



In partnership with



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Information Technology and Telecommunications Transfer, Coordination, and Modernization Study Phase 1—Assessment

Developed by:

Capgemini Government Solutions LLC

In partnership with:

The Chief Information Officer
The Information Services Division
of the Office of State Finance



Preface

The 2009 Oklahoma State Legislature passed House Bill 1170—the Oklahoma Information Services Act—and created the position of Chief Information Officer (CIO), appointed by the Governor, to also serve as Secretary of Information Technology and Telecommunications, with jurisdictional responsibility related to the information technology and telecommunications systems of all State agencies.

House Bill 1170 also stated that within 12 months of appointment, the first CIO should complete, for all State agencies:

- a. An assessment of the existing and planned information technology and telecommunication systems (including but not limited to hardware, software, contracts, personnel, capabilities, facilities, networks, current and planned projects, and budgets).
- b. An assessment of the implementation of the transfer, coordination, and modernization of all information technology and telecommunications systems.

This document presents the Phase 1 assessment. The key short- and long-term objectives of this assessment are to build upon and transform the State's current information technology- and telecommunications-related organizations, structures, technologies, capabilities, processes, facilities, practices, tools, standards, architectures, supply chain relationships, and workforce.

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1 Introduction

House Bill 1170 created the first State-wide position of CIO and Secretary of Information Technology. It also necessitated a comprehensive assessment of the State-wide use of information technology and telecommunications systems to develop practical short- and long-term plans for modernization of State systems, infrastructure, and services.

The State of Oklahoma (“the State”) is facing a budget deficit estimated at \$600 million as it begins the process of preparing the FY2012 budget. This represents a shortfall of 11.3 percent of the FY2011 budget. State agencies are being directed to prepare plans to reduce their costs by 3 to 5 percent. To help reduce ongoing costs, the State needs to identify improvements to the way it conducts its business and provides services to its constituents (citizens, the State business community, and workers). There needs to be a view to a **long-term solution** generated by significant productivity gains and enhancements that will offset State budget reductions while providing ongoing savings and cost containment.

The State—like many other states, cities, and counties—typically implements a wide-ranging, wholesale headcount and/or expense reduction approach for most of its initial cost cutting. *It does achieve immediate results, but only for the short-term.* This is because the systemic causes of the rising costs are not evaluated and addressed.

The solution, in part, is the use of technology to automate, standardize, simplify and provide accessibility to the State’s diverse constituents. When leveraged correctly, technology can be one of the most effective levers in achieving a sustainable savings model for the State.

It was noted by Governor Fallin in her February 2011 State of the State Address that information technology (IT) and infrastructure consolidation was the most effective way to reduce costs and could keep overall agency cuts in the 3 to 5 percent range. *Implied in this statement is the reality that failure to consolidate will result in larger future cuts in agency budgets to fund duplicative IT expenditures and processes by the agencies.*

The Governor and State legislators know the current IT model is not sustainable to meet the current or future needs of the State for technology resources. Consolidation and centralization of IT resources must occur. The State has already taken the first step in this direction with the announcement of the hard freeze on the hiring of all full-time IT resources, as noted in the Governor’s address in February of 2011. A second key step was the adoption of an IT modernization program estimated to cost \$100 million.

As the Governor stated, “Oklahoma only needs one financial application—not 76.” Lasting productivity improvements require a shift in the way technology is acquired, managed, and deployed in the State. If we look at the States of Texas and Virginia as two examples, they shifted cost elsewhere without addressing the core issues and challenges negatively impacting productivity and costs. For all practical purposes, they are now engaged in rebuilding their respective IT infrastructures *again*. The State has valuable lessons learned from these models.

Since states can’t print money and many are debt averse, IT consolidation is the only sure way to reduce IT costs. The State is at a legislative precipice, but needs to execute IT consolidation initiatives to ensure immediate and long-term IT savings.

The two most frequently undertaken types of IT consolidation are *physical consolidation* and *application consolidation*. A review of states by the National Governors Association Policy Center found that at least 42 states have undertaken consolidation initiatives in recent years; 32 have implemented physical consolidation and 26 undertook application consolidation. Oklahoma is in good company in its endeavors.

The nature of the State’s business revolves around basic activities that lend themselves to the concept of **shared services**, or more simply put, the re-use of applications in the support of an agency’s mission by one or more agencies. The most fundamental ones are:

- **Eligibility.** For federal, state, and local programs from Medicaid to child support.
- **Revenue.** Income tax, sales tax, business taxes, fees, and other revenues collected in the State.
- **Appropriation and expenditure accountability.** Appropriation and expenditure accountability is the same across the State for every agency.
- **Cost accounting.** This includes programmatic initiatives in the State (1) with one or more funding sources involved and (2) requiring accountability beyond the appropriation level.
- **Imaging.** Documents are a byproduct of government and need to be stored and retrievable.

The adoption of a shared services model is how the State eliminates duplicative systems. This lesson has been learned from other states with successful shared services initiatives including the State of Ohio, the State of Connecticut, and the State of Colorado.

The passage in 2009 of House Bill 1170—the Oklahoma Information Services Act (“the Act”)—created the position of CIO, appointed by the Governor, to also serve as Secretary of IT and Telecommunications with jurisdictional responsibility related to the IT and telecommunications systems of all State agencies.

House Bill 1170 required that a comprehensive assessment and analysis of the State-wide use of IT and telecommunications systems be conducted. The purpose for this study and assessment is to develop practical short- and long-term plans incorporating specific recommendations for modernization of State systems, infrastructure, and services to produce a minimum 15 percent first year savings in IT costs based upon FY2009 actual expenditures. The roadmap defined by this project leads to tangible cost savings and additional value-added services for the citizens of the State. It also details recommendations for enhancing State-wide IT capabilities across the entire spectrum of technology applications and infrastructure.

Some examples of our key finding across agencies:

- 76 financial systems (everything from custom Enterprise Resource Planning systems to Solomon to Oracle E-Business to Quick Books).
- 22 unique time and attendance systems.
- 17 different imaging systems.
- 48 reporting and analytics applications (e.g., Cognos, BI, Crystal Reports, Adobe, SAS, etc.).
- 3 different pension systems.
- 30 data center locations.
- 32,643 workstations (20 percent over four years of age).
- 7 mainframes.
- 129 e-mail and BlackBerry servers (with 25 agencies running their own e-mail).
- Aging systems/processes, service gaps, duplicate services and resource constraints.

Note: As far as we have been able to ascertain, the State of Oklahoma is the only state that has not consolidated its wide-area network to a single network and maintains multiple networks by State agencies.

Higher Education represents a unique challenge in consolidation and standardization as a result of its distinctive mission. It is recommended that a State CIO for Higher Education be created. This may require a bill similar to HB 1170 that created the State CIO position. Similar findings were observed in Higher Education and are noted in the assessment findings. Centralization would yield benefits for the State.

2 Executive Summary

Cost savings are achievable, service performance can be improved, and organizational structures can be streamlined to deliver more with less. The research information validates that the State can achieve savings of at least 15 percent and potentially more.

Capgemini Government Solutions LLC was engaged by the State to conduct a feasibility study to assess the State's IT environment and deliver a set of recommendations focused on opportunities to streamline the delivery of IT services and reduce IT operating expenses.

The team gathered information about State resources, computing and work environments, existing policies, technology investments and costs, data usage, applications, and the politics of each agency performing their own technology services. This has been an extensive assessment with careful consideration to the nuances of each individual State agency. Because a centralized formal mandate was not dictated to require agency participation, the team was not able to gather some of the detailed information required to precisely define each and every cost. The team has, however, validated that cost savings are achievable, service performance can be improved, and that organizational structures can be streamlined to deliver more with less. The next project phase, **Strategy Prioritization Validation and Priority Strategy Implementation**, will finalize this data and launch the short-term strategies to demonstrate progress and short-term savings. The overall approach that Capgemini has taken is:

- **Phase 1**—State of Oklahoma Assessment.
- **Phase 2**—Strategy Prioritization Validation and Priority Strategy Implementation.
- **Phase 3**—Implementation Continuation.
- **Phase 4**—Optimization.
- **Phase 5**—CIO Measurement and Reporting.

Based on the information provided by the various stakeholders, the assessment by Capgemini was successful in that it accomplished three key things:

1. The research information validates that the State **can achieve** savings of at least 15 percent and potentially more.
2. The team documented the as-is (current) state environment at a high-level, including assets, challenges, and resources, along with the to-be (future) state and the overall roadmap to get there.
3. The effort also identified the top priority strategies needed to be agreed-to by the CIO, which will form the basis for phase 2.

Capgemini recommends that all technology projects and related expenditures be frozen for the coming year, with the exception of projects that, if not done, would

disable or severely impair an agency's ability to deliver services and meet its mission. It is anticipated that very few projects would fall into this category. The recommended "hard freeze" will ensure that only these vital projects will get funded. Federally funded projects would be subject to review and determination of authorization on a case-by-case basis.

The emphasis and the focus of the two major technology IT initiatives recommended by Capgemini in the next year are to have the State execute a comprehensive normalization of the IT infrastructure and the accelerated roll-out of the CORE services to the agencies as an all-encompassing shared service for finance and administration. These should be the only two IT initiatives the State undertakes in the next fiscal year. The primary focus of the State for the next three to five fiscal years should be full implementation of these two initiatives with multiple supporting projects identified by Capgemini. If the State wishes to realize additional first-year savings, this can be accomplished by bonding the necessary investment. The financial estimates currently assume no bonding, to be consistent with the State's preference to not borrow money which could be appropriated, thereby not committing future leadership to decisions made by current decision makers.

Phase 2, which we recommend starts as quickly as possible before the end of FY2011, will be the mobilization of teams to gather the detailed information for building the specific work plans, measurements, and status reporting constructs needed to achieve the savings identified by this assessment. Five teams are initially proposed and the teams will focus on the following:

- **Team A**—Addresses the organization, structure, human resources, IT governance, contracts, and the measurement of savings.
- **Team B**—Addresses State applications and how to eliminate the duplication, select the right ones, and place applications into portfolio management.
- **Team C**—Addresses the closing of the data centers, segregated by types and sizes of centers (satellite sites, server farms, small sites, medium sites, and the large data centers).
- **Team D**—Addresses the infrastructure, network, desktops, and future technologies including cloud and virtualization and the necessary IT service delivery process and tool improvements to sustain the new operational state.
- **Team E**—Provides portfolio management and manage acquisition of services required to support the State's transformation. Responsibilities include issuance of Requests for Proposals and analysis of overall program.

Capgemini has identified initiatives that will exceed \$100 million in net savings over three years. **Figure 2-1** provides a summary by four main IT areas, over a three-year period.

Figure 2-1. Net Savings by Area Initiative and Operating Recommendations

Net Savings by Area Initiative and Operating Recommendations (\$000) (see Year 1 assumptions)				
	Year 1	Year 2	Year 3	
IT Operations/Infrastructure	-\$14,837	\$28,998	\$57,445	
Applications	-\$6,495	-\$15,554	\$48,760	
Governance	-\$1,664	-\$1,015	-\$1,015	
Executive and Administrative	\$1,911	\$5,538	\$9,126	
Sub-total	-\$21,085	\$17,967	\$114,316	\$111,198
Operations and Maintenance Reduction (One Time)	\$23,347			
Project Funding Differential (One Time)	\$21,000			
Total	\$23,262	\$17,967	\$114,316	\$155,545
Investment Required for Savings (\$000)				
	Year 1	Year 2	Year 3	
IT Operations/Infrastructure	\$29,647	\$36,417	\$29,379	
Applications	\$6,495	\$20,571		
Governance	\$1,664	\$1,015	\$1,015	
Executive and Administrative	\$39			
Total	\$37,845	\$58,003	\$30,394	\$126,242

Assumptions Year 1

- The 2011 operating budget for all agency IT spending is approximately \$233,183,138. This number was derived from the examination of the general ledger accounts out of PeopleSoft for FY2010 and was estimated for FY2011 based upon the GL account spend as of month end, December 2010. Of the total, federal funds account for \$61,718,196. Additionally, \$15,815,821 is attributed to fees charged for services between agencies. That nets to \$155,649,121, which is the estimated total tax dollars spent on IT in FY2010 and estimated for FY2011, for all executive branch agencies. 15 percent of this comes to \$23,347,371.
- The FY2011 operations and maintenance operating budget (\$233 million) is transferred to the State CIO function.
- Agency IT operations and maintenance full-time equivalents move under the direct control of the CIO.
- To mitigate a decline in agency service levels during the transition process, we recommend a temporary SWAT team be created to deal with agency issues and allow the CIO's core team to focus on the transition and integration of personnel, processes, and consolidation initiatives. The team would be comprised of State personnel and possibly external consultants.
- 15 percent of FY2011 operations and maintenance is applied as a reduction to the agency operating budgets for a total of \$23 million (this does not include fees for services and federal funds).

- Project budgets are frozen less federal for a net savings of \$21 million after \$100 million bond is issued against the \$121 million.

Investment is required to make the cost containment and savings materialize in the three-year timeframe. Failure to invest will negate the benefits outlined in this document. The State may believe that it has been investing on regular basis, and it has at the agency level, but investment decisions were based on a somewhat limited view driven by each agency's specific mission. A view that does not consider the State as a whole is inherently a costly and unsustainable model. The investments are not trivial in nature, but it is the classic conundrum, "pay me now, or pay me later". Later is almost always more expensive for both implementation cost and the lost savings opportunities that can never be recaptured.

In addition to the recommendations detailed within this document, it will be important to review existing laws, policies and current business processes. It may be necessary to modify certain legislative statutes and executive directives to ensure successful transformation of current IT practices. There are several directives that the State should consider acting on immediately to reduce IT costs in the short-term:

- The Information Services Division (ISD) should be separated from the Office of State Finance effective with the start of the fiscal year. Making the decision now enables ample time for the ISD organizational design and budgeting process to be started and built using an appropriate cost accounting methodology to support financial tracking.
- Issue a technology bond in the amount of \$100 million for the acquisition of the services and equipment necessary to facilitate consolidation of IT infrastructure and services.
- Centralize the State-wide agency IT budgets effective July 1st, 2011. Centralizing the funding for agency IT related initiatives and services defines a single point of accountability for the approval of IT funds, as well as the proper financial tracking and management. It is recommended this consolidation of funds should be in the amount of \$233 million, which is 2011 operating budget by all executive branch agencies. Of this amount, \$23 million for year one IT operations and maintenance savings should be set aside as the bond payment for the \$100 million technology bond modernization funding recommendation.
- Develop legislative mandates as needed to provide the State CIO with the ability to initiate, execute, and enforce accountability for all agencies IT resources State-wide. This could be a refinement of House Bill 1170, with one or more amendments.
- Implement a freeze on all agency-level IT spending for technologies and services that are allocated to individual agency budgets, but not yet spent. As of December 2010, this amount, when adjusted for federal funding, represented \$252 million in allocated and unspent dollars.

- Freeze all planned projects or recently initiated projects that are still in the projects early stages. As of the end of December, 2011, there was approximately \$165 million in unspent/unapproved funds for planned projects for the Executive Branch. These funds should be applied by the agencies to meet next year's budget requirements. For projects that are active and still in the planning /design stages, conduct a project review to re-visit the economic models for these projects. A review to ensure compliance to enterprise architecture and technology standards may result in cost avoidance downstream.
- Consolidate all fiber assets into one agency immediately. This effort should include the consolidation of OneNet into ISD.
- Higher Education represents a unique challenge in consolidation and standardization as a result of its distinctive mission. It is recommended that a State CIO for Higher Education be created on or before July 1st, 2011; possibly as an amendment to House Bill 1170 with the same authority over higher education as recommended for the State CIO.
- The Higher Education CIO should have dotted line to the State CIO; the State CIO would maintain veto authority over IT activities, when it appears there is conflict with the State's consolidation strategies, infrastructure, technical standards, or policies. Budgeting and planning activities would require the State CIO's approval. There would be an assumption that the State CIO and Higher Education CIO would be in tight coordination on all projects which crosses beyond the higher education mission. It is recommended that this arrangement be kept in place for not more than five years. On or before the end of Year 5, the Higher Education CIO and staff eventually become part of the rest of State IT under the auspices of the State CIO, with the Higher Education CIO becoming a Deputy IT Director.
- Key benefits to the State on this arrangement is joint purchasing on IT and telecommunications hardware and software, and joint systems development and deployment for items of a utility nature, including e-mail, desktop standards, and fiber networks for connectivity.
- Consolidate all agency IT personnel and personnel budgets under the direct authority of State CIO. Transition ideally would start prior to July 1st, 2011 and become effective on July 1st, 2011. Higher education is excluded from this recommendation pending action on the above recommendation regarding the appointment of a Higher Education CIO.
- The State CIO should be given full control and approval for IT acquisitions. This is beyond the current responsibility to only be able review and sign-off on requirements provided by the agency, but to have final approval of all IT acquisitions for all agencies.

- The governance model requires the House Bill 1170 Technology Application Board to be replaced with the State IT Advisory Board. This board would advise the State CIO on external events and business insight into State IT practices based on their commercial knowledge. The intention is to utilize external corporate and IT knowledge thought leaders to provide other points of view on State IT opportunities.
- During the process of initiating recommended changes, it is expected other policy, executive directives, and statutes may be discovered and require changing as the State pursues shared services and consolidation initiatives as this is a dynamic iterative process.

Figure 2-2 provides a list of the specific initiatives with a breakdown of the investment costs, ongoing/operating costs, savings and net benefits by year for the first three years. Several of these opportunities will continue to provide ongoing annual savings and some will require ongoing operational costs. We expect that long-term annual benefits will continue to outweigh annual costs for several years to come.

Figure 2-2. Estimated Investment and Cost Savings

Area	Initiative	Year 1 (\$000)					Year 2 (\$000)					Year 3 (\$000)					Total (\$000)				
		Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings
Operations	Asset Management	\$1,225	\$780		\$178	-\$1827		\$2,439		\$5,203	\$2,764		\$2,751		\$13,963	\$11,212	\$1,225	\$5,970		\$19,344	\$12,149
Operations	Service Desk and Incident Management	\$627	\$706		\$1,105	-\$228		\$2876		\$4,345	\$1469		\$2,876		\$4,345	\$1,469	\$627	\$6,458		\$9,795	\$2,710
Operations	Problem Management Improvements	\$462			\$106	-\$356		\$324		\$158	-\$166		\$324		\$158	-\$166	\$462	\$648		\$422	-\$688
Operations	Change Management	\$248	\$528		\$637	-\$139		\$633		\$2,187	\$1,554		\$633		\$2,187	\$1,554	\$248	\$1,794		\$5,011	\$2,968
Operations	Automated Event Monitoring and Control	\$1,588	\$252		\$603	-\$1,237		\$724		\$1,494	\$770		\$724		\$1,494	\$770	\$1,588	\$1,700		\$3,591	\$303
Operations	Availability Management	\$490			\$688	\$198		\$193		\$1,375	\$1,182		\$193		\$1,375	\$1,182	\$490	\$386		\$3,438	\$2,562
Operations	Capacity Management						\$1,108		\$129	-\$979		\$372		\$246	-\$126	\$1,108	\$372		\$375	-\$1,105	
Operations	Service Request Catalog	\$1,276		\$107	\$2,590	\$1,421		\$702	\$320	\$2,590	\$2,208		\$702	\$320	\$2,590	\$2,208	\$1,276	\$1,404	\$747	\$7,770	\$5,837
Operations	IT Service Level	\$346	\$144		\$509	\$19		\$237		\$509	\$272		\$237		\$509	\$272	\$346	\$618		\$1,527	\$561
Operations	IT Chargeback											684	\$168		-\$852	684	\$168				-\$852
Operations	ITIL Training	\$104				-\$104		\$52		-\$52		\$52		-\$52		-\$52	\$104	\$104			-\$208
Operations	CSI Marketing and Communications	\$243	\$251			-\$494		\$362			-\$362		\$362			-\$362	\$243	\$975			-\$1,218
Applications	HCM Implementation	2678				-2678	\$8,033				-\$8,033			\$10,711		\$10,711	\$10,711		\$10,711		
Applications	Pension																				
Applications	Budgeting	\$1,310				-\$1,310			\$655	\$655				\$655	\$655	\$655	\$1,310		\$1,310		
Applications	Reporting and Analytics																				
Applications	Fixed Assets	\$1,895				-\$1,895	\$10,738				-\$10,738			\$12,633	\$12,633	\$12,633		\$12,633			
Applications	Financials (Accounting 1/2 and T&E)	\$612				-\$612			\$306	\$306				\$306	\$306	\$306	\$612		\$612		
Applications	GIS and Mapping																				
Applications	GRC						\$1,800				-\$1,800			\$1,800	\$1,800	\$1,800	\$1,800		\$1,800		
Applications	CORE Contractor																		\$18,600		\$18,600
Applications	EAFW								\$4,056	\$4,056				\$4,056	\$4,056	\$4,056		\$8,112		\$8,112	
Telecomm	VoIP	\$3,979			\$2,136	-\$1,842	\$5,036			\$4,840	-\$195	\$2,229			\$6,972	\$4,743	\$11,244			\$13,948	\$2,705

Area	Initiative	Year 1 (\$000)					Year 2 (\$000)					Year 3 (\$000)					Total (\$000)				
		Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings
Telecomm	MPLS	\$4,500			\$2,293	-\$2,207	\$3,000			\$7,860	\$4,860	\$3,000			\$11,609	\$8,609	\$10,500			\$21,762	\$11,262
Infrastructure	Data Center Consolidation	\$5,118			\$1,131	-\$3,987	\$1,144			\$3,042	\$1,898			\$3,042	\$3,042	\$6,262			\$7,215	\$953	
Infrastructure	Mainframe Consolidation	\$300				-\$300	\$628			\$1,013	\$385	\$250			\$2,759	\$2,509	\$1,178			\$3,771	\$2,593
Infrastructure	E-Mail Consolidation/Collaboration	\$838				-\$838	\$3,847			\$6,568	\$2,720	\$3,847			\$6,568	\$2,720	\$8,532			\$13,135	\$4,603
Infrastructure	Computer Optimization - Server Consolidation	\$1,120			\$322	-\$799	\$2,062			\$1,331	-\$731	\$1,480			\$2,549	\$1,069	\$4,662			\$4,201	-\$461
Infrastructure	Workstation Optimization	\$3,058			\$2,406	-\$652	\$11,050			\$21,574	\$10,524	\$8,497			\$17,165	\$8,668	\$22,605			\$41,144	\$18,540
Infrastructure	Enterprise Storage	\$1,465				-\$1,465				\$879	\$879				\$879	\$879	\$1,465			\$1,757	\$292
Infrastructure	Staffing													\$8,097		\$8,097			\$8,097		\$8,097
Governance	Implement IT Governance Program	\$456				-\$456		\$38			-\$38		\$38			-\$38	\$456	\$75			-\$531
Governance	Operationalize IT Governance	\$207	\$564			-\$771		\$564			-\$564		\$564			-\$564	\$207	\$1,693			-\$1,900
Governance	Organizational Change	\$114				-\$114											\$114				-\$114
Governance	IT Governance Communications	\$42	\$78			-\$120		\$78			-\$78		\$78			-\$78	\$42	\$234			-\$276
Governance	Enterprise IT Architecture for Governance	\$132	\$71			-\$203		\$335			-\$335		\$335			-\$335	\$132	\$742			-\$874
Total		\$34,433	\$3,374	\$107	\$14,704	-\$22,996	\$48,446	\$9,557	\$5,337	\$65,097	\$12,431	\$19,987	\$10,409	\$38,578	\$78,410	\$86,591	\$102,866	\$23,341	\$62,622	\$158,206	\$94,620

Figure 2-3 provides a high-level overview of the implementation strategy and timing of the opportunities, ultimately leading to the future state for the State. The opportunities are organized by areas along the outer borders, opposite the final future State in the upper right. The opportunities are also identified by the year in which the opportunity should be initiated. Dotted lines indicate a dependency between opportunities.

Figure 2-3. High-Level Implementation Roadmap

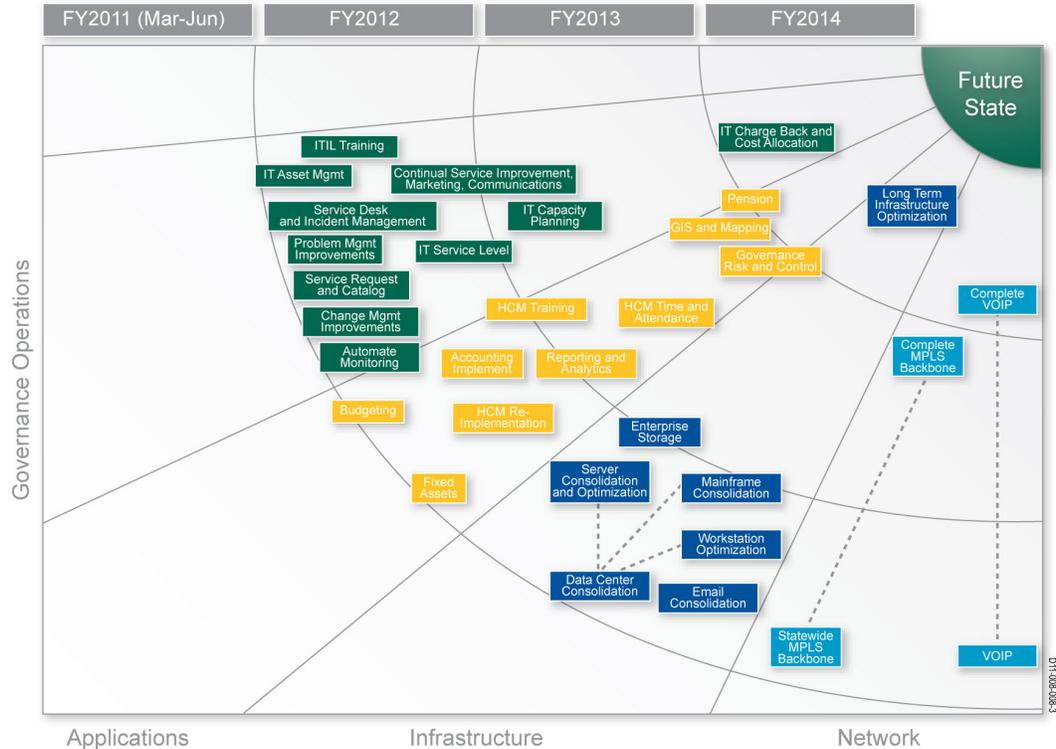


Figure 2-4 provides a summary of the impacts as the State migrates from the current state of IT to the future state.

Figure 2-4. Summary of Impacts

Current State	Initiatives	Future State
30+ data centers and over 75 remote computing sites	Data center consolidation	Three data centers
4,000+ applications	Adoption of a shared services or common, enterprise-wide development application framework (platforms)	400 to 700 applications
129 e-mail/BlackBerry systems	E-mail consolidation/ collaboration	One e-mail system
No disaster recovery State-wide	Basic disaster recovery	State-wide disaster recovery
No IT governance	Basic governance model	State-wide IT governance model
Decentralized budgets	Use the People Soft Enterprise Performance Management module on zero based budgeting model for all IT budgeting	Centralized budget with cost accounting detail and performance measures
1,279 employees	Combined impact	909 employees

3 Approach and Current Situation

Capgemini performed a review and analysis of the State’s technology operations and costs, which led to the development of a comprehensive portfolio of improvement opportunities.

Capgemini’s analysis identified the number of State IT and telecommunications users and examined the majority of the State’s sites, systems, infrastructure, software, contracts, historical IT costs, methodologies, tools, network, security, and hardware. As part of this analysis, Capgemini uncovered aging systems/processes, service gaps, duplicated services and resource constraints.

3.1 Approach

A two-pronged, parallel approach was used to capture the necessary data elements required as part of the assessment. One approach was a manual survey process containing a series of questions designed around people, processes, and technology that captured the current state of IT used within each agency. These surveys were submitted to 108 agencies within the Executive Branch, as well as the State’s higher education institutions. The second approach included a combination of the manual survey and an automated data collection process. The State defined 18 large- and medium-sized agencies as candidates for automated data collection of the assets currently in use in support of each agency’s mission. These agencies are considered the Tier 1 agencies. The State agreed to utilize an agent-less, non-intrusive tool (BDNA Discover) to accurately collect information relating to an agency’s technology. Seventeen of these large- to medium-sized agencies participated in the BDNA scan.

While we achieved a respectable level of manual survey responses (weighted by agency IT spend and agency employee population) the manual survey responses have gaps or included inconsistent data.

Figure 3-1. Manual Survey Response Tracking

Agency Tracking (Without Higher Education)	
Total number of agencies	108
Total number complete	74
Total number incomplete	34
Percentage complete	69 percent

A review of the manual survey responses indicated several agencies did not fully complete all sections of the survey’s five sections distributed to each agency.

Capgemini performed a review of the quality and completeness of the survey responses by agency. As part of this review, each response has an equal weighting of 1. The responses to the five surveys sections were factored into an overall score with a maximum raw value of 111 per agency. Each agency’s score is represented as a percentage of the maximum values, 100 percent being the maximum score

and 90 percent representing a target. For the Tier 1 agencies, the average score for all agencies who responded was 80.60 percent. **Figure 3-2** provides the scores for all Tier 1 agencies.

Figure 3-2. Survey Tracker—Qualitative Statistics—Tier 1

Tier 1		Roll-Up Score	
	Agency	Agency GL ID Number	Score
1	Office of Juvenile Affairs	400	99.1 percent
2	Department of Human Services	830	99.1 percent
3	Office of State Finance	90	97.3 percent
4	Department of Central Services	580	96.4 percent
5	Department of Corrections	131	94.6 percent
6	Regents for Higher Education	605	87.4 percent
7	Department of Veterans Affairs	650	86.5 percent
8	Department of Agriculture	40	85.6 percent
9	Oklahoma Tax Commission	695	84.7 percent
10	Oklahoma Public Employees Ret. System	515	82.9 percent
11	Department of Transportation	345	81.1 percent
12	Department of Environmental Quality	292	79.3 percent
13	Corporation Commission	185	62.2 percent
14	Employment Security Commission	290	61.3 percent
15	Department of Rehabilitation Services	805	61.3 percent
16	State Department of Health	340	60.4 percent
17	Department of Public Safety	585	51.4 percent
18	Mental Health and Substance Abuse Services	452	50.5 percent

In addition to the BDNA scans and surveys, additional information was provided to assist in the validation of the automated and manual survey results.

The Office of State Finance has provided the Capgemini team with various budgetary and planning reports as a means of correlating the data captured with high-level agency plans submitted on an annual basis. This included the IT and telecommunications plans for the FY2009 through FY2011 period. This information provided information on planned IT operating expenses and project costs for each of these fiscal years. These plans also provide limited information regarding the personnel costs associated with IT for FY2011. In addition, the Capgemini team was provided with actual IT expenditure information for FY2009 through FY2010.

The Capgemini team was also provided reports previously conducted for specific agencies or initiatives. This included the Oracle Insight report with a review of the PeopleSoft (CORE) application and post-production and operational support processes and capabilities.

The Office of State Finance also provided information on the services currently provided by its agency to other agencies throughout the State.

3.2 Current IT Environment

The combination of the automated and manual data collection processes as well as the additional information has provided a snapshot in time of the current state of IT in use by the State.

A key finding is that large- and mid-sized agencies (approximately 60 in total) manage their IT functions as an independent department within the agency, with either a CIO or IT Director. This decentralized IT management gives the agency and its IT leadership full authority to make IT decisions that are in its best interest. While this approach to IT management may result in a more responsive delivery of IT services to an organization, it generally often comes at great expense as IT fails to optimize resources across the enterprise. This decentralized governance model often results in a proliferation of applications and infrastructure technologies. This leads to a number of inefficiencies, including:

- The inability to leverage buying power across the enterprise.
- The over-provision of IT infrastructure resources as each agency incorporates its surge capacity into its design resulting in hardware operating at a fraction of capacity.
- Expensive integration requirements to share data across agencies.
- Additional information assurance risks due to a lack of industrialized processes including, backup, fault tolerance, and disaster recovery.
- Redundant human capital necessary to support the local infrastructure and applications.

In many cases, the IT leaders are making decisions around the level of IT infrastructure investments required to support the short-term and long-term needs of their agency. This has led to over provisioning of IT capacity, since it is more cost-effective to acquire additional capacity and grow into it at the start of a major initiative, rather than add capacity once demand increases. This typically leads to assets being underutilized, waiting for the growth to occur over time. Imagine this over provisioning taking place 60 times, since the majority of the agencies have independent IT organizations with the authority to make these decisions. Based on this, the following finding was not a surprise:

In the survey responses, the agencies indicated that they had 1,799 full-time equivalents engaged in IT activities, but per the full-time equivalency plan of 2011, the agencies should be at 1,279 full-time equivalents. The significance is that there may be even more full-time unaccounted equivalents involved in IT. We do believe the number of IT personnel within the agencies may be closer to 1,279 since some agencies have notified the team that they entered the information incorrectly

Given the current model, agency IT directors are tasked with providing the best service and optimizing IT expenditures and processes for their individual agency. By optimizing at the agency level, the State as a whole is not optimized from an IT perspective.

Capgemini found a number of disparate architectures, numerous technology vendors, and literally thousands of software products throughout the State. The loss of support synergies, purchasing economies of scale, and cross agency integration difficulties are driving the cost of IT higher at the aggregated State level.

The State of Connecticut embarked on a shared services initiative for its finance and administrative applications beginning in 2005. While the State of Connecticut has fewer agencies, the model is a good example of a successfully executed transformation to shared services and cost savings, and is representative of the recommendations that have been made in this assessment to the State. Other similar models are States of Colorado and Ohio. In each case, these states are further along the shared services path than Oklahoma by three to four years.

We would not recommend the voluntary model the State of Ohio has adopted for shared services; it is problematic at both the governance level and for realizing cost savings. From a State-wide perspective, this type of governance model would be equivalent to the voluntary adoption basis of the State's CORE services—in other words, **no effective governance**. Once the door is opened for participation exceptions to shared services and consolidations, the cost savings of consolidation have been effectively negated. With over 40 years of a highly decentralization mindset in the State regarding IT, it is going to require a severe course correction to enable the successful adoption of a shared services model. There is no easy solution to this problem. In these types of environments, a quick transfer of the budgets, personnel, and authority is the most painless way to accomplish a successful move to shared services and consolidations.

3.2.1 Current State Analysis—Operations

The current situation relative to State operations can be characterized by the following elements based on the survey data received:

- Limited operational shared services in use throughout the State.
- Low process maturity in key service operation, transition, and design processes leading to execution inefficiencies. The Office of State Finance and the Department of Human Services did report the highest process maturity rankings in the core IT service processes.
- A variety of IT service management tools are currently in use by various agencies.
- Limited end user self-service portals are available, limiting the State's ability to speed end user service and reduce service desk calls.

- Inconsistent IT asset management process maturity is leading to excessive costs.
- Customer relationship management (CRM) software has been retrofitted to provide service desk functions while a leading practice software toolset is available for State usage from an enterprise contract with DHS.
- System and application monitoring is very immature and leads to a lack of performance data and delayed service disruption resolution.
- To support service desk operations across the State, 16 different software packages and processes are used.

3.2.2 Current State Analysis—Applications

CORE is the primary financial system and is considered the system of record for the State. CORE is maintained and operated by the Office of State Finance. There have been several studies since 2008 by the Hackett group and Pew Center on state organizations, and most recently, the completed Oracle Insight (CORE) PeopleSoft evaluation of December 2010 on the applications in use in the State.

The State's implementation of PeopleSoft is a shared services model for financial, human capital, and administrative processes. Its deployment and utilization are ineffective because of the lack of authority to require adoption by the State agencies. This effectively negates the benefits and adoption of optimal process capabilities which resulted in the following observations from Oracle during their independent analysis on current process adoption and maturity:

- The Oracle Insight evaluation paints a rather grim picture of suboptimal application usage/deployment for the CORE PeopleSoft financials and human capital management, which is consistent with the application survey findings. The use of business intelligence and analytics were themes they stressed in particular, with a great urgency to be deployed by CORE.
- The Oracle Insight team also noted the State was lagging on the upgrade path for both financial and human capital management.
- Interestingly, the Oracle Insight Team did not address governance, risk, and control (GRC), a fairly recent emerging requirement that should be included in any future upgrades and enhancement work with PeopleSoft. It is noted in the future projects that there is a GRC project planned by the State.
- The Hackett group, Pew Center on States, and Oracle Insight reports has evaluated CORE and each of the reports shares one or more of these themes: under utilization; lack of return on investment; lack of best practices in finance and administration; redundancy; accessibility issues; and the need to extend shared services to more agencies.

- The more application silos, the more human capital required to maintain them. This was apparent from the staffing ratios and the large amount of consulting support required by the agencies to maintain their respective application portfolios. For example, the State agencies' spending on consulting related to applications is estimated at \$13 million for FY2009, \$26.3 million for FY2010 and projected at \$31 million for FY2011. This represents year over year increases of 50 percent and 18 percent. The State of Connecticut Department of Information Technology experienced a 33 percent drop in consulting spending by \$11 million dollars within four years with their implementation of shared services and consolidation initiatives (see http://www.ct.gov/doit/lib/doit/4d-11_fy_2010_final.pdf).
- In line with the Governor's State of State Message in February 2011, the recommendation for electronic payments and P-Cards represents examples of shared services and processes that are needed in the financial and accounting areas; a savings of \$3.6 million on the electronic payments was noted vs. a paper check.
- Consistent with the National Association of State Chief Information Officers (NASCIO) Top 10 Priority Strategies in FY2010, the State is already actively engaged in five at different stages of maturity to address these current baseline deficiencies:
 - Budget and cost control, including managing budget reduction, strategies for savings, reducing or avoiding costs, activity based costing.
 - Consolidation and centralizing, including consolidating services, operations, resources, infrastructure, and data centers.
 - Shared services, including business models, sharing resources, services, and infrastructure, independent of organizational structure.
 - Transparency, including open government, performance measures and data, accountability, access to government data.
 - Governance, including improving IT governance and data governance.
- The Oracle Insight CORE recommendations are consistent with the Capgemini view and the NASCIO priority recommendations and support the State's direction to shared services and consolidation. We would encourage their adoption as part of the improvement process to the baseline applications used by CORE. As noted in the Oracle Insight document of December 2010, nine initiatives are listed in **Figure 3-3**.

Figure 3-3. Oracle Insight Initiatives



- While the current state of the State’s application portfolio with its many silos is not optimal, it should be noted that the waters were tested towards governance and standardization. It was difficult to get consensus. In effect, the agencies and the Office of State Finance did what they needed to do to meet finance and administration requirements in the State’s decentralized IT model. The lack of State-wide governance and a State CIO function further exacerbated this problem. Examples of this non-standardization include (but is not limited to these items):
 - 55 agencies were identified by the Office of State Finance through the business process analysis (BPA) exercise in December 2010 that would benefit from PeopleSoft projects/grants GPC module, 11 agencies accepted the invitation to participate in CORE.
 - 40 agencies were indentified during the BPA that would benefit from the PeopleSoft strategic sourcing capabilities.
 - 86 agencies may benefit from the PeopleSoft accounts receivable (AR) and/or business intelligence modules, particularly licensing agencies.

Observation on AR: These numbers illustrate that if the agencies are not participating in CORE, they must have something they are using to manage these AR activities, or worse, they are all manual processes. If half of the 86 agencies do not participate in the Accounts Receivables module and maintain some kind of system, then there is an interface requirement being maintained for 43 agencies. If the other half is using manual processes, the State has staff engaged in the paper chase, with the lowest productivity and highest cost per AR transaction.

- 18 agencies would benefit from the use of the fixed asset (inventory) module and are noted in the CAFR (comprehensive audited financial report) with inventory valuation. It was noted in the assessment that multiple fixed assets systems exist in the State.
- Oracle’s Insight recommendations of November 2010 to the State found similar or the same findings.

3.2.3 Current State Analysis—Telecommunications and Network

The current state of networks and telecommunications infrastructure in the State can be characterized by the following elements, based on the automated scans and survey data received:

- A mixed set of vendors and vendor models of equipment is in use for common functions like switching and routing. The survey results and the BDNA scans indicate switching and routing from Cisco, Juniper, Extreme, 3COM, Dell and Netgear. The same was observed for wireless equipment vendors. This results in excessive support personnel requirements and limited purchasing strategies for the State.
- The lifecycle of equipment deployed is in various stages of support are at end of life. BDNA scans show multiple versions of OS/Firmware on network equipment, a potential security concern. We also observed platforms from Cisco and 3COM that are no longer supported by vendors. A multitude of vendors also make the task of lifecycle management difficult.
- We observed an inconsistency of tools for network performance and monitoring. No State-wide set of metrics exists to measure and compare network performance. The tool sets used for monitoring were also fragmented and ranged from basic tools like Solarwinds to Nagios.
- There is no State-wide network compliance model for network and telecom. This makes auditing for security compliance and monitoring very difficult.
- There are competing wide-area network (WAN) architectures in place throughout State agencies. The Office of State Finance, Department of Human Services, Department of Corrections, OneNet, and others maintain WANs that provide the same services to themselves and/or other State entities.
- The State owns a significant fiber plant throughout the capital complex and other major population centers in the State. However, pockets of responsibility and ownership exist (the Department of Transportation, OneNet, third party administrator, and the Office of State Finance) throughout the State for the laid fiber, with no single owner and/or authority in place today for State-owned fiber. This enables additional purchases of capacity and creates an inefficient use of State-owned capacity.

- We also noticed that several agencies manage their own WAN and deploy point-to-point (P2P) circuits to remote locations from central offices. Many locations with multi-agency presence have duplicate circuits and local area network (LAN) environments, which results in unnecessary costs that can be eliminated by consolidating and sharing such assets. Several State agencies including the Department of Human Services, Department of Corrections, and Office of State Finance maintain their own private branch exchanges and voice circuits. Telephony is a good example of a shared service used by a limited number of agencies today that should be expanded State-wide.
- The Office of State Finance currently has a central shared service that is being used by several agencies resulting in consolidation or elimination of several LAN segments. The use of these shared services is mostly by small and medium size agencies. In some cases, agencies that are opting for the shared services still maintain their own infrastructure. The shared services model is not being leveraged by large agencies.
- As far as we have been able to ascertain, the State of Oklahoma is the only State that has not consolidated its WAN to a single network and maintains multiple networks between State agencies. Most States led consolidation initiatives in the 1980s and the 1990s. The initial cost for the networks, along with ongoing maintenance, represents a lost opportunity for a consolidated network and the associated savings. It is estimated at a minimum of \$3 to \$6 million to as much as \$15 million is spent annually by different agencies to maintain their own networks.
- The current State network initiative is more about replacing obsolete networks and standardizing on a single network with current technology. Typically, agencies like the Department of Corrections and the Department of Public Safety will object to consolidation on the basis of security. Great advances have been made in the segmentation of networks for security and other purposes, and such security concerns are far less relevant.

Several recent initiatives spearheaded by the Office of State Finance, such as Voice over Internet Protocol (Voice over IP, VoIP) migration is a step in the right direction for consolidating the State's network and telecommunications infrastructure to address some of the references made above.

3.2.4 Current State Analysis—Infrastructure

The State's current infrastructure is a reflection of several years spent building and operating IT environments and making IT decisions at the agency level. Consequently, we observed varying levels of sophistication and maturity across the enterprise.

Based on information collected through surveys and discovered with BDNA, we observed the following themes in the current environment:

1. Disparate technologies exist within and across agencies as evident by the following facts:
 - Multiple vendors and technology platforms are supporting core data processing activities. For example, 14 storage providers, 10 server manufacturers, and 15 printer manufacturers were identified. This results in excessive support cost and limited purchasing power.
 - While there are State-wide contracts with specific workstation vendors, many agencies still own and maintain workstations from other non-contract vendors, adding to the complexity and cost of end user management.
 - Most major agencies maintain their own anti-virus platforms, with varying degrees of proficiency. 8 different versions of McAfee were identified in the BDNA scans.
 - Multiple database technologies exist, including approximately 30 different versions of SQL and Oracle.
2. We found no cohesive technology lifecycle management (TLM) process or strategy in use across the technology landscape, as evident by the following facts:
 - Lack of tools to consistently manage software upgrade cycles:
 - More than 25 workstation operating systems.
 - 14 different versions of Microsoft Office.
 - More than 18,000 Windows XP Nodes, data capture also revealed instances of Windows 95.
 - 34 NT devices.
 - 1,340 Windows 2003 devices discovered.
 - Lack of lifecycle management tools:
 - 706 workstations purchased in FY1999 or earlier.
 - More than 6,661 personal computers out of warranty coverage (23 percent of total workstations).
 - 50 percent of databases are no longer under vendor's support.
 - 92 percent of current SQL Server databases no longer under support as of April 12th, 2011.

3. There was limited development of a central governance model or standard for the technology architecture. Responsibility for this currently lies within agency, as evident by the following facts:

- No State-wide adoption of a uniform hardware platform as evident by statistics above.
- Limited State-wide support contracts for infrastructure devices.
- No unified technology portfolio management capability or structure exists across the State for software distribution, patch management, and standards enforcement.

4. Although some agencies offer shared IT services, we observed limited shared services adoption from larger State agencies. This has led to wide-scale duplication of core services, as evident by the following facts:

- Commodity IT, such as e-mail, antivirus, back-up, file and print, collaboration, domain and directory services, database management, and server management and administration functions are operated and maintained individually by agencies. There are 129 e-mail or BlackBerry servers in use across the State.
- Use of service-level agreements and performance metrics is not institutionalized.

The survey results indicate a very large portion of State IT assets fall outside of the manufacturer's warranty or maintenance support period. The lack of standardized technologies contributes to higher costs and requires additional staffing with specialized skill sets. Outdated technology devices are prone to a higher failure rate, longer recovery times, potential constraints on security, and increase the difficulty to deploy additional application functionality, resulting in higher operating costs and diminished end user productivity.

The survey results indicate there are 30 data centers, computer rooms, and computer closets running mission critical applications in the Executive Branch of the State. The survey data indicated many mission critical business applications require around the clock support (24 hours X 7 days per week X 365 days per year). Those applications that are perceived as mission critical should be part of a disaster recovery plan that focuses on the resumption of normal business operations in the event of a disaster or major business interruption. It was reported only the largest agencies (OSF and DHS) have an appropriate process maturity level for some core IT processes, disaster recovery planning and disaster recovery capabilities, while many of the smaller agencies indicated a level of disaster response process maturity that is unacceptable. This may result in longer system outages, more costly recovery processes, and potential loss of services to the constituents of the State.

Figure 3-4 describes the current-state findings, high-level recommendations, and the primary benefits behind each recommendation.

Figure 3-4. Summary Infrastructure Current State

Current State Findings	High-Level Recommendations	Primary Benefits
Disparate technology	<ul style="list-style-type: none"> Standardize on technology models, products, versions. Retire outdated systems. Manage decisions and compliance moving forward. 	<ul style="list-style-type: none"> Streamlined portfolio. Cost reduction. Aligned support staff. Increased management capabilities.
No centralized TLM strategy	<ul style="list-style-type: none"> Develop and publish a TLM strategy, with acceptable guidelines, standards and an appropriate execution strategy. 	<ul style="list-style-type: none"> Improved cyclical spend decisions. Reduced risk, support and testing needs. Eliminated end of life or support agreements with expensive maintenance contracts.
Limited governance and standardization	<ul style="list-style-type: none"> Standardize decision criteria, thresholds, reporting and metrics. Define model and process for governance and standardization. 	<ul style="list-style-type: none"> Transparency—the State can't manage what it can't measure.
Limited shared services	<ul style="list-style-type: none"> Continue Office of State Finance initiatives around shared services, shared infrastructure and State-wide governance. Standardize on common core services and provide them centrally across the State. 	<ul style="list-style-type: none"> Significant cost reductions by removing duplicated services and administration. Gained centralized management capabilities. Determined shared model support required for overall technical administration and management.

3.3 Financial Observations

In addition to the IT-specific areas, findings related to IT spending from a financial standpoint should also be highlighted.

IT and telecommunications expenses for State agencies are recorded in two major categories:

- Salaries and benefits.
- Hardware, software, consulting and other.

State agencies, when recording salary and benefit costs, do not identify the employees specifically assigned to IT and telecommunications activities. Therefore, it is not possible to determine the IT and telecommunications expenditures for salary and benefits.

The actual costs presented in this financial baseline were obtained from the Office of State Finance. Our analysis of the various materials provided indicates the estimated IT staff headcount, salary and benefits costs by branch, as depicted in **Figure 3-5**.

Figure 3-5. 2009 Actual Expenditures and 2011 Headcounts and Costs

Branch	2009 Actual IT Expenditures (excluding personnel costs)	2011 Planned IT Headcount	2011 Planned IT Personnel Costs	Average Salary per IT Headcount
Executive	\$220,538,502	1,279	\$97,512,743	~\$78,000
Judicial	\$5,319,991	N/A	N/A	N/A
Legislative	\$1,402,260	N/A	N/A	N/A
Higher Education	\$139,161,404	1,036	\$62,784,782	~\$60,600
Total	\$366,422,157	2,315	\$160,297,525	~\$70,125 (Blended)

**Please note that the Judicial and Legislative branches do not submit plans to the Office of State Finance for their annual IT and telecommunications plans.*

As part of our financial assessment, we conducted an analysis comparing the FY2009 and FY2010 IT planned budgets for hardware, software and consultants and compared them to the actual expenditures for the corresponding period. The results of this analysis indicated the amounts budgeted to be in excess of the amounts spent by a sizable percentage. One can draw the conclusion that monies budgeted and allocated for IT modernization initiatives are not being spent, but may be directed elsewhere to fund the operation and administration of non-IT agency functions. It is also understood the plans may include funds for projects dependent on grants that are not received; and as a result, the planned projects are not initiated. Nevertheless, opportunities no doubt exist for improvements in the accuracy of IT budgeting estimates through consolidation.

Figure 3-6 depicts the planned budget to actual expenditures comparisons for FY2009 and FY2010.

Figure 3-6. Budget to Actual Comparison FY2009 and FY2010

Branch	FY2009 IT Planned Expenditures (excluding payroll)	FY2009 IT Actual Expenditures (excluding payroll)	Difference
Executive	\$404,513,005	\$220,538,502	\$183,974,503
Higher Education	\$184,321,339	\$139,161,404	\$45,159,935
Total	\$588,834,344	\$359,699,906	\$229,134,438

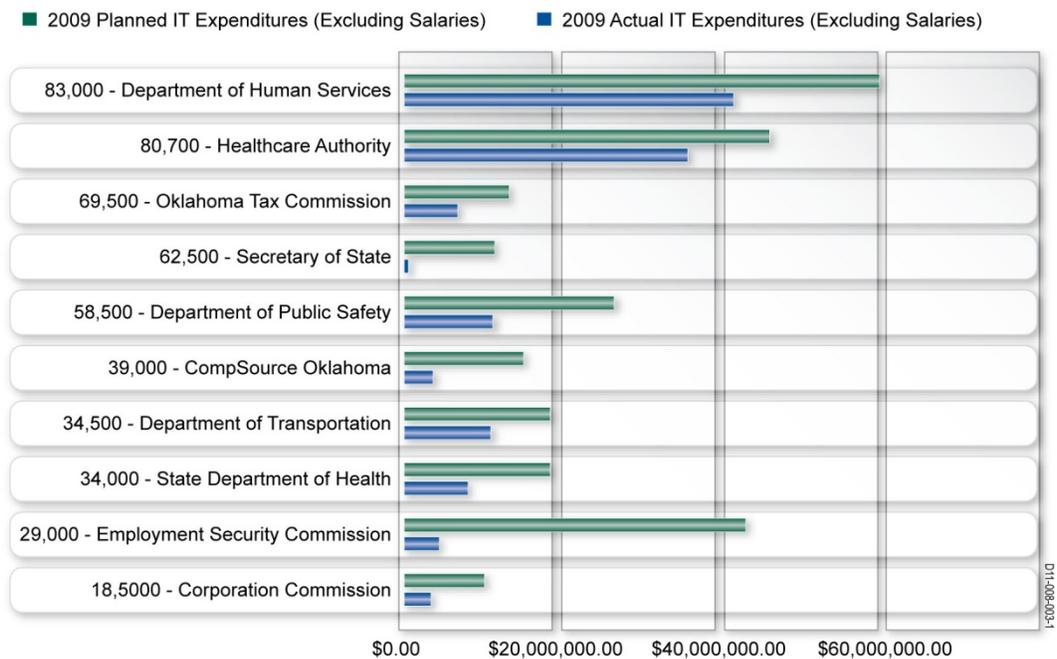
Branch	FY2010 IT Planned Expenditures (excluding payroll)	FY2010 IT Actual Expenditures (excluding payroll)	Difference
Executive	\$394,323,708	\$210,749,752	\$183,573,956
Higher Education	\$131,182,348	\$134,762,649	-\$3,580,301
Total	\$525,506,056	\$345,512,401	\$179,993,655

IT Actual Expenditures vs. IT Telecommunications Plans

The State has spent less than planned for IT services by an average of \$200 million each of these years.

Figure 3-7 highlights agencies that had largest percentage of the under spend on IT during FY2009. **Appendix F— Supporting Financial Data** includes a comparison for each agency for FY2009.

Figure 3-7. Comparison of Planned vs. Actual Expenditures FY2009



3.4 Human Capital/Operations

As noted in the **Section 3.3—Financial Observations**, IT personnel costs are not recorded specifically by agency IT, but to the individual agencies as a whole. In addition, there is not an overall breakdown of the skills and competencies within the IT personnel group for the State as a whole. As part of the manual survey process, an attempt was made to understand the skills and competencies of the IT staff within the individual agencies. From the survey responses, it is clear there is not a source available to identify the IT skills and competencies available to the State of Oklahoma. This no doubt results in under utilization as well as over sourcing.

As the State progresses to its desired future state, it will be very important to build and understand the true skills and competencies of the IT staff of the State as a whole. It is recommended the development of a skills database structured around a survey on State-wide IT personnel be implemented and maintained.

4 Portfolio of Improvements

The portfolio of improvements identified by Capgemini is designed to deliver long-term reductions in the total cost of ownership for IT services delivered State-wide. This transformation is rooted in the deployment of standardized processes to improve the quality of services provided to agencies while providing a feedback loop for continuous process improvement.

To achieve the quickest and greatest IT and telecommunications cost savings throughout the State, the CIO study has identified two strategic objectives: **productivity and quality.**

These two strategic objectives will help the State eliminate redundant, overlapping, and inefficient processes and yield an overall sustainable cost savings exceeding the target, depending on how aggressively the State wants to develop and implement these strategies. These initiatives will mitigate the current risk that we observed within the State by developing a high-availability IT and telecommunications infrastructure and service delivery model.

The collective impact of the initiatives identified by the CIO study is linked to these strategic objectives and is in direct support of HB1170. Once these initiatives are implemented, they will deliver long-term reductions in the total cost of ownership for IT services offered State-wide. More specifically, these initiatives are designed to reduce the acquisition costs for IT technology and services, reduce the on-going operating costs associated with providing IT services to State agencies, and provide for the elimination of duplication or overlapping services. This transformation is deeply rooted in the deployment of standardized processes that will improve the quality of services provided to agencies. These processes provide a feedback loop for continuous process improvement, which keeps **costs low** and **quality high.**

4.1 Leading Practices

The strategic objectives of productivity and quality can be accomplished by leveraging three basic leading practices: **centralization, platform consolidation, and standardization.**

Centralization

Centralization and consolidation are the processes of shifting technologies and services from many disparate instances and locations into a single technology or location. It often includes consolidating from many physical devices and applications to a few. Capgemini recommends that all infrastructure management services be centrally located and centrally managed by the ISD organization. This strategy is to move or consolidate these hardware platforms and associated support services from the individual agency data centers, server rooms, or closets to the new green data center located in the Office of State Finance building. The new data center is energy efficient, secure, and well-positioned for automation of

routine support services designed to significantly reduce the operational costs while improving the quality of services to the agencies. Centralization also makes it easier to create an effective disaster recovery strategy while minimizing labor and technology redundancies.

Platform Consolidation

The term **platform** is meant to collectively reflect mainframe computers and server type computers that may run Windows, UNIX, AIX, Linux, and other operating systems. Platform consolidation is an approach to the efficient use of computer resources in order to reduce the total number of platform devices or locations that an organization requires. The practice developed in response to the problem of platform sprawl, a situation in which multiple, under-utilized servers take up more space and consume more resources than can be justified by their workload.

The traditional approach to building-out the infrastructure platform for a data center was to dedicate one server to one application. This model requires the over-provisioning of processing, memory, storage, and other peripherals. The rapid evolution of the business environment and continuing advancement of technology has created an opportunity to replace this static definition of a data center and generate a new, more efficient, virtual operating environment.

Application servers are sized for a specific application, with the selection of the central processing unit, memory, storage, and input/output capabilities based on the projected peak needs of that one application. The utilization of all of these components is often well below the maximum since few applications run at their peak load all of the time. This over-provisioning wastes significant resources.

Standardization

Put at its simplest, a standard is an agreed upon, repeatable criterion for execution. It is a published document that contains a set of technical specifications or other precise criteria designed to be used consistently as a rule, guideline, or definition. Productivity gains and cost reductions can be achieved by standardizing across technologies (e.g., platforms, applications, etc.), data standards, processes, procurement, and vendors. Standards help organizations reduce the complexity within their operations. This can lead to higher efficiency because such standards can result in timesaving and enable reuse while allowing for reduction in replications and/or support staff.

Apart from these efficiency aspects, there are the effectiveness gains. Standardization can enable future changes with greater flexibility to support new functions, new technologies, and improve the scalability of existing functions. Standards can result in a lower acquisition and support costs while creating greater economies of scale. Standardization can also lower costs of integration because components are built on a common set of specifications that have demonstrated interoperability. In addition, standards can improve quality, reduce testing, and reduce user training when products change.

4.2 Key Improvement Opportunities

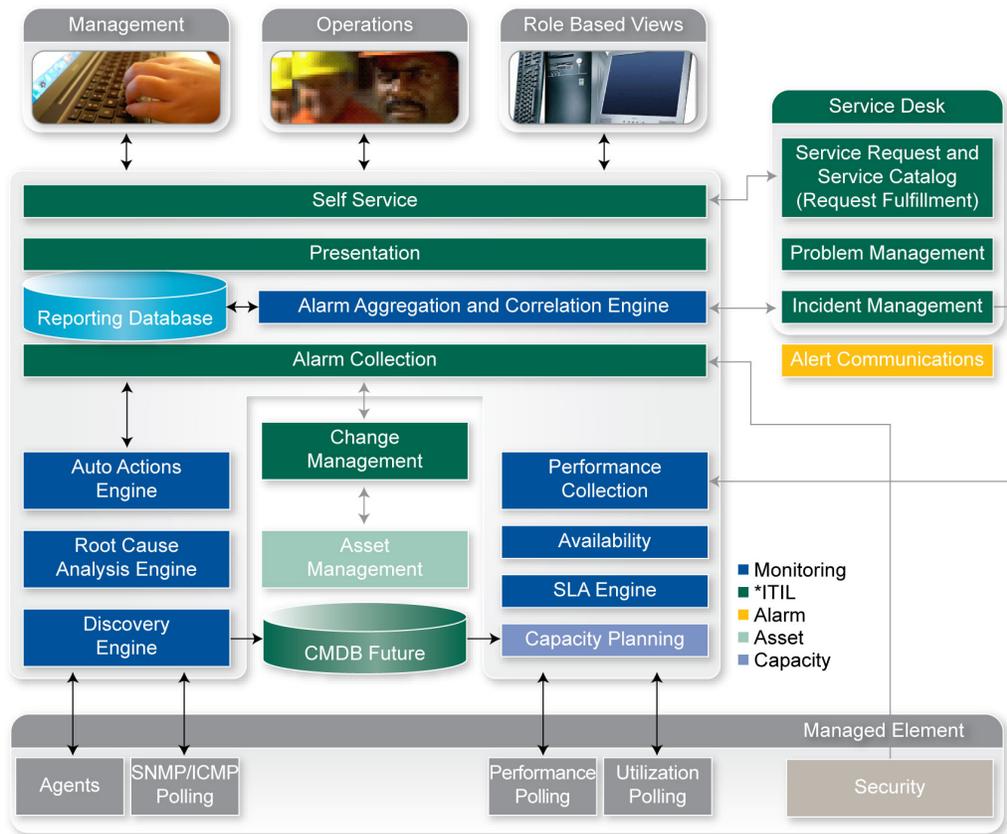
Based on review of the current situation in the State, areas of improvement have been identified in four key areas: **operations**, **applications**, **telecommunications**, (networks), and **infrastructure**. These opportunities make up an overall portfolio of improvements. Detailed information on each of these areas can be found in **Appendices A through D**.

4.2.1 Operations

The ISD is in the process of implementing a few key processes to improve overall IT service delivery. The following information expands this direction across more processes required to sustain a leading practice shared services delivery organization.

The system management framework for IT service delivery illustrated in **Figure 4-1** is based on the premise that the flow through the Information Technology Infrastructure Library (ITIL®) framework must be driven by business requirements and deliver measurable business benefits. The future vision for State operations is based on designing and implementing a standard set of processes based on the ITIL® v3, a globally recognized standard for IT service delivery.

Figure 4-1. Systems Management Framework



**The ITIL tool is available through DHS's enterprise contract and represents a leading practice tools set.

This suite of integrated processes is designed to improve the quality and repeatability of service delivery while reducing cost. The proposed implementation approach utilizes ITIL Lite, which builds on the implementation of processes that are closely aligned to State objectives for cost effective and efficient services and allows for continuous improvement. ITIL Lite is a phased implementation of the core ITIL processes needed to immediately improve service delivery to meet defined objectives. The selected processes are usually a sub set of the complete ITIL framework.

These selected processes must be integrated to deliver maximum benefit and reduce operating costs. Figure 4-1 assumes usage of a leading practice software product that is available to the State through a Department of Human Services enterprise license. This tool is already in operation and can speed the implementation and maturity of a number of core processes. Some of the improvements made possible by these in processes and tool sets are:

- Designation of the key service(s) where the business impact of major incidents is critical and fast recovery is essential.
- Prioritization of end-to-end service-level agreements from a business perspective to ensure service delivery and accountability.
- Implementation of end user self services to speed end user response and reduce impact on service desk services. This combined with a service catalog and service request process significantly reduces IT service delivery costs. Some agencies have implemented aspects of this concept.
- System performance, monitoring service level agreements, and capacity planning will enable the shared service organization to expand its capabilities to meet agency service expectations and improve communications.
- Focus on driving down defects and improving services without significant investment.

Figure 4-2 summarizes costs and benefits analysis for key operations-related opportunities/initiatives.

Figure 4-2. IT Operations Estimated Investment and Cost Savings

Area	Initiative	Year 1 (\$000)					Year 2 (\$000)					Year 3 (\$000)					Total (\$000)				
		Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings
Operations	Asset Management	\$1,225	\$780		\$178	-\$1,827		\$2,439		\$5,203	\$2,764		\$2,751		\$13,963	\$11,212	\$1,225	\$5,970		\$19,344	\$12,149
Operations	Service Desk and Incident Management	\$627	\$706		\$1,105	-\$228		\$2,876		\$4,345	\$1,469		\$2,876		\$4,345	\$1,469	\$627	\$6,458		\$9,795	\$2,710
Operations	Problem Management Improvements	\$462			\$106	-\$356		\$324		\$158	-\$166		\$324		\$158	-\$166	\$462	\$648		\$422	-\$688
Operations	Change Management	\$248	\$528		\$637	-\$139		\$633		\$2,187	\$1,554		\$633		\$2,187	\$1,554	\$248	\$1,794		\$5,011	\$2,968
Operations	Automated Event Monitoring and Control	\$1,588	\$252		\$603	-\$1,237		\$724		\$1,494	\$770		\$724		\$1,494	\$770	\$1,588	\$1,700		\$3,591	\$303
Operations	Availability Management	\$490			\$688	\$198		\$193		\$1,375	\$1,182		\$193		\$1,375	\$1,182	\$490	\$386		\$3,438	\$2,562
Operations	Capacity Management						\$1,108		\$129	-\$979		\$372		\$246	-\$126	\$1,108	\$372		\$375	-\$1,105	
Operations	Service Request Catalog	\$1,276		\$107	\$2,590	\$1,421		\$702	320	\$2,590	\$2,208		\$702	\$320	\$2,590	\$2,208	\$1,276	\$1,404	\$747	\$7,770	\$5,837
Operations	IT Service Level	\$346	\$144		\$509	\$19		\$237		\$509	\$272		\$237		\$509	\$272	\$346	\$618		\$1,527	\$561
Operations	IT Chargeback											684	\$168			-\$852	\$684	\$168			-\$852
Operations	ITIL Training	\$104				-\$104		\$52			-\$52		\$52			-\$52	\$104	\$104			-\$208
Operations	CSI Marketing and Communications	\$243	\$251			-\$494		\$362			-\$362		\$362			-\$362	\$243	\$975			-\$1,218
Total		\$6,609	\$2,661	\$107	\$6,416	-\$2,747	\$1,108	\$8,542	\$320	\$17,990	\$8,660	\$684	\$9,394	\$320	\$26,867	\$17,109	\$8,401	\$20,597	\$747	\$51,273	\$23,019

4.2.1.1 Operations Initiatives

Key operations area initiatives are defined as:

- **IT asset management centralization.** Centralize all IT asset management in the State with one process and tool set that can be leveraged throughout all agencies.
- **IT service desk consolidation and incident improvements.** Consolidate State IT service desks using a single tool suite to support incident management improvements, integration with alert monitoring, single alarm paging, and enable virtual service desks where desired/required.
- **Problem management improvements.** Problem management minimizes the impact of incidents and maximizes communications and teaming effectiveness to restore services and eliminate the root causes.
- **Change management improvements.** Consolidate change management into one consistent process and establish a change approval mechanism to communicate system changes and risk across the supporting services.
- **Automated event monitoring and control.** Develop a tiered monitoring architecture to support the system requirements, service-level agreements, and performance of shared services across the State.
- **Availability management.** Develop and implement a process to monitor critical business services availability to ensure service levels are met and variances are reported and resolved through the use of incident and problem management.
- **IT service levels.** Aligns business expectations with the capability of IT services delivery to monitor and deliver according to agency business expectations.
- **Service request and service catalog management.** Automate the available standardized services provided by State IT services that can be ordered, approved, tracked and monitored to effectively and efficiently deliver IT services.
- **ITIL training.** ITIL training will rally IT resources around a common glossary of terms and definitions that enable people across the agencies to speak the same language and use consistent centralized and consolidated processes to deliver consistent, high quality IT services.
- **Continuous service improvement, marketing, and IT communications.** Since IT will be run like a business, continuous service improvement needs to be managed and aligned with holistic State IT needs in harmony with agency requirements. A marketing and communications function will help establish effective communications mechanisms for relationship managers and agency leaders throughout the State.

Other initiatives suggested for Year 3 are:

- **IT capacity planning implementation.** Effective utilization of available resources is critical to optimize the State’s IT investments. With capacity planning and management, the State will have the capability to monitor and plan service capacity.
- **IT chargeback and IT cost allocation.** Shared service cost transparency is critical to enable State agencies to budget for IT services and understand the cost of various levels of service.

IT Asset Management Centralization

Overview

IT asset management is a critical process to control and manage IT assets and enable other IT support process with valid inventory information to increase the effectiveness and efficiency of IT delivery.

Recommendation Summary

IT asset management process and tools need to be standardized and centralize across the State agencies to optimize the resource and capacity management capabilities and to insure that proper control and oversight occurs on all IT assets. Standard use of bar codes and automated inventory agents to monitor and record all changes to asset attached to the State network is recommended.

Recommendation Benefits

IT information sources, consulting companies, and vendors all indicate that IT asset management can generate savings on assets from 20 to 50 percent. This includes items such as:

- Provides for full life cycle management of IT assets.
- Software licensing audit compliance optimizes software investments through reallocation (Gartner 20 to 25 percent become shelfware).
- Supports consolidation of vendor contracts.
- Reduces support costs through optimizing refreshes and reuse of new equipment.
- Assist with justifying software and hardware investment.
- Allow audits for disappearing assets.
- Stops overbuying and unauthorized usage.
- Reduces support costs through optimizing refreshes and reuse of new equipment.
- Volume licensing agreement and management.
- Tracks asset life cycle changes.
- Tracks cost and control asset data.

- Supports incident, service desk, service request, and change processes with enabling information.
- Key enabler for configuration management process and database.
- Provides key data for IT chargeback and TCO application.
- Portfolio management process input enabler to enable optimization of this portfolio.
- Enable data to support maintenance analysis for potential cost savings.

The key areas for the initial process scope are servers, desktops, network, storage, and software.

Implementation Plan

The implementation plan is a standard ITIL process plan with focused usage of a fully developed process model, even if the entire model is not implemented to enable full understanding of its components and integration. An IT asset management core group needs to be responsible with delegated duties to other IT service support staff. The plan follows a plan, design, configure, test, train, and iterative rollout plan.

IT Service Desk Consolidation and Incident Improvements

Overview

IT service desk consolidation will consolidate resources and standardize the IT service desk function for all agencies. The service desk will support the incident, problem, and service request processes using the ITIL framework. Lead practice tool implementation is recommended using the enterprise license from Department of Human Services. After due diligence a determination on what service desk remain virtual can be made. DHS has software and process upgrade planned and budgeted; combining this effort to create a State-wide service is recommended. In addition improving the incident process will provide enhanced service improvements to end customers.

Recommendation Summary

Consolidate and standardize the service desk process and tool across the State agencies, reducing the current number of separate organizations, software, and processes.

Recommendation Benefits

Significant cost savings are attributed to FTE reductions, software license savings, and more effective and efficient usage of service desk resources, end user self help, and automated interface with monitoring tools. A service desk modeling tool was used to estimate the staffing requirements and was very conservatively calculated.

Implementation Plan

The implementation plan utilizes the standard ITIL process implementation approach to improve the incident and problem process. The service desk consolidation will be timed to parallel the data center consolidation of various agencies. Key activities of this implementation are listed below.

- Plan and scope project phases consolidating other agency service desks (help desks).
- Develop service desk improvements to scale the service for State-wide support.
- Define software configuration, reporting, dashboard, and end user web access requirements enhancements.
- Strengthen interface with incident, problem, and service request process requirements.
- Interface with system monitoring tools for automated incident recording and assignment.
- Develop and test software and process improvements.
- Develop and train process users.
- Rollout users (service desk level 2 support including applications).
- Develop and distribute performance reports, dashboards, end user access.
- Develop improvement plan focused on self help.

Problem Management Improvements

Overview

Problem management minimizes the impact of incidents and maximizes communications and teaming effectiveness to restore services and eliminate the root causes. The problem management team will:

- Own the end to end management, lead enterprise wide Major Incident Response Teams (MIRT), Coordinate all major incident status communications
- Co-host a daily enterprise wide operations meeting.

This initiative should be implemented with the incident and service desk improvements because of the tight process and tool integration. It also will take advantage of the leading practice tool suite from the Department of Human Services.

Recommendation Summary

Sustaining application and infrastructure service delivery to an acceptable level and resolving repeating incidents to minimize the end user impact and IT service staff impact, problem management using ITIL framework leading practices provides this capability.

Recommendation Benefits

There are models that utilized detailed incident data and availability statistics to calculate the overall cost savings by minimize end user outages and impacts. In addition, mitigating the IT support staff efforts to constantly resolve repeating incidents generates resource savings. However, since this was a high level availability and State-wide incident analysis, minimal financial savings could be calculated.

Implementation Plan

The implementation plan follows the ITIL implementation project plan approach. In this situation the process has to be created and it is assumed that the vendor partner will supply the mature process detail that will only need to be slightly modified for the State. This new process requires a small focused staff. This project should be executed with the incident and service desk initiative.

- Plan and scope project phase.
- Define process improvements necessary to scale the process.
- Define software configuration and reporting requirements.
- Refine the process model and procedures.
- Interface with incident, problem, change management, and service request process requirements.
- Develop repeatable training materials.
- Develop and procure test software.
- Rollout.
- Develop and distribute performance reports and publish on wiki.

Change Management Improvements

Overview

Change management is the coordination and controlling process for all changes to the State's production environments. This process ensures that changes do not conflict, risk assessment is properly analyzed, security practices are met, and end user notification is sufficient to enable the end user community to plan around the change and expected outages. This also enables the State agency IT relationship managers to review and approve all changes impacting their users.

Change management processes based on ITILv3 will be implemented using the leading practice software in use by the Department of Human Services as a base with active interfaces between incident, problem, and service request. The change management team will own the end-to-end management and execution of the process, ensure each change is executed and closed at approved times, ensure each change is constructed and tested to minimize risk, host enterprise-wide weekly change advisory boards, lead post-implementation reviews as needed, conduct root cause analysis reviews, and coordinate communication collateral needed to support the process.

Recommendation Summary

Sustaining a State environment of shared services requires a consistent, managed process to minimize the service disruption risk to the State's end user population.

Recommendation Benefits

Change management provides oversight across the State's IT services to minimize disruption, assess risk, and align multiple change schedules to mitigate conflicts. Since the study did not do a detailed change risk assessment, the calculated savings on ineffective changes could not be measured. However, analysis of the current full-time equivalent headcount associated with change management found the State was much higher than industry benchmarks indicating a savings during consolidation and standardization of the process.

Implementation Plan

This process would follow the ITIL framework leading practices and also utilize the leading practice tool from the Department of Human Services, which has an integrated change management module that allows cross-process information to be used to further the overall process execution effectiveness.

- Plan and scope project phases.
- Develop process requirements and tool improvement and integration requirements.
- Develop software configuration and reporting requirements.
- Interface with incident, problem, service request, and IT asset management.
- Configure and test software.
- Develop a repeatable web/video training course.
- Train users (includes project managers, service providers, developers, and IT management).
- Rollout in parallel with the data center consolidation and server optimization (detailed in the infrastructure opportunities section of this document).
- Develop and distribute performance reports and publish on a wiki.
- Rollout to the remaining agencies.

Automated Event Monitoring and Control

Overview

Automated event monitoring and control standardizes event and monitoring software and procedures to capture application and service alerts and notify incident management to activate the service response.

Recommendation Summary

Sustaining high quality operations of shared services requires exception based monitoring and response to reduce service delivery costs and optimizes response efforts and mitigates end user impacts.

Recommendation Benefits

Cost savings are attributed to full-time equivalent reductions, software license savings, more effective and efficient usage of support resources, and tiered monitoring.

Implementation Plan

- Plan and scope project phases.
- Develop ITIL event, monitoring and control process and procedures and tool requirements.
- Select and procure monitoring tool set, if required and define tier monitoring requirements.
- Develop procedures for implementing monitors and alerts.
- Interface with incident process.
- Develop and test software.
- Train monitoring team on software and procedures.
- Rollout in parallel with the data center consolidation and server optimization.
- Develop and distribute monitoring log analysis reports.
- Develop Phase 2 improvement plan for next set of infrastructure services.

Availability Management

Overview

Implement standardized availability monitoring for business and shared services that enables tracking, reporting, and supports the service level management process. Availability monitoring monitors and reports the mean time between failures and tracks the availability and utilization of business services and enables the accountability of services levels.

Recommendation Summary

Availability is a core ITIL process to sustain the shared services environment and enable effective dialogue with the relationship managers, agency leadership, and IT service providers to meet end user expectations.

Recommendation Benefits

There is considerable cost avoidance through availability management by focusing on increasing service availability, aligning service expectations with architecture, and by minimizing maintenance service disruptions. Since business system outage data was not available, calculation of this cost avoidance was not possible.

Implementation Plan

Availability is an ITIL process and the project plan follows this process improvement approach. The critical element is to understand the needs of the information audience and the level of detail required.

- Plan and scope the project.
- Develop ITIL availability management process and procedures.
- Integrate process with monitoring and control, incident, and service level management.
- Design and develop availability reporting and web portal reporting capacities.
- Develop and test software and reports.
- Automate data gathering and reporting.
- Determine critical business services and implement with existing shared services. The implementation should then be included as part of the data center consolidation and server optimization involving production servers.
- Implement availability management for all production services having a service level target defined.

Service Catalog and Service Request

Overview

Service request is already in operation in the Office of State Finance and some of the other larger agencies using different processes and software tools. This can be consolidated using the Department of Human Services leading practice tool to simplify the overall support and end user interface for service request. Service request requires a consolidated service catalog that the Office of State Finance has initiated but will have to be expanded as more services are introduced into the shared environment.

The proposed leading practice solution re-uses current State-owned software and scales to support the State's IT users.

Recommendation Summary

Consolidating the IT service request workflow and service catalog provides opportunities to optimize the work requests, delivery flow, and service automation across multiple agencies to maximize economies of scale in delivery and support these services and processes.

Recommendation Benefits

The solution triggers all the necessary automated processes and enables the service desk to monitor and ensure services meet communicated expectations. Self-service capabilities allow employees to track the status through online inquiry. Business benefits are significant and include higher employee productivity, service provider productivity, and effective coordination and expectation management.

The service desk model takes the service requests into consideration in the staffing model to meet acceptable service measures. This consolidation provides a full-time equivalent reduction across State agencies.

Implementation Plan

Service request and service catalog are integrated processes with the service desk but do provide separate services to the end users. The leading practice toolset also allows end users self-service and review status further reducing the service desk effort. This project plan should closely parallel the service desk and incident project.

- Plan and scope project phases.
- Develop service request and service catalog system requirements.
- Develop workshops to review existing service requests and create service catalog items.
- Define software configuration and reporting requirements.
- Configure service request software and initiate service catalog definitions.
- Test service requests and the catalog.
- Develop and train process users.
- Rollout in parallel with the data center consolidation and optimized servers.
- Develop and distribute performance reports and publish performance in the web portal.
- Rollout to all agencies.

Service Level Management

Overview

Service level management and reporting provides the process and enabling tools to establish, monitor, and improve business-aligned IT service quality through a constant cycle. Service levels are reviewed with agency IT CIOs and directors on a periodic basis to ensure that their services are delivered to meet expectations. When service levels are breached an incident will be opened and tracked to resolution.

Recommendation Summary

Service level management is critical to providing a measurable, repeatable, and accountable process and mechanism to the agency's relationship manager to enabling communication about the delivered IT shared services.

Recommendation Benefits

This will provide the process to communicate with the agency's business leadership to understand their business needs and demands for IT shared services. It also enables ISD to review service expectations, service costs, and communicate deficiencies and corrective actions. Service level management also provides the alignment capabilities to match the service expectation and the service delivery. Costs can be minimized when these are aligned.

Implementation Plan

Service level management has multiple processes that require integration. Careful planning and synchronization with other projects needs to be considered.

- Plan and scope project phases.
- Develop ITIL V3 service level processes based on the selected enabling tool.
- Select and procure tool set.
- Define software configuration and reporting requirements.
- Interface with incident process.
- Develop and procure test software.
- Develop training materials and train process users.
- Rollout to critical production systems and shared services.
- Develop and distribute performance reports and publish monthly reports on the web portal.

IT Chargeback and Cost Allocation

Overview

IT chargeback and cost allocation service provides the information on the service usage and cost to enable accurate service billing. Annual service rate updates are provided so IT budget forecasts can be estimated. The process includes activities to gather the data, report usage and costs, provide forecasts, and optimize service costs through benchmark analysis.

Recommendation Summary

Most shared service IT organizations need a thorough mechanism for service billing and service cost accounting. The level of requirements analysis is similar to outsourcing solutions.

Recommendation Benefits

Depending on the level of change required with the current Office of State Finance process, a more formal and mature solution may be necessary. A less costly commercial off-the-shelf (COTS) solution or software as a service (SaaS) may be available, reducing customization, and providing ongoing support.

Implementation Plan

This plan is a standard approach that Capgemini utilizes for outsourcing chargeback services and was adapted for this situation. Most of the tasks are similar and the effort would vary depending primarily on the level of reporting required.

- Plan and scope project phases.
- Define chargeback process and annual update procedure.
- Define IT chargeback requirements.
- Select and procure software or SaaS, if required.
- Define software configuration and reporting requirements.
- Develop and procure test software.
- Develop and train users and educate agencies on chargeback reporting.
- Rollout in parallel with the data center consolidation and server optimization.
- Develop and distribute reports and publish on the web portal.

ITIL Training

Overview

The Office of State Finance and a few other agencies are moving forward with standardizing on utilizing an ITIL framework for operational and transition processes. We recommend continuing and accelerating this training. ITIL training is a requirement for standardizing and simplifying IT process supporting operations, service transition, and service design. The approach is to focus on the core processes necessary to support a centralized environment of shared services. Training can be provided via the web or on-site. Ongoing training should be a continuing initiative.

Recommendation Summary

ITIL training is required for IT service delivery process and tool training to meet the required service expectations and process improvements necessary for the IT consolidation and improvements.

Recommendation Benefits

ITIL is an international IT process framework standard that is adaptable to the State's service requirements. It provides training materials, a standard glossary, and other leading practice materials to effectively and more efficiently improve IT service delivery.

Implementation Plan

- Plan and scope project phases.
- Identify course participants by role (foundations and then advanced training).
- Examine web-based foundations classes and onsite or local advanced training courses.
- Prepare training plan and budget.
- Set-up web page under IT web portal to communicate ITIL and training requirements.
- Schedule employee training for ITIL foundations.
- Schedule employee training for advanced ITIL certification in operations, transition, and design.
- Update and maintain knowledge base on ITIL web portal for training materials and ITIL glossary.

Continual Service Improvement, Marketing, and IT Communications

Overview

Consolidated continual service improvement responsibility will provide the audit and service performance oversight for the ISD services. Governance over the requested service improvements must be analyzed and prioritized and this process aligned with overall IT service management. The ITIL framework provides this controlling mechanism.

As it is recommended the State have a centralized IT service organization, it is critical to maintain effective communication to the other agencies, bureaus, and offices to assist with providing information on the services available and understand the demand for new services.

Overall IT communications to the other agencies and executive branch must be centralized to improve the messaging, align with CIO objectives, and utilize standard communication methods. This will also include communications to the wide range of end users and stakeholders.

Recommendation Summary

The centralized IT organization consolidates these activities into one organization. During consolidation, new processes and procedures are required to meet agency and customer requirements. These three key activities are essential to professionally represent the consolidation of the State IT organization.

Recommendation Benefits

- Provide consistent communications and messages to stakeholders.
- Continually improve the IT service delivery process through effectiveness and efficiency analysis.

Implementation Plan

- Define the activities for continual service improvement, marketing, and IT communications.
- Develop RACI (Responsible, Accountable, Consulted, and Informed) matrix to align responsibilities and accountability.
- Define the standard communication template, medium, and cadence calendar.
- Define the marketing approach and techniques to engage other State agencies to utilize the IT consolidated shared services.

Capacity Planning

Overview

Standardize a capacity planning service for the shared service applications and infrastructure services planned for FY2013. This service manages required capacity based on business drivers to meet the service level metrics. Capacity planning will monitor, collect, analyze, and report on shared service capacity usage and trends.

Recommendation Summary

Since applications will receive a due diligence review as they are consolidated and optimized, the need for the capacity planning process can be postponed until FY2013.

Recommendation Benefits

Capacity planning continually aligns the State application and shared services to the service level agreements and takes into consideration the changes in demand for these services. If the demand drops, less resources are required and can be used elsewhere or eliminated. If the demand increases, it is important to meet a higher level of service without interruption.

Implementation Plan

- Plan and scope project phases.
- Select capacity planning staff.
- Develop capacity planning software requirements.
- Define capacity planning process based on ITILv3.
- Select software, procure infrastructure services and implement the infrastructure.
- Train capacity planning staff.
- Develop shared service analysis, requirements, and implementation procedures.
- Implement monitoring and Extraction, Transformation, and Loading (ETL) collection, database loads, and automated analysis.
- Develop standard monthly capacity reporting and outline annual capacity plan report.
- Implement capacity planning for share services on a rotating schedule.

4.2.2 Applications

The future vision for the State applications portfolio is the consolidation of common finance and administrative applications into a shared services model. This becomes the common framework for running the finance and administration activities across the State. It standardizes typical processes such as budgeting, fixed assets, asset life cycle management, time and attendance, training, payroll services, grant and projects, and procurement processes. These types of initiatives provide the basis for the systematic expansion of a subscription model for software as a service to State agencies with these common requirements.

There will be unique, individual agency-level requirements that are outside of the shared service model. There could also be a sub-grouping of agencies with similar requirements with unique finance and administration requirements based on their missions. For example, the Department of Corrections, the Department of Public Safety, and the State Bureau of Investigation will have unique requirements common to their missions beyond the overall State requirements. For those needs, there may be commercial-off-the-shelf (COTS) software that addresses those requirements. In the event a COTS solution is not available or incompatible with the State's established common framework/technological standards, a common enterprise-wide application framework (EWAFF) development platform with services (internal or external), and Project Management Office (PMO) functions is provided to support those needs with established integration points into the common framework of the shared services environment. It is critical that they integrate into the framework and not create application "creep", where duplicative process and systems begin to evolve outside of the framework. The combination of good governance and standards will keep this in check. The project initiatives are meant to extend services to a broader set of agencies and standardize and simplify financial and administrative processes.

The future run rate could evolve from a financial shared service model to more of a service bureau activity for and possibly beyond State agencies. This type of initiative provides for the extending of application support model (shared services) in a broader context throughout the State. This provides the common framework that becomes the innovation vehicle for the future run state. In the future state, several things, further described below, will happen.

The shared service environment will continue to expand across the agencies as well as in capabilities to support financial and administrative processes. The learning curve will drive even more efficiencies as the processes are adopted across the agencies and become more mature, along with the use of governance. Governance drives agency needs recognition of common requirements individually, or within subsets, or at large that now become visible and can be addressed. The consistent standardization on the EWAFF technology with planned obsolescence and migration strategies in place confirms cost will become measurable and predictable in support of State agencies.

An innovation would be to expand the State’s shared service environment beyond State agencies and provide financial and administrative support to counties, cities, and others where it would be more cost effective for them to subscribe to the service, and allow the State to recoup the costs of the ISD operations by spreading it across a larger subscription base. This is not unlike the contracting of police to small cities and counties from larger counties and cities, instead of the smaller city standing their own force. The general trend in government operations is consolidation at many levels of government operations.

Figure 4-3 summarizes the costs and benefit analysis associated with the IT operations key opportunities/initiatives identified in this section.

Figure 4-3. Applications Estimated Investment and Cost Savings

Area	Initiative	Year 1 (\$000)					Year 2 (\$000)					Year 3 (\$000)					Total (\$000)					
		Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	
Applications	HCM Implementation	\$2,678				-\$2,678	\$8,033				-\$8,033				\$10,711		\$10,711	\$10,711		\$10,711		
Applications	Pension																					
Applications	Budgeting	\$1,310				-\$1,310			\$655	\$655			\$655		\$655		\$655	\$1,310		\$1,310		
Applications	Reporting and Analytics																					
Applications	Fixed Assets	\$1,895				-\$1,895	\$10,738				-\$10,738				\$12,633		\$12,633	\$12,633		\$12,633		
Applications	Financials (Accounting 1/2 and T&E)	\$612				-\$612			\$306	\$306			\$306		\$306		\$306	\$612		\$612		
Applications	GIS and Mapping																					
Applications	GRC						\$1,800				-\$1,800			\$1,800		\$1,800	\$1,800		\$1,800			
Applications	CORE Contractor																			\$18,600		\$18,600
Applications	EAFW								\$4,056	\$4,056			\$4,056		\$4,056		\$4,056			\$8,112		\$8,112
Total		\$6,495				-\$6,495	\$20,571		\$5,017		-\$15,554			\$30,161		\$30,161	\$27,066		\$53,778			\$26,712

In the applications area, savings result from net full-time equivalency reductions across agencies (due to production enhancements and automation of processes) to be determined by the State.

Key initiatives for the applications area are defined in the following subsections.

4.2.2.1 Human Capital Management (HCM) Implementation

Recommendation Summary

Given the current release level (9.0), the issues with time and attendance, and the number of shadow systems in support of HR functions, it is recommended the State consider expanding implementation of self-service and determine if the next release of HCM will provide more features and functions in support of a wider adoption of a Shared Services HCM.

Recommendation Benefits

- The elimination of over 22 shadow systems.
- The elimination of redundant head count.
- Indirect savings become real when the State re-deploys/eliminates full-time equivalents.

4.2.2.2 Payroll

Recommendation Summary

It is recommended that the payroll recommendation made in March of 2009 by ISD be integrated into the HCM implementation activity to accomplish further savings beginning as of July 1, 2011 or sooner, eliminate the “Anticipatory Payroll” process, and go to a bi-weekly processing.

Recommendation Benefits

- Standardize on leading practices for payroll processing.
- Reduce the number of payroll runs by 25 percent.
- Eliminate the need for agencies to perform complicated reconciliations of anticipatory and supplemental payroll costs.
- Reduce the actual time worked before billing the federal government or other third parties.
- Eliminate the corresponding shadow systems that support these reconciliation activities.

4.2.2.3 Financials

Accounting Part 1 Recommendation Summary

There are many accounting systems, from small to large, in place in the State today. For agency-specific unique applications with their own financial modules, there is only a need to integrate into the CORE framework. Agencies maintaining separate accounting systems need to be consolidated and such redundancies eliminated wherever possible. The State should consider using the next major upgrade to the CORE financials and determine if the new functionality will aid

the effort and enhance CORE capabilities to ensure a robust financial environment of shared services and reduce the number of interfaces, applications and processes.

Accounting Part 1 Recommendation Benefits

- The elimination of over 76 shadow systems.
- Elimination of interfacing requirements and systems.
- The elimination of redundant IT head count.
- The indirect savings become real when the State re-deploys/eliminates full-time equivalents engaged in support activities.
- A single repository data schema enhances Governance, Risk, and Control (GRC) processes.

Accounting Part 2 Recommendation Summary

Applications for the balance of the non-CORE areas are to be incorporated into a EWAF, including the staffing, development, and maintenance of all non-CORE financial and accounting applications previously noted (i.e. HCM, budgeting, financials, and fixed asset initiatives). These applications comprise the remaining 764 (+/-) applications noted as agency-specific applications (i.e., child support, tax, professional licensing). There are also a number of older legacy applications built for agency-specific needs with their own financial modules.

Key points to note with this recommendation are listed below.

- Buy vs. build analysis is recommended as the replacement option if the COTS product fit addresses the agency's needs, typically in the 75 percent + range.
- If build is necessary, use the EWAF platform standards to ensure the applications integrate into the PeopleSoft CORE framework.
- Given the age of some of the State's systems, a strategy needs to be in place to replace/integrate applications. In particular anything that is on a mainframe (legacy applications) needs to be prioritized first.
- It was noted that the State is in the process of acquiring a COTS tax solution for income and sales tax. It is recommended the State look at expanding the solution, if it is not too late in the award cycle, to encompass more than income tax and sales tax processing and consider a revenue shared services approach.
- Note there is an interrelationship between these applications and the CORE shared service recommendation in the Accounting Part 1. As CORE expands and replaces financial components, the number of these applications declines proportionately to the adoption of shared services by the agencies. Based on previous experiences with widespread adoption of shared services, elimination of applications in a ratio of 2:3 can be expected. For example, the elimination of an agency revenue (accounts

reliable) application and 2 interfaces to integrate into the CORE environment represents a ratio of 1:2; there are no interfacing requirements in CORE accounts receivable. Therefore, the total number of applications in the future state would be in the range of 400 to 700. This assumes 1,500 applications with an average 1:2 ratio, resulting in 500 applications in the “to-be” state with widespread adoption by the agencies.

Basic assumptions on CORE integrations with EWAF include:

- CORE is the single foundational basis for the HCM and financial framework for the State.
- CORE has application program interfaces (APIs) embedded into the major applications (e.g., Accounts Payable, Accounts Receivable).
- CORE handles most financial aspects when fully deployed throughout the agencies.
- CORE is not designed to handle unique agency requirements.
- CORE supports generic finance and administrative activities and processes wherever possible throughout the State.
- CORE is updated to the most current release level, and maintained going forward on a standard major upgrade path time line, typically 18 to 36 months.

Basic assumptions on EWAF include:

- Agencies share commonality often in subset groupings; these are all candidates for shared services or EWAF platforms:
 - Payment processing.
 - Licensing and fee activities.
 - Training.
 - Accounts receivable.
 - Document imaging.
 - Geographic Information System (GIS).
- EWAF encompasses commonality by the processes.
- Grouping by commonality for data warehousing initiatives.
- Grouping by commonality for business intelligence and analytical tools.
- Shared automated tools, workflow, content management, and portals.

It is recognized that some agencies will have requirements specific to the agency. In this model, these discrete COTS/custom built systems need to leverage CORE/EWAF where it is appropriate. For example, a payment is a payment, no matter how it is authorized. The specialized requirements for the agency-specific applications are to enable the authorization and transmit the payment instruction to CORE or other shared services applications and not replicate the payment process.

Basic staffing assumptions relative to EWAF:

- Establishment of centers of excellence on the common framework as needed.
- Pools of functional rich talent to perform the necessary analysis.
- Must be led by senior application architect(s).
- Must be staffed by senior and junior business analysts, in shared pools and interdisciplinary skills sets for analysis gathering, refinement, and recommendations.
- Cross pollination of skills within talent pools is critical to the success of this model as both a cost containment function and because keeping of domain expertise widely shared helps avoid single point of failure issues.

Basic organizational assumptions relative to EWAF:

- The staffing consolidation leads to existing agency IT staff being absorbed into the pools.
- Key agency IT directors/CIOs evolve into subject matter experts (SMEs) or domain architects (DAs) regarding agency IT requirements. There are options as to who should “own” these resources. It is recommended they all be under the State CIO given the culture and history of decentralization of State IT practices.

Accounting Part 2 Recommendation Benefits

- Standardization of additional shared services processes.
- A COTS solution keeps the State out of the software development business.
- The State will have fewer applications to support and can leverage and synergize on skills sets and technology for non-COTS EWAF platforms as needed.
- Skills sets will be in pools to provide problem/functional/process expertise. This will eliminate the situation where only one or two programmers know how to support older applications in use by State agencies.
- Eliminate redundant systems and processes.

4.2.2.4 Governance, Risk and Compliance (GRC)

Recommendation Summary

The move to a robust shared services model with increased investment in PeopleSoft increased functionality (through upgrades) and greater utilization by agencies will require some additional applications. For example, the implementation of the GRC application suite is recommended to enhance the control of the application environment beyond the role-based security features embedded in the applications. This was noted in the future projects planned by the State.

Recommendation Benefits

- **Improved predictability and performance.** The State can identify potential loss events and thereby reduce operational surprises and losses by establishing mitigation strategies, increasing predictability, and improving performance.
- **Increased speed of execution.** Integrated and coordinated GRC processes and systems enable rapid response and remediation to risk and compliance issues.
- **Improved clarity.** The State can gain greater visibility into the enterprise-wide risk profile, helping to ensure risk controls are operating effectively.
- **Reduced costs of risk and compliance management.** The GRC activities are embedded within business and application processes and enables streamlining and continuously monitoring risk.
- **Increased efficiencies.** With a standardized approach to managing risk and ensuring compliance across the enterprise, operations can be aligned to meet governance and performance objectives. Proactive and consistent application of control testing alerts and reporting reduces the time and cost involved in mitigating addressing risk events.

It is noted that ISD is currently planning a GRC project.

4.2.2.5 Travel and Expense

Recommendation Summary

There appears to be several types of travel and expense tracking systems. To address this, a broader use of the PeopleSoft application is recommended. It is noted that as of February 2011, the State has acquired this module and plans on deploying it in the 2011 to 2012 timeframe.

Recommendation Benefits

- Standardize on one process State-wide (policies in particular are better enabled).
- Visibility into time and expenses on a State-wide basis.
- Provides the ability to leverage with vendors and in some cases to negotiate better travel rates.

4.2.2.6 Pension

Recommendations Summary

There are multiple pension applications/activities noted in the application surveys. It is recommended that the State evaluate using a single pension package throughout the State. It should be noted PeopleSoft does have a pension administration package that would be compatible with the existing CORE applications.

Recommendation Benefits

- A COTS solution is the preferred application model for this specific need.
- This will provide a standardized process under a single pension system and facilitate the establishment of shared services (three pension applications identified in the surveys).
- This eliminates redundant applications, systems, processes, personnel, and interfaces.

4.2.2.7 Budgeting

Recommendation Summary

To clearly identify and normalize the State's overall IT spend, it is recommended all IT budgets be consolidated into the ISD budget, enabling line level controls on all IT expenditures for all technology, software, consulting, personnel, maintenance, and all related IT costs. Budgeting includes all agency personnel with fully loaded costs, including travel/training costs related to their function in the support of IT in the agency. This budgeting model could become the straw man for a new centralized distributed budget preparation system.

Recommendation Benefits

- Visibility into IT expenditure activities at the detail expenditure level.
- Accurate and realistic planning across the State IT budget landscape.
- Real accountability on planning budgets and expected outcomes.

4.2.2.8 Reporting and Analytics

Recommendation Summary

Reporting tools need to be standardized across all the agencies unless COTS specific applications have their own tool. There are multiple packages and varying levels of skills sets required to support these activities. We recommend establishing a center of excellence in this area, with a pool of talent to support one or possibly two standards. This would eliminate redundancy, reduce full-time equivalents, and consolidate and focus the skills sets while making license consolidations/reductions. It should be noted that as of February 2011, the State acquired the PeopleSoft Business Intelligence software.

Recommendation Benefits

- Standardize on a reporting and analytic tool (two might be required).
- Eliminate multiple reporting and analytic tools (48 noted in the surveys).
- Standardize training and deployment.

4.2.2.9 Fixed Assets

Recommendation Summary

There are multiple fixed asset systems in various agencies. We recommend an enterprise-wide, single asset system be adopted to consolidate and eliminate the redundant systems and full-time equivalent activities. The Department of Transportation is excluded from this recommendation due to the unique nature of transportation authorities. It has a newly implemented application that addresses these unique requirements.

Recommendation Benefits

- Elimination of multiple fixed asset systems (seven are known, more are known to exist).
- Indirect savings become real when the State redeploys/eliminates full-time equivalents performing these functions. Automated asset tracking in particular should contribute to this through the use of bar coding and related technologies.
- Asset visibility in one place on a State-wide basis.
- There is cost avoidance; some examples include increased audit/compliance cost, indirect cost calculation, planned obsolescence, and residual dollar value.
- The elimination of the shadow systems is not included in hard cost savings. It could prove to be substantial depending on how many additional shadow systems are discovered during the migration to a single asset management system.

Observation: Certain agencies (e.g., higher education research) have significant asset accountability at the funding source which is an important consideration to be aware of with this initiative.

Observation: The State should assess the need for asset tracking activities that take place after asset acquisition and recording as a tangible asset. Certain assets require an accountability of history for recalls and software upgrades during the life of the asset. This requirement would be difficult to meet without centralization and is recommended as a Phase 2 follow up by ISD.

4.2.2.10 Geographic Information Systems and Mapping

Recommendation Summary

Geographic information systems and references to mapping applications were noted from the survey data. We recommend standardizing the State geographic information system (GIS) for use throughout State agencies. We also recommend defining a standard mapping program for use by State agencies.

Recommendation Benefits

- Standardize on GIS solutions and provide a shared service to agencies.
- The geospatial data is not very dynamic, and is best done in a central repository model for control and access purposes for consistency.

4.2.3 Telecommunications

Based on our identified leading practices, two major initiatives are recommended within the telecommunications area. These are the introduction of a single State-wide network backbone and a transition to a unified VoIP telephony.

4.2.3.1 State-wide Backbone

We are recommending that the State network architecture be defined into a standardized, State-wide Wide Area Network (WAN). For the future state architecture, the WAN should be a shared backbone serving all agencies. This will be managed and operated by a centralized support group. The recommendation is to consolidate and optimize the current hub and spoke environments with multi-protocol label switching (MPLS) point of presence (PoP) locations to connect to the central data center and all remote sites.

Recommendation Summary

- Establish a single, State-wide optical backbone using State-owned fiber. The existing OneNet environment should be the basis of this single network. OneNet should be rolled under ISD as a State-wide IT service provider for telecommunications.
- It is also recommended that the use of OneNet by State agencies be mandatory for all networking services.
- It is recommended the State initially establish 4 major MPLS PoPs for the backbone at existing OneNet locations and consolidate connectivity of the agencies to the nearest PoP.

Recommendation Benefits

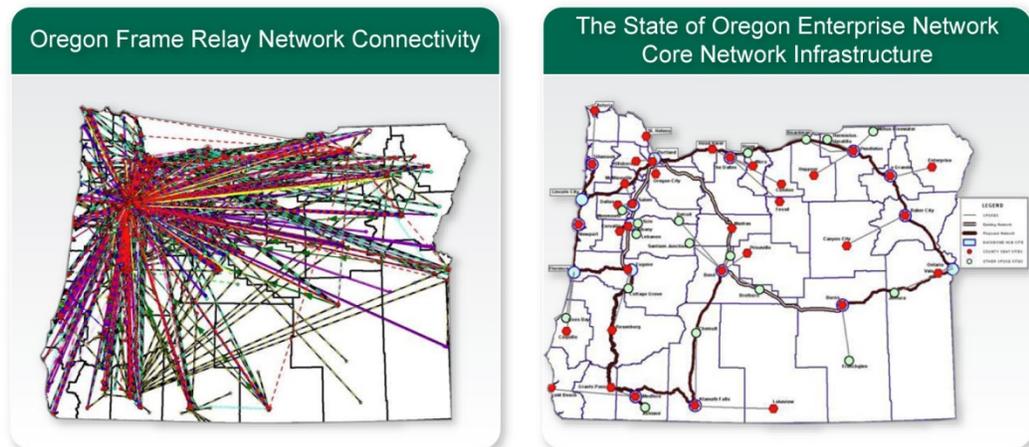
- Separation of the optical backbone and WAN will enable a design where the underneath optical transport network (OTN) can be provisioned to deploy various WAN technologies for disparate needs for bandwidth flexibility, security or both.

- MPLS technology deployed on top of OTN enables easy migration from legacy technologies like ATM and Frame-Relay and simplification of resulting WAN. MPLS inherently inhibits IP based attacks like spoofing.
- OTN based on DWDM/CDWM (Dense Wavelength Division Multiplexing/Coarse Wavelength Division Multiplexing) also enables simultaneous deployment of MPLS and pure Ethernet services via Layer 2 LAN or Fiber Channel over long distances. Each wavelength is akin to running a virtual wire over a wide area between sites. This can be used for higher security requirements.
- This initiative also enhances the overall security posture of the State by carrying all State traffic in a State-owned backbone instead of a service provider backbone.
- The resulting service from this architecture would be the same as procuring WAN service from a service provider like AT&T or COX; however the privacy and security can now be controlled by the State without relying on a third party.
- Any current end point or end-to-end security measures like Internet Protocol Security (IPSEC) does not change by adoption of this initiative as the service delivered to State entities is the same as procuring from a third party.

A single, State-wide backbone network should be deployed that can be accessed and shared by multiple agencies but is controlled, managed and maintained by a single organization. The State currently owns significant fiber assets within the capital complex, while numerous agencies own their own fiber throughout the main population centers. The Department of Transportation, OneNet, and the Oklahoma Turnpike Authority have their own fiber with significant coverage. Current initiatives such as the Broadband Technology Opportunities Program have been funded to extend the fiber reach for mid-mile access. A backbone network controlled by a single entity will enable the State to eliminate long-reach circuits by converting to tail circuits to the nearest PoP location. Also, a backbone network will enable internet protocol (IP) services including VoIP, video, and virtual desktops. Multiple owners of fiber deployment in different geographies within the State create a non-optimal use of the fiber plant, a valuable asset in which the State has invested significantly. Having a united backbone and single authority will also enable cost-effective deployment of WAN optimization and acceleration to remote locations where high-speed connectivity is not available or is expensive.

The State of Oregon went through a deployment of a core network in 2007. **Figure 4-4** illustrates the before and after telecommunications network. The legacy network consisted of a frame relay mesh not unlike the State. The geography and number of population centers of both states are very comparable. Similarly, the end users are also comparable, around 35,000 for both states. The State of Oregon elected to create a single backbone with MPLS as is proposed for the State of Oklahoma.

Figure 4-4. Before and After Telecommunications Network (Oregon)



A single backbone network deployed with DWDM between PoP locations in major population areas will help ensure availability of current and foreseeable future bandwidth requirements for the State. Technology trends will necessitate deployment of high-bandwidth consuming applications like video (e.g., on-demand, teleconferencing, unified communications, etc.) for State employee productivity and ability to serve the citizens of the State.

The wide-area network is going to be a critical component of future services offered by the State. As more and more services become available online and as more legacy architectures like time-division multiplexing (TDM) systems are moved to IP-based services, the complexity and load on the network will only increase. The expertise to maintain the evolving wide-area networking technologies is going to be an issue and maintaining multiple clusters of such talent will be unsustainable. The equipment needed to deliver high-speed network is cheaper per unit of performance. The return on investment is maximized by high utilization, which can only be done via sharing such equipment. This does not mean that any functionality or security need be compromised. Network virtualization technologies like MPLS enable service providers today to offer higher bandwidth at lower prices. The same can be achieved by the State, which has multiple entities requiring wide-area network services.

4.2.3.2 Telco VoIP Conversion

We are recommending the State migrate from fragmented, legacy PBX-based telephony and disparate VoIP system into a uniform State-wide VoIP service. The Office of State Finance has made an investment in an Avaya VoIP solution over the last year and has converted several small agencies to the solution. There are also active projects to convert the capitol complex phones to VoIP. These projects should be accelerated and extended State-wide.

Recommendation Summary

- Complete the decommissioning of the current TDM Nortel SL100 switch and replace it by deploying VoIP in all agencies, to take advantage of the capital and operating expense savings.
- Embed capabilities in each agency for the integration of media communication of audio, video, and messaging for a unified message platform. This includes voicemail to e-mail conversion and vice-versa, the deployment of collaboration and web-conferencing technologies (e.g., virtual meeting with the ability to record and play back IP mobility, IP phones, soft-phones via soft-phone agents on PC or desktops, PC computer telephony integration and virtualization, and wired and wireless connectivity.
- Distribution of platform capabilities throughout the network such as Class 4 and 5 features, signaling, 800 services, RTP for VOIP/SIP services using soft switch technology.

Recommendation Benefits

- Up to 25 percent in savings by creating a State-wide integrated converged VOIP and Data IP network for telecommunications cost.
- 30 to 40 percent savings in operating cost over traditional PBX based solutions.
- Solution providers have matured their offerings for unified communications. The unification of all communication devices inside a single platform provides the mobility, presence, and contact capabilities in a single desktop device that replaces traditional phones.
- Security enhancements via authorization and authentication and accounting via traditional security solutions is possible with IP-based voice services.
- Further security enhancement by traditional IP encryption algorithms of voice traffic is possible with VoIP.
- Easy enhancements of services on top of voice as opposed to traditional TDM.

In addition to the OSF Avaya VoIP solution implementation, there are also active projects to convert the capitol complex phones to VoIP. The Oklahoma Employment Security Commission is targeted to convert to this solution in the FY2011 to FY2012 timeframe. The ISD organization is targeted to ultimately own this solution. The central system has a capacity to support 30,000 phones, which is in line with capacity needed to support the whole State's current and future needs. Our recommendation is to carry forward this solution and roll into this system all other VoIP solutions provided by the Department of Human Services and Regents.

The critical infrastructure for implementing an IP convergent/unified communications network is a WAN linking all of the State agencies. The aggregation of dark fiber throughout the footprint of the agencies to create a high-speed high-bandwidth backbone network is a pre-requisite for delivering such services. Such a WAN infrastructure integrated with network elements for Packet Optical Networking Platform and software for multi-protocols such as Ethernet and MPLS will create architecture for a robust, Connection-Oriented Ethernet (COE), low packet loss, low delay and delay variation (latency and jitter), reliable, resilient, self-healing, manageable, and scalable IP convergent/unified communications network. These characteristics are essential for the future State-wide backbone Wide Area Network.

Figure 4-5 summarizes the costs and benefit analysis associated with the key telecommunications and network opportunities/initiatives.

Figure 4-5. Telecommunication Estimated Investment and Cost Savings

Area	Initiative	Year 1 (\$000)					Year 2 (\$000)					Year 3 (\$000)					Total (\$000)							
		Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform. Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings			
Telecom	VoIP	\$3,979			\$2,136	-\$1,842	\$5,036				\$4,840	-\$195	\$2,229				\$6,972	\$4,743	\$11,244				\$13,948	\$2,705
Telecom	MPLS	\$4,500			\$2,293	-\$2,207	\$3,000				\$7,860	\$4,860	\$3,000				\$11,609	\$8,609	\$10,500				\$21,762	\$11,262
Total		\$8,479			\$4,429	-\$4,049	\$8,036				\$12,700	\$4,665	\$5,229				\$18,581	\$13,352	\$21,744				\$35,710	\$13,967

4.2.4 Infrastructure

The future vision of infrastructure services for the State consolidates all core State-wide IT platform assets under a centralized shared services support organization (i.e., ISD). Based on leading practices in the public and private sectors, a shared service strategy should provide the State with optimized costs and control over IT spending decisions. The shared services strategic vision also will enable IT resources to be better aligned with the strategic mission of individual agencies, standardize IT resource skill sets to create greater operating efficiencies, and build an infrastructure foundation that is scalable, adaptable, resilient, and secure for all forms of State data.

Based on guidance received from the State, the prevailing approach for infrastructure improvement is to “centralize first, then optimize.” As an example, this approach results in a direct dependency between data center consolidation and compute optimization. In this instance, data center migration will occur according to the bundles and immediately initiate optimization activities after an agency is centralized. During the second bundle or wave of data center consolidation activities, optimization of the first bundle will occur in parallel. This cadence will be repeated until the environment is centralized and optimized.

The infrastructure initiatives are also aligned with initiatives from other areas such as application and operations. For example, workstation optimization is scheduled to take place after data center consolidation and is related to the new network design, application improvement, and asset management initiatives. For more information on these initiative relationships and dependencies, see the implementation plan section of the detailed narrative documents.

4.2.4.1 Prioritized Cost Saving Infrastructure Initiatives

Capgemini recommends the implementation of the below infrastructure initiatives to yield either the most significant cost savings to the State and/or to best position ISD to work towards the adoption of a centralized core infrastructure landscape.

Data Center Consolidation

The State must maximize its return on the foundational investment made in the construction of their new data center championed by ISD. In order to accomplish a higher return on investment, all agencies must relocate their data center environments into the premier facility on North Lincoln Boulevard.

The Office of State Finance is presently migrating agencies into the new center. Capgemini supports this initiative and is recommending the acceleration of these migrations, focusing on Tier 1 agencies. In order to maximize the impact of Tier 1 migrations—and support other consolidation and virtualization initiatives—the formation of an additional move team is suggested.

Recommendation Summary

Capgemini recommends the State initially consolidate 30 current data center/computing locations to three. Primary applications and services should be hosted out of the existing ISD and Department of Human Services facilities with all new solutions being deployed into the ISD facility. The Department of Health has established its own recovery capability in a facility near Tulsa. The capabilities and capacity for growth at the Tulsa facility are not yet fully understood, but may provide a location with sufficient distance from Oklahoma City in order to maintain data processing and recovery functions for the State. A long-term and leading practice strategy is to consolidate down to two centers with one primary and one secondary center for disaster recovery and data replication. The overall consolidation strategy, confirmed future locations, and migration activities should be defined as part of a detailed data center planning phase.

The goals of data center consolidation are:

- Co-locate hardware platforms in a single location in order to enable platform consolidation and virtualization.
- Reduce facilities management and maintenance duplication.
- Improve platform stability.

Recommendation Benefits

- **Service improvement.** By moving into 24X7X52 data center facilities, agencies and end users will experience improved levels of service.
- **Management standardization.** Consolidating onto fewer data centers will result in standardizing operational tools and management systems producing efficiencies. Metrics can be mined for trends, creating an environment of incident avoidance and prevention.
- **Capital/operating expense avoidance.** There will be ample capacity available for additional landscape expansion, avoiding the need for mid-term lease additions. Also, real estate, licensing and maintenance costs will be reduced.
- **Maintenance pooling.** Facilities maintenance costs and contracts can be pooled creating greater leverage with the State's suppliers.
- **Modernization of the data center.** The new facility commissioned by the Office of State Finance has the power distribution and cooling capacity to deploy the latest in virtual technologies, allowing the State to drive even higher levels of infrastructure utilization. The modern environment will require less maintenance over the next several years compared to existing facilities.
- **Personnel reduction.** Duplicative staff resources are supporting distributed facilities.

- **Asset optimization through consolidation and virtualization.** A data center consolidation exercise goes beyond simply reducing locations. It enables an increase in asset utilization through virtualization technologies available across application delivery stacks (i.e., databases, operation systems, servers, storage, network, and backup devices).
- **Reduction in risk.** The centralization to fewer locations streamlines the architecture and recovery processes through reduction in complexity of managing data in multiple locations.

Figure 4-6 briefly describes the rationale behind the creation of agency bundles.

Figure 4-6. Agency Bundles

Bundle 1 – Year 1	Target Rationale
Veterans Affairs	Has disaster recovery site in Norman – 100 servers – moderately virtualized – 11 full-time equivalents supporting.
Tax Commission	Large site – multiple virtual technologies Xen, VMWare – 12 full-time equivalents supporting.
DEQ	Within capital complex and distributed locations – note: Paying 2.5C more per kwh.
Department of Health	Has disaster recovery site in Tulsa – 320 servers – approx. 20 percent virtualized.
Public Safety	Large agency – mainframe – many core applications.
Dept. of Transportation	Little data provided – center aging – built in 1974 – Notes and Sametime collaboration.
District Attorney’s Council	Hi concentration of SQL – ideal for SQL Farm.

Bundle 2 – Year 2	Target Rationale
Employment	2800 sq. ft. – only 40 percent populated – over provisioned (+9 full-time equivalents supporting).
Office of Juvenile Affairs	Built in the 1980’s – only 50 percent utilized – e-mail/SharePoint and SQL.
Mental Health	IBM Unix systems – compute less standardized – Dell/Gateway/HP.
Turnpike Authority	Tier 2 – 2 site migration – 10 full-time equivalents – highly virtualized HP shop.
Employee Benefits	Smaller footprint –virtualized – has e-mail server.
Central Services	Data center 50 percent utilized – HP shop – e-mail development.
Employees Group Ins	Has a disaster recovery site – approx. 60 HP servers – likely virtualized – e-mail, SQL, and Oracle – well-sized for initial data center.

Bundle 3 – Year 3	Target Rationale
Indigent Defense	Small footprint within Office – SQL.
ABLE	Indicates 300 sq. ft. – built in the 1990’s – small footprint.
Agriculture	Could come in earlier phase – small footprint – e-mail – trouble ticketing system – aging SPARC platform.
Civil EM	Little info. supplied – smaller agency – exchange service.
DOC	Sizeable center – delicate move.
Dept of Securities	Tier 3 center – multiple full-time equivalents supporting.
Career Tech	700+ sq. ft. – bigger notes shop.
Healthcare Authority	Servers located in office space – few systems – e-mail server.

Bundle Grouping and Rationale – Table 1.5 Source – DCC Approach

Mainframe Consolidation

The State currently supports seven higher-end mainframe-type systems. The Office of State Finance, Department of Human Services, Office of Juvenile Affairs, Department of Public Safety, Tax Commission, Department of Transportation, and Employment Security Commission support these environments. The Department of Human Services manages an HP9000 and the Employment Security Commission supports three Bull Novascale environments. There are also five AS400s within the landscape. Today's current mainframe can support up to 52,000 MIPS in a single footprint, it is difficult to support Oklahoma maintaining seven distinctly separate environments which have a combined total of 4,000 MIPS.

The mainframe data used to compile our findings was provided through the return information from the surveys. BDNA was not able to gain visibility into the mainframe environment. Higher education was not in scope of this study and their mainframes are not considered in the total of seven. Additionally, one mainframe was identified at Oklahoma State University and another at the University of Oklahoma. It should also be noted that the survey information lacked enough content to determine the total cost of ownership (TCO) for each environment, therefore the recommendation's content and savings calculations will be based on industry benchmarks.

Recommendation Summary

The State needs to embark on an initiative to combine workloads of mainframe environments within the IT landscape. Each mainframe system consumes significant operating expense, including but not limited to: hardware maintenance; software maintenance; software licenses; support costs; power, and cooling.

- Capgemini's recommended approach begins by creating mainframe bundles based on model architecture in order to prepare for a consolidation. IBM's Z series systems or business-class LINUX servers would comprise the first wave of consolidation. Agencies with this infrastructure have been placed in the first wave of data center consolidation.
 - The first decision is to determine whether to place the applications on a Z-series or a business-class LINUX processor. This is driven somewhat by architectural design and if the State desires vendor independence.
 - Once the systems are located in the same data center, shared disk technologies can be used to facilitate the combination of workloads into one enterprise mainframe storage system.
 - A similar consolidation approach has recently been adopted by the State of Pennsylvania, where they are presently collapsing 15 mainframes into six new z10's with a projected savings of \$240 million over five years.

- Agencies with the Z family systems that may be consolidated in Phase 1 are the Department of Public Safety, the Department of Transportation, the Department of Human Services, the Tax Commission, and the Office of State Finance. Capgemini recommends that all mainframes migrate to the ISD data center. Phase 2 migrations will include the Office of Juvenile Affairs and other agencies with standard environments like UNIX or AS/400 (iSeries). Phase 3 will include Employment Security Commission (Bull) and Department of Education providing their Tandem system.
- After the consolidation of the mainframe environments into three primary systems based on workload, the State should investigate the adoption of industry trends and eliminate the mainframe environment entirely from its IT landscape. Two of the three future state mainframe systems would primarily provide resiliency for recovery purposes and the third would be decommissioned.

Summary

Capgemini recommends the State implements a consolidated mainframe infrastructure. The goals of mainframe consolidation are listed below.

- Consolidate disparate platforms into a single environment and location in order to enable optimal performance and architecture.
- Reduce support, facilities management, and maintenance costs.
- Improve platform stability.
- Prepare for eventual mainframe retirement.

Recommendation Benefits

- **Reduced cost.** The decrease in power, space, maintenance and licensing costs are the key factors of mainframe consolidation. Potential staff reductions would yield additional savings since duplicative staff resources are supporting independent mainframe solutions.
- **Enhanced system management and operation.** Decrease amount of hardware that has to be monitored and managed. Much of this is due to integration of processing, storage, and network.
- **Increased governance.** Since applications are running under a centrally controlled system and team within a highly structured environment, it is easier to enforce standardization and governance across the IT landscape.
- **Reduction in risk.** The centralization to fewer locations streamlines the architecture and recovery processes through reduction in complexity of managing environments in multiple locations.
- **Infrastructure simplification.** Freed up network capacity can be realized from the consolidation of the mainframes. The savings would be realized as cost avoidance when the network resources are redeployed.

- **Batch stacks restructuring.** The portfolio rationalization process would eliminate unnecessary applications and centralize mainframe batch processing.
- **Management software standardization.** Consolidating into fewer platforms will produce standard operational tool use and process.
- **Vendor management and lifecycle simplification.** This will reduce the number of vendors and enable the State to take advantage of new system management methodologies to increase performance and reduce operating and upgrade costs.

E-mail Consolidation

The State has 129 e-mail servers including Microsoft Exchange Server 2003, 2007 and 2010, Lotus, Novell GroupWise Server, Blackberry Enterprise Server, which are currently used by different State agencies. The disparate technology platforms are currently distributed between multiple data center operating environments.

The State seeks an infrastructure environment that will enable centralized governance and shared e-mail services. Project activities are underway for ISD to consolidate the agencies it serves under a single e-mail solution. By June 2011, ISD will have successfully migrated approximately 50 agencies and 1,800 mailboxes onto the Microsoft Exchange Server platform, including some solutions previously on the Lotus Notes platform. In addition to leveraging the experience from these migrations, it would behoove the State to leverage tools that have been purchased. The State also has an opportunity to leverage the existing software licenses (previously purchased) for Microsoft Exchange Server platform that includes software assurance (estimated 21,500 Client Access Licenses).

Recommendation Summary

Capgemini's recommendation is to consolidate the State's messaging platform to a single, centralized messaging platform. A Microsoft Exchange 2010-based platform is suitable for the State. Microsoft Exchange Server 2010 provides advanced e-mail and calendaring while delivering new methods of access for employees, greater productivity for IT administrators as well as end users, and increased security and compliance capabilities. While leveraging existing technology standardization and investment in Microsoft Exchange, this proposed solution will provide reduced operating costs and improved efficiencies through consolidated resources and locations. It will also enable the State to adopt standard operational procedures, tools and configurations. The new environment is the foundation for all current and future enterprise-wide messaging technology solutions. A common messaging environment will provide a consistent user experience across regions and agencies.

The goals of e-mail consolidation are listed below.

- Consolidate messaging platforms into a single solution and location to enable optimal performance and virtualization.
- Reduce facilities management and maintenance duplication.
- Improve platform stability.

Recommendation Benefits

- Improved and unified communication from a single messaging solution and centralized resource directory.
- Consistent user experience across regions and agencies.
- Reduced operating costs and improved efficiencies through consolidated resources and locations.
- Simplified vendor and life-cycle management is enabled by a single e-mail solution.
- Centralized deployment and governance.
- Standardized operational procedures, tools and configurations.
- Personnel reduction—duplicative staff resources are supporting 129 or more independent messaging solutions.
- Reduction in risk—the centralization to fewer locations streamlines the architecture and recovery processes through reduction in complexity of managing data in multiple locations and on different platforms.
- Improved compliance and controls.
- Improved support for open records request and records management.

Some of the primary benefits to this solution are highlighted in **Figure 4-7**.

Figure 4-7. E-mail Summary, Recommendations and Benefits

Key Findings	Major Recommendations	Primary Benefits
Distributed E-mail servers including Microsoft Exchange Servers, Lotus and Groupwise Servers.	Drive centralization and consolidation through Microsoft Enterprise Messaging.	<ul style="list-style-type: none"> • Access e-mail from almost anywhere through a web browser using Outlook Web Application and Outlook Anywhere. • Use Microsoft Office Outlook for a rich client experience and offline access to mailboxes. • Access e-mail, calendar, contacts, and tasks through Exchange ActiveSync® from a wide range of mobile devices, including Microsoft Windows Mobile® and Windows Phone 7, Nokia E and N series devices, Palm devices, Apple iPhone and iPad, and certain Android phones.
E-mail service availability and maintenance is inconsistent.	Adopt high-availability services.	<ul style="list-style-type: none"> • Utilize Database Availability Group feature in Exchange 2010. • Easier and cheaper to deploy and manage high availability. • Support better service-level agreements with faster and more granular recoveries.
There is redundant e-mail administration.	Adopt a global helpdesk to facilitate a reduction in headcount.	<ul style="list-style-type: none"> • Reduction in human resources costs. • Leverage Microsoft Premier Services Support.
There are archiving challenges.	Adopt automation to archive old messages.	<ul style="list-style-type: none"> • Automatically archive old messages to a personal e-mail archive to reduce inbox clutter. • Reduce the liabilities associated with e-mail by applying expiration policies.

Workstation Optimization

The State's workstation environment is very expensive due to technology variance and decentralized management. There are approximately 32,000 end user devices within the 70 agencies that responded to the survey. There are more than 25 workstation operating systems. There were over 18,000 Windows XP nodes scanned, data capture also revealed Windows 95 and 14 different versions of MS Office.

In addition to the variations in software, at least 22 percent of the workstations in the inventory are more than 4 years old and out of warranty. Due to the lack of standardization across the enterprise, the State is saddled with a higher cost of end user management, lack of consistent security standards, and lack of data backup. Besides the cost of managing the end user environment, ensuring software compliance in such an environment is a significant challenge and security concern.

Recommendation Summary

In order to create a consistent end user experience and drastically reduce the management overhead associated with end user support, Capgemini strongly recommends the creation of a tiered user structure as part of a complete workstation optimization program. Workstation optimization includes the use of standardized thin client and virtual desktop environments where possible, recognizing that some high-end technical users and executives may need to maintain a different profile and workstation infrastructure configuration.

Workstation optimization will focus on a State-wide, secure, scalable and reliable infrastructure while enabling a consistent experience and improved performance for end users. The solution should be standardized, consolidated, centralized, network-based and flexible to meet dynamic business needs. Leveraging a centralized shared service workstation approach will provide the State with the opportunity to consolidate desktop operations.

Capgemini recommends the State implement workstation optimization across the enterprise. Workstation virtualization is prioritized and based on defined user profiles. These profiles will allow an organization to optimize workstation investments and configurations that align with specific business requirements.

Recommendation Benefits

- **Workstation simplification.** The decreased need for the workstation to have processing and storage for applications simplifies the workstation requirements and thereby the number of support personnel required
- **Software stack centralization.** Application portfolio rationalization process would eliminate unnecessary applications.

- **Management software standardization.** Consolidating onto fewer platforms would result in standardizing operational tools and processes. This also provides centralization of system management.
- **Vendor management simplification.** This initiative reduces the number of vendors in the environment.
- **Technological upgrades.** The State will have the ability to take advantage of new system management methodologies, increasing performance while reducing costs.

4.2.4.2 Additionally Recommended Infrastructure Transformation Initiatives

Many of these additional recommendations will follow the implementation of data center consolidation. This rationale is based on the risk mitigating approach that the State should consolidate core data center infrastructure first and with few exceptions will not optimize servers or other infrastructure until agency migration into primary data centers is complete.

Computing Optimization

This initiative includes both server consolidation and server virtualization.

Server consolidation is an approach to utilize more efficient computer server resources in order to reduce the overall number of servers in the IT landscape. This technique has been developed in response to the problem of infrastructure sprawl, where an organization has grown a landscape of under-utilized servers that take up more space and consume more resources than can be justified by their workload.

Both BDNA and survey responses indicate there are approximately 2,200 servers known to be supporting the State. With 2,200 servers under a common IT foundation, it would be prudent to manage their workloads to maximize efficiency. However, each agency maintains its own computing environment, thus there is significant duplication of the more commoditized functions of hardware and operating system support. As each agency must size their environments for peak demand, many systems remain under 10 percent utilized awaiting a spike in workload.

With the prerequisite of a shared IT services model, most of these workloads can be consolidated on more efficient hardware, allowing for significant reduction in power consumption, space, and administrative support and licensing. A common initiative explored with consolidation is virtualization: the managing of multiple virtual operating systems and/or applications on a single hardware component.

Agency IT departments have evidence that there is a virtualization effort underway. For example, the 100 UNIX servers managed across the State are already highly virtualized. As we review the 2,200 x86 devices, we can already see that several agencies have healthy efforts underway to utilize virtual

technologies and reduce the server hardware footprint within the IT environment. However, many agencies and applications are still highly distributed, representing an opportunity for the State to significantly improve service while reducing operational expenses.

Figure 4-8. Compute Optimization Findings and Recommendations

Key Findings	Major Recommendations	Primary Benefits
Agencies are at different levels of consolidation and virtualization adoption.	Create a consolidation and virtualization program. Promote standardized optimization practices across State infrastructure.	Those teams who have a higher experience level with consolidation can share their experiences.
Many agencies have mature core service offerings for e-mail, web, anti-virus, file and print, and database platforms. These need to shift towards a centralized service model.	Define the optimization lead, an individual who is chartered with building a convergence strategy for various core services.	Improved communication between technology teams at the grass roots level, thus promoting a culture of optimization.
Many agency systems are less than 20 percent utilized.	Adopt common sense thresholds on utilization. Promote a capacity manager to review compute capacity prior to application roll out.	System capacity will be reviewed on a regular basis by a capacity manager which fosters prudent purchasing policies rooted in capacity requirements.

Source: CG-PMO

Recommendation Summary

The primary applications which lend themselves to more efficient consolidation initiatives are desktop, e-mail, databases, and file servers. Capgemini recommends these services be our initial target for compute optimization.

Survey and BDNA data are fairly consistent in their findings about the WinTel x86 Platforms residing in the IT landscape in the State. Volumes are approximately:

- 120 web servers.
- 129 e-mail and BlackBerry servers.
- 98 SQL servers.
- 75 file servers.

These totals have been collected across 70 agencies. A server virtualization initiative can increase server efficiency and output by 50 to 80 percent conservatively, a consolidation ratio of 24:1 is targeted for each of these services.

Agencies ideally positioned to further explore a consolidation or virtualization effort include:

- The State Department of Health (over 300 servers).
- The Department of Mental Health and Substance Abuse Services (Disparate infrastructure: IBM, Dell, Gateway, and HP servers).
- The Department of Human Services (over 600 servers).

- The Employment Security Commission (over 100 servers which are mostly physically racked and stand-alone machines).
- The Office of State Finance (48 highly virtualized P7 series AIX servers supporting the PeopleSoft deployment and shared service agencies).
- The Oklahoma Tax Commission (10 Sun Solaris Systems performing a variety of functional and core services).

The Tax Commission will require additional functional analysis to reveal if the Solaris Operating System is required for their application portfolio. They presently are running on Solaris 8, 10, and Sparc operating systems on seven different hardware types, most of which are at end of life. A modernization of the hardware platform will increase efficiency and cost savings.

Attrition and lifecycle management are the optimal ways to uplift a UNIX estate of this size unless additional performance improvements are required of the platforms.

After centralization, service providing agencies should adopt a server consolidation strategy, combining compatible workloads on servers maintaining less than 30 percent utilization. In some cases, the minor investment in additional hardware will be self-funded and realized from the reduction in power, hardware maintenance, and administration activities.

ISD should investigate an initiative to build a SQL farm within the data center. Applications which are not significantly sensitive to minor latency can make database calls across the Capitol district into this shared farm.

We understand that not all of the remaining server opportunities for virtualization are viable. For the purposes of this recommendation, we will suggest that the State target 1540 candidate servers for virtualization over the next five years. Further, the State should consider adopting a “virtual first” policy for all new installs.

After centralization, ISD should adopt a server consolidation strategy, combining compatible workloads on low utilization servers.

Recommendation Benefits

- Reduced infrastructure footprint (1,540 servers currently, down to 154 physical servers).
- Target ratio of 24:1 is in scope for virtualization.
- 75 to 80 percent reduction in watts and BTUs with increased performance.
- Dynamic scalability capabilities, to transparently support future demand.

Storage Transformation

Simplification and centralization are overall foundational themes for the storage strategy and consolidated environment recommended for adoption by the State.

Capgemini recommends reducing the number of storage suppliers and technologies, adopting a tiered storage framework, and instituting thin provisioning practices. A fundamental recommendation is to optimize storage usage by:

- Using less data volume via Business Continuance Volume (BCV) replaced by snapshots where possible, conducting data de-duplication to eliminate unnecessary duplicate copies of the same data, and using a utility model to eliminate overhead and under-utilization costs by pay-for-use.
- Reducing cost per GB via re-tiering (moving applications to a lower cost tier of storage), virtual provisioning to eliminate storage space unused by applications, automating back-up and restore processes and driving competitive vendor pricing.

High-level recommendations and benefits based on findings from the CIO Study are presented in **Figure 4-9**.

Figure 4-9. Storage Transformation Findings and Recommendation Summary

Key Findings	Major Recommendations	Primary Benefits
Distributed storage platforms.	Storage assessment, driving the centralization and consolidation of the storage landscape.	<ul style="list-style-type: none"> • Reduction in TCO of landscape including maintenance and power. • Increase in utilization. • Enhancements in BCP profile.
Inconsistent State-wide standards.	Adopt a single vendor/model standard for both distributed and mainframe hosts and standardize management tools.	<ul style="list-style-type: none"> • Ease of procurement / increased discount levels. • Reduction in training. • Simplified administration. • Leverage of shared resource pool is more effective.
Redundant storage administration.	Adopt a shared resource pool to facilitate a reduction in headcount.	<ul style="list-style-type: none"> • Reduction in human resources costs. • Increase in skill levels.

These enhanced capabilities will lower the cost and complexity of improved storage services.

4.2.4.3 Strategic Infrastructure Programs

These strategic programs will also benefit the State in the long run. It is important to continually improve the IT approach and operating model. The State should consider service alternatives and optimization methods as they become more proven and widely available. Capgemini recommends maintaining an eye on the future as the transformation takes place.

Peripheral Centralization and Standardization

It is recommended the State stay the course of centralizing peripherals devices around standardized multi-function printers (MFPs). It is also recommended that the State accelerate the rate of adoption with these solutions so benefits can be realized sooner. The State will also benefit from being able to standardize and centralize supplier contracts around the selected standard models and providers.

Figure 4-10 summarizes the costs and benefit analysis associated with the IT infrastructure key opportunities/initiatives. The following subsections provide details on the individual initiatives.

Figure 4-10. Infrastructure Estimated Investment and Cost Savings

Area	Initiative	Year 1 (\$000)					Year 2 (\$000)					Year 3 (\$000)					Total (\$000)						
		Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings		
Infrastructure	Data Center Consolidation	\$5,118			\$1,131	-\$3,987	\$1,144			\$3,042	\$1,898				\$3,042	\$3,042	\$6,262			\$7,215	\$953		
Infrastructure	Mainframe Consolidation	\$300				-\$300	\$628			\$1,013	\$385	\$250			\$2,759	\$2,509	\$1,178			\$3,771	\$2,593		
Infrastructure	E-Mail Consolidation/ Collaboration	\$838				-\$838	\$3,847			\$6,568	\$2,720	\$3,847			\$6,568	\$2,720	\$8,532			\$13,135	\$4,603		
Infrastructure	Computer Optimization - Server Consolidation	\$1,120			\$322	-\$799	\$2,062			\$1,331	-\$731	\$1,480			\$2,549	\$1,069	\$4,662			\$4,201	-\$461		
Infrastructure	Workstation Optimization	\$3,058			\$2,406	-\$652	\$11,050			\$21,574	\$10,524	\$8,497			\$17,165	\$8,668	\$22,605			\$41,144	\$18,540		
Infrastructure	Enterprise Storage	\$1,465				-\$1,465				\$879	\$879				\$879	\$879	\$1,465			\$1,757	\$292		
Infrastructure	Staffing													\$8,097	\$8,097			\$8,097			\$8,097		
Total		\$11,899			\$3,859	-\$8,041	\$18,731			\$34,407	\$15,675	\$14,074			\$8,097	\$32,962	\$26,984			\$44,704	\$8,097	\$71,223	\$34,617

5 Organizational Improvements

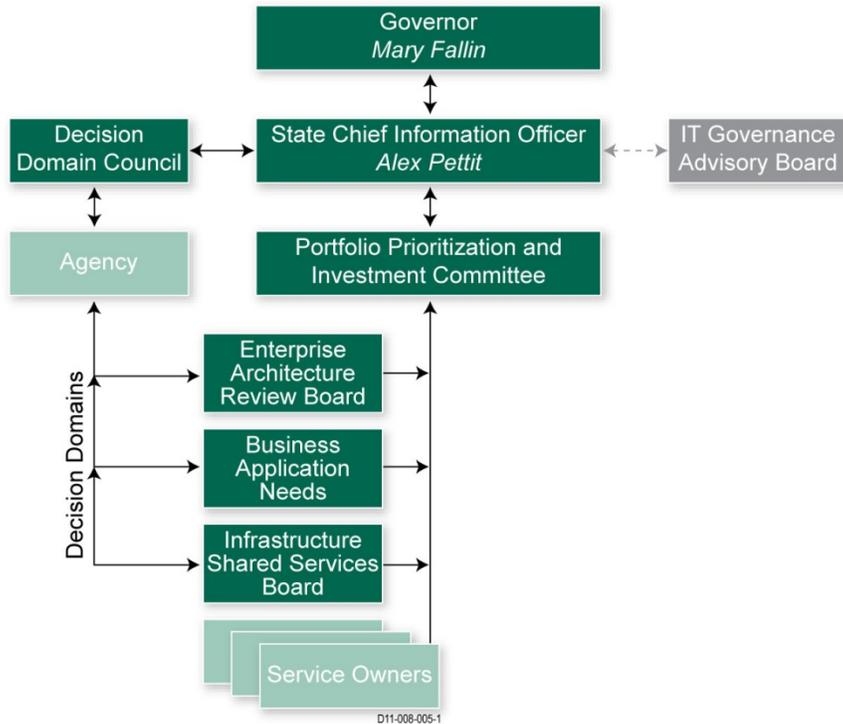
IT governance is a vital process to improve the effectiveness and efficiency of the State. It includes the creation of a governance program for evaluating, prioritizing, and tracking technology investments and monitoring projects State-wide.

Control and compliance activities are required over State IT expenditures, resources, enterprise architecture, stakeholders to meet House Bill 1170. This includes creating a governance program for evaluating and tracking technology investments, developing enterprise-wide policies that address repeatable technology solutions, and introducing disciplined operational structures and processes into the State’s IT organization.

IT governance work sessions were held with various State agencies leadership to understand expectations and to share the future IT governance objectives required by House Bill 1170 and this plan of improvements. The IT governance organizational structure as the described implementation and support activities were outcomes of these work sessions.

Figure 5-1 shows a hierarchical organization structure with the Governor establishing the overall IT guidance, the State CIO driving the execution of this guidance, and the IT service owners delivering day to day IT services to the State.

Figure 5-1. IT Governance Organizational Structure



A newly chartered IT Governance Advisory Board will provide advice to the State CIO on external forces that can impact the direction of IT. This group will provide external business insights into improving IT services. It is recommended that this advisory group replace the Technology Application Review Board.

The Decision Domain Council and individual decision domains provide the State a collaborative framework for analysis and review to sustain and improve IT services. The council has one representative from each decision domain to further review and suggest options to the State CIO. Each decision domain focuses on a particular IT service or agency business service.

The Portfolio Prioritization Investment Committee supports the State CIO by providing the investment analysis on all IT projects requiring IT governance review. Return on investment, total cost of ownership, and financial sustainability analysis will be the responsibility of this committee.

To provide the necessary support structure and processes IT governance will require core initiatives to be immediately implemented that enable portfolio analysis, project management monitoring, investment analysis, and reporting. These core initiatives are:

- Selection, configuration, and implementation of the portfolio and project management system.
- Develop the IT governance process.

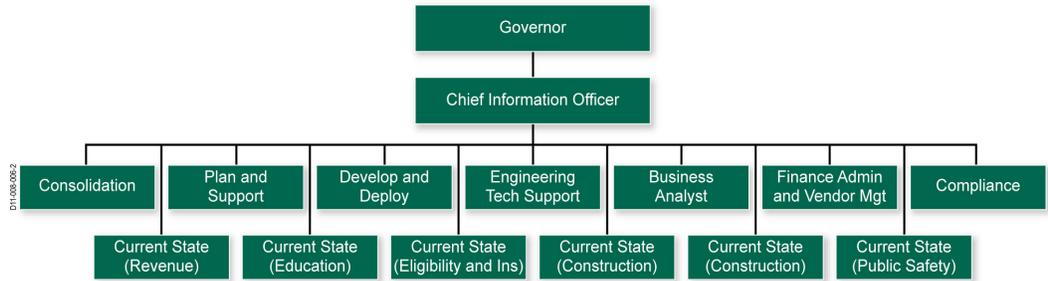
These two initiatives should be executed in parallel, tightly coupling process and tool integration. These processes, technology, and training provide the basic foundations and activities to initiate IT governance.

5.1 Proposed ISD Functional Organizational Model

This transformation initiative defines a new IT operating model and mandate. It is imperative that the State CIO have full authority and accountability for all State IT personnel, technologies, and expenditures in this new centralized enterprise infrastructure and shared services organization. This is at the core of eliminating the redundant and overlapping services currently residing in State agencies today. Only through this will the State lower total IT costs while improving quality of services.

Figure 5-2 defines a new functional organizational model for ISD, placing the State CIO at the helm of the ISD organization.

Figure 5-2. ISD Functional Organization Model



The ISD organization is chartered to delivery high quality, cost effective IT services throughout the State. The State CIO will report directly to the Governor, and will deploy an IT Governance process to develop the IT strategic plans.

The Decision Domain Council in conjunction with the external advisory board will hold the State CIO accountable for the delivery of these services.

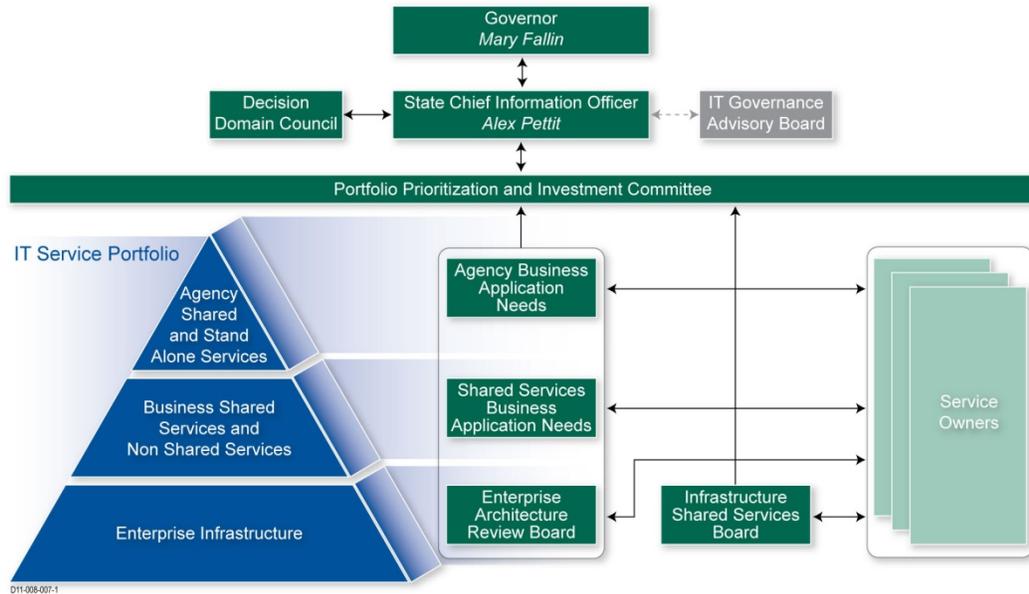
5.2 IT Governance Model

IT governance is a required capability to improve the effectiveness and efficiency of IT services. This includes creating a governance program for evaluating and prioritizing technology investments and monitoring projects State-wide. Additionally, this program will help develop enterprise-wide policies, standards, and architectures that address repeatable process and technology solutions and introduce disciplined operational structures and processes into the IT organization.

Effectiveness of IT governance can be assessed by how well it enables IT to deliver on cost-effectiveness, asset utilization, continuously improving quality of services, and resource optimization.

Figure 5-3 shows the relationship between the IT service portfolio and the IT governance organizational groups that review and approve changes to the IT portfolio and proposed projects.

Figure 5-3. IT Governance Model



These governance groups reflect the service owners responsible for the State enterprise architecture standards, shared services, and agency business needs. The final project request is reviewed by the Portfolio Prioritization and Investment Committee, which makes the final decision on enterprise infrastructure project approval.

The Decision Domain Council will advise the State CIO on IT issues, IT services, technology directions and standards that can impact State IT service delivery. They will provide membership to the Business Application Needs groups, which are responsible to review, prioritize, and approve all shared-services projects. The Decision Domain Council with the Portfolio Prioritization and Investment Committee together form the IT Steering Committee, with the responsibility to review, prioritize, and recommend approval for all technology projects.

Many States have a central IT organization that delivers all IT infrastructure, policies, strategies, and architecture. The following States provide examples of IT governance models:

- **The State of California.** Office of State CIO is a cabinet level agency with statutory authority over strategic vision and planning, architecture, IT policy.
- **The State of Florida.** The Agency for Information Technology led by the State CIO is responsible for architecture, IT policies, project portfolio management, and participation with the CIO Council.

- **The State of Georgia.** The Georgia Technology Authority is responsible for IT infrastructure, policy, architecture, and project portfolio management. Statutory authority does not cover agencies headed by elected officials nor the general assembly.
- **The Commonwealth of Kentucky.** The Commonwealth Office of Technology, under the State Finance Cabinet is responsible for all State IT procurement, architecture, applications, and infrastructure services.
- **The State of Michigan.** The Department of Information Technology has centralized authority over all State IT services. The CIO is appointed by the Governor. The CIO is responsible for infrastructure, security, architecture, project portfolio management and strategic policy.

5.3 Centralized Enterprise Infrastructure/Shared Services Model

Figure 5-3 defines a combination of a centralized services model with a customer-driven business model. Starting with the pyramid on the left, the IT delivery stack has been divided into three general categories: Enterprise Infrastructure; Business Shared Services; and Agency Stand-Alone Services.

The Enterprise Infrastructure services can be summarized as the “differences which do not make a difference.” Telephone services are the classic example of these commodity services. Dial tone sounds the same to the end user if the supplier is AT&T, Verizon, or Sprint. The same can be said of internet connectivity, storage space, security monitoring, virus protection, server virtualization, and many other basic IT services. Many of the services IT delivers today are commodity in nature, invisible to the end user and scalable in delivery. The larger the audience which these are delivered, the more affordable the service is on an individual, per-unit basis. This is the primary focus for consolidation and where the largest portion of savings can be realized, both by the agency and to the State overall. The service is either available or it is not, making availability and up-time the key service criteria. Standards are the most important component of governance at this layer, and an architecture review board is to be established which will set these standards and develop a technical reference model mapping the legacy, core, and leading technologies the State is adopting to meet the agency needs at the infrastructure layer. This can be illustrated with network devices employed by the State. Some agencies use the old coaxial cable systems to do networking. These would be considered legacy. Most agencies use Ethernet systems, these are considered core systems. Wireless connectivity solutions are considered leading technologies.

The next layer is the Business Shared Services capabilities and infrastructure. The CORE PeopleSoft implementation represents a shared service, but it is not the only opportunity for shared services in the State. Several agencies (Department of Human Services, the State District Attorneys, OneNet, and others) have found there are services which they provide to themselves which can be provided to more agencies through a shared services arrangement. There are

opportunities for other agencies to enjoy or benefit from a shared services delivery model, offering further economies of scale. Quality at this level can be more difficult to define, and often more strategic to the agency than the basic infrastructure needs. Business Application Needs committees comprised of the agencies who use these services (customers of the services) are to be formed. The roadmap for delivery of new services, service levels for existing services, and update or upgrade of older services will be decided and prioritized by these groups for each shared service provided. This will be a customer-driven process, and most of the savings realized will come primarily from optimization of the business practices rather than through the optimization of the IT delivery systems.

The highest layer of the pyramid represents those services which are unique to the particular agency itself, where no other service is substitutable and the best way to provide this service is to do so at the agency level. This is where the sensitivity to quality is the greatest and where the differences truly do make a difference. This represents the investment opportunity for an agency to make in IT to further improve quality, optimize service delivery, and innovate ways they can better support the mission of the agency.

From industry metrics and consistent with our findings, about 70 percent of the total IT costs are devoted to the operation and maintenance of the current state, which is mostly transparent to the end user. To consolidate this responsibility will free agency resources to focus on the opportunities which do make a difference to the end users, citizens, or to be captured by the State as savings.

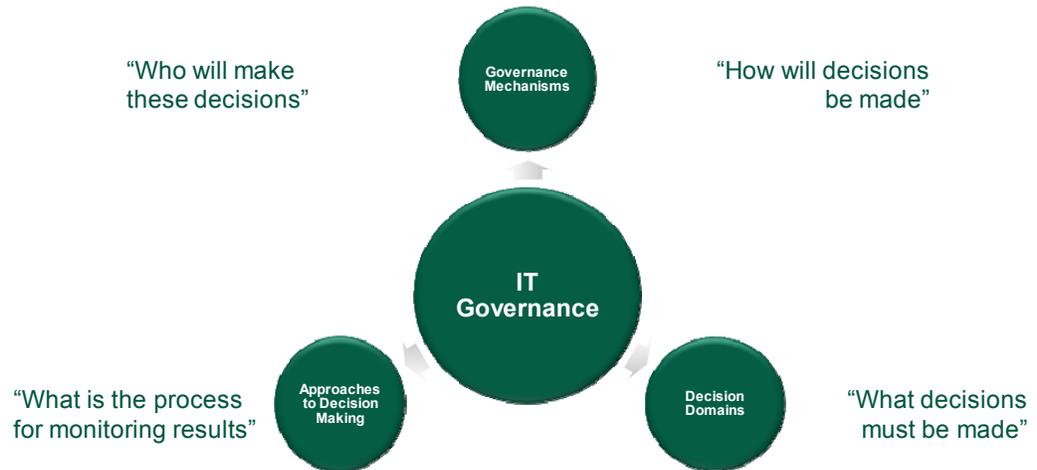
Key services the enterprise infrastructure/shared services organization provides to the subscriber agencies are listed below.

- **Strategic planning.** Strategic planning should be a centralized activity carried out by the office of the CIO with input provided by the enterprise infrastructure/shared services organizations and the larger agency representatives. This centralized planning process is the primary method the Governor would use direct agency IT activities. This centralized function will provide the enterprise with the leverage to conduct IT activities more effectively and economically than the completely federated model employed today. Currently, agencies plan and manage their IT portfolio independently, with scant oversight from the Office of State Finance. This strategic planning process can identify and take advantage of synergies between agencies, ultimately decreasing the overall cost while improving service levels.
- **Solutions delivery.** Solutions delivery is the process of realizing the systems envisioned by the strategic planning process. Solution delivery translates the concepts defined by the agencies and approved by the IT governance committees into application designs and requirements. The goal of solutions delivery is to identify, create and deliver IT applications that are on-time, within budget meet the intended requirements, and create value for the State.

- **Solution provisioning.** This provides the services that are IT utility or commodity services such as network connectivity, workstation provisioning and support, e-mail application servers, data centers, service desks and other commodity IT services. These are the foundational layers upon which other IT activities are built. The key objectives of this function are deploying and operating services to the agencies at the lowest possible cost and highest possible quality. Economies of scale for these services are large and can provide the State with significant savings when centralized across all agencies.
- **Architecture and standards.** This addresses the creation of the standards and policies which form the architectural blueprints guiding the expansion of the enterprise IT infrastructure. These roles are critical to ensure the infrastructure environment is highly scalable, reliable, available, manageable, and secure. Standards help to eliminate delays in the applications development life cycle and facilitate the seamless integration across applications/agencies.

5.4 The Agency-driven Governance Model

The agency driven governance model incorporates both business and technologist participation in the decision-making process as illustrated in Figure 5-4. This model introduces the concept of a Vice -President (VP) for IT Strategic Services within the agency as the innovation leader and IT champion ensuring IT delivers the critical value proposition. This forms the basic structure of a matrix management organization. Matrix management structure is not a new concept, private sector organizations have had to optimize cross-functional teams nested in vertical organizations for over 30 years. Supporting the agency VP is a small cadre of IT business analysts to drive value innovation within the larger agencies. Value innovation requires an on-going analysis of how IT can be used to strengthen and enhance the agency's central role and mission, enhance their customer/citizen relationships, and connect or interact with other partners/agencies. This model allows the VP to focus on the needs of the agency and how best to maximize the investments of IT. The VP and supporting IT business analysts are the experts in developing a deep understanding of the agency lines of business and form close ties with the centralized IT organization. This function will require coordination with the IT governance processes and the State CIO.

Figure 5-4. Decision Making Process

1 A Matrixed Approach to Designing IT Governance”, MIT Sloan Management Review, by Peter Weill and Jeanne Ross

A large part of the successful IT governance implementation depends on the organizational change required to position the participants in these new roles to ensure they understand the performance expectations. During the IT governance workshops, materials were produced that can accelerate this implementation and form the basis of the above guidance.

Key initiatives to support implementation are listed below.

- Implement State-wide portfolio and project management.
- Operationalize IT governance by establishing committees, missions, and first year objectives.
- Enact recommended organizational change through centralization of IT services.
- Establish IT governance communications plan.
- Link enterprise IT architecture to the governance framework.

5.4.1 Implement State-wide Portfolio and Project Management

Capgemini recommends that the State implement the IT Governance Model developed in the IT governance workshops. The model frames how decisions over IT projects, IT expenditures, enterprise architecture, and project performance monitoring will work. Portfolio and project management solutions enable high-level project management, establishes standard project process definitions, identifies critical inputs and outputs, establishes roles and responsibilities, defines software configuration requirements, and produces standard workflow procedures and templates.

Recommendation Summary

Through multiple working sessions with agency IT leadership, an IT Governance model for the State was designed that supports the principles of House Bill 1170 and establishes a governance process necessary to achieve IT consolidation.

Recommendation Benefits

This recommendation provides the process, organization alignment, tools, and workflow to implement IT Governance to support the realization of the multi-year IT savings developed in the CIO Study.

Implementation Plan

- Align the project portfolio management and software configuration plans.
- Staff a project team to define and implement the process.
- Design the relevant processes (activities, inputs, outputs).
- Define the software requirements through collaboration with the process team.
- Implement the solution and process.
- Define the charter for each IT governance process.
- Develop all process documentation, templates, and workflow.
- Test the processes with a scenario walk through.
- Develop supporting procedures, reports, and communications templates.

5.4.2 Operationalize IT Governance

This initiative closely follows the State-wide portfolio and project management initiative. IT governance rollout requires the training development, training delivery, process rollout and supporting tools accessed by governance users. Monitoring and coaching project managers and governing boards through the process will be required during rollout.

Recommendation Summary

The operationalization of the IT governance process and alignment with the State-wide portfolio and project management initiative is necessary to effectively separate decision making from execution, ensuring targeted quality and productivity goals are achieved and corrective actions are identified and executed when necessary.

Recommendation Benefits

Implementation of an IT governance process is mandatory to support the CIO Study recommendation and achieve its fiscal and operational objectives. If this is unsuccessful, IT delivery will define in a vacuum what services will be delivered to the agencies at what cost and quality, with a proclivity to minimize both. This will result in an unsuccessful consolidation, with shadow IT shops producing

rogue IT services to help agencies meet mission critical needs. This will ultimately lead back to a fragmented IT environment similar to what the State is now experiencing.

Implementation Plan

- Design the final rollout plan and training schedule (activities, timeline).
- Develop the training materials and identify reusable delivery capabilities.
- Train the stakeholders and governance participants.
- Roll out and build sustainability through monitoring and coaching.
- Review rollout effectiveness.
- Revise rollout based on effectiveness review.
- Implement standard reports and dashboards for service delivery status and project monitoring.

Establish IT Steering Committee and Board Governance Charters

The external governance board provides the perspective of the external stakeholders to the CIO. Representatives should assist in identifying risk and have strong communications skills with the ability to explain and market the governance council role and processes to other external stakeholders. External stakeholders would include both businesses and citizens of the State, and would be appointed by the Governor and House and Senate leadership. This board would review overall IT strategies and proposed services and provide insight and advice. The agency driven Decision Domain Council, with the Portfolio Prioritization and Investment Committee together form the IT Steering Committee. The State of Oklahoma IT Steering Committee (ITSC) provides overall oversight of the State-wide IT strategic plan and key consolidated or shared services initiatives including major project strategy feasibility and benefits analysis, project prioritization and adoption strategies, and oversight of all major activities.

The ITSC provides a strategic, balanced perspective to support State-wide agency goals as well as ensuring all audit, legislative, executive and regulatory mandates are achieved. Members of the ITSC ensure business objectives are being adequately addressed and the approved strategies and supporting projects remain under control. ITSC members should be able to consistently represent their particular area while maintaining a State-wide strategic perspective. If unable to attend, they will appoint and brief a senior level delegate to represent them. They serve as the executive sponsor for projects and process improvements from the areas they represent. They must maintain a high level knowledge of the State and agency strategic plans, services provided, and the current systems employed by their agency. They must be able to act as the change agent and coach/mentor to their agencies.

5.4.3 Enact Recommended Organizational Changes

The IT governance process implementation requires consistent support from the organizational change team to support the overall IT transition. Considering the expected impact of the proposed changes within the agency communities, aggressive culture awareness, communications planning, consistent executive support, and dedicated change teams will be required.

Recommendation Summary

Align and communicate the IT organizational changes to include the overall IT consolidation, explaining how the new governance processes will ensure high quality service delivery that exceeds agency requirements while providing significant and sustainable cost savings.

Recommendation Benefits

These organizational changes are the only reasonable and effective means to ensure all shadow IT services, rogue IT systems, and hidden IT costs are identified and marshaled to meet the overall objectives and priorities of the State.

Implementation Plan

- Analyze organizational readiness.
- Identify key stakeholders and secure their participation to improve and support the centralization initiative.
- Meet with relevant committees, councils, boards, and agencies to review their new roles and responsibilities.
- Attend governance sessions to monitor and propose corrective leadership and meeting actions.
- Develop a change agent network and leaders to accelerate IT governance support.
- Assign specific tasks to governance bodies.
- Support and monitor progress, with the expectation of continuous improvement.

5.4.4 IT Governance Communication

It will be necessary to develop an IT governance communications plan to support the effective messaging to all affected parties. This will require the building of communications templates, workflow, and approval mechanism to optimize communication flow. Different levels of messaging for the varied audiences will need to be built. It will be necessary to coordinate communication distribution and distribution lists among these audiences. It will be necessary to identify media (wikis, blogs, frequently asked question websites, contact numbers and email addresses) through which stakeholders can get information, pose questions, and request clarification about initiatives and activities.

Recommendation Summary

IT communication consistency and timeliness is a stabilizing mechanism to ensure stakeholders are continually informed on the progress and expectations of the IT governance activities in meeting the State's fiscal and operational expectations. It also provides stakeholders with the opportunity to provide performance feedback to identify problems or service delivery failures. This feedback loop will also communicate lessons learned, corrective actions taken and timelines for improvements.

Recommendation Benefits

This activity enables communication, alignment, centralization and control of the overall message to the stakeholders. Perhaps as important as execution, effective communication is key to the success of the entire initiative. Bi-directional communications must be supported to provide transparency and legitimize the process and decisions made by the various IT governance bodies. Governance and related communications activities will continue long beyond the consolidation of IT services.

Implementation Plan

- Develop, prepare, and launch the communication campaign. This should be initiated before transition program begins.
 - Proactively communicate the timeline of key IT governance activities.
 - Highlight and focus on the benefits and the expected outcomes.
 - Explain the process of consolidation in detail, providing examples and contact information of key participants.
 - Encourage feedback from all stakeholders and make this feedback public when possible. Demonstrate tracking and issue resolution, with the goal of continuous improvement of service delivery.
- Coordinate and manage communications for the organization change initiative. Separate IT communication from business issue communication for clarity.
- Train and coach key stakeholders and affected parties on IT governance messaging. Encourage participation in the messaging process.
- Identify modes of communication and target audiences.
- Develop communication workflow and approval mechanism, where applicable.
- Develop and publish a communications schedule.

5.4.5 Link Enterprise Architecture to the IT Governance Framework

The establishment of enterprise architecture (EA) capabilities and standards and the documentation of this information is an important source of knowledge for the Enterprise Architecture Review Board to review project requests, standardize procurement, and manage change activities.

The first initiative focuses on the EA process development and integration with the overall IT governance process. Included is the development of the EA project package submission requirements. This provides the technical specification to demonstrate compliance with or request exception to the IT architecture and standards adopted by the State. It will also be necessary to design the workflow for developing and approving EA standards and provide training. This will be performed by technical subject matter experts from across the State, who together will produce the technical reference model which will guide all IT acquisitions and changes.

The second initiative is the EA build-out. It focuses on the development of all the architecture standards, with an initial emphasis on defining the “as-built” environment, particularly as it relates to the current consolidation and project activities. Completion of the “as-built” will provide the EA online standard to enable project managers and solution architects to design the future state and requisite project plans to reduce risks, costs, ensure re-use, and identify potential technical barriers and limitations.

Recommendation Summary

A key guiding force for overall State IT governance and fiscal control is the utilization of the EA to enable a consistent and standardized architecture within the State. Detailed description of the technical architecture, along with the business process supported, will be used by both the IT and business process owners routinely, beginning with the “as-built” and progressing to the “to-be” state of the architecture.

Recommendation Benefits

A consistent and standardized EA is a critical requirement to meet the objectives of House Bill 1170 and support the sustained fiscal controls for State-wide IT. A comprehensive EA will identify redundancies, clearly illustrate service gaps and opportunities for improvement, and avoid costly IT initiatives which can arise from making decisions grounded in incomplete information. Much like the architectural documents used in the construction of buildings, the State’s EA will help ensure that all IT work is conducted consistent with an overall integrated design. EA will provide the State with the background information to estimate and specify risk, costs, and opportunities specific to Oklahoma.

Implementation Plan

- Develop an EA vision and communication plan.
- Develop project plan:
 - Define, develop, and document the EA workflow process, and review activities.
 - Determine models, methods, skill sets, and tools to be used to develop a State EA.
 - Identify the method and template to communicate the enterprise architecture standards.
 - Develop the EA project package requirements and integrate with the portfolio and project management initiative.
 - Develop EA process, project package, technical reference model, and standards review training materials.
 - Train enterprise architects and specific solution architects.
- EA build out:
 - Prepare and launch architecture standards development effort, beginning with the technical reference model.
 - Plan architecture capability, communicate key activities and timeline.
 - Develop communications plan for architecture standards development and benefits. Identify community of practice to produce and define EA for the State.
 - Assign standards development domains to individuals in community of practice.
 - Review drafted standards.
 - Obtain IT Governance approval.
 - Publish on approved medium and method.
 - Provide process feedback and suggest workflow improvements.

These initiatives will incur costs for implementation. **Figure 5-5** provides a breakdown of the costs associated with the governance implementation.

Figure 5-5. Estimated Investment for Governance Implementation

Area	Initiative	Year 1 (\$000)					Year 2 (\$000)					Year 3 (\$000)					Total (\$000)				
		Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings	Transform Costs	Operating/Ongoing Costs	Cost Avoidance	Hard Savings	Net Savings
Governance	Implement IT Governance Program	\$456				-\$456		\$38			-\$38		\$38			-\$38	\$456	\$75			-\$531
Governance	Operationalize IT Governance	\$207	\$564			-\$771		\$564			-\$564		\$564			-\$564	\$207	\$1,693			-\$1,900
Governance	Organizational Change	\$114				-\$114											\$114				-\$114
Governance	IT Governance Communications	\$42	\$78			-\$120		\$78			-\$78		\$78			-\$78	\$42	\$234			-\$276
Governance	Enterprise IT Architecture for Governance	\$132	\$71			-\$203		\$335			-\$335		\$335			-\$335	\$132	\$742			-\$874
Total		\$951	\$713			-\$1,664		\$1,015			-\$1,015		\$1,015			-\$1,015	\$951	\$2,744			-\$3,695

6 Recommendations/Roadmap

An all-inclusive, high-level roadmap/master plan has been developed to ensure that our recommendations provide a high return on investment. This master plan is based on the ranking and interdependencies of the proposed initiatives.

This section presents a **draft** roadmap that will help the State to achieve its targeted 15 percent cost savings for overall IT expenditures. The roadmap/master plan contains recommendations in the form of initiatives, priorities, timeframes, and high-level implementation plans. We have estimated the capital and labor resources required to successfully execute this master plan and utilized these estimates in developing the detailed cost/savings models included in the appendices to this document.

The all-inclusive roadmap is presented in **Figure 6-1**. This is an ambitious plan encompassing 33 improvement opportunities. With the organizational realignment and process changes currently taking place, it would not be practical to recommend that ISD execute all of these initiatives at the same time and with the same level of intensity. Hence, external resources will most likely be required to help ISD staff implement the master plan. In order to mitigate risks for the State during this transition period, several initiative implementations are based on a co-sourcing model.

It has been recommended that a \$100 million bond be used to fund this IT modernization program. The bond fund is expected to be drawn down as costs are incurred over a three year period. Based on prior experience with similar implementations that utilized comparable funding mechanisms, funding over a five to seven year period is typical.

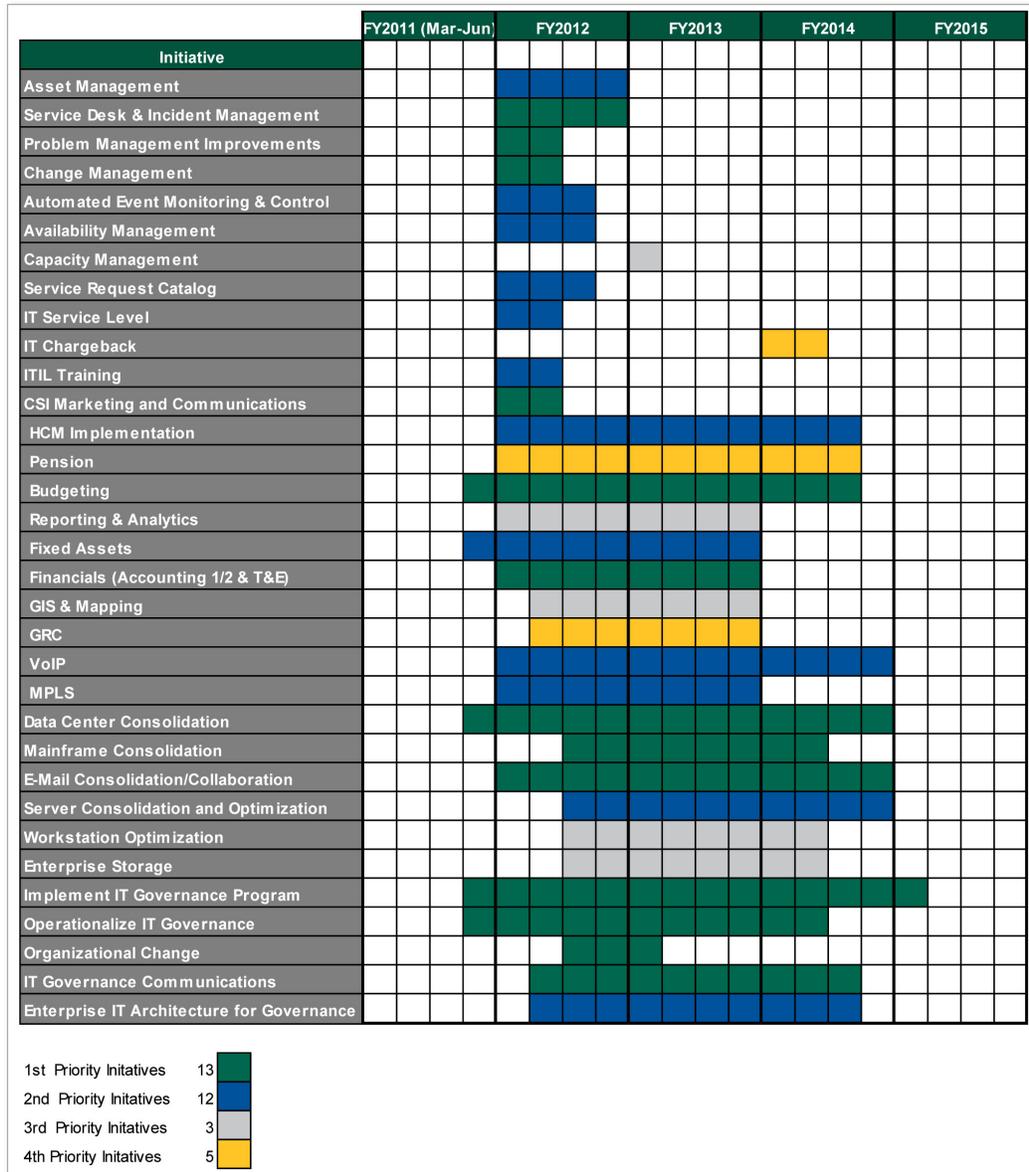
Figure 6-1. Roadmap/Master Plan

Area	Initiative	FY2011 (Mar-Jun)			FY2012			FY2013			FY2014			FY2015		
		Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3	Q1	Q2	Q3
Operations	Asset Management															
Operations	Service Desk & Incident Management															
Operations	Problem Management Improvements															
Operations	Change Management															
Operations	Automated Event Monitoring & Control															
Operations	Availability Management															
Operations	Capacity Management															
Operations	Service Request Catalog															
Operations	IT Service Level															
Operations	IT Chargeback															
Operations	ITIL Training															
Operations	CSI Marketing and Communications															
Applications	HCM Implementation															
Applications	Pension															
Applications	Budgeting															
Applications	Reporting & Analytics															
Applications	Fixed Assets															
Applications	Financials (Accounting 1/2 & T&E)															
Applications	GIS & Mapping															
Applications	GRC															
Telecom	VoIP															
Telecom	MPLS															
Infrastructure	Data Center Consolidation															
Infrastructure	Mainframe Consolidation															
Infrastructure	E-Mail Consolidation/Collaboration															
Infrastructure	Server Consolidation and Optimization															
Infrastructure	Workstation Optimization															
Infrastructure	Enterprise Storage															
Governance	Implement IT Governance Program															
Governance	Operationalize IT Governance															
Governance	Organizational Change															
Governance	IT Governance Communications															
Governance	Enterprise IT Architecture for Governance															

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Figure 6-2 provides further insight by prioritizing initiatives based on strategic importance to the State. The chart uses a four level prioritization scheme. Implementation priority levels are color coded, with priority 1 being the most important and priority 4 being the least important to the State. This initial priority scheme is based on feedback from the State, survey data, and general observations made by the Capgemini team during the assessment.

Figure 6-2. Prioritized Roadmap



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Note: the State is already engaged in implementing and/or planning some of the recommendations (e.g., e-mail consolidation), which will most likely result in some changes to priority schemes when this master plan is finalized.

To expedite the implementation process and reduce risk to the State, external consulting components are included in the three year transition plan, which should allow the ISD staff to simultaneously do their day jobs and execute strategically important initiatives (e.g., the adoption of PeopleSoft as a shared services to 75 percent or more of the agencies is considered Priority 1).

One of the main assumptions for this roadmap is that all IT spending, personnel, projects, and related costs will be effectively moved to the State CIO on July 1st, 2011. Upon completion of the transfer, further assessment will be conducted to reassess prioritization of all initiatives as ISD and the State learn to work within the new governance framework and shared services-consolidated IT environment.

The State should engage in the implementation of the master plan in four distinct but interlocked phases: Phase 0—Immediate Needs, Phase 1—Organizational and Key Infrastructure Initiatives, Phase 2—Mid-Term Implementations, Phase 3—Closure and Next Steps.

6.1 Phase 0—Immediate Needs (FY2011)

This phase begins immediately after the State accepts the assessment. The primary objective of this phase is maintaining momentum of change generated by HB1170 and creation of the State-wide position of CIO and Secretary of Information Technology. Most of the initiatives undertaken during this phase will be stepping stones for the subsequent phases. Phase 0 initiatives include:

- Identify and mobilize core transition team.
- Create and begin executing a sustainable IT governance model in support of the State’s IT prioritization and spending.
 - Select, configure, and implement the portfolio and project management system.
 - Begin implementing the IT governance program.
 - Begin operationalizing the IT governance (e.g., implement processes, enabling tools, etc.).
- Begin data center consolidation by developing a detailed project charter and start implementing.
- Develop a budgeting process model for the new centralized / distributed budget formulation system.
- Develop a consolidated fixed asset management approach, which will serve as the basis for implementation of the future state vision.
- Begin PeopleSoft-related model confirmation and planning efforts for financial and human capital management processes management.

6.2 Phase 1—Organizational and Key Infrastructure Initiatives (FY2012)

This phase will begin by building upon Phase 1 and will primarily focus on implementing the most urgent initiatives. Phase 1 initiatives should include:

- Solidifying and fine tuning IT governance.
 - Develop a communications plan. Develop and deliver all future communications in a consistent pre-planned fashion (proactively manage effective communication to and from all agencies and ISD).
 - Begin building organizational change management competencies.
 - Implement enterprise IT architecture for governance.
- Continue implementing the data center consolidation plans.
- Financial shared services (CORE) accelerated adoption by the agencies, centralized IT budgeting, and payroll change recommendations.
- Establish an operational excellence program.
 - Identify and mobilize an operational excellence program team.
 - Develop an operational excellence program charter including the following projects:
 - Develop service desk and incident management.
 - Problem management improvements.
 - Change management.
 - CSI marketing and communications.
 - Asset management.
 - Automated event monitoring and control.
 - Availability management.
 - Service request catalog.
 - IT service level.
 - ITIL training.
 - Capacity management.
 - IT chargeback.
 - Identify and mobilize team members for specific projects.
 - Implement the following projects:
 - Develop service desk and incident management.
 - Problem management improvements.
 - Change management.
 - CSI marketing and communications.
 - Asset management.

- Automated event monitoring and control.
- Availability management.
- Service request catalog.
- IT service level.
- ITIL training.
- Develop a detailed project charter and begin implementing the e-mail consolidation initiative.
- Develop a detailed project charter and begin implementing the mainframe consolidation initiative.
- Develop a detailed project charter and begin implementing the VoIP initiative.
- Develop a detailed project charter and begin implementing the MPLS initiative.
- Develop detailed project charters for the server consolidation and optimization, workstation optimization and enterprise storage initiatives.

6.3 Phase 2—Mid-Term Implementations (FY2013)

This phase will be primarily focused on successful implementation of the on-going programs. Phase 2 initiatives should include:

- Perfecting the governance model in support of the State IT prioritization and spending and communication to and from ISD/agencies.
- Implementation of the HCM recommendations and Fixed Assets.
- Continue implementing data center consolidation.
- Operations excellence program -- implement capacity management.
- Continue implementing the E-Mail consolidation initiative.
- Continue implementing the mainframe consolidation initiative.
- Continue implementing the VoIP initiative.
- Continue implementing the MPLS initiative.
- Continue implementing server consolidation and optimization, workstation optimization and enterprise storage initiatives.
- Planning of software and tools standardization.

6.4 Phase 3—Closure and Next Steps (FY2014)

This phase will be focused on completing major infrastructure-related projects and beginning to address leading practices adapted by industry. Phase 3 initiatives should include:

- A perfected governance model in support of the State IT prioritization and spending and communication to and from ISD/agencies.
- Operations excellence program/implement IT chargeback.
- Complete data center consolidation.
- Complete VoIP initiative.
- Complete MPLS initiative.
- Continue implementing server consolidation and optimization.
- Maintain workstation optimization.
- Maintain enterprise storage future state.
- Disaster recovery.
- Planning for pension consolidation, GIS standardization, and reporting analytics to the shared services environments.
- Planning for green IT and cloud computing.

People Survey—Top 40

The enterprise response to the people survey was 80.52 percent.

Top 40 - People Quality		Target Score - 90%*		
AGENCY	#	Tier	People Survey	Overall
1 DEPARTMENT OF HUMAN SERVICES	830	1	100.00%	99.10%
2 OFFICE OF STATE FINANCE	90	1	100.00%	97.30%
3 OFFICE OF JUVENILE AFFAIRS	400	1	100.00%	99.10%
4 DEPARTMENT OF CORRECTIONS	131	1	100.00%	94.59%
5 REGENTS FOR HIGHER EDUCATION	605	1	100.00%	87.39%
6 DEPT. OF ENVIRONMENTAL QUALITY	292	1	100.00%	79.28%
7 DEPARTMENT OF AGRICULTURE	40	1	100.00%	85.59%
8 DEPARTMENT OF CENTRAL SERVICES	580	1	100.00%	96.40%
9 EMPLOYMENT SECURITY COMMISSIO	290	1	100.00%	61.26%
10 DEPARTMENT OF TRANSPORTATION	345	1	100.00%	81.08%
11 CORPORATION COMMISSION	185	1	100.00%	62.16%
12 DEPARTMENT OF VETERANS AFFAIRS	650	1	100.00%	86.49%
13 MENTAL HEALTH AND SUBSTANCE A	452	1	100.00%	50.45%
14 OK. PUBLIC EMPLOYEES RET. SYS.	515	1	100.00%	82.88%
15 DEPARTMENT OF PUBLIC SAFETY	585	1	100.00%	51.35%
16 CNTR. FOR ADVANC. OF SCIENCE/TEC	628	2	100.00%	99.10%
17 DEPARTMENT OF LABOR	405	2	100.00%	97.30%
18 ST. & EDUC. EMP. GRP. INS. BD.	516	2	100.00%	99.10%
19 OKLAHOMA LOTTERY COMMISSION	435	2	100.00%	97.30%
20 WATER RESOURCES BOARD	835	2	100.00%	97.30%

Top 40 - People Quality		Target Score - 90%*		
AGENCY	#	Tier	People Survey	Overall
21 HEALTH CARE AUTHORITY	807	2	100.00%	97.30%
22 POLICE PENSION & RET. SYSTEM	557	2	100.00%	85.59%
23 OKLA. TRANSPORTATION AUTHORITY	978	2	100.00%	68.47%
24 DISTRICT ATTORNEYS COUNCIL	220	2	100.00%	87.39%
25 COUNCIL ON LAW ENFORCEMENT ED	415	2	100.00%	63.06%
26 TEACHERS RETIREMENT SYSTEM	715	2	100.00%	60.36%
27 CONSERVATION COMMISSION	645	2	100.00%	92.79%
28 COMMISSION ON CHILDREN & YOUT	127	2	100.00%	91.89%
29 OK. COMM. FOR TEACHER PREP.	269	2	100.00%	82.88%
30 EMPLOYEES BENEFITS COUNCIL	815	2	100.00%	89.19%
31 COMM. OF THE LAND OFFICE	410	2	100.00%	75.68%
32 STATE AUDITOR AND INSPECTOR	300	2	100.00%	74.77%
33 STATE TREASURER	740	2	100.00%	90.99%
34 DEPARTMENT OF COMMERCE	160	2	100.00%	87.39%
35 Okla. Career and Technology Educati	800	2	100.00%	87.39%
36 OKLA. BUREAU OF NARCOTICS AND D	477	2	100.00%	70.27%
37 OFFICE OF PERSONNEL MANAGEMEN	548	2	100.00%	67.57%
38 INDIGENT DEFENSE SYSTEM	47	2	100.00%	62.16%
39 OKLAHOMA AERONAUTICS COMMIS	60	2	100.00%	75.68%
40 STATE BANKING DEPARTMENT	65	2	100.00%	74.77%