- ▶ Project name
- ▶ Reporting period
- ▶ Description
- ▶ Percentage complete
- ▶ Overall project status
- ▶ Delivery date
- ▶ Budget status
- ▶ Key accomplishments
- ▶ Plans for next period

These measures lack an underlying framework of formal, quantifiable performance expectations or measurements for consolidation initiatives. Further, the project tracking items listed above do not appear to directly align with the overall objectives of the consolidation, such as targeted cost savings or reduction.

The Colorado Consolidation Plan also recommended performance metrics comprising measures in the areas of project management, operations and business functions as a starting point. It further proposed that these metrics be expanded to incorporate all areas of governance, be tracked monthly and be available to the general public and elected officials. However, OIT did not establish such performance metrics or identified measures from the areas listed.

Additionally, OIT did not gather baseline IT performance metrics prior to the consolidation to further track the performance of consolidation initiatives. For example, when performing a consolidation of statewide applications, OIT should have gathered baseline counts of the number of applications, the number of users on each application, the number of operating systems, spending on applications

(purchase and maintenance costs) and service-level data. Baseline IT performance metrics are critical for tracking progress over a multi-year consolidation project.

- ▶ **Structured agency communication was not implemented.** As referenced by the Consolidation Plan and industry guidelines, effective communication is one of the significant hurdles in any major change that affects an organization. Communication planning entails determining the communication and information needs of the stakeholders, who needs what information, when they need it and how it will be given to them.

At the time of our audit, OIT had a communications plan and dedicated communication mechanisms and resource, however communications can be further enhanced. Our interviews with several key agencies also noted that the frequency and style of communication from OIT was a key hurdle for the consolidation process. This issue was further validated through interviews with OIT personnel who agreed that their communication approach was a top-down approach. Furthermore, OIT communicated its decisions to the agencies rather than seeking agencies' feedback prior to decision-making. This often left state agencies and staff feeling alienated and frustrated.

What caused the finding to occur?

OIT leadership changes have influenced and slowed the formalization and implementation of an effective governance structure. Since the passage of Senate Bill 08-155, various individuals within OIT have assumed accountability for the consolidation. These individuals include past, interim and current CIOs. This turnover has likely created challenges for OIT in the implementation of an agreeable and sustainable governance framework due to differing strategies, initiatives and priorities among different CIOs related to the consolidation.

Why does this finding matter?

Without a well-defined governance model, OIT faces an increased risk of not meeting agency business needs and missing the intent of the legislation that authorized the State's IT consolidation. Lack of established measures prevents OIT from identifying increased costs and risks or delivering services in a timely manner. Additionally, without a strong communication strategy it will be hard for OIT to obtain agency buy-in and it will continue to face significant resistance. Further, tactical planning is critical since consolidation efforts are comprised of many sub-projects (e.g., performing asset inventories, collecting standards requirements, defining metrics) and without a directive it will be impossible for OIT to keep track of each of these sub-projects.

Recommendation No. 1

OIT should strengthen its governance and oversight of the State's consolidation initiative by:

- a. Developing a strategy and tactical plans for IT consolidation that aligns with the overall goals of OIT and the goals of the agencies involved in the consolidation.
- b. Developing strong risk criteria to adequately identify and assess risks at the consolidation project level.
- c. Developing a standard set of metrics across consolidation projects and implementing a means of tracking such metrics.
- d. Implementing a comprehensive communications plan to guide the effective communication of consolidation project goals, benefits and status to key stakeholders; in addition, the communication plan should include methods for receiving feedback from stakeholders.

Governor's Office of Information Technology response

Agree. Implementation period: June - October 2012

OIT agrees that a strong and stable governance structure is important to ensure operational efficiency across the state. OIT's current CIO was appointed in February 2011 and she immediately put OIT on the path of refining, collecting and in some cases establishing performance plans and performance metrics which did not exist. To date OIT has published its Fiscal Year 2011-12 Playbook (strategic plan), implemented quarterly deliverables for each of the playbook initiatives, implemented monthly operational metrics, and has implemented performance requirements for each of the executive staff that map back to each of the metric and deliverables.

- a. Agree. In October 2011 OIT completed work plans with each of the departments. This was a collaborative effort with each department outlining the annual information technology operational priorities. The next step is to incorporate the strategic needs of the departments into our annual planning process which will then feed into the annual technology plan and the next budget cycle as necessary. Implementation October 2012.
- b. Agree. OIT has good processes and procedures around assessing risks for projects larger than \$5 million and is currently working to bring all medium and small projects under formal project management procedures. In addition, OIT recently completed a risk assessment of 130 of the most critical applications across the state and is in the process of completing an inventory of all applications so that a risk assessment may be completed on the remaining applications. OIT will then

complete this assessment annually to identify where operational efforts need to be targeted annually. Implementation July 2012.

- c. Agree. OIT is tracking existing enterprise projects through our Enterprise Portfolio Project Management Office and the new Director is updating the project management policies, procedures and metrics. Once updated these policies, procedures and metrics will be applied to all IT projects across the state as applicable. Implementation July 2012.
- d. Agree. OIT agrees that communication is one of the hardest objectives to maintain consistently. OIT has a published communications plan but agrees that more work needs to be done to build out and execute against this plan, including receiving feedback from stakeholders. Effective communication must be maintained internally and externally to OIT to ensure employees, legislators, and citizens understand the role OIT plays and the benefits it can provide. Implementation June 2012.

Consolidation of statewide IT budgets

As previously discussed, transitioning to a consolidated IT environment requires OIT to work with state agencies in many new ways. One aspect of the transition is the shift from budgeting as individual agencies to budgeting and funding IT projects as a collaborative group with shared IT goals and objectives. In a consolidated IT organization, the IT department controls most IT-related spending with formally defined governance standards for investment policies and procedures to confirm that IT investments meet the overall objectives of the organization.

What audit work was performed and what was the purpose?

The audit team requested and received data for the period from July 2008 through June 2011 from the Colorado Financial Reporting System, the State's accounting system. Using the data, we analyzed and compared OIT's IT operating expenses (i.e., those costs incurred as a result of performing day-to-day business operations) with the agencies' IT operating expenses. The purpose of this analysis was to then determine the extent to which management of IT operating expenses had been centralized as part of the consolidation initiative.

How were the results of the audit work measured?

The results of this audit work were measured by analyzing the amount of IT operating expenses spent by OIT relative to spending controlled by the agencies. In a consolidated IT organization, the IT department (in this case, OIT) should control all IT-related spending, versus a decentralized IT organization in which the IT department controls a smaller portion of the IT operating spending relative to the agencies.

What did the audit work find?

OIT has yet to obtain full control of the overall IT spending for the State, as envisioned by the consolidation initiative. Agencies continue to receive funds for IT expenditures and are spending those funds without or with minimal OIT knowledge or input. As a result, we found that IT operating expenditures continue to remain decentralized when comparing state agencies' IT operating expenditures over the past three fiscal years with the operating expenses controlled by OIT during the same period. In fact, OIT has historically controlled only roughly 20% of the State's IT operating expenditures, while approximately 80% has been controlled by the agencies. The chart below provides further details of the actual IT operating expenses (not including personnel costs and capital expenditures) spent by OIT versus the amount spent by state agencies over the past three fiscal years.

State of Colorado					
Comparison of OIT IT operating expenses vs. agency IT operating expenses					
Year	OIT	Percent	Agencies	Percent	Total
2009	\$ 22,059,532	20.4%	\$ 86,078,698	79.6%	\$ 108,138,230
2010	\$ 23,375,611	21.3%	\$ 86,610,774	78.7%	\$ 109,986,385
2011	\$ 24,455,195	16.0%	\$ 83,247,645	84.0%	\$ 107,702,840

Source: Colorado Financial Reporting System data.

Note: This table only includes operating expenditures and does not include expenditures related to personnel or capital projects.

Further, we found that the State lacks a truly centralized IT procurement function. Specifically, OIT does not have a standard list of vendors with negotiated rates that the agencies can contract with. As a result we found several thousand vendors that the State contracted with for IT-related products and services in the last three years. In fiscal year 2010, OIT implemented a policy that required all IT expenditures greater than \$10,000 to be approved by OIT's Chief Financial Officer (CFO). In practice, the new control has yielded limited results because OIT cannot influence agency IT spending. According to OIT, they are informed of IT expenditures at the last minute, many times after IT products have been delivered or IT services have been rendered and payment is due or sometimes past due.

We reviewed IT expenditures that are managed outside of the formal OIT budget and noted that during fiscal year 2009 through fiscal year 2011, agencies spent over \$70 million procuring personal services related to software, over \$28 million procuring communication services from outside sources, and over \$8 million in hardware maintenance. Due to the lack of data, we were not able to substantiate whether or not these expenditures were approved by OIT prior to entering into a commitment for services between the agency and vendor.

What caused the finding to occur?

We believe this finding is the result of four factors: (1) OIT does not have control over the statewide IT budget as most of this currently resides with the agencies, (2) a centralized IT procurement function does not exist resulting in agencies continuing to engage with vendors for IT products and services, (3) OIT's controls over IT purchases have contributed to OIT not having full control of the IT budget, and (4) OIT does not have a full inventory of the IT infrastructure at the agencies.

Why does this finding matter?

Without OIT's ownership of the statewide IT budget, state agencies will continue to procure IT products and services that may not be aligned with the overall goals and objectives of the State. Furthermore, such products and services may be redundant and may introduce additional security risks to the State's IT environment. For example, if an agency buys a new server without consulting OIT, the server may have an operating system that the state does not support and, hence, not align with the goals and objectives of the state. In addition, the server may not be purchased through a preferred state vendor, resulting in loss of best pricing and potential cost savings. Furthermore, a consolidated organization could provide insight into the existence of unused IT resources at another agency that can be repurposed and further introduce potential cost savings.

Recommendation No. 2

OIT should work with the Governor's Office of State Planning and Budgeting, Joint Budget Committee, and General Assembly to move all Executive Branch IT appropriations so as to be under the control of OIT. In addition, OIT should determine whether IT spending is in line with organizational IT goals by:

- a. Collaborating more effectively with agencies during the budget process to determine their IT needs.
- b. Developing policies and procedures that address IT investment and funding decisions.
- c. Centralizing IT procurement of overlapping IT projects and services.

Governor's Office of Information Technology response

Agree. Implementation period: October - December 2012.

OIT will work with the Departments, Governor's Office of State Planning and Budgeting, Joint Budget Committee, and General Assembly to determine the best way

to control IT budgets and balance statewide versus departmental information technology priorities.

- a. Agree. OIT is working to update its current processes to increase collaboration with agencies during the budget process to ensure strategic needs of the departments and the state are compiled annually. This information will then be utilized during the subsequent budget cycle. Implementation December 2012.
- b. Agree. OIT is working to update its current processes including developing policies and procedures that address IT investment and funding decisions to ensure strategic needs of the departments and the state are compiled annually. This information will then be utilized during the subsequent budget cycle. Implementation December 2012.
- c. Agree. OIT has an active project to address the intake and delivery process for all information technology resource requests (i.e. hardware, software, services, and systems). These processes include all aspects of the resource lifecycle such as requirements definition, procurement, contacting, project management, vendor management, deployment and subsequent disposal of the resource. Utilizing the LEAN principles, OIT has engaged a subset of staff from all departments to help design and implement these processes. Implementation October 2012.

IT asset management

A centralized IT asset management function optimizes the utilization of IT assets to achieve organizational goals. Asset management includes accurately capturing the physical, financial and contractual data required to manage IT assets throughout the lives of those assets. Contractual data is useful information related to the lease of IT products (e.g., when the asset was leased, the duration of the lease, price of the leased asset and purchase price for the IT asset) should the customer decide to buy the product at the end of the lease instead of returning it. These combined practices help confirm that accurate IT asset information is available to make business decisions that result in better risk management, cost management and operational efficiencies.

What audit work was performed and what was the purpose?

The audit team requested a listing of IT hardware and software assets across the State. More specifically, we requested the asset name, asset type (e.g., software, server, desktop, laptop, printer), asset location (for hardware), details about the asset (e.g., programming language of software), date the asset was acquired, purchase amount, useful life, number of users, depreciation (if applicable) and retirement date (if applicable).

The purpose of this information was to: (1) determine the level of OIT and state department spending on IT assets, (2) determine if IT assets are effectively utilized

across the State, (3) understand the level of complexity of the State's IT environment, and (4) understand how OIT is managing risks in the IT environment.

How were the results of the audit work measured?

Per industry best practices, such as Gartner, IT asset management's value lies in its ability to manage change, optimize the use of IT assets, take control of the technology stream and mitigate risks, in addition to its ability to control costs and make deals. Its long-term payback lies in its ability to effectively execute technological and organizational change, and to make tactical and strategic decisions about the enterprise and the level of risk it wants to assume. Leading practices for IT asset management would include:

- ▶ **Cost management** - A listing with asset procurement prices, useful life and depreciation information provides valuable insight into how much an organization spends on IT assets. Useful life and depreciation balances also provide insight into the age of the assets and may identify obsolete assets that should be retired or may contribute to higher maintenance costs. In addition, information about application names, operating platforms and programming languages provide insight into the level of complexity of the IT environment. For example, an environment with a high number of applications operating on many different platforms and developed with many programming languages can represent a complex environment that contributes to high operating costs because it requires more IT staff with many different skills to support the environment. Finally, untracked assets may result in lost IT assets, resulting in additional replacement costs for the State.
- ▶ **Risk management** - Complete and accurate IT asset information may mitigate OIT's exposure to additional risks, such as software penalties or overpayment for unused licenses. Errors in the number of user licenses for particular software may result in fines from the software maker if there are more users than allowable licenses. Conversely, if there are more software licenses than users, OIT may be overpaying for unused licenses.
- ▶ **Operational efficiency** - IT asset management helps keep the hardware and software components within their respective technology environments up-to-date at all times, a key requirement for achieving maximum operational efficiency. Incomplete and inaccurate IT asset information may result in reduced operational efficiency. For example, linking service desk and IT asset management information allows service desks to leverage IT asset management information to check warranty status and to troubleshoot reported problems related to IT assets.

What did the audit work find?

OIT does not have a centralized list of IT assets across the State, which prevented us from concluding on whether or not IT assets are utilized effectively, determining how

the risk associated with IT is managed, or determining the level of spending on IT assets.

What caused the finding to occur?

The primary cause of OIT's inability to gather a list of IT assets is the lack of a centralized IT asset management function. OIT has not consistently maintained complete and/or accurate IT asset data for the following reasons:

- ▶ The budget for asset purchases resides within the departments.
- ▶ The lack of a centralized IT procurement function.
- ▶ Each department has been responsible for inventory and asset capitalization for financial statement purposes.
- ▶ OIT does not have a centralized IT asset management tool to enable the tracking and reporting of IT assets across the State.
- ▶ The majority of IT assets are owned by and reside at individual state agencies. OIT does not have resources to establish visibility into the agencies' IT assets to determine the inventory of the assets.
- ▶ OIT has not developed written policies and procedures that define and communicate to agencies the following: (1) the purpose for tracking IT assets, (2) what assets should be tracked, and (3) who is responsible for tracking IT assets.

Why does this finding matter?

Without IT asset information, OIT cannot determine future IT inventory needs and cannot leverage existing infrastructure to negotiate better pricing. The lack of an IT asset management function can also have a significant adverse impact on generating potential cost savings. Specifically, incomplete and inaccurate IT asset information prevents OIT from making effective business decisions that may result in better cost and risk management and operational efficiency.

Recommendation No. 3

OIT should perform a full physical inventory and reconciliation of hardware and software assets, including accounting for and reconciling records to inventory and inventory to records, as needed. In addition OIT should implement mechanisms to keep this inventory current and remain fully informed of all key IT assets across the state to improve decision making, reduce overall risk, effectively manage costs, and improve operational efficiencies. OIT should also consider implementing more

stringent policies for managing IT assets and, if funding becomes available, consider the cost and benefits of implementing an integrated IT asset management system.

Governor's Office of Information Technology response

Partially Agree. Implementation date: July 2012.

OIT agrees that asset management is critical to the state and should be maintained and managed at the enterprise level. OIT has an active project to build processes and procedures to track and manage all information technology resources from the moment they are procured throughout their entire lifecycle. This project will go live on July 1, 2012 and OIT will test and refine the processes and procedures throughout the first quarter of the fiscal year.

While OIT agrees that enterprise asset management is critical, OIT does not have the resources available to complete a full statewide inventory of all information technology assets and is why OIT has initiated the project to track all newly purchased assets from procurement to disposal.

Human resources and organizational change

Under a consolidated IT structure, the State's IT staff will continue working at individual state agencies but will be managed centrally by OIT. As such, the identification of IT skills available across the State is critical to ensure that OIT can meet the needs of state agencies and optimize human resources (HR) distributed across the agencies. Assessing IT skills requirements for a consolidated IT environment also allows OIT to align its resources for existing and future strategies and initiatives.

What audit work was performed and what was the purpose?

We requested that OIT provide us documentation and evidence related to OIT organizational data, such as a statewide IT staff count, job titles and functional groups. Additionally, we met with OIT's Director of Human Resources to understand the current status of IT staff consolidation and to determine if the transfer of IT staff progressed as planned.

The audit work reviewed whether OIT had performed a skills assessment of IT staff to confirm that they adequately met the requirements for supporting consolidation activities. The purpose of this audit work was to determine if IT staff across the State were effectively consolidated. More specifically, it determined whether: (1) IT personnel who were employed by state agencies were transferred to OIT, (2) skill sets were identified, documented and tracked, (3) skill gaps were identified, and (4) resource pools were established.

How were the results of the audit work measured?

We identified the following criteria by which to measure the results of our audit work:

- ▶ According to Senate Bill 08-155 (Section 24-37.5-104, C.R.S.), all IT staff were to be transferred to OIT effective July, 2010.
- ▶ Industry-leading practices indicate that a skills assessment should be performed before embarking on consolidation so that skill gaps can be immediately identified and addressed.

What did the audit work find?

We found that OIT completed the transfer of IT staff to OIT as of July 1, 2010, but the functional alignment and reporting structure for these staff were only partially completed. Specifically, the functional job titles were not analyzed to identify job titles that are different but perform the same functions and which job titles should report to which functional area. In addition, a reporting structure along with policies and procedures were not formalized to establish: (1) chains of command, (2) reporting hierarchy, and (3) rules, such as a supervisor only having a certain number of direct reports.

Through interviews with key OIT staff and a review of OIT's fiscal year 2012 business initiatives, our understanding is that a statewide skills assessment of IT staff commenced in fiscal year 2009. However, we noted the following observations that highlight the importance of enhancing or furthering this assessment:

- ▶ Thirty to forty percent of staff who are knowledgeable and skillful enough to maintain the mainframe that hosts the State's financial data will retire in the next five years.
- ▶ There were 504 unique functional job titles for the 1,012 OIT positions, indicating either a broad IT skill set across the State or that people with different functional job titles essentially perform the same function. The functional job titles should be analyzed to ensure the appropriate sets of skills are in place to meet the objectives of consolidation.

In addition, OIT has not:

- ▶ Analyzed staff roles and responsibilities to identify problems and inefficiencies that affect the consolidation.
- ▶ Provided training based on identified skill gaps.
- ▶ Implemented knowledge management tools to allow staff flexibility to perform multiple functions and mitigate the impact of OIT's aging workforce.

- ▶ Standardized functional job titles and eliminated or reduced overlapping job positions.

What caused the finding to occur?

OIT leadership changes have slowed the formalization and implementation of the skills assessment. This turnover, as previously mentioned, has likely created challenges for OIT to implement the initiative due to differing strategies and conflicting initiatives and priorities related to the consolidation.

Why does this finding matter?

Without a strong understanding of the number and types of skills of available IT resources, OIT may fall short of meeting the intent of legislation, achieving the consolidation benefits expected by state agencies, and achieving short- and long-term strategies of the State. Furthermore, properly identifying these IT resources and categorizing them into functional areas with a defined reporting structure is key to optimizing the consolidation.

Recommendation No. 4

OIT should improve its HR function and more aggressively manage organizational change by:

- a. Performing a RACI-like analysis of OIT staff roles and responsibilities to properly align the functional and reporting structure, standardize job titles and identify inefficiencies that impact the OIT consolidation initiative.
- b. Implementing resource management planning to handle staff attrition and aging of the workforce, identify skill gaps and implement training and tools to mitigate skill gaps.
- c. Implementing robust knowledge management tools to allow staff the flexibility to perform multiple functions and address succession planning.

Governor's Office of Information Technology response

Agree. Implementation period: July - October 2012.

OIT agrees that improvements in our Human Resources operations is a priority and is included as one of the six priorities identified in our Fiscal Year 2011-12 Playbook. OIT is very committed to its employees and wants to ensure they have a productive work environment in which to operate.

- a. Agree. OIT is completing a nationwide search for an experienced human resources director who can address both the strategic and tactical needs of our office. OIT

expects to have this director on board in April 2012 and the immediate priorities of the position will be to identify the operational gaps in our human resource functions and address those gaps. In addition, OIT has an active occupational study underway with the Department of Personnel & Administration to review the current class structure and working titles. Implementation October 2012.

- b. Agree. The first priority of the new human resources director will be to complete a Human Capital Resource Strategy to address attrition, succession planning, skills and skill gaps and the aging workforce. Implementation July 2012.
- c. Agree. The first priority of the new human resources director will be to complete a Human Capital Resource Strategy to address attrition, succession planning, skills and skill gaps and the aging workforce. Implementation July 2012.

Cost allocation model and state agency billing

Chapter 3

OIT provides services on a cost reimbursement basis, with OIT acting as a vendor for state agencies. OIT is a service provider and, as previously mentioned, is almost exclusively funded through reappropriated funds. OIT bills state agencies for enterprise-level services, listed under the four areas mentioned below, just as any third-party vendor would bill a state agency.

Depending on the service, OIT can bill the agencies for the following four areas:

- ▶ **OIT management and administration** - This common policy includes management and general administrative activities of OIT, such as the management of executive salaries and back office administrative staff.
- ▶ **General Government Computer Center (GGCC)** - This common policy includes all data center activities, including mainframe operations, server hosting/housing and application support.
- ▶ **Network services/multi-use network** - This common policy includes all network-related activities, such as internet access, long-distance telephone services, and other voice and data services.
- ▶ **Communication services** - This common policy includes all of the activities associated with the State's public safety radio system, including both microwave transmission and the Digital Trunked Radio System.

Cost allocation model

OIT uses a cost allocation model to determine how much it charges agencies for the services it provides. OIT compiles billing rates by taking all of the estimated recoverable costs associated with a service and dividing those costs by the related utilization. For the four areas listed above, the main estimated recoverable costs include personal services, professional services, operating costs and overhead. OIT uses previous-year data (by state agency and service) as a basis for its initial estimates of recoverable costs and average utilization for the following fiscal year. The initial estimates are then adjusted once a year for any predicted future changes in cost or utilization for the given budget cycle.

In every subsequent budget cycle, OIT compares the estimated (budgeted amount) to actual costs incurred and then adjusts the billing across the agencies. Management and administrative time are captured as general overhead and are allocated across all services. Non-managerial time is tracked and directly coded to each service the employees support.

The following formula is used to determine the billing to agencies by service:

State of Colorado Governor's Office of Information Technology Cost allocation model	
	Estimated personal services expenditures (loaded salaries -salaries including benefits - for FTE staff)
+	Estimated professional services expenditures (contractors)
+	Estimated operating expenditures (e.g., hardware, software, office supplies)
+	Estimated overhead expenditures (e.g., leased space, utilities, overhead/indirect cost)
=	Estimated recoverable costs
÷	Estimated total service utilization based on prior-year actual consumption
=	Billing rate
×	Utilization by agency based on actual usage
=	Agency charge for service

Source: OIT Whitepaper, "OIT Financial Consolidation."

What audit work was performed and what was the purpose?

The audit team met with OIT management to better understand the reimbursement and allocation method and discussed the results of past audits of the cost model. Further, we reviewed OMB Circular A-87, *Cost Principles for State, Local and Indian Tribal Governments* (the Circular), and specifically compared each service in OIT's service catalog to corresponding items in the Circular. We also determined if the services are allowable according to the Circular and how well OIT services meet those requirements. In addition, we reviewed OIT's web site to determine whether the method for calculating the bills was properly communicated to the agencies. Finally, we selected one OIT bill to a state agency, based on our reliance on automated controls and sound billing methodology, to review and observe the process for the bill's calculation.

The purpose of the audit work was to: (1) determine whether OIT's cost allocation model is reasonable, appropriate and meets state and federal standards, and (2) to determine whether OIT calculates reasonable and valid cost estimates and incorporates industry best practices through its application of the OIT cost allocation model, particularly for the purpose of estimating the cost of providing services to state agencies.

How were the results of the audit work measured?

We identified the following criteria by which to measure the results of our audit work:

- ▶ The Circular’s rules regarding allowable cost items.
- ▶ Industry best practices in which users are billed in real time for actual consumption of products and services and a detailed service catalog is documented that includes the service name, billing rate and utilization criteria.

What did the audit work find?

We found that the cost allocation model employed by OIT is reasonable, appropriate and meets the standards specified by the Circular. We also noted that OIT has created a detailed service catalog that includes the fund title, service name, category code and utilization criteria. Additionally, the methods for calculating the bills and the billing rates are communicated to state agencies annually, and the same details can also be found on OIT’s web site. Finally, the charge-back and allocation model employed by OIT charges back all IT expenditures to the agencies. These practices are in line with industry practices.

Compliance with Circular A-87 requirements

We noted that all costs included in OIT’s calculations are allowable under the Circular and, therefore, OIT meets the federally mandated cost principles. More specifically, the audit team reviewed the services listed in OIT’s service catalog and compared those services with the items of costs outlined in the Circular. The following is a list of the key elements of the Circular and how OIT’s reimbursement model addresses those requirements.

Key elements of Circular A-87 and the OIT cost allocation model		
Description of cost	Circular A-87 requirements	How OIT services meet Circular A-87 requirements
Communications	Allowable Unallowable - Communications devices and usage charges for personal use	All phone systems or communications systems and support charges are charged back to the agencies based on business usage. Devices are not charged back.
Compensation for personnel	Allowable if costs are reasonable for similar work and charges are supported with time distribution records or other documentation	OIT bills agencies based on hours as documented by a time-keeping system or as allocated based on FTE counts.
Fringe benefits	Allowable	OIT charges back all fringe benefits for all OIT staff using the same formula as compensation
Maintenance, operations and repairs	Allowable	All GGCC costs related to the maintenance, operations and repair of the mainframe, data center, servers, email, desktop and enterprise applications are charged back.

Source: OIT’s cost allocation model and the OMB Circular A-87.

Improvement to the cost allocation model

While OIT's cost allocation model meets the standards of the Circular, there is an additional enhancement that can be made to align OIT's cost allocation model with industry-leading practices. As mentioned above, OIT calculates the billing rates for the current year based on estimated or projected expenditures and utilization rates. At the end of the year, the true cost for each service is calculated based on actual utilization and incurred expenditures which is then used to true-up the projected expenditures to actual. Based on this "true up" process, some agencies may receive credits, while other agencies will have to pay additional money for the services actually utilized during the year. This model does not allow agencies to understand and control their IT use and costs in a timely manner. Additionally, the "true up" process continues to negatively impact OIT's relationship with state agencies. During our audit, state agencies complained that OIT's billing process is difficult to understand, not entirely transparent and makes it difficult for them to control their IT costs.

What caused the finding to occur?

OIT does not have mechanisms, such as tools to track real-time usage, used to perform real-time billing based on actual service utilization. According to OIT, there are two primary reasons. First, OIT does not have the ability to make adjustments to the agencies' IT budget once it is final. While OIT could under bill or give credits to some agencies, it does not have the ability to over bill the other agencies for exceeding their budget for services. In addition, OIT is prohibited from making a profit, so they do not have the ability to absorb any adjustments on an annual basis. Second, OIT indicated that a real-time monthly billing is currently cost prohibitive as they lack the time, personnel and budget needed to implement such changes to their cost allocation model.

Why does this finding matter?

As previously discussed, for the services that are billed based on usage, state agencies believe that they do not have sufficient control over their IT services and costs. The current cost allocation model does not allow state agencies to identify real-time consumption of their demand for IT services in a timely manner. In essence, any changes in IT consumption by an agency may not be fully understood until the following year. Hence, the agencies cannot control their consumption of IT services to drive their IT cost down in the same year.

Recommendation No. 5:

OIT could improve their cost allocation model by implementing billing that is based on real-time consumption of services where practical. More specifically, OIT could eliminate the process of billing based on estimated consumption and implement

mechanisms to track, document and report actual utilization for services outlined in the service catalog. Alternatively, OIT could perform its “true up” process on a more frequent basis (e.g., quarterly) to minimize the lag time state agencies experience in understanding their IT consumption. However, resource constraints will need to be considered when assessing the feasibility of this alternative as well.

Governor’s Office of Information Technology response

Partially Agree. Implementation date: December 2012.

In the majority of cases, OIT could build tracking mechanisms to collect monthly utilization data by service and use that information to complete monthly billing adjustments. However, neither OIT nor the Departments have the ability to adjust budget outside of the annual or supplemental budget cycles. Therefore, while OIT could under bill or provide monthly credits to departments, OIT would not have the ability to charge a department more than they were budgeted even if they utilized more service(s). Statewide the consumption of information technology goods and services has increases by ~5% annually. OIT operates as an internal service organization and is not allowed to carry a large fund balance. If OIT were required to move to real-time billing for all services, OIT would not be able to impact budgets accordingly and would be unable to absorb the resulting budgetary shortfalls.

OIT will work with the Governor’s Office of State Planning and Budgeting and the Joint Budget Committee to determine if there is an acceptable budgetary solution which would allow OIT the flexibility to move to a real-time billing model for services.

Appendix

Footnotes

¹"Issue Brief: IT Consolidation and Shared Services: States Seeking Economies of Scale," National Association of State Chief Information Officers, March 2006.

²"Timeline of Significant Activities and Events," *Governor's Office of Information Technology website*, www.colorado.gov/cs/Satellite/OIT-Main/CBON/1251575443107, accessed 2 March 2012.

³ibid.

⁴"About DIR," *Texas Department of Information Resources website*, www2.dir.texas.gov/about/Pages/aboutDIR.aspx, accessed 2 March 2012.

⁵"Background," *Utah Department of Technology Services website*, dts.utah.gov/about/index.html, accessed 2 March 2012.

⁶"Utah recognized as top 'Digital State' by Center for Digital Government," *DTS Accomplishments 2011*, dts.utah.gov/about/documents/finalaccomplishments2011.pdf, accessed 2 March 2012.

⁷"Issue Brief: IT Consolidation and Shared Services: States Seeking Economies of Scale," National Association of State Chief Information Officers, March 2006.

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