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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 Bill1170 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	$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	$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	$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			$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

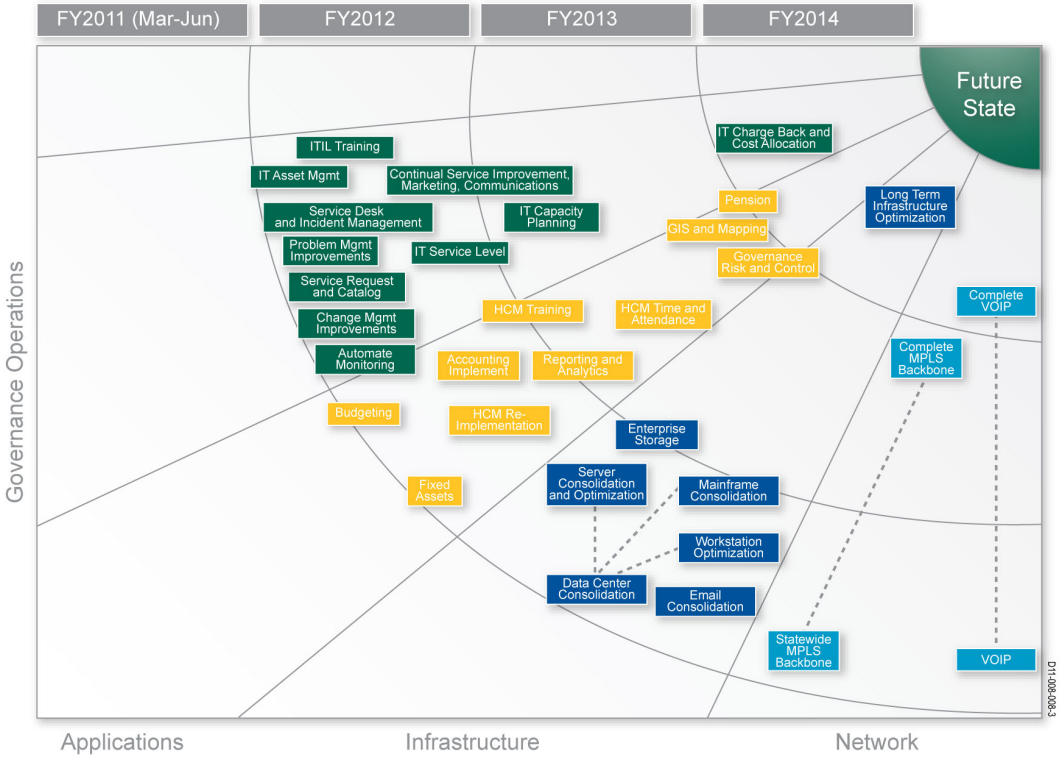


Figure 2-4 provides a summary of the impacts as the State migrates from the current state of IT to the future state.

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

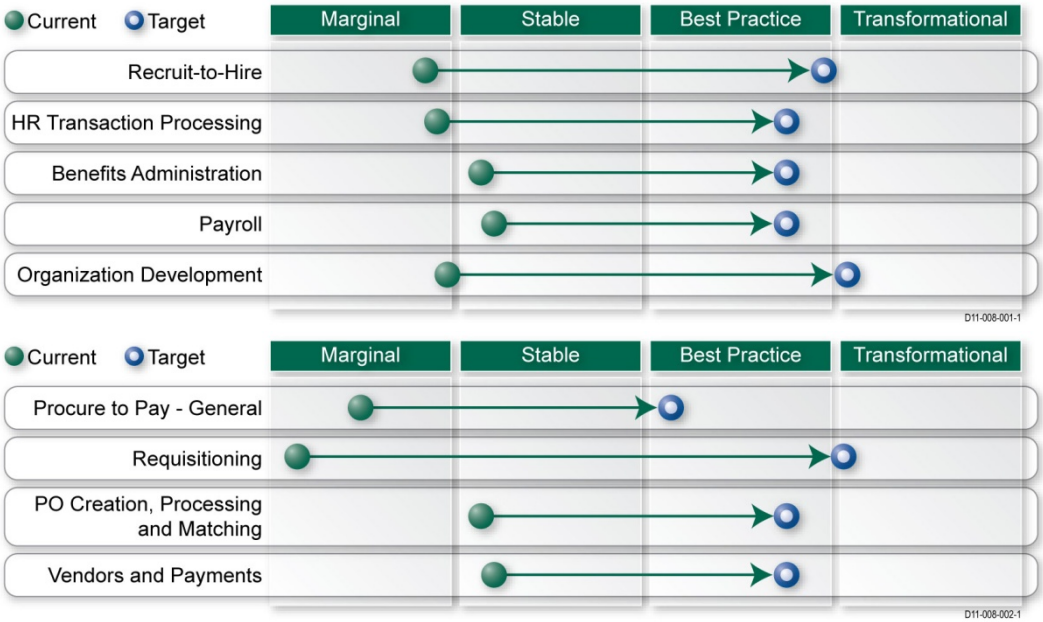
CORE is the primary financial system and is considered the system of record for the State. CORE is maintained and operated by the Office of State Finance. There have been several studies since 2008 by the Hackett group and Pew Center on state organizations, and most recently, the completed Oracle Insight (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 it's 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	• Standardize on technology models, products, versions. • Retire outdated systems. • Manage decisions and compliance moving forward.	• Streamlined portfolio. • Cost reduction. • Aligned support staff. • Increased management capabilities.
No centralized TLM strategy	• Develop and publish a TLM strategy, with acceptable guidelines, standards and an appropriate execution strategy.	• 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	• Standardize decision criteria, thresholds, reporting and metrics. • Define model and process for governance and standardization.	• Transparency—the State can't manage what it can't measure.
Limited shared services	• 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.	• 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**

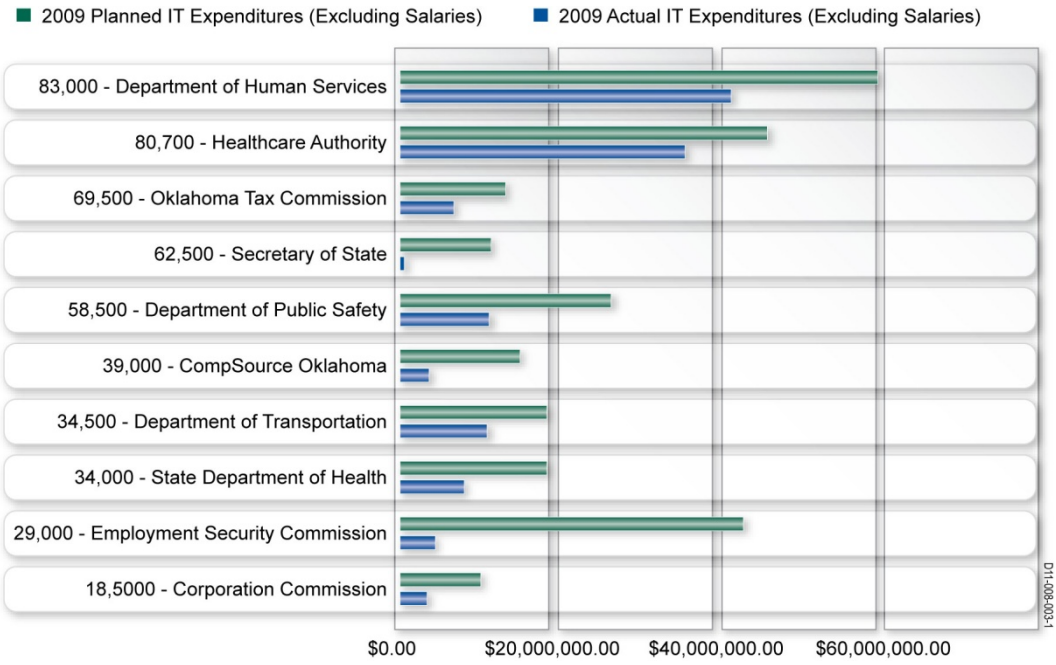
Branch	FY2010 IT Planned Expenditures (excluding payroll)	FY2010 IT Actual Expenditures (excluding payroll)	Difference
Executive	$394,323,708	$210,749,752	$183,573,956
Higher Education	$131,182,348	$134,762,649	-$3,580,301
Total	**$525,506,056**	**$345,512,401**	**$179,993,655**

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

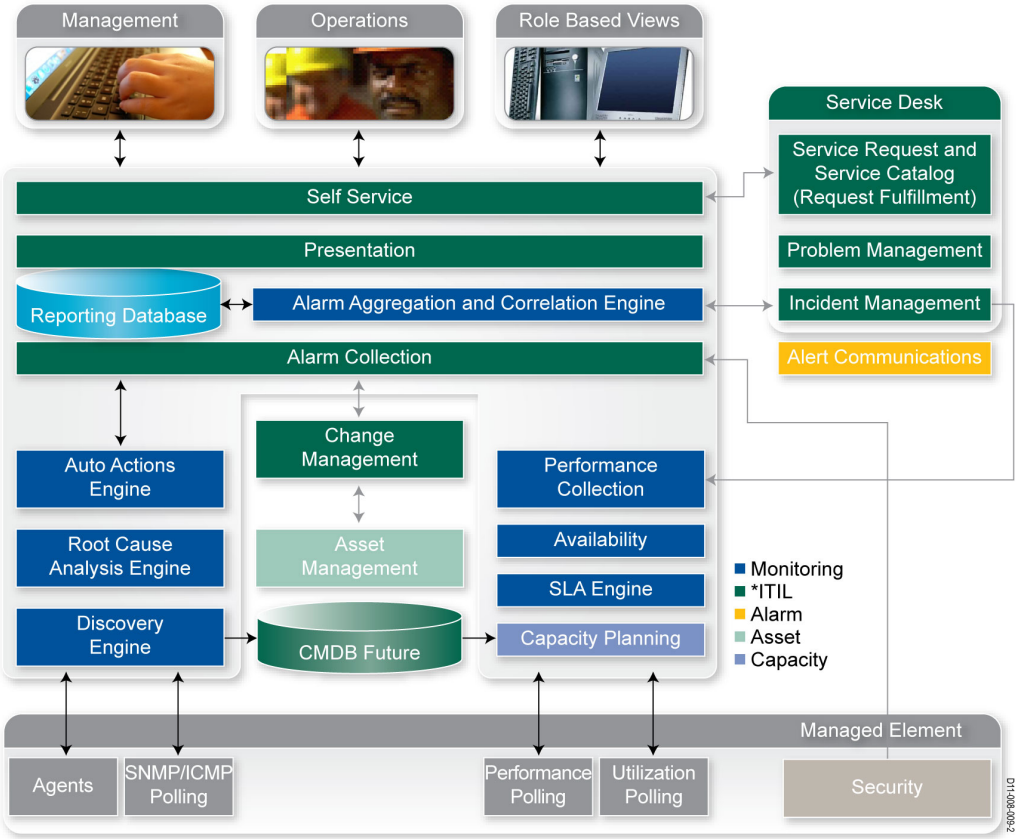
Based on review of the current situation in the State, areas of improvement have been identified in four key areas: **operations**, **applications**, **telecommunications**, (networks), and **infrastructure**. These opportunities make up an overall portfolio of improvements. Detailed information on each 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 (EWAF) 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 EWAF 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	$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	$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			$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

relievable) 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

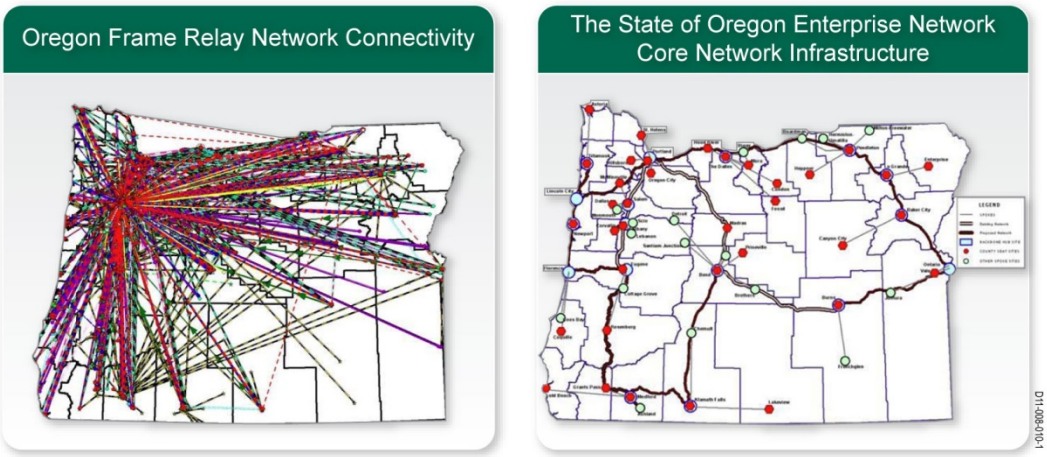
- Separation of the optical backbone and WAN will enable a design where the underneath optical transport network (OTN) can be provisioned to deploy various WAN technologies for disparate needs for bandwidth flexibility, security or both.

- 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 covert 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 covert 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.	• 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.	• 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.	• Reduction in human resources costs. • Leverage Microsoft Premier Services Support.
There are archiving challenges.	Adopt automation to archive old messages.	• Automatically archive old messages to a personal e-mail archive to reduce inbox clutter. • Reduce the liabilities associated with e-mail by applying expiration polices.

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.	• 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.	• 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.	• 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

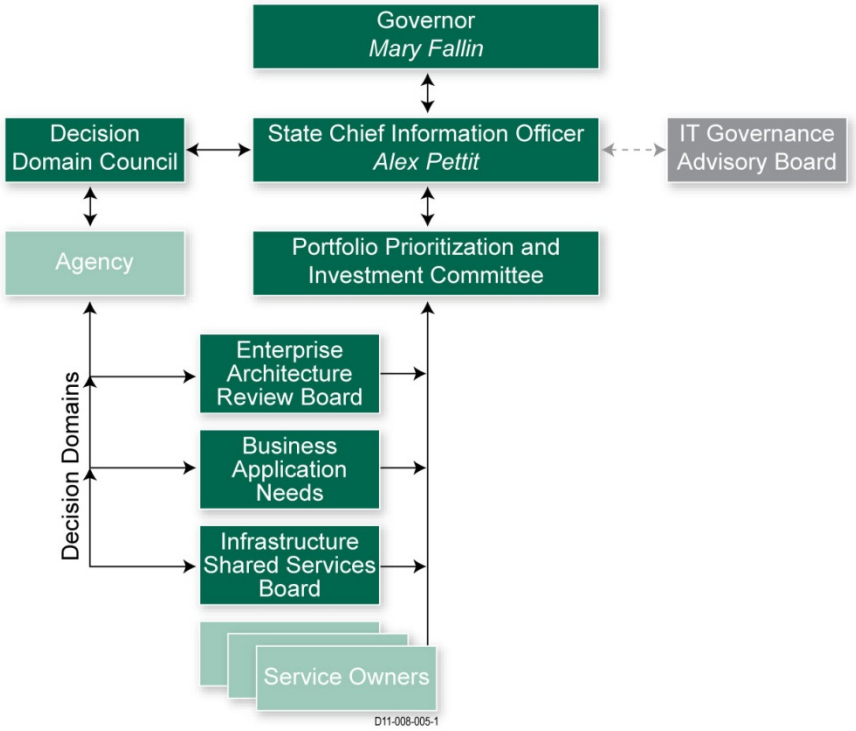
IT governance is a vital process to improve the effectiveness and efficiency of the State. It includes the creation of a governance program for evaluating, prioritizing, and tracking technology investments and monitoring projects State-wide.

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.

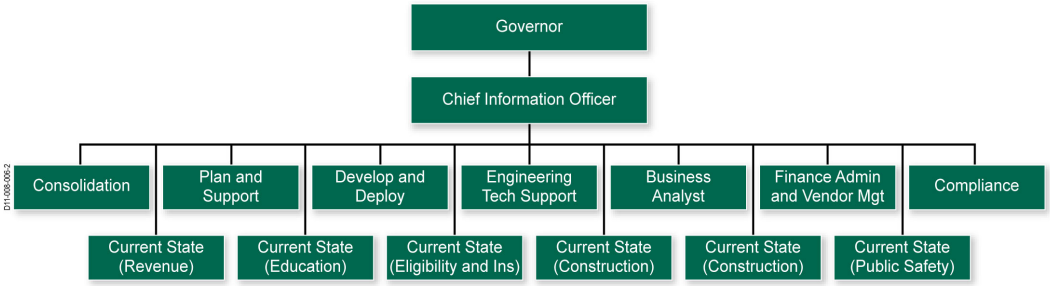
These two initiatives should be executed in parallel, tightly coupling process and tool integration. These processes, technology, and training provide the basic foundations and activities to initiate IT governance.

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.

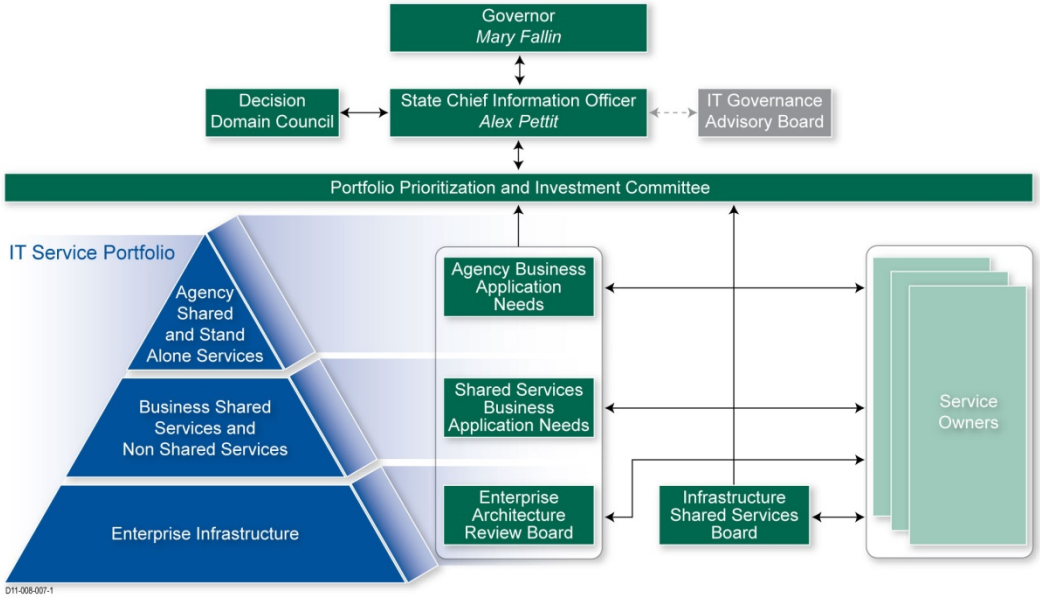
5.2 IT Governance Model

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.

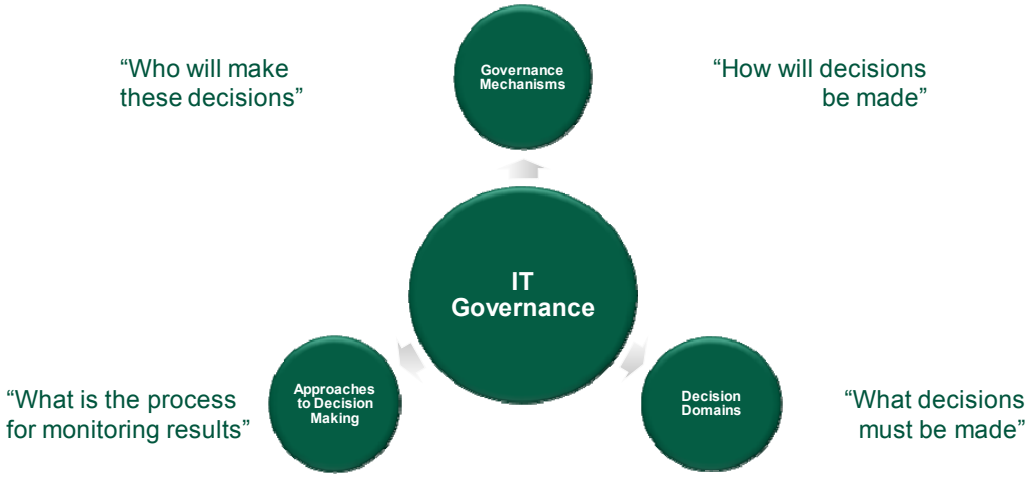
- **Strategic planning.** Strategic planning should be a centralized activity carried out by the office of the CIO with input provided by the enterprise infrastructure/shared services organizations and the larger agency representatives. This centralized planning process is the primary method the Governor 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 like 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

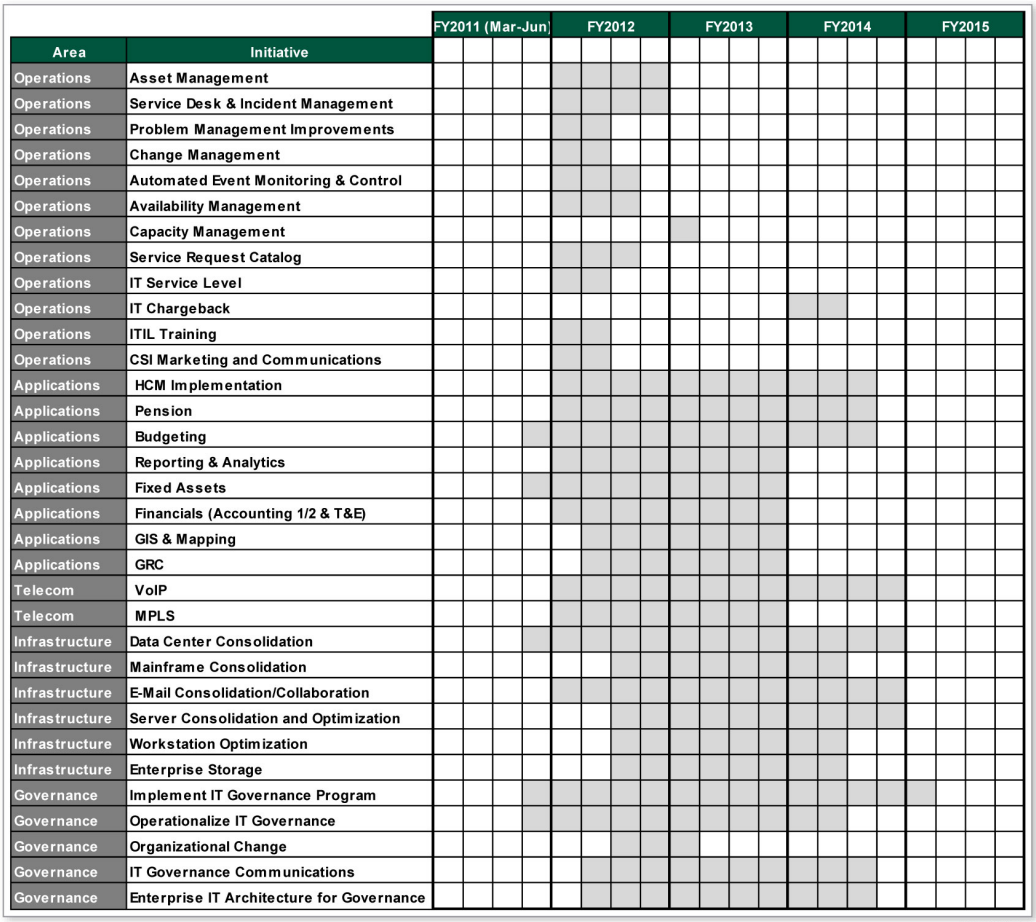
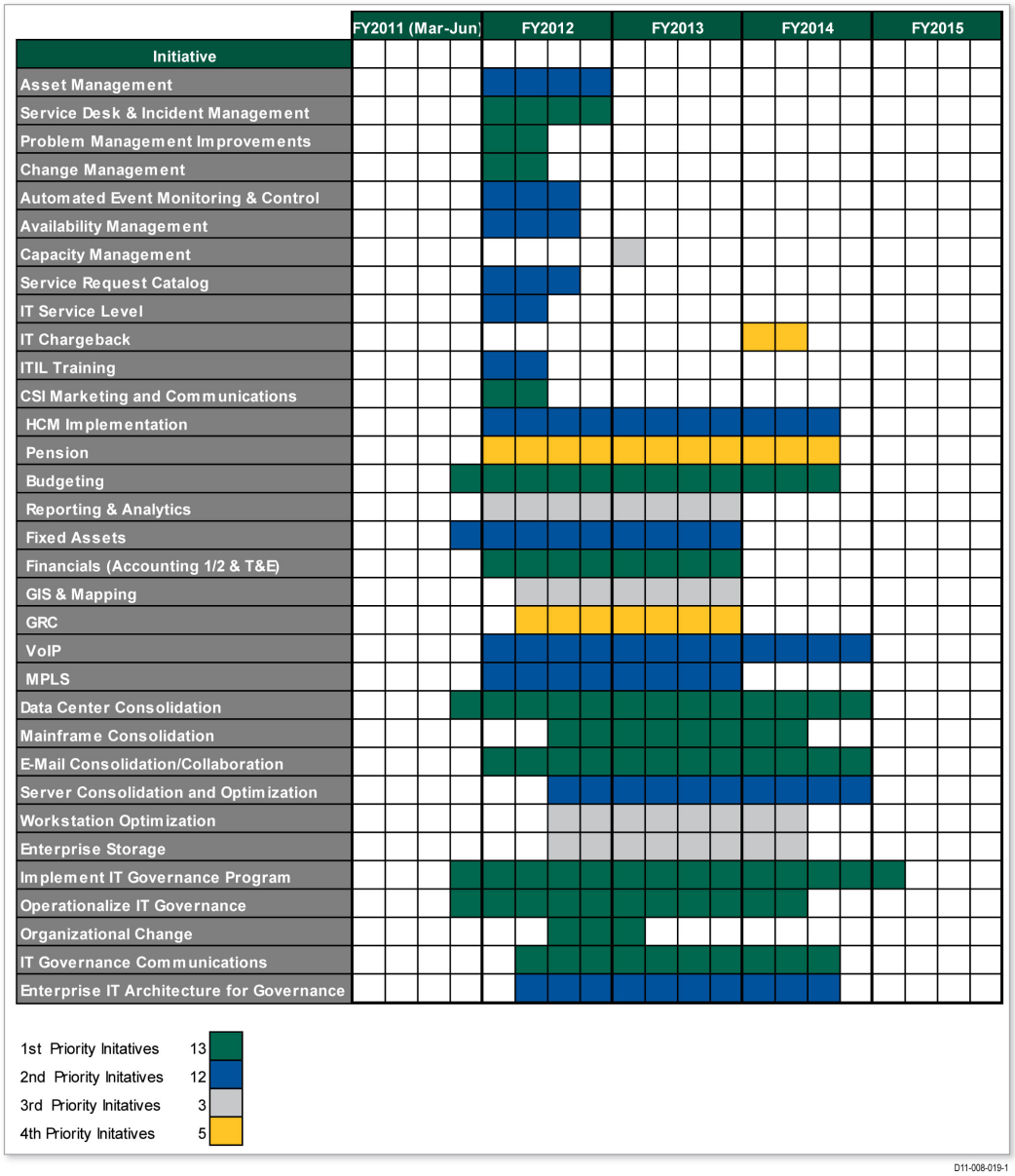


Figure 6-2 provides further insight by prioritizing initiatives based on strategic importance to the State. The chart uses a four level prioritization scheme. Implementation priority levels are color coded, with priority 1 being the most important and priority 4 being the least important to the State. 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



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.

Appendices

The following appendices represent working papers, including the presentations that were used to gather and communicate information during the development of this report. The information contained in these appendices does not supersede or replace the report findings, and may not reflect some of the final report findings that were developed from these working papers. For example, the presentations were living documents that evolved as the assessment proceeded over seven months.

The appendices are useful as snapshots of points in time, to better understand the assessment process and findings. The appendices may provide additional insight to the State as it executes the recommendations made in the IT assessment.

Appendix A—Infrastructure Findings, Trends, and Recommendations

The infrastructure team reviewed existing State IT and telecommunications environments and identified both short-term opportunities to drive cost out and long term strategic initiatives that will yield additional efficiency and effectiveness improvements.

A.1 Infrastructure—Current State Baseline

Information Discovery

The State's 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.

In an environment as diverse as the State's, it is important to start with a bottom-up analytical approach. The Capgemini team performed infrastructure analysis utilizing two bottom-up techniques.

- **Manual survey.** Surveys were distributed to and completed by agency IT leaders in order to capture detailed information on the current IT landscape. Copies of these surveys and responses are available at https://cybersecurity.ok.gov/default.aspx.
- **Discovery tool.** BDNA, a leader in technology discovery, was sourced to complete a programmatic and automated discovery of the landscape for 17 Tier 1 agencies. BDNA utilized a technical library trademarked 'Technopedia' (http://www.bdna.com/page/index/bdna-technopedia) to map each component discovered to a predefined fingerprint.

This facilitated data collection as well as data validation.

Current State Themes

There were four major themes that resonated throughout the Infrastructure Study and these themes correlate to the cost savings initiatives identified in this report:

- Pervasive use of disparate technologies.
- Lack of cohesive technology lifecycle management.
- Limited governance and standards between agencies.
- Limited shared services.

The following data points were extracted from the surveys and support these themes:

- Disparate technologies exist within and across agencies.
  - 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.
  - While there are State-wide contracts with specific workstation vendors, agencies still own and maintain workstations from other non-contract vendors, adding to the complexity and cost of end user management.
  - Major agencies maintain their own anti-virus platforms.
  - Multiple database technologies exist, including approximately 30 different versions of SQL and Oracle.
- Inconsistent technology lifecycle management process/strategy in use across the technology landscape.
  - Lack of tools to effectively manage software upgrade cycles:
    - 1,340 Windows 2003 devices discovered.
    - 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 Windows NT devices.
  - 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 workstations).
    - 50 percent of databases are no longer under vendor's support.
    - 92 percent of current SQL Server databases are no longer supported as of April 12th, 2011.
- Limited development of a central governance model or standard for the technology architecture. Responsibility for this currently lies within each agency.
  - No State-wide adoption of a uniform hardware platform.
  - Limited State-wide support contracts for infrastructure devices.
  - No unified technology portfolio management capability or structure exists for software distribution, patch management, and standards enforcement.

- Limited shared services adoption from larger State agencies, leading to wide-scale duplication of core services.
  - 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.

Current State Findings, High-level Recommendations, and Primary Benefits

Figure A-1 describes the current state findings, high-level recommendations, and the primary benefits behind each recommendation.

Figure A-1. Infrastructure Current State Summary

Current State Findings	High-Level Recommendations	Primary Benefits
Disparate technology.	• Standardize on technology models, products, versions. • Retire outdated systems. • Manage decisions and compliance moving forward.	• Streamlined portfolio. • Cost reduction. • Aligned support staff. • Increased management capabilities.
No centralized technology lifecycle management strategy.	• Develop and publish a technology lifecycle management strategy with acceptable guidelines, standards and an appropriate execution strategy.	• 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.	• Standardize decision criteria, thresholds, reporting and metrics. • Define model and process for governance and standardization.	• Transparency—the State can't manage what it can't measure.
Limited shared services.	• 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.	• Significant cost reductions can be achieved by removing duplicated services and administration. • Gained centralized management capabilities. • Determined shared model support required for overall technical administration and management.

A.2 Future Vision and Key Initiatives

The future vision of infrastructure services for the State consolidates core State-wide IT platform assets under a centralized shared services support organization (ISD). The State can expect to achieve benefits including optimized costs and control over IT spending decisions. The shared service strategic vision will also enable IT resources to be better aligned with the strategic mission of its agencies, standardize IT resource skill sets to create greater operating efficiencies, and build an infrastructure foundation that is scalable, adaptable, resilient, and secure for State data.

Future State Themes and Guiding Principles

The infrastructure initiatives that build toward the future state vision have been organized around the strategic objectives of **productivity** and **quality**. These objectives, along with relevant leading practices, provide guiding principles for defining the future state.

- **Centralization/consolidation.** Centralization enables the creation and execution of a shared vision of how IT should support and manage opportunities and growth. Centralization also provides significant economies of scale, reduction of redundancies and improved management efficiencies. Consolidation focuses on how to organize the delivery of IT services. Corresponding guiding principles include:
  - All core (defined as non-agency specific solutions) State agency infrastructure and applications will be initially consolidated and centralized into two primary data centers along with a satellite center for distribution and enhanced disaster recovery.
  - Applications requiring distributed local agency locations need to conform to enterprise architecture standards and approvals.
- **Standardization.** IT standardization is a strategy for minimizing IT costs within an organization by keeping hardware and software as consistent as possible and reducing the number of tools that address the same basic need. Standardization also greatly simplifies the operating environment (less variables to manage). Corresponding guiding principles include:
  - The data center and infrastructure strategy will be executed in compliance with the State's enterprise architecture objectives, including standards and design principles.
  - Infrastructure and applications will adhere to an approved technology lifecycle management strategy and must meet documented standards.

- **Optimization.** The desired outcome of IT optimization has evolved toward a dynamic, flexible infrastructure that can support changing business needs. Virtualization, at the core of IT optimization, can refer to a variety of computing concepts, but it usually refers to running multiple operating systems on a single machine. While most computers only have one operating system installed, virtualization software allows a computer to run several operating systems at the same time. Corresponding guiding principles include:
  - Data center infrastructure will be designed leveraging best practice virtualization techniques in order to maximize resource utilization, maximizing provisioning and management processes and reducing the overall hardware footprint.
  - Data center infrastructure will also be designed for sustainability, using leading environmental design practices and environmentally innovative solutions.

The above guiding principles will be applied to the recommended infrastructure programs and should be considered as part of the ongoing operating model for IT.

Prioritized Cost Saving Infrastructure Initiatives

Capgemini recommends the implementation of the following infrastructure initiatives to yield either the most significant cost savings to the State or to best-position ISD to work towards the adoption of a centralized core infrastructure landscape:

- Data center consolidation.
- Mainframe consolidation.
- E-mail consolidation.
- Workstation optimization.

Based on guidance received from the State, the prevailing approach for infrastructure improvement is to “centralize first, then optimize”. This approach results in a direct dependency between data center consolidation and compute optimization. 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 aligned with initiatives from other towers. 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.

Additionally Recommended Infrastructure Transformation Initiatives

Many of these additional recommendations will follow the implementation of data center consolidation. This rationale is based on the 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.

- Compute optimization, including server consolidation and server virtualization.
- Storage transformation.

Long-Term Strategic Infrastructure Programs

The strategic programs identified in this section will benefit the State in the long-term. Capgemini recommends that the State consider service alternatives and optimization methods as they become more proven and widely available. Several of the programs identified below are in place or have been explored to some extent. Capgemini recommends maintaining an eye on the future as the transformation takes place, particularly related to peripheral centralization and standardization. The overall infrastructure changes listed in **Figure A-2** are envisioned for the State as a result of the cost savings and transformation initiatives.

Figure A-2. Transformation Summary

Current State: Pre-Transformation	Target State: Post-Transformation
• 30 data center locations	• 3 data centers
• 2,200 servers • 17 agencies with virtualization practices	• <1,000 servers • Virtualization standardized
• 7 mainframes	• 3 mainframe environments
• 106 storage devices • 14 storage vendors • 1,256 TB of raw storage	• 30 storage devices • 2 storage vendors • Thin provisioning, tiered storage
• 32,643 workstations • 20 percent over four years of age in lifecycle • Approximately 200 thin devices adopted	• Tiered user base • 60 percent adoption of thin devices
• 129 e-mail and BlackBerry servers • 25 agencies running their own e-mail	• Less than 20 e-mail/BlackBerry servers • Single e-mail provider for the State
• Peripheral sprawl including a myriad of suppliers and limited adoption of standards	• Stay the course • Accelerate adoption rate

A.3 Cost Saving Infrastructure Initiatives

The following project information is organized around specific details relevant to the recommended initiatives.

Data Center Consolidation

The State has just completed construction of a multi-million dollar data center. The natural progression to maximize this investment would be to embark on a data center consolidation for those agencies that maintain a data center footprint. The Department of Human Services may remain exempt from such a migration, as their primary facility may be utilized as a live-live synchronized facility for IT processing. **Figure A-3** summarizes key findings and presents major recommendations and benefits associated with data center consolidation.

Figure A-3. Data Center Summary and Recommendations

Key Findings	Major Recommendations	Primary Benefits
The State has an active consolidation program in place for smaller agencies.	• Stay the course and accelerate the program.	• Quicker realized cost savings. • Faster adoption of shared services approach. • Promotes Information sharing at technology levels.
Agencies support their own computer room environments, duplicating facilities staff positions, and maintenance initiatives.	• Mobilize an additional migration team to focus on Tier 1 migrations and their complexity. • Assign a contracts specialist to consolidate maintenance contracts until the migration can occur.	• Quicker realized cost savings. • Quicker alignment to a shared services model. • Reduced maintenance costs in older facilities through leveraged relationships.
Shared services and virtualization of services will not be *fully* realized until platforms can be co-located.	• Accelerate the migration of agencies into the OSF data center.	• Quicker realized cost savings through platform consolidation and virtualization. • Quicker alignment to a shared services model. • Reduction in operations and telecommunications costs.

Survey respondents indicated that 30 distributed data center environments exist throughout the State accounting for an estimated 32,000 square feet of computer ready floor space. While some of these are shared with other agencies or are small environmental closets, there are eleven agencies reporting unique landscapes which require management cycles and budgets to maintain and administer. The remaining facilities are likely computer rooms or closets which are also targets for consolidation into the primary facilities.

Recommendations

The State must maximize its return on the foundational investment made in the construction of its new data center. In order to accomplish a higher return on investment, all agencies must relocate their data center environments to 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.

The data center consolidation approach should begin with a detailed planning phase. For the sequencing of the migration, agencies have been placed in strategic bundles based on the following criteria (*note: application dependencies were not discovered or assumed*):

- Platform portfolio.
- Number of full-time equivalents supporting the facility.
- The age of existing facility accounting for last retrofit.

Disaster recovery should be addressed in another initiative but the fundamental concept is to leverage the primary data centers to unify the approach across agencies, eliminate current external costs and maintain data sovereignty within the State.

Industry leading practices recommend that a contingency data center facility for IT operations fall outside of the primary center's geography. However, with significant sunken costs into the Department of Human Services facility in Oklahoma City, it would not be fiscally prudent to immediately transition from this facility. The Department of Human Services facility may be considered as a secondary data processing facility with highly available State services synchronized to the Office of State Finance data center. Eventually, the State should seek data center consolidation into the minimum amount of facilities required to support the business requirements. In most cases, optimal data center strategies include a primary facility and secondary facility for data replication or recovery services which may be provided internally or externally.

Given stringent requirements for data sovereignty of State information, other local facilities should be considered as a viable secondary location for data replication. This will provide for measurable consolidation, prioritized service capabilities and independent operations as required. The strategy and approach for data center consolidation, including finalized location decisions, should be defined during the planning phase. For future considerations, the new Google Data Center in Prior, Oklahoma may be an option as the State considers moving toward hosting service alternatives.

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

Figure A-4. Creation of Agency Bundles—Rationale

Bundle 1—Year 1	Target Rationale
Veterans Affairs	Has DR site in Norman – 100 servers – Moderately virtualized – 11 FTEs supporting
Tax Commission	Large site – Multiple virtual technologies Xen, VMWare – 12 FTEs supporting
DEQ	Within capital complex + distributed locations – Note: Paying 2.5C more per kwh
Department of Health	Has DR site in Tulsa – 320 servers ~20% virtualized
Public Safety	Large agency – Mainframe – Many core applications
Dept Of Transportation	Little data provided – Center aging – Built in 1974 – Notes and Sametime collaboration
DA Council	Hi concentration of SQL – Ideal for SQL Farm
Bundle 2—Year 2	**Target Rationale**
Employment	2800 sq. ft. – only 40% populated – Over provisioned +9FTEs supporting
OJA	Built in 80's – only 50% utilized – Mail/SharePoint and SQL
Mental Health	IBM Unix systems – compute less standardized – Dell/Gateway/HP
OTA	Tier 2 – 2 site migration – 10 FTEs – highly virtualized HP shop
Employee Benefits	Smaller footprint – Is virtualized – has mail server
Central Services	Data center 50% utilized – HP shop – mail development
Employees Group Ins	Has a DR site – approx 60 HP servers – likely virtualized – e-mail, SQL, and Oracle – well sized for initial DC
Bundle 3 —Year 3	**Target Rationale**
Indigent Defense	Small footprint within office – SQL
ABLE	Indicates 300 sq. ft. built in 90's – small footprint
Agriculture	Could come in earlier phase – small footprint – mail – and 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 FTEs supporting
CareerTech	700+ sq. ft. – bigger notes shop
Healthcare Authority	Servers located in office space – few systems – mail server

Bundle grouping and rationale—Table 1.5 Source—DCC Approach.

Summary

Capgemini recommends the State consolidate 30 current data center/computing locations to three. Primary applications and services should be hosted out of the existing Office of State Finance and Department of Human Services facilities, with all new solutions being deployed into the Office of State Finance 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 strategy is to consolidate down to two centers with one primary and one secondary center for DR 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 to:

- 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.

Anticipated 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 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. 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.

Implementation Plan

The complete planning and first phase of migration to a higher-end remote data center facility at the Office of State Finance Center is estimated to consume approximately 300 business days of activity (a full year of effort).

Multiple teams will be required to complete the three-year data center transformation program in order to realize the aforementioned savings. Representative activity groups to accomplish the overall transformation include:

- Data center strategy and architecture (high-level design, approval, detailed design).
- Detailed planning (discovery, capacity planning, application mapping, migration strategy, discovery report).
- Bundle 1 execution, including:
  - Migration preparation (readiness plan, install equipment, building the core network, core storage, core back-up, core servers, change management, and script the migration).
  - Pre-migration activities.
  - Migration (execute applications, follow P2V, build, network configuration, storage configuration, monitoring, database).
  - Cutover activities (e.g., service enablement, testing, etc.).
  - Post-migration activities (e.g., reporting, decommissioning, initiate optimization, etc.).

Subsequent bundles (bundle 2, bundle 3, and so on) will be implemented following the implementation of bundle 1 and will follow a similar activity path.

Conclusion

Investing in data center consolidation will produce immediate savings. It will also result in long-term re-occurring savings and reduce support costs through an alignment in technology platforms and resources and the maximization of the State's investment in its modern facility.

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. One mainframe was discovered at Oklahoma State University and another at the University of Oklahoma. 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.

Recommendations

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 determination of whether to place the applications on a Z-series or a business-class LINUX processor is driven by whether 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's 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 other would be decommissioned.

Summary

Capgemini recommends the State implement a consolidated mainframe infrastructure. The goal of mainframe consolidation is to:

- 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.

Anticipated 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 the amount of hardware that has to be monitored and managed. Much of this is from integration of processing, storage, and network.
- **Increased governance.** Since applications are running under a centrally controlled system serviced by a team within a highly structured environment, it is easier to enforce standardization and governance across the IT landscape.
- **Reduction in risk.** This centralization streamlines the architecture and recovery processes through the reduction of the 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.

Implementation Plan

Representative activity groups to accomplish the overall mainframe consolidation include:

- Execute a discovery phase for mainframe landscape.
  - Appoint committee of mainframe users and support personnel.
  - Gather information on user requirements and configuration.
  - Translate information to system requirements.
  - Identify quick wins by turning off unnecessary MIPS.
  - Secure a qualified partner to deliver results faster.
- Define the consolidation and virtualization strategy and conduct an initial planning session for Bull and HP900.
- Conduct consolidated architecture planning including high-level design and detailed design.
- Execute mainframe consolidation, with a build and deployment designed for each phase, to include server build, application deployment, and license recovery.

Conclusion

Seven State agencies have underutilized mainframe environments. Capgemini recommends that the State implement a phased approach to consolidate its mainframe workloads onto three mainframe systems. The first phase should focus on the Z-series infrastructure. The second phase should focus on other standard environments that represent opportunities for consolidation. The third should focus on the non-standard legacy environments and those that may not lend themselves to consolidation. Significant reduction in licensing costs and operating costs from physical space and power savings are the primary benefits of the proposed approach.

E-mail Consolidation

The expectations for what an e-mail system should deliver have evolved. Employees need rich, efficient access to e-mail, calendar, contacts, and voicemail no matter where they are. IT professionals need a system that is highly reliable, cost effective, and easy to manage. The State needs a single messaging system that can support the requirements of their end users without compromising security.

The State has at least 129 e-mail servers including Microsoft Exchange Server 2003, 2007 and 2010, Lotus, Novell GroupWise Server, Blackberry Enterprise Server, which are used by different State agencies. The disparate technology platforms are currently distributed among 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 the Office of State Finance to consolidate the agencies it serves under a single e-mail solution. By June 2011, the Office of State Finance will have successfully migrated approximately 50 agencies and 1,800 mailboxes onto the Exchange 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 that includes software assurance (estimated 21,500 CALs).

This State's on-going e-mail consolidation project benefits the long-term strategy in that the State has performed a series of planning and prioritization discussions around the scope and service levels expected for messaging solutions. The resources involved thus far should be leveraged in the ongoing consolidation of the enterprise messaging solution.

Recommendations

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 reduce operating costs and improve 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.

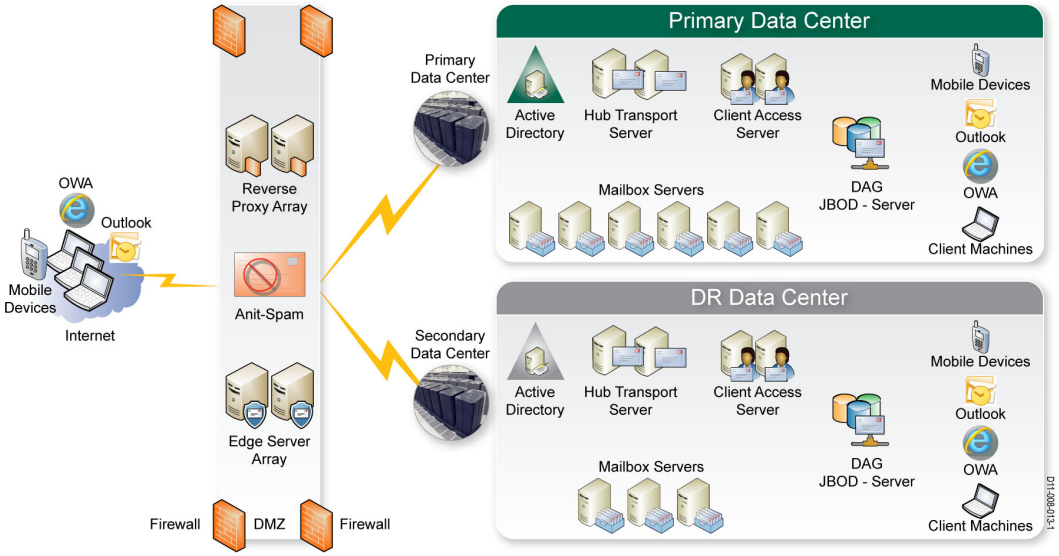
Summary findings, recommendations and benefits of e-mail consolidation are highlighted in **Figure A-5**.

Figure A-5. E-mail Summary Findings, Recommendations, and Benefits

Key Findings	Major Recommendations	Primary Benefits
Distributed e-mail servers including Microsoft Exchange, Lotus Notes and GroupWise servers.	Messaging assessment, driving centralization and consolidation through Microsoft Enterprise Messaging.	• 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.
Prioritized e-mail service availability and maintenance.	Adopt high availability services.	• 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.
Redundant e-mail administration.	Adopt a State-wide helpdesk to facilitate optimized headcount.	• Reduction in human resources costs. • Leverage Microsoft Premier Services Support.
Archiving challenges.	Adopt automation to archive old messages.	• Automatically archive old messages to a personal e-mail archive to reduce inbox clutter. • Reduce the liabilities associated with e-mail by applying expiration polices.

Figure A-6 depicts the target messaging architecture model. This diagram is only an indicative figure and the server count will vary based on detailed analysis and assessment of current environment and the functional requirements.

Figure A-6. High-Level Architecture—Consolidated Messaging Environment



Total mailboxes: 30,000, growth: 20 percent per year. This diagram is for general guidance and not a design proposal.

Summary

Capgemini recommends the State implement a single, State-wide messaging infrastructure leveraging Microsoft Exchange 2010. The goal of e-mail consolidation is to:

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

Anticipated 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.
- Reduction in risk. The centralization to fewer locations streamlines the architecture and recovery processes through reduction in complexity of managing data in multiple locations.
- Improved compliance and controls.
- Improved support for open records requests and records management.

Implementation Plan

The recommended e-mail consolidation effort includes high-level activities including:

- Detailed assessment and environment gathering.
- Design and planning.
- Solution testing.
- Production pilot deployment.
- Pilot user migration.
- Production deployment.
- Production mailbox migration.
- Stabilize and run the environment.
- Closure and retirement of old solutions.

The migration timeline will be based on a detailed assessment and the total resources planned for migration. A detailed assessment will also yield the optimal approach for consolidating e-mail solutions. One approach may be to go after like systems first (those already on the Exchange platform) with dissimilar environment consolidation (solutions in Notes, GroupWise, etc.) to follow in a second phase.

Conclusion

E-mail is a mission-critical communications service. Each year, the volume of messages increases, the number of mobility requirements expand, and the speed at which business is conducted grows ever faster. The State is currently dealing with a widespread server base and complex multi-vendor messaging platform, which is increasing administrative overhead, helpdesk costs, and infrastructure expenses.

The recommendation for e-mail consolidation is to standardize on Microsoft Enterprise Messaging, which provides higher availability targets, backup and disaster recovery capabilities. Consolidation of 129 servers spread across different messaging solutions, manufacturers, and hardware models down to Microsoft Enterprise Messaging enables physical data center facility reductions, reducing high maintenance costs of older equipment and overlap of management software and capabilities. A 60 to 70 percent hardware reduction is targeted. The biggest cost savings will be in administrative costs with the centralized management capability. As a long-term strategy, the State should continue to investigate opportunities to leverage hosting providers for e-mail services. The overall cost savings possible from hosted e-mail solutions offer radical reduction from the current and targeted cost levels at the same or better service levels.

Workstation Optimization

The State's workstation environment is very expensive in the current configuration, due to technology variance and decentralized management. There are approximately 32,000 end user devices within the 70 agency survey respondents. 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.

Recommendations

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 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 the opportunity to consolidate desktop operations across the State.

Summary

Capgemini recommends the State implements 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.

Anticipated Benefits

- **Workstation simplification.** The decreased need for the workstation to have processing and storage for applications simplifies the workstation requirements.
- **Software stack centralization.** Application portfolio rationalization process eliminates unnecessary applications.
- **Management software standardization.** Consolidating onto fewer platforms would result in standardizing operational tools and processes. The other part of this is centralization of system management.
- **Improved vendor management.** Vendor management is simplified through the reduced numbers of vendors.
- **Technological upgrades.** The ability to take advantage of new system management methodologies increases performance and reduces costs.

Implementation Plan

The State should initially engage in an assessment to define the workstation user tiers and populate the tiered framework. A conservative leading practice approach toward grouping users is shown below (this should be refined during the definition of the workstation optimization program).

- Tier 1—Power/Executive User (Laptop)—10 percent.
- Tier 2—Professional User—Workstation—30 percent.
- Tier 3—Thin Client Technology—60 percent.

The target user tier proportions above have been implemented as high as 5 percent/10 percent/85 percent in other public sector organizations. These tiers will allow an organization to optimize workstation investments and configurations in response to business requirements. Secondary phases of optimization activity include the actual migration of agency workstation environments leading up to and after the impending data center consolidation effort.

The following activities should be executed to develop a workstation strategy based upon the functional needs of the user community:

- Workstation assessment services and strategy.
- Assessment kickoff workshop.
- Data collection and analysis.
  - Interviews/discussions.
  - Data collection areas.
  - Data analysis.
- Set-up user proof of concept environment.
  - Gather feedback.
  - Build awareness.
- Workstation strategy definition.
  - Presentation.
  - Finalize the workstation landscape vision.
- Deploy end user solutions.
- Retire old equipment.

In-depth interviews should be conducted and performance tests should be administered on the network.

Conclusion

The State has a diverse technology landscape in the current workstation environment as well as unnecessary risk (from an age of equipment and warranty perspective). Capgemini recommends the State implement workstation virtualization across the enterprise. 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.

A.4 Additional Infrastructure Transformation Initiatives

Compute Optimization

This initiative includes both server consolidation and server virtualization.

Server consolidation is an approach to utilize more efficient computer server resources to reduce the overall number of servers in the IT landscape. This technique has been developed to address 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 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 compute environment. 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 service IT model, many of these workloads can be consolidated on more efficient hardware. This will allow for significant reductions in power consumption, space, and administrative support and licensing costs. A common initiative explored with consolidation is virtualization: the managing of multiple virtual operating systems on a single hardware component.

Several State agency IT departments have virtualization efforts 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.

Figure A-7 presents our computer optimization findings and recommendations

Figure A-7. Compute Optimization Findings and Recommendation Summary

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 all State infrastructure	Team's having more experience with consolidation can support others.
Many agencies have mature core service offerings in e-mail, web, anti-virus, file and print services, 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 server systems are less than 20% utilized	Adopt common sense thresholds on utilization: promote a capacity manager to review compute capacity prior to application rollout.	System capacity will be reviewed on a regular basis by a capacity manager who fosters prudent purchasing policies rooted in capacity requirements.

Source: CG-PMO

Recommendations

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

Survey and BDNA data are 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 WinTel 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, most physically racked and standalone machines).
- The Office of State Finance (48 highly virtualized P5's 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).

For the Office of State Finance environment, Capgemini supports the upgrade to the P7 processor chip. This would reduce 48 servers to 5 in system consolidation. This would effectively return two racks of floor space back into the consumable pool.

The Tax Commission will require additional functional analysis to reveal if the Solaris Operating System is required for their application portfolio. The Tax Commission is presently running on Solaris 8, 10, and Sparc on 7 different hardware types, most of which are at end of life. A modernization of the hardware platform will produce efficiency and 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. Should a new PeopleSoft implementation be launched, it would be advisable to install it on the P7 chip.

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 recaptured from the reduction in power and administration activities.

The Office of State Finance 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 enterprise into this shared farm.

We understand that not all of the 1,300 remaining server opportunities for virtualization are viable. For the purposes of this recommendation, we will suggest that the State target 1,540 candidate servers for virtualization over the next five years. Further, the State should consider adopting a virtual first policy for all new installs.

Summary

Capgemini recommends the following services be the initial target for compute optimization: web, e-mail, databases, and file servers. After centralization, service providing agencies should adopt a server consolidation strategy, combining compatible workloads on servers maintaining low utilization.

Anticipated Benefits

- Reduced infrastructure footprint (1,540 servers currently reduced 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.
- Memory expansion and sharing.

Implementation Plan

The following high-level implementation plan should be used to develop a virtualization and consolidation strategy based upon the technical requirements with a target ratio of 24:1. The target virtualization ratio should be confirmed during a detailed assessment. Capgemini recommends that the State break up server virtualization into waves of two hundred machines and repeat until the environment is transformed.

- Define the virtualization assessment strategy.
- Conduct an assessment kickoff workshop.
- Perform data collection and analysis, including:
  - System administrator interviews/discussions.
  - Data collection areas.
  - Information analysis.

- Model the future state environment. This includes:
  - Gathering feedback.
  - Building awareness.
- Define the server strategy, including:
  - Architecture planning
  - Presentation to stakeholders.
- Conduct solution design including a high-level design and a detailed design.
- Deploy the virtualization solutions. This includes:
  - Server virtualization build and deployment.
  - Server consolidation build and deployment.
- Retire old equipment.

Conclusion

Server consolidation efforts can begin immediately after agency centralization for a select group of services (e-mail, SQL, and web platforms). Conservative targets of a 24:1 workload consolidation can easily be achieved against 70 percent of the server estate, yielding a highly conservative 30 percent return on investment over five years. Maintaining this conservative posture will allow State technologists and administrators to grow their skills before driving toward higher consolidation and virtualization ratios.

Storage Transformation

Capgemini leveraged survey information and leading practices in development of this high level storage assessment and recommendation. As a result of the information discovered during the study, Capgemini reviewed the current state infrastructure and found instances of over-provisioning at the agency level to accommodate their perceived requirements for peak consumption and to allow for timely provisioning of un-forecasted demand. This fairly common practice in the storage landscape is driven by long procurement and installation lead times.

The survey information collected indicates 1,256 terra bytes of raw storage reported by thirty different agencies. This storage is supported by 106 devices, 14 manufacturers, with 70 different models, managed by 54 resources. From the disk pool, 217 terra bytes (17 percent) remained unallocated. The data provided in the surveys indicated the percentage of allocated, not unused, disk.

The major challenges for organizations in today's storage environment include backup, recovery and archiving need to meet services levels; managing backup windows as data volumes increase; ensuring data availability and on time recovery in case of a disaster; ensuring legal compliance; and lowering costs. Industry standards indicate annual storage growth at approximately 40 percent.

Storage infrastructure is a major investment for the State and an immediate opportunity for saving agency cost through centralized solutions.

A phased implementation approach is recommended so the State can adequately scan, focus, and act on the storage strategy, assessment and transformation activities. The first phase is a storage assessment program focused on the strategy, guiding principles, standards, products and agency-level planning required. The second phase of activities is focused on implementing the various transformation projects as agencies become more integrated to the shared service environment and operating model.

Recommendations

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 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 giga-bit 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.

Simplification and centralization are overall foundational themes for the storage strategy and consolidated landscape recommended for adoption by the State. The first step in the storage transformation process is a detailed storage assessment and planning effort.

High-level recommendations and benefits based on findings from the study are presented in **Figure A-8**.

Figure A-8. Storage Transformation Findings and Recommendation Summary

Key Findings	Major Recommendations	Primary Benefits
Distributed storage platforms	Perform a storage assessment driving the centralization and consolidation of the storage landscape	• 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. Define a standard set of storage management tools	• 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	• Reduction in human resources costs. • Increase in skill levels.

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

State-wide storage transformation is expected to yield the following results:

- Elimination of the inefficiencies associated with individual project storage hardware purchases that are never fully utilized to achieve the anticipated return on investment.
- Elimination of the inefficiency of individual project software licenses and maintenance costs.
- Elimination of the significant operations support resources needed to physically manage multiple project and technology storage solutions.
- Elimination of the engineering configuration design work required to use multiple storage devices across various projects.
- Elimination of the engineering disaster recovery work needed for individual project solutions.
- Elimination of multiple vendors.
- Significant space and power/AC reductions as well as quick root cause problem identification.
- Enterprise licenses can be put in place on time, eliminating the need for creating new software license for every device brought in per project.
- Acquisition of additional storage can be bought in blocks of storage, accessible and utilized by the enterprise, no longer an individual project by project purchase saving time and money in the procurement and implementation processes.

With standard enterprise storage attached network solutions, the data storage accessibility across all devices and utilization of unused storage provides a full utilization of what was purchased. It also allows for support of the enterprise storage devices with 75 percent fewer resources because it is all accessible from the console through automation.

Should the State implement storage on demand, the storage would no longer be on your site, thus freeing up the physical space, operations support, licenses, and the acquisition of physical devices. The State would be acquiring, using, and paying for what is needed, what is used, for as long as it is needed, and no longer.

Summary

Capgemini recommends the State implement storage transformation across the enterprise. The storage solutions are tiered and based on defined business requirements. The solutions are provided centrally, leveraging improved technology capabilities and service levels.

Anticipated Benefits

- **Reduce operating costs.** Tiered storage solutions and centralized maintenance will enable substantial reduction in current operating costs.
- **Reduced footprint.** Power, floor space, and cooling expenses are significantly reduced due to the use of SATA drives without compromising performance or reliability.
- **Improved efficiency.** Differential snapshots, elimination of orphaned space, and thin provisioning capabilities enable data centers to use less system capacity to achieve the same goals.
- **Management software standardization.** Consolidating onto a fewer storage platforms would produce standardized operational tools and processes. The other benefit is the centralization of system management which greatly reduces storage administrator activities and related costs.
- **Improved vendor management.** Vendor management is simplified through the reduced numbers of vendors.
- **Technological upgrades.** Ability to take advantage of new system management methodologies increases performance and reduces costs.
- **Reduced software costs.** This comes from hardware vendors bundling in the supporting software and enabling the State to have greater buying leverage.
- **Productivity and service.** As the environment shifts to greater virtualization of servers, consolidated networked storage should enable faster turnaround times for new application provisioning and maintenance
- **Disaster recovery.** Disaster response capability improvements from:
  - Use of shared storage by consolidated server resources.
  - Leveraging storage clustering for high availability of critical data.
  - Built-in management tools reduce the amount of resources required to manage back up and replication, including automated snap-shot capability, effective data de-duplication, and data replication.

Implementation Plan

The storage transformation begins with due diligence in the assessment phase. The focus should be on scoping and planning the specific opportunities for storage improvement/transformation. The initial phases of implementation typically align to the following major activities:

- Platform optimization.
- Application lifecycle optimization.
- Storage usage optimization.

An example set of implementation activities is included below. Capgemini recommends the State leverage a phased approach to storage transformation, which would include several phases, implementation threads, and areas of focus.

- Define the storage transformation assessment strategy.
- Conduct an assessment kickoff workshop.
- Conduct data collection and analysis, including:
  - Interviews/discussions.
  - Data collection areas.
  - Information analysis.
- Define the storage strategy, including the architecture plan.
- Model the future state environment, including:
  - Gathering feedback.
  - Building awareness.
- Conduct solution design including the high-level design and the detailed design.
- Deploy the new storage solution.
- Retire old equipment.

Conclusion

Capgemini recommends that the State standardize, consolidate, and virtualize storage managed by a centralized shared service storage team in primary data center locations. Storage consolidation and virtualization is the enabler to server consolidation/virtualization, higher availability targets, and back-up and disaster recovery capabilities.

Consolidation of the 106 devices spread across 14 different manufacturers and 70 different models down to two models (mainframe/distributed) and under a dozen devices enable physical data center facility reductions, elimination of high maintenance costs of older equipment, and reduction of the overlap of management software and capabilities. The biggest cost savings will be associated with a reduction in administrative costs.

A.5 Long Term Strategic Program Details

The strategic programs described in this section will benefit the State in the long-term. 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. Several of the programs below are in place or have been explored to some extent. Capgemini recommends maintaining an eye on the future as the transformation takes place.

Peripheral Centralization and Standardization

There is tremendous sprawl of peripheral equipment in the current environment. Surveys and discovery data revealed agencies with thousands of printers varying in size, make and model. There are over 9,000 printers in the current state environment with the vast majority (>70 percent) being used as personal printers. The support costs for printer cartridges, replacement parts, and paper is not trivial. The State recognizes this challenge and has put in place standard contracts and a general push to eliminate personal and non-standard printers from the environment.

Recommendations

Capgemini recommends the State stay the course of centralizing peripherals around standardized multi-function printers (MFPs). We also recommend 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, while realizing increased purchasing leverage.

Summary

The State already has a peripheral centralization effort underway and Capgemini recommends the acceleration of this program.

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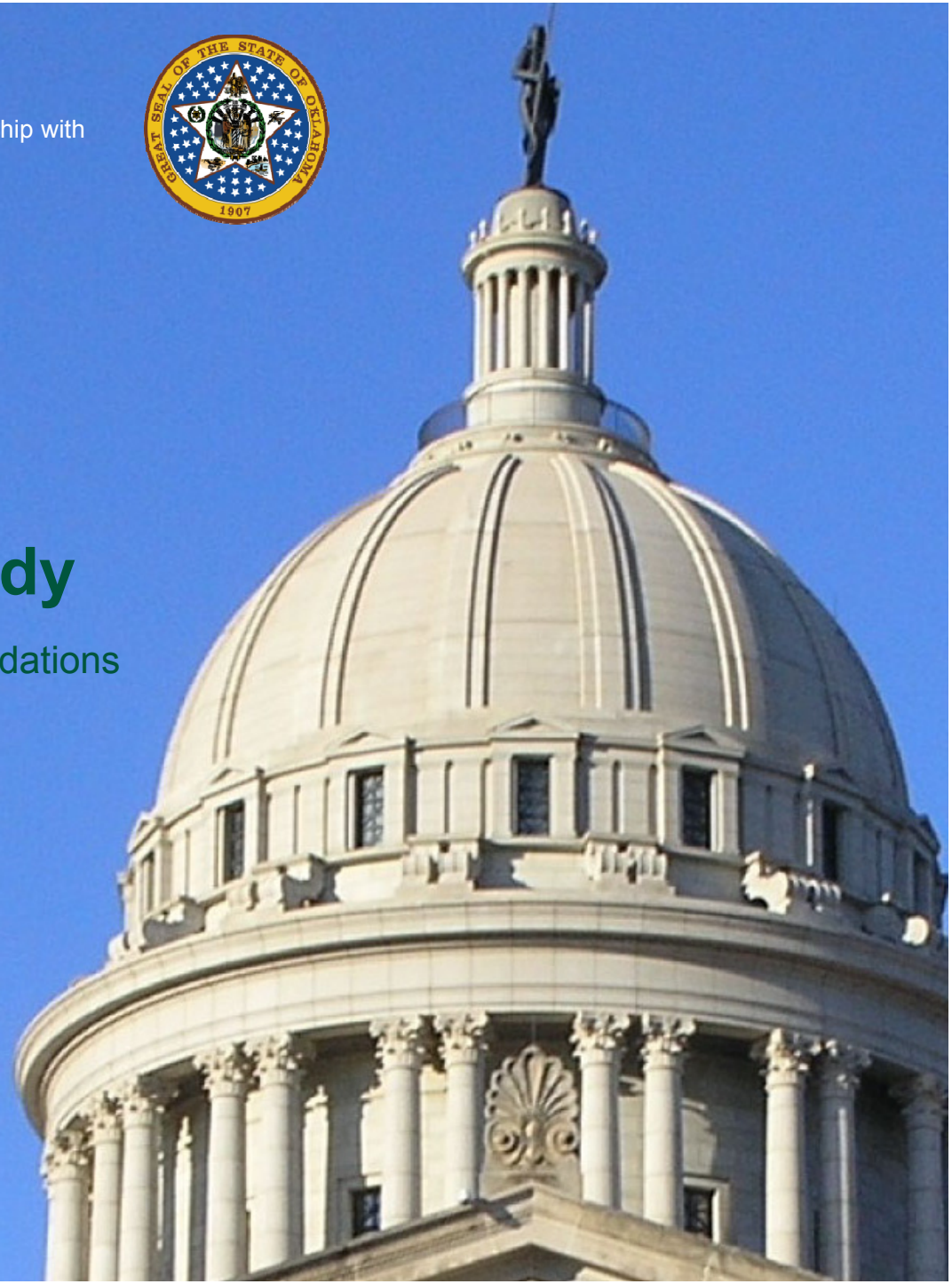
State of Oklahoma CIO Assessment Study

Infrastructure Analysis and Recommendations



Technology Baseline (Snapshot)

Network and Telecommunications	• WANs • Data circuits • PBXs • Voice over IP Service	• DOT, DHS … all maintain independent WANs • Many duplicate P2P circuits • Multiple Vendors & instances
Infrastructure / Data Centers	• Locations • Space consumed	• >11 T1 ~ (19 Rooms or Closets) • >32000 sq. ft. – much is 50% occupied
MF/Servers	• Installed Servers • Mainframes in use • MIPS	• >2300 • >7 + Several Midrange Platforms • >4000
Workstation/Laptop	• Vendors • Models • # Out of Warranty /Unknown	• >10 • >100 • >6700 ~ 22%
Applications	• Number in use • Vendors in place • Different email systems	• >4000 • >350 • Several (some hosted)
Applications - Web Presence	• OK.gov visitors • Web pages viewed	• 13,748,316 (YTD) • ~87M
Operations (Support Services)	• Availability, Performance & Event Management • ITIL Compliant	• At agency level • Maturity Level 1

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Trends and Hypothesis - Infrastructure

Disparate Technology

- Within agencies, technology is not standardized.
- Across agencies this challenge is even more impactful.
- Select technology components in the current environment are outdated, out of support and warranty which may lead to issues in frequency of failure, longer recovery timeframes, higher support costs, constraints on security and adversely impact the deployment of additional application functionality.

Operating Model

- Distributed service and support model with varying degrees of IT governance.
- Duplicated functions.
- Few shared business applications.

Infrastructure

- Many computer rooms/closets exist in the current environment.
- Several data center environment exist independently.
- Limited correlation between support requirements, existing solutions and risk of business outage (e.g. systems seem to require 24x7x365 support).

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Trends and Hypothesis - Infrastructure

Service delivery

- Limited shared service delivery in place currently.
- Opportunity to improve service level agreements and support requirements.

IT costs

- $366M (2009) in current environment ($236,611,320 – Executive Branch).
- Proposed FY11 IT Expenditures for Executive Branch is $380,681,022.
- Proposed IT costs per end-user supported is approximately $10.5K per employee across all agencies.
- Gartner defines total employee IT cost per employee (end-user supported) as $7.5K.
- Budget process not rationalized across agencies.
- 5.0% = IT staffing as percentage of total (end-user) headcount (without higher education Gartner indicates industry average of 3.8%).

**IT FTEs reported 1,285 / approximately 28,000 end-user population = 5.0 percent.*

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Trends and Hypothesis - Infrastructure

Complexity

- High number of programming languages and development platforms.
- Moderate data complexity.
- Incomplete definition and inconsistent application of standards.
- Perception of unique business services and applications.

Governance

- Under-utilization of IT governance.
- Under-utilization of service level agreements.

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Infrastructure Baseline

Current State

- We are observing disparate technology within and across State agencies.
- We found no cohesive life cycle management across the technology landscape.
- No central governance model for the technology portfolio (lies within the agencies).
- Limited State-wide shared services .

Vision for the Future

- We seek an infrastructure environment that will enable centralized governance and shared services.
- Infrastructure standardization, rationalization and consolidation is required to achieve the future state vision of centralized technology.
- Future vision includes centralized and common/shared business services used by multiple agencies.
- Services requiring agency specific competencies will remain at the agency level.

ROADMAP - Blueprint

Build an infrastructure foundation leveraging a common language and reference architecture to enable:

- Simplified, optimized, standardized enterprise IT Infrastructure .
- Centralized application and infrastructure services.
- Common, effective management practices.

Future vision to be enabled through delivery of an integrated project roadmap comprising infrastructure rationalization and capability development initiatives.

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Infrastructure Baseline – Details (Current State Observations)

We are observing disparate technology within and across State agencies as evident by the following facts:

- Multiple suppliers for core data processing platforms.
- Multiple workstation platforms exist adding to the complexity and cost of end-user management.
- Multiple database technologies.

We found no cohesive lifecycle management across the technology landscapes evident by the following facts:

- Lack of tools to manage software upgrade cycles.
- Lack of lifecycle management tools.
- Critical databases are out of, or nearing end of, support from vendors.

No central governance model for the technology portfolio (lies within the agencies) as evident by the following facts:

- Limited technology portfolio management exists.
- OSF has a very good security control tools in place but other agencies have largely voluntary compliance reporting.
- Network monitoring, change control and service control policies are controlled, if at all, by various agencies.

No State-wide shared services as evident by the following facts:

- Even common services like email and virus protection are operated and maintained independently.
- Use of service level agreements and performance metrics are not institutionalized.

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Infrastructure Baseline – Details (Current State Observations)

We are observing disparate technology within and across state agencies as evident by the following facts:

- Multiple vendor equipment for common technology platforms.
- Lack of unified security management as evidenced by inconsistent anti-virus software and lack of desktop backup technologies.
- 350+ unique software vendors; 70 + legacy mainframe applications.
- Multiple vendors for common web browsing (e.g., IE, Mozilla Firefox (>25 versions), Mozilla Thunderbird, Netscape (Communicator, Navigator, 7.2, etc.).
- 27 different versions of SQL and Oracle.

We found no cohesive lifecycle management across the technology landscapes evident by the following facts:

- Lack of tools to consistently manage upgrade cycles (>25 workstation operating systems including Windows 95, 14 different versions of MS Office, 34 NT devices found, 1340 Windows 2003 devices discovered, etc.).
- Lack of compliance and lifecycle management tools as evident by the following facts: 20% of workstations with expired maintenance, ½ of databases are no longer under vendor's support (92% of current SQL Server databases no longer under support as of 4/12/11).

No central governance model for the technology portfolio (lies within the agencies) as evident by the following facts:

- No technology portfolio management capability or structure exists across the State.
- No State-wide support contracts for infrastructure devices.

Limited State-wide shared services as evident by the following facts:

- Even common services like server administration, break/fix, and architecture are operated and maintained by all large agencies.
- Some agencies subscribe to limited shared services provided by agencies like OSF, but the chargeback model requires updates.

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Infrastructure Baseline – Details (Future State Objectives)

We seek an infrastructure environment that will enable centralized governance and shared services as supported by the following trends:

- Data center consolidation, enabling the collocation of core platforms in order to allow additional consolidation and virtualization.
- Implement State-wide lifecycle and inventory management.
- Implement a common statewide compliance monitoring tools.

Infrastructure standardization, rationalization and consolidation is required to achieve the future state vision of centralized technology as supported by the following trends:

- Limit network, security and telecommunications vendors to one or two.
- State-wide support contracts.
- Standardize print/scan/fax and telephony. Make print/scan/fax as a network based services and limit local print/scan/fax.

Future vision includes centralized and common/shared business services used by multiple agencies as supported by the following trends:

- Move small and medium agency datacenter into a central location.
- Create or designate single entities for security services and telephony.
- Services requiring agency-specific competencies will remain at the agency.

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Infrastructure Baseline – Details (Future State Objectives)

We seek an infrastructure environment that will enable centralized governance and shared services as supported by the following trends:

- State legislation mandating and government progress toward enabling shared services across agencies.
- Well-documented public sector and commercial consolidation of shared service functions for purposes of cost reduction.

Infrastructure standardization, rationalization and consolidation is required to achieve the future state vision of centralized technology as supported by the following trends:

- In order to reduce the infrastructure footprint, visibility and control of State-wide technology is required.
- Far too many vendors, products, instances and versions are present in State's current environment.
- Duplicate environments exist in the most expensive technology areas including: data centers, mainframes, servers and workstations.

Future vision includes centralized and common/shared business services used by multiple agencies as supported by the following trends:

- Shared service model targeted by OSF ("Federated Model of The Enterprise").
- Identifying the common business services is a requirement for moving toward a centralized shared service model. Currently many business services exist at the agency level without leverage of the investment and resources required to enable them.

Services requiring agency specific competencies will remain at the agency level as supported by the following trends:

- Agency-level unique services and processes will remain at the top of the shared service model pyramid.
- Agency-specific activities and requirements will not be centrally managed.

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Infrastructure Baseline – Details (Roadmap Initiatives)

- 35 initial recommendations were captured (normalized, updated, enhanced, etc.)….these projects include the following technology areas: application development, business continuity/disaster recovery, database, workstation, e-mail/collaboration, help desk, internet services, licensing, personnel, platforms, maintenance, networks, voice.
- The initiatives have been grouped and organized around the following themes: cost savings, transformational projects, and long-term strategic programs. Below is a high level list of opportunities:

Cost Savings Initiatives	Transformational Initiatives	Long Term Strategic Programs
• Data center consolidation • Mainframe consolidation • E-mail consolidation • Storage assessment – Phase 1 • Workstation rationalization and optimization	• Compute optimization – Server consolidation – Server virtualization • Disaster recovery • Storage assessment – Phase 2	• Data center certification (SAS 70) • Peripheral centralization and standardization • Cloud strategy and adoption • Utility consumption modeling • Green IT • Mainframe retirement

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Guiding Principles

Centralize – (dictionary.com)

v.tr.

- To draw to or gather about a center.
- To bring under one control, esp. in government: to centralize budgeting in one agency.
- To come together at or to form a center.

Standardize

v.

- To bring to or make of an established standard size, weight, quality, strength, or the like.
- To bring into conformity with a standard.

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Guiding Principles

Optimize –

- To make as effective, perfect, or useful as possible.
- To make the best of.
- To create so as to maximize efficiency and speed.
- To take the full advantage of.

Simplify –

–v -fied, -fy·ing.

- To make less complex or complicated; make plainer or easier.

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Top 5 Recommended Cost Savings Initiatives

1. Data center consolidation.
2. Mainframe consolidation.
3. E-mail consolidation.
4. Storage assessment – Phase 1.
5. Workstation rationalization and optimization.

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Data Center Consolidation

Infrastructure

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	

Description

- A data center consolidation is a major transformational effort focused on cost reduction via the act of collapsing multiple data center locations into a subset of locations (if not one). This consolidation of locations results in substantially reduced costs IT operating costs.
- A limited effort is already underway to migrate select agencies into the new OSF data center location at 3115 N. Lincoln.

Stakeholders

- ISD – DHS – Health (for Tulsa DR)
- ~ 30 Agencies with Data Center locations or computing rooms

Investment

Investment Category	2011	2012	2013
Transformational Costs	2, 040, 000	1, 720, 000	799,000
Cost Avoidance	50, 000	50, 000	50, 000
Hard Dollar Savings	**3, 006, 463**	**989, 120**	**672, 342**

Activities

- Engage a move Program Office (completed).
- Secure a migration partner (completed).
- Select candidates for migration (suggested).
- Conduct inventory (snapshot in November).
- Perform application mapping.
- Select a migration strategy.
- Script the migration .
- Reduce complexity.
- Execute.

Assumptions

- Approximately $15 per sq ft of vacated data center space will be recovered from each facility migration (conservative estimate).

Phase	Timeline	Duration
Bundle 1	Q1 - 2011	1 yr
Bundle 2	Q1 - 2012	1 yr

Dependencies

- Application rollout and waved migration approach needs to be defined per agency (part of due diligence phase).
- Technology interfaces and touch points are currently unknown (auto discovery tool recommended to provide this level of detail).

Metrics to measure achievement

- Consolidation - TCO: reduction of physical locations, maintenance, and lease costs.
- Improved SLA's and data availability.

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Mainframe Consolidation

Infrastructure

Risk Assessment

M

Description

- Establish a program of mainframe consolidation, and workload rationalization. The State has 7 mainframes (MIPS ~4000), supporting multiple agencies: a consolidation effort would reduce the landscape to 2; (perhaps 3), and would consider the possibility of application migration to client server environments.
- Long-term strategy may include complete retirement of mainframe in lieu of open systems.

Benefit Theme(s) Supported

Centralize	✓
Standardize	
Simplify	✓
Optimize	✓

Stakeholders

- ISD
- OSF
- DHS
- Health, ESC, OJA, DPS, ODOT

Investment

Investment Category	2011	2012	2013
Transformational Costs	600,000	500, 000	
Cost Avoidance			
Hard Dollar Savings	2,025,000	1,159,995	

Activities

- Appoint a committee of mainframe users.
- Initiate a consolidation program.
- Launch application study.
- Identify quick wins by turning off unneeded MIPS .
- Secure partner or expert staff to perform consolidation analysis.
- Identify 2 or 3 primary target systems.
- Execution of plan.

Assumptions

- Security posture will allow for the sharing of workloads across the most secure platform: mainframe.

Phase	Timeline	Duration
Analysis	Q1 - 2011	6 Months
Execution	Q3 - 2011	1 yr

Dependencies

- Data center proximity and availability of supporting infrastructure.
- Note: Last year the US House of Representatives retired its last mainframe: estimated savings were 700K in licensing and maintenance, and 30K in power.

Metrics to measure achievement

- Consolidation – TCO reduction of MF operations for the State of Oklahoma.
- Improved services by pooling highly skilled resources.

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E-mail Consolidation

Infrastructure

Risk Assessment

L

Description

Establish a formal e-mail strategy and implement consolidation of existing infrastructure. The most important aspect to e-mail is developing a strategy based on solid understanding of the needs of the State agencies. Before studying the technologies available, the State must perform an in-depth analysis of the collaborative processes and e-mail technologies currently in place. Initially, e-mail, social networking, wikis, web conferencing, and instant messaging should be in scope of this initiative.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Stakeholders

- TBD
- Other agencies (TBD)

Investment

Investment Category	2011	2012	2013
Transformational Costs			
Cost Avoidance			
Hard Dollar Savings			

Activities

- Establish a cross-agency Data Management Committee, experienced with industry practices.
- Determine explicit goals for each functional program.
- Establish usability, security, and compliance criteria.
- Choosing a true enterprise solution.
- Select the appropriate delivery mechanism.
- Operationalize solutions.

Assumptions

- Existing platforms can be leveraged.
- Convergence strategies will support agency adoption – consolidation of e-mail platforms.

Phase	Timeline	Duration
Phase 1	Q2 - 2011	6 M
Phase 2	2013	1 yr

Dependencies

- Platform convergence strategy – consolidation of multiple e-mail platforms – Notes, Exchange, POP.
- Technology and product enhancements around BPOS (site located).

Metrics to measure achievement

- Reduced cost per user through pricing bundles.

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Storage Assessment – Phase 1

Infrastructure

Risk Assessment

M

Description

Storage assessment project would be focused on evaluating the current state storage environment and providing specific improvement recommendations. Information gathering will be based on strategic interviews, data collection/analysis and State's request for additional perspective on relevant leading practices. The ultimate goal is to establish a balance between risk and investment around storage solutions and to adapt the existing solution offerings into a shared service model where the state can more effectively procure and manage data storage within IT.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Stakeholders

- ISD
- DHS
- Veteran Affairs
- Tier 2 Agencies
- Health
- Juvenile Affairs
- Mental Health
- Tax

Investment

Investment Category	2011	2012	2013
Transformational Costs	340000	340000	340000
Cost Avoidance	Tentative	Calculation	Incorporates 2 Admin p.y.
Hard Dollar Savings	719, 412	719,412	719, 412

Activities

- Appoint a Data Management Community of Practice chartered with vendor selection, management, and contract negotiation.
- Establish a study to assess the entire storage landscape (3 phase approach below).
- Analysis defines the major service tiers and compares pricing. Looks into existing retention policies.
- Development and alignment defines the detailed technologies and attributes for tiered services, retention policies, application patterns, storage re-tiering and aligns with agency expectations.
- Operationalize finalizes the tiered services, costs, application patterns, storage re-tiering patterns and provides knowledge transfer.
- Execute improvement programs.

Assumptions

- Agency alignment to shared service model and agreement on policies.
- Data classification is out of scope.

Phase	Timeline	Duration
Assessment	Q2	12 weeks
Implementation	2012	1 yr

Dependencies

- Centralized management and governance for IT spend (storage).
- Rationalization of structured vs. unstructured storage.
- Compute and storage affinity.

Metrics to measure achievement

- Reduction of disk consumption.
- Reduction of admin cycles.
- Reduction of cost per GB measurements.

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Workstation Rationalization and Virtualization

Infrastructure

Risk Assessment

L

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	

Description

- Consolidation across workstation platforms, for simplified management. This initiative will include standardized hardware, software images and significantly reduce the need for workstation dispatch.
- Provide as many workstations as possible via VDI or RDS. Use Terminal Services for large groups of identical workstations, VDI for the rest.

Stakeholders

- ISD
- Other Agencies (TBD)

Investment

Investment Category	2011	2012	2013
Transformational Costs			
Cost Avoidance			
Hard Dollar Savings			

Activities

- Define PC strategy.
- Vendor selection.
- Initiate a pilot program.
  - Include stakeholder support, training, third-party assistance, ROI analysis and testing in your planed pilot.
- Assess existing environment with regard to infrastructure capacity.
- Build solution from back to front.
- Validate initiative with a pilot.

Note: This is an optimization activity, subsequent to path of DC consolidation.

Assumptions

- Leverage of global CDM.
- Network bandwidth.
- Application virtualization in progress.

Phase	Timeline	Duration
Phase 1	2Q2011	5 months

Dependencies

- Networking reach and capacity.
- Adoption of a technology framework and governance.

Metrics to measure achievement

- Strategy established and agreed upon.
- Standardization (# of standards established, removed, etc.).
- Consolidation (# of devices converted, etc.).
- Virtualization (# of devices).
- User feedback.

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Additionally Recommended Transformation Initiatives

- Compute Optimization.
  - Server Consolidation.
  - Server Virtualization.
- Disaster Recovery.
- Storage Assessment – Phase 2.

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Compute Optimization - Server Consolidation

Infrastructure

Risk Assessment

M L

Description

Server consolidation is an approach to the efficient use of computer server resources in order to reduce the total number of servers, suppliers, and/or server locations that an organization requires. The practice developed in response to the problem of server sprawl, a situation in which multiple, under-utilized servers take up more space and consume more resources than can be justified by their workload.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- ISD – DHS
- DPS, OJA, DHS, DOT, DOC, OSF

Investment

Investment Category	2011	2012	2013
Transformational Costs	600,000	1,200,000	450,000
Cost Avoidance			
Hard Dollar Savings	896,000	1,792,000	672,000

Activities

- Establish scope for both systems and agencies.
- Assess current infrastructure - (target services : web, mail, DC's, file/print).
- Identify server consolidation goals.
- Design new environment (data center).
- Develop migration plan.
- Finalize user and data migration plan.
- Implement new environment.
- Retire servers.

Note: This is an optimization activity, subsequent to path of DC consolidation.

Assumptions

- Cross-agency core services can be combined.
- Active directory Forrest implementation.

Phase	Timeline	Duration
Phase 1	Q2 - 2011	1 - 50 Servers
Phase 2	2012	2 – 50 Servers

Dependencies

- Data center capacity and data center consolidation of target agencies.
- Server and storage capacity and compatibility to absorb workloads.
- Unknown current server support ratios.

Metrics to measure achievement

- Standardization (# of physical servers removed, established, # of vendor and model standards removed, etc.).
- Consolidation (# of devices).

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Compute Optimization - Server Virtualization

Infrastructure

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Description

- Server virtualization is the masking of server resources, including the number and identity of individual physical servers, operating systems, from the user. The server administrator uses a software application to divide one physical server into multiple isolated virtual environments.
- Throughout the state approximately 33% of the server landscape is in some form of virtualization. Over a 5 year investment the State will net a 27% return – most coming in Y4 and 5.

Stakeholders

- ISD and DHS
- All agencies

Investment

Investment Category	2011	2012	2013
Transformational Costs	843096	993,442	3088978
Cost Avoidance	18% per Server		
Hard Dollar Savings	**456417**	1,108,221	**2,857,860**

Activities

- Establish scope for both systems and agencies.
- Assessment targets for feasibility and optimal design.
- Screen capabilities and select vendor(s); partner to deliver infrastructure as a service based on consumption model.
- Design solution (system virtualization and impact to interfaces, management, etc.).
- Develop and implement solutions.
- Conduct change management (training on new processes or technologies).
- Monitor KPIs and adjust process as needed.

Note: This is an optimization activity, subsequent to path of DC consolidation.

Assumptions

- Adoption and standardization of Virtual Standard – VMWare.
- 50% of Estate can be virtualized.

Phase	Timeline	Duration
Phase 1	Q1 - 2011	1 yr
Phase 2	2012	1 yr

Dependencies

- Space and capacity.
- Adoption of a shared services model.

Metrics to measure achievement

- The % virtualization in your compute environment.
- Physical servers removed.
- Reduction in TCO.

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Disaster Recovery

Infrastructure

Risk Assessment H

Description

- Establish a business continuance program and remediate current environment.
- Two step process - 1, utilize the OSF and OKDHS datacenters as DR sites for each other, co-hosting all OK gov. assets. 2, establish a mirror of the two sites in OKC in Tulsa or Muskogee for geographical diversity.
- Redundant diversely located zServers and open systems to eliminate Boulder DR site need.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	

Stakeholders

- ISD
- Other Agencies (TBD)

Investment

Investment Category	2011	2012	2013
Transformational Costs	**75, 000**	**75, 000**	75, 000
Cost Avoidance			
Hard Dollar Savings	760,000	760,000	760,000

Activities

- Establish business impact analysis and risk assessment for both systems and employees processes (Phase 1A).
- Proceed with DR feasibility / opportunity study (Phase 1B).
- Develop solutions and present for approval to proceed.
- Implement DR planning and delivery of targeted services (Phase 2).
- Monitor KPIs and adjust process as needed (Phase 3).

Note: This is an activity, subsequent to path of DC consolidation.

Assumptions

- Centralized services and suppliers for disaster recovery and business continuity.
- Regulatory approval of Data Preservation Strategy.

Phase	Timeline	Duration
Phase 1	Q1 - 2011	3 M
Phase 2	Q3 - 2011	18 M

Dependencies

- Consolidation of State agency IT landscapes into a centralized service to increase reach of offering.

Metrics to measure achievement

- Improved measurements on RTO.
- BC DR Scorecard.

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Storage Assessment – Phase 2

Infrastructure

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Investment

Investment Category	2011	2012	2013
Transformational Costs	340000	340000	340000
Cost Avoidance	Tentative	Calculation	Incorporates 2 Admin p.y.
Hard Dollar Savings	719, 412	719,412	719, 412

Description

A storage assessment project would be focused on evaluating the current state storage environment and providing specific improvement recommendations. Information gathering will be based on strategic interviews, data collection/analysis and State's request for additional perspective on relevant leading practices. The ultimate goal is to establish a balance between risk and investment around storage solutions and to adapt the existing solution offerings into a shared service model where the state can more effectively procure and manage data storage within IT.

Stakeholders

- ISD
- DHS
- Veteran Affairs
- Tier 2 Agencies
- Health
- Juvenile Affairs
- Mental Health
- Tax

Activities

- Appoint a Data Management Community of Practice chartered with vendor selection, management, and contract negotiation.
- Establish a study to assess the entire storage landscape (3 phase approach below).
- Analysis defines the major service tiers and compares pricing. Looks into existing retention policies.
- Development and alignment defines the detailed technologies and attributes for tiered services, retention policies, application patterns, storage re-tiering and aligns with agency expectations.
- Operationalize finalizes the tiered services, costs, application patterns, storage re-tiering patterns and provides knowledge transfer.
- Execute improvement programs.

Assumptions

- Agency alignment to shared service model and agreement on policies.
- Data classification is out of scope.

Phase	Timeline	Duration
Assessment	Q2	12 weeks
Implementation	2012	1 yr

Dependencies

- Centralized management and governance for IT spend (storage).
- Rationalization of structured vs. unstructured storage.
- Compute and storage affinity.

Metrics to measure achievement

- Reduction of disk consumption.
- Reduction of admin cycles.
- Reduction of cost per GB measurements.

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Long Term Strategic Programs

- Data center certification (SAS 70).
- Peripheral centralization and standardization.
- Cloud strategy and adoption.
- Utility consumption modeling.
- Green IT.
- Mainframe retirement.

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Data Center Certification (SAS70)

Infrastructure

Risk Assessment

L

Benefit Theme(s) Supported

Centralize	
Standardize	✓
Simplify	
Optimize	

Description

- A SAS70 certification defines and measures standards an auditor must employ in order to assess the contracted internal controls of a service organization, such as a hosted data center. The SAS 70 was developed by the American Institute of Certified Public Accountants (AICPA) and is commonly recognized as an industry standard of service excellence.
- This project will aid in providing necessary credentials that support the performance capabilities and continual improvement required in a shared service data center.

Stakeholders

- ISD
- DHS
- Health (Tulsa)

Investment

Investment Category	2011	2012	2013
Transformational Costs	718,998	120,000	120,000
Cost Avoidance			
Hard Dollar Savings	0	0	0

Activities

- Year 1 (Type 1 Audit).
  - Establish cross-functional team to support audit.
  - Scope and plan activities.
  - Perform risk assessment.
  - Controls definition and documentation.
  - Education.
  - Conduct effectiveness assessment.
  - Remediation.
- Year 2 (Type 2 Audit).
  - Operational controls and sampling.
  - Prepare for onsite audit.

Assumptions

- 1 FTE required for specialized program management.
- System investment and development.

Phase	Timeline	Duration
Type 1	June 2011	12 months
Type 2	Yearly	2 weeks

Dependencies

- Security or standards team familiar with data protection and operational certification programs.
- Agency-wide adoption of operational systems required for audit control.

Metrics to measure achievement

- Qualified opinion from third part auditor.
- Increased availability through operational controls.

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Peripheral Centralization and Standardization

Infrastructure

Risk Assessment

L

Description

- Establish supported make/models for printers , faxes and scanners across the State.
- Document and get agreement on exceptions.
- Establish a policy for multifunction printers and a strict exceptions policy.
- Standardize and enforce via procurement network print/fax/scan devices and supplies.

Benefit Theme(s) Supported

Centralize	
Standardize	✓
Simplify	✓
Optimize	

Stakeholders

- ISD
- Other Agencies (TBD)

Investment

Investment Category	2011	2012	2013
Transformational Costs	TBD		
Cost Avoidance			
Hard Dollar Savings	1,000,000		

Activities

- Establish standards for make/model for print/fax/scan.
- Retire local printers and convert users to network print/fax/scan.
- Establish exception policy.
- Get consensus from every State entity.
- Align procurement process with new standards.

Assumptions

- Buy in from all State entities.

Timelines

- Q1 – Q2 2011 (Identify candidate printers for retirement).
- Q3-Q4 2011 (convert to network service).

Dependencies

- Initial investment in conversion to standard models.
- Central procurement .

Metrics to measure achievement

- Standardization (# local printers, scanners and Faxes eliminated).
- Track spending for printer supplies.

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Cloud Strategy and Adoption

Infrastructure

Risk Assessment H M L

Description

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. *NIST
Environment is ideal for agile development environments required for a finite timeframe.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	

Stakeholders

- ISD
- Any other agency

Investment

Investment Category	2011	2012	2013
Transformational Costs			
Cost Avoidance			
Hard Dollar Savings			

Activities

- Establish committee.
- Select an appropriate cloud solution supplier – be cognizant of existing hardware to leverage existing compute and storage infrastructure.
- Secure minimal footprint of cloud with full complement of tools.
  - Self-provisioning.
  - Monitoring.
  - Capacity planning.
  - Reporting (multi-tenant).
- Develop a P2V strategy (Platespin or VM Capacity Planner).
- Migration execution phase.

Assumptions

- Migrating platform is/can be virtualized.
- Clear path and strategy for scaling.
- Server Virtualization will roll into private cloud.

Phase	Timeline	Duration
Phase 1	Q1 - 2012	1 yr
Phase 2	2013	1 yr

Dependencies

- OS capability with cloud platform.
- Connectivity to consumers of cloud .

Metrics to measure achievement

- Speed to deploy.
- Chargeback – revenue Metering with multi-tenant reporting.

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Utility Consumption Modeling

Infrastructure

Risk Assessment

L

Description

- Utility computing is a service provisioning model in which a service provider makes computing resources and infrastructure management available to the State as needed. Charges them for specific usage rather than a flat rate. Like other types of on-demand computing, the utility model seeks to maximize the efficient use of resources and/or minimize associated costs.
- Environment is ideally positioned for data center consolidation and modernization.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	

Stakeholders

- ISD
- Other agencies (TBD)

Investment

Investment Category	2011	2012	2013
Transformational Costs	TBD		
Cost Avoidance			
Hard Dollar Savings			

Activities

- Establish focus team.
- Identify the specific set of IT issues that need to be satisfied by utility computing services.
- Set realistic and measurable objectives for solving these issues.
- Secure 1 or more providers to partner with.
- Effective negotiations around technology refresh.
- Execute.
- Conduct frequent performance reviews to determine if service level objectives are being met. If the objectives are not being met, determine if the objectives need to be modified.

Assumptions

- Procurement policy flexible to allow Opex vs. Capex-based.
- Sufficient power to manage higher density deployments.

Phase	Timeline	Duration
Phase 1	Q1 - 2011	2 M
Phase 2	Q2	3 Y

Dependencies

- Equipment lifecycle synchronization – environment sufficiently aged.
- IT tool set integration .
- Procurement and lifecycle process adoption.

Metrics to measure achievement

- Improved migration timelines into OSF.
- Reduced Capex spends.
- Improved procurement times .

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Green IT

Infrastructure

Risk Assessment

L

Description

- Green IT refers to environmentally sustainable computing , and the principles and practices of environmental stewardship. It includes the practice of designing, manufacturing, using, and disposing of computers, servers, and associated peripherals efficiently with minimal or no impact on the environment.
- Green IT also encompasses areas of renewable energy and energy conservation within the IT estate.

Benefit Theme(s) Supported

Centralize	
Standardize	
Simplify	
Optimize	✓

Stakeholders

• All	• All

Investment

Investment Category	2011	2012	2013
Transformational Costs	WIP		
Cost Avoidance			
Hard Dollar Savings			

Activities

- Establish a Green Team.
- Explore Energy Savings Credits.
- Establish Conservation and Recycling Curriculum for all employees.
- Explore emerging technologies and chip sets to determine energy saving ROIs.
- Establish a partnership with a data center expert in the field of energy optimization.
- Explore renewable energy for ancillary IT supporting services.
- Establish a carbon footprint and associated KPIs.
- Aggressively measure cost savings and publish wins.

Assumptions

- Environmental stewardship equates to substantial energy savings.

Phase	Timeline	Duration
Phase 1	Q1 - 2011	1 yr
Phase 2	2012	1 yr

Dependencies

- State sponsorship and recognition of environmental initiatives.

Metrics to measure achievement

- Reduction of carbon footprint.
- Reduction of energy consumption.

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Infrastructure Mainframe Retirement

Infrastructure

Risk Assessment

M

Description

- Long-term strategy should include complete retirement of mainframe in lieu of open systems.

Benefit Theme(s) Supported

Centralize	
Standardize	
Simplify	✓
Optimize	✓

Stakeholders

- ISD
- OSF
- DHS

Investment

Investment Category	2011	2012	2013
Transformational Costs	600,000	500, 000	
Cost Avoidance			
Hard Dollar Savings	2,025,000	1,159,995	

Activities

- Appoint a committee of mainframe users.
- Initiate a consolidation program.
- Launch an application study.
- Identify quick wins by migrating unneeded MIPS .
- Secure partner or expert staff to perform consolidation analysis .
- Identify target systems .
- Execution of plan.

Assumptions

- Security posture will allow for the sharing of workloads across open system platforms.

Phase	Timeline	Duration
Analysis	Q1 - 2011	6 Months
Execution	Q3 - 2011	1 yr

Dependencies

- Note: Last year the US House of Representatives retired its last mainframe: estimated savings were 700K in licensing and maintenance, and 30K in power.

Metrics to measure achievement

- Consolidation – TCO reduction of MF Operations for the State.

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Appendix B—Data Network and Telecommunications Findings, Trends, and Recommendations

Several recent initiatives spearheaded by the Office of State Finance are steps in the right direction for consolidating the State's network and telecommunications infrastructure to address the challenges identified in Capgemini's current state analysis. The future vision of network and telecommunications services for the State should follow the guiding principles of centralization, standardization, and simplification.

B.1 Current State Baseline

The current state of network 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.
- The lifecycle of equipment deployed is in various stages of support or 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 the entity itself 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.
- 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, producing 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 model 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 it's WAN to a single network and maintains multiple networks between State agencies. Most states led consolidation initiatives in the 1980's and the 1990's. The initial cost for the networks, along with ongoing maintenance, represents a lost opportunity for a consolidated network and the associated savings. Capgemini is not tasked with assessing prior network acquisition costs, but it is estimated at a minimum of $3 to $6 million to as much as $15 million is spent 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 network for security and other purposes, and security concerns are no longer 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 observations made above.

B.2 Future Vision and Key Initiatives

The future vision of network and telecommunications services for the State should follow three key themes and guiding principles:

- **Centralization.** All network and telecommunications services for State agencies and entities will be centralized and delivered by a single group/authority under the guidance of ISD. This will include network access via wide area network and local area networks. LANs which do not need to reside at end-user locations will be centralized in the two primary data centers. Telephony and IP-based collaboration services will be delivered via ISD using the central data centers. Any network and telecom services that cannot be centralized due to regulatory or legal reasons will need to conform to State-wide network architecture standards and approvals.
- **Standardization.** Capgemini's network and telecommunications strategy will be executed in compliance with the State's objectives for network architecture, standards, and design principles. Network and telecommunications infrastructure will adhere to an approved technology lifecycle management strategy and must meet documented accepted standards.
- **Simplification.** All network and telecommunications infrastructure design and architecture should follow a standard layered based approach to simplify deployment and operation. Standard equipment and configuration support procedures will be adopted to simplify deployment, operations, and lifecycle management.

Today, the State has multiple distributed networks with non-uniform network architecture. The WAN architecture for the larger agencies is primarily hub and spoke where a central site connects to the remote sites via point to point connectivity. Several of them are using legacy frame relay or P2P circuits with the agencies themselves acting as hubs for other agencies/sites.

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.

State-wide Backbone

We are recommending that the State network architecture be defined into a standardized, State-wide 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.

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 four major MPLS PoPs for the backbone at existing OneNet locations and consolidate connectivity of the agencies to the nearest PoP.

Anticipated Benefits

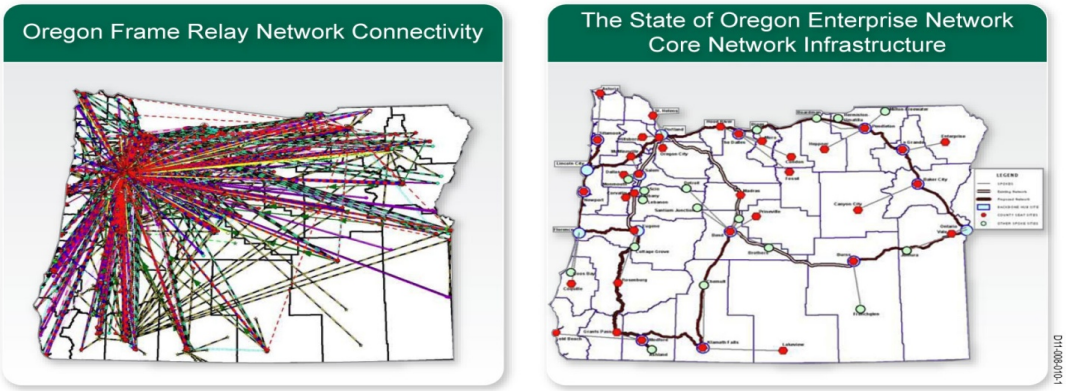
- Separation of the optical backbone and WAN will enable a design where the underneath optical transport network (OTN) can be provisioned to deploy various WAN technologies for disparate needs for bandwidth flexibility, security or both.
- MPLS technology deployed on top of OTN enables easy migration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

Details

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 middle mile access. A backbone network controlled by a single entity will enable the State to eliminate long-reach circuits by connecting 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 deployed a core network in 2007. **Figure B-1** illustrates the before and after telecommunications network. The legacy network consisted of a frame relay mesh not unlike the State of Oklahoma. 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 B-1. Before and After Telecommunications Network (Oregon)

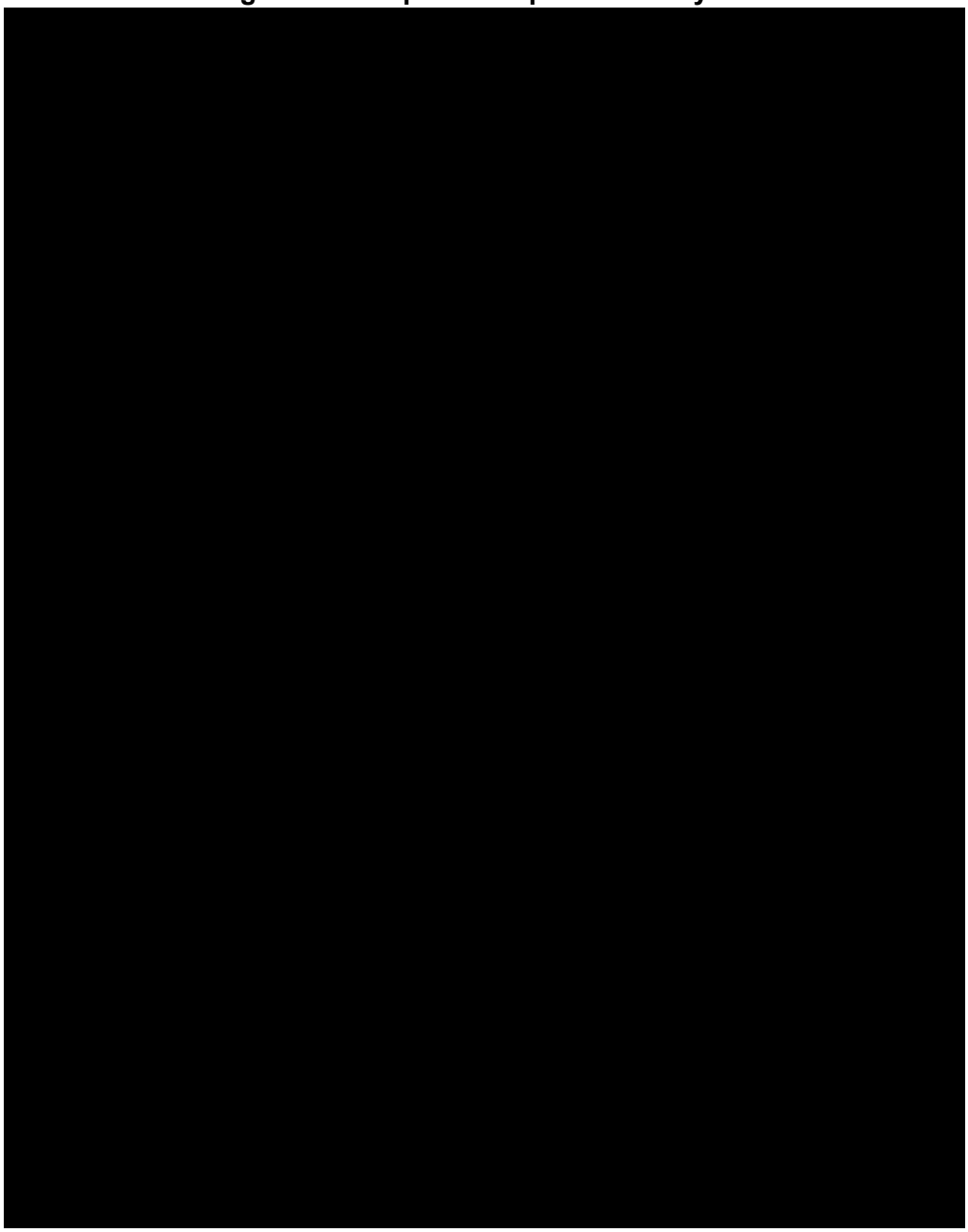


Multiple owners of the fiber deployment in different geographies within the State have created a non-optimal use of the fiber plant, a valuable asset in which the State has invested significant dollars over the last several years. Additional investment of approximately $75 million for BTOP initiative has been approved. These investments can only be maximized by judicious planning and design of the fiber plant. Having a single backbone and authority will also enable cost-

effective deployment of WAN optimization and acceleration to remote locations where high-speed and high bandwidth connectivity is not available or is expensive.

Figure B-2 shows the current fiber plant within the capitol campus. The majority of this plant is under the ownership of the Office of State Finance and is used to connect various buildings within the complex to the Office of State Finance data center.

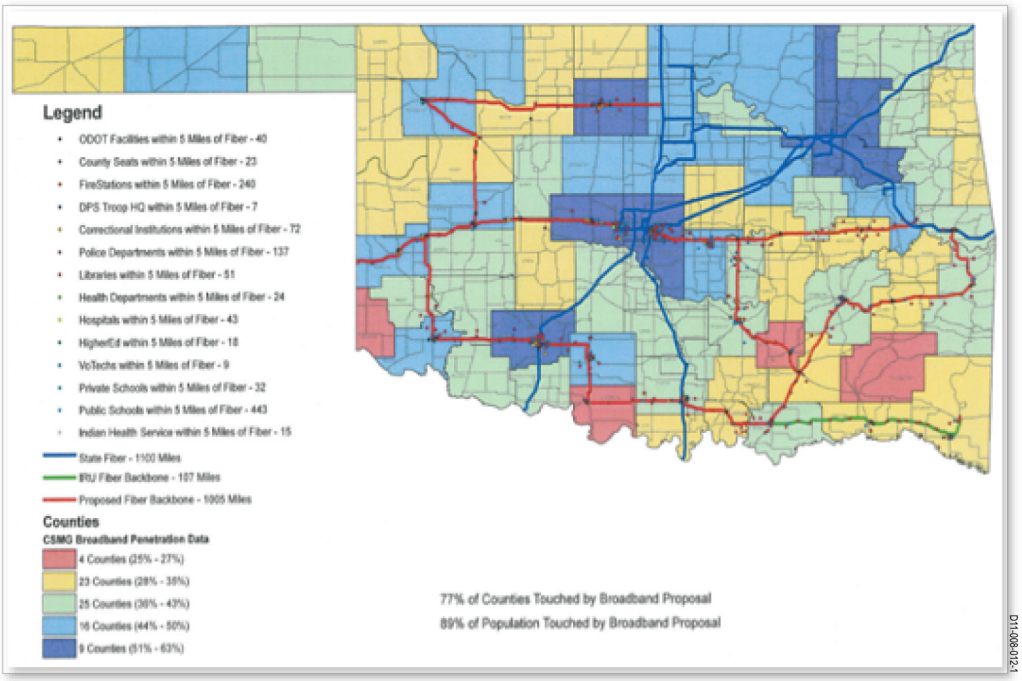
Figure B-2. Capitol Campus Fiber Layout



The current connectivity is limited to point to point 1GB links, based on economically available technology at the time of deployment several years ago. 10 GB fiber technology over single mode fiber for distances up to 400 km and for multi-mode fiber up to 2.2 km is now available economically via optical modules costing less than $5,000. Multi-wavelength technologies like DWDM are also now widely deployed to extract 40 GB bandwidth from a single fiber. The campus network can easily be upgraded to 10 GB in order to provide bandwidth for current VoIP and future unified communications initiatives for maximum productivity and quality service.

Figure B-3 illustrates the current fiber plant and fiber in process of installation State-wide. The OCAN/BTOP initiatives will result in the fiber plant shown. The current fiber plant outside the capitol complex is owned and maintained by the Oklahoma Board of Regents (OneNet), Oklahoma Turnpike Authority, or the Oklahoma Department of Transportation. The currently deployed technologies have mostly limited the depicted fiber plant to 1 GB data rate per fiber.

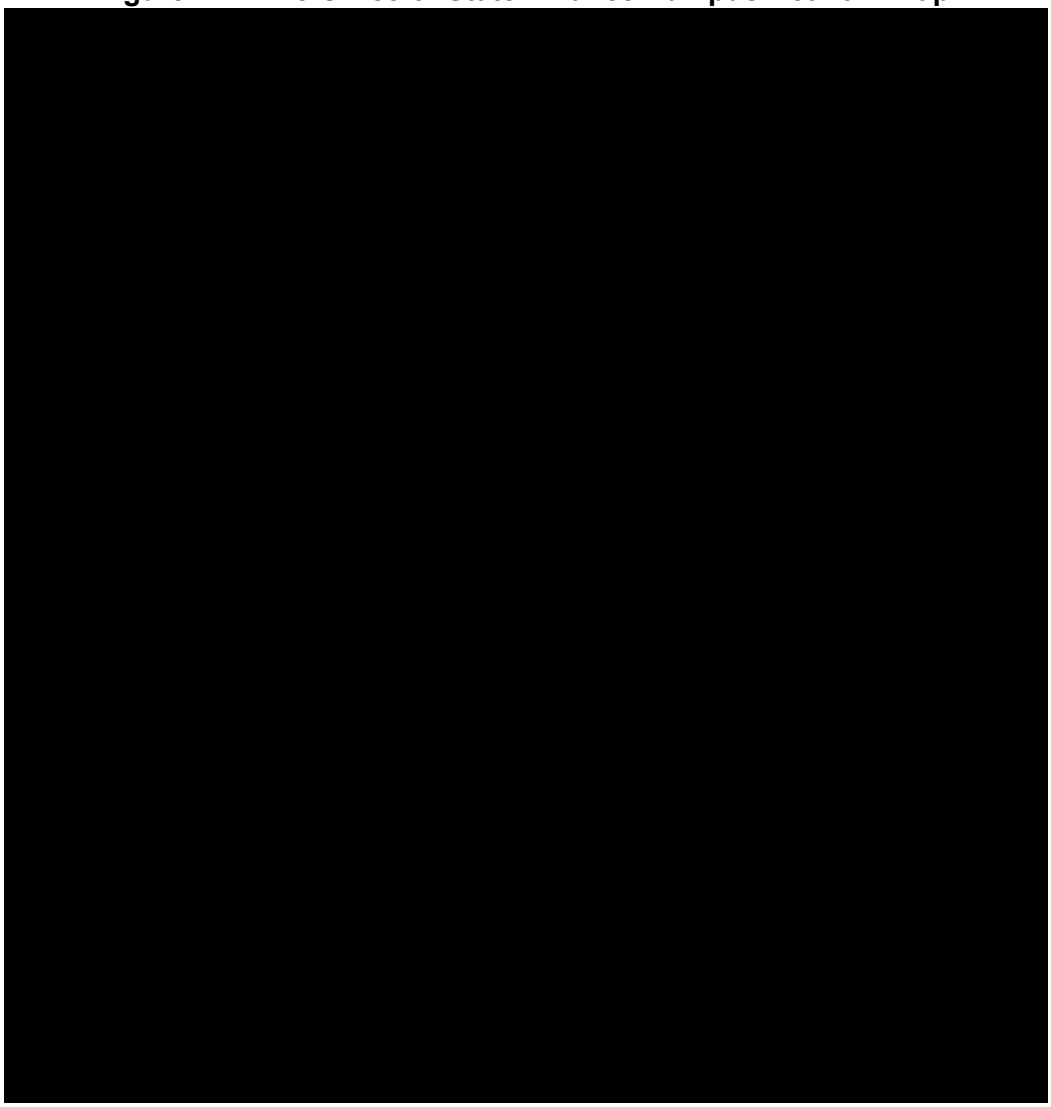
Figure B-3. State-wide Current and Proposed Fiber Plant



OneNet under Regents does have 10 GB deployed between the four major PoPs in Oklahoma City, Tulsa, Norman and Stillwater. The core of the network also has service provider class multi-service ONS platforms deployed. ONS series routers from Cisco now support DWDM modules with ROADM (reconfigurable optical add/drop/mux) capability. These capabilities can be used to create a core optical mesh network. These PoP locations can be augmented by MPLS capable routers to make them MPLS PoPs. MPLS can be configured as multiple virtual WAN

clouds for various agencies. State entities can replace their current P2P and frame relay WANs to a MPLS network. A DWDM network can also be used without the MPLS overlay to provide connectivity via technologies like VPLS and MPLS-TP or an Ethernet L2 network for isolated cases, where a traditional connectivity can still be maintained at the edges with a simpler configuration of the core.

Figure B-4. The Office of State Finance Campus Network Map



The combined fiber plant (capitol complex and State-wide) is not enough to light up every facility via point to point connections. However, it is substantial enough for a Metro type DWDM solution for campus networks and long haul DWDM solution for the major PoPs. The metro optical networks can even be deployed with far cheaper CWDM solutions where 10 GB access is not needed. CWDM components are much cheaper (4 times cheaper) than DWDM equipment and are easier to maintain being a passive optical technology. A study done by the

University of Oklahoma Interop lab for fiber quality was conducted that indicated some quality problems with the fiber splices (poor quality and potential air gaps) and signal loss that was greater than acceptable tolerances for the existing OneNet fiber. These can be mitigated by selective installation of optical amplifiers. A more comprehensive study on fiber quality and selection of PoP locations can enable the State to have a high bandwidth backbone with potentially a few pairs of fibers. A DWDM capable infrastructure will also enable Oklahoma to fill in gaps for fiber by acquiring a few pair of dark fibers from third parties where the State does not own fiber. These gaps can also follow some of the existing fiber swap agreements with service providers to minimize costs.

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.

We discovered that there are a number of independent initiatives or proposed initiatives to deploy MPLS technologies. OneNet, OSF and DHS are either in process of planning or assessing the deployment of separate MPLS WANs. ODOT already uses an AT&T MPLS network. We recommend that Oklahoma create a single entity to plan and deploy an optical backbone which will enable operation of multiple MPLS clouds on State-owned fiber. A working group should be created to align these initiatives. A single authority needs to be identified to monitor allocation and usage of fiber assets owned by the State. Any ownership issues should be mitigated by a chargeback mechanism.

Investments are currently being made for the OCAN/BTOP initiatives for broadband access to middle mile across the State. These investments will yield maximum returns only if the fiber planning is done in conjunction with the network design. A single authority is necessary to ensure maximum reach of network access with unified physical network. The number of fiber strands is probably not going to be the determining factor, the location and reach will. Available technologies like DWDM can extract all the needed bandwidth for the State of Oklahoma from just a couple of pairs of fiber strand. However, the labor costs for laying the fiber dictates installation of a bundle of fiber instead of a few pairs. Perhaps a partnership with telecommunications private sector entity for cost sharing and use of physical fibers from the bundle is the best way to maximize the returns on the investments. Such partnership will also have side benefits wherein telecommunication companies can offer broadband access to the citizens of Oklahoma, even in the remote regions of the State.

The WAN 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.

Figure B-5. OneNet Wide Area Map

Implementation Plan

- Establish a steering committee/work group for adoption of the roadmap. This entity should have participation from major agencies including the Department of Transportation, the Office of State Finance, and the Department of Human Services.
- Establish top-level guiding principles and standards for telecommunications.
  - Guiding principles should include but not be limited to:
    - Reduce complexity.
    - Mitigate security risks by design.
    - Provide an improved user experience.
    - Provide common provisioning and support procedures.
    - Provide consistent WAN service.
    - Provide a single connection for all IP services.
    - Establish a managed WAN service for the State.
  - Standards should include but not limited to:
    - Common IP authority for the State.
    - Standard routing and switching platforms.
    - Configuration standards.
    - Service catalog.
- Document WAN connectivity for each agency, leveraging any previous studies (i.e., AT&T).
- Assess environment with regard to existing infrastructure, components, and costs.
- Identify a single State entity that would operate the backbone and the MPLS networks.
- Establish a baseline architecture based on requirements from all agencies.
- Define service parameters and a provisioning and support model. This model should parallel an ISP model.
- Architect and design the backbone and MPLS networks.
- Define rollout for the base backbone and MPLS PoPs. OneNet PoP locations should the starting point.
- Establish a base migration plan.
- Identify agencies (bundles) for migration and establish a schedule.
- Execute migration plan.
- Develop a detailed migration plan for each agency.
- Conduct change management (training on new technology and processes).
- Monitor KPIs and adjust process as needed.

Dependencies include:

- Fiber availability for major PoPs that make the MPLS Backbone. This already exists for major population centers via OneNet.
- A single entity that controls and manages the WAN for agencies via MPLS.

Metrics and milestones to measure achievement include:

- Strategy established.
- A State entity identified.
- Design and deployment of the core completed.
- Agencies successfully migrated.
- Cost savings per added bandwidth after migration.

Stakeholder includes ISD, OneNet, and the major State agencies.

Telco VoIP Conversion

Capgemini is recommending that 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 covert the capitol complex phones to VoIP. These projects should be accelerated and extended State-wide.

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.

Anticipated 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.
- 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.

Details

State telecommunications services network exists as islands of discrete technologies, services, facilities, service level agreements, and maintenance agreements. The annual operational expense (OPeX) budget indicates increase of spending of 9 percent over FY2007 and 18 percent over FY2008. Increases in operational cost of these magnitudes year over year present an opportunity to radically change the telecommunications infrastructure and the operations cost trajectory. Approximately 25 percent cost savings can be garnered by implementing an IP converged, integrated unified communications network and a State-wide Packet Optical Transport Platform WAN. In addition, the development of the WAN can reduce the return on investment time period to less than 18 months. Other benefits include the enabling of business continuity/disaster recovery, increased productivity and responsiveness of mobile professionals, improved business resilience and increased utilization of IP communications and technology assets.

The State network supports a variety of voice telephony services which range from Class 5 DMS-100 switch, Plain Old Telephone Service (POTS), Centrex services (a POTS-like service, which is offered from a Class 5 switch as a virtual PBX) VoIP services, and an Avaya PBX system. In addition, 800 out of network services are offered via the DMS 100 switch to the Public Telephone Switch Network (PSTN).

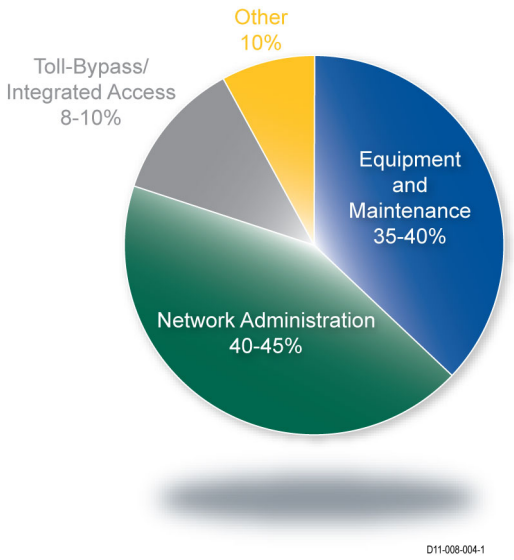
The telephone services in the network account for in excess of 12,000 DMS-100 lines, 1100 VoIP lines, a large number of PBX lines and systems. It is supported by facilities connected to Cox and AT&T PSTN. This wide range of technologies and large quantity of facilities incur high monthly operating expenses. The expense covers equipment maintenance, powering and cooling, space and facilities rental for Cox and AT&T. Additional cost is incurred by the wide range of management and maintenance personnel and contracts needed to support this network.

The industry standard has noted for POTS to VoIP OpeX is about $40.00 to $11.00 monthly per line respectively. This POTS-VoIP cost analysis was published in the "NASCIO Representing Chief Information Officers of the States -: VoIP and IP Telephony Planning for Convergence in State Government" dated May 2005.

This study strongly emphasizes the need for developing an IP converging network by the State to take advantage of the synergies of technology, services and cost. The State network will average a 25 percent saving by creating a State-wide integrated converged VoIP and data IP network with distributed capacities and capabilities over the MPLS WAN. A chart of the potential categories of saving published by Cisco is presented as **Figure B-6**.

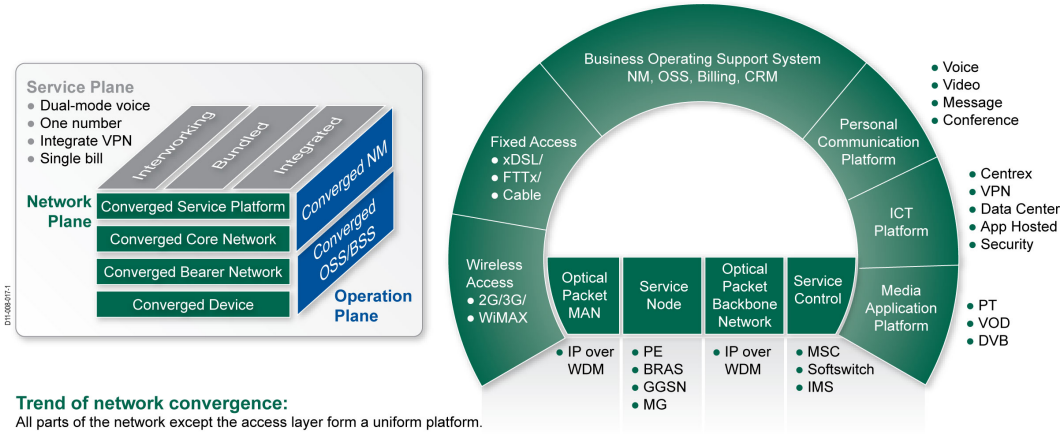
Telephony services currently are de-centralized for most of the Tier 1 and 2 State agencies and maintained by them. Several PBX systems and even VoIP deployments exist. This has created duplicate support structures and is not conducive to a good total cost of ownership model for the State as a whole. State-wide IP telephony services should be deployed in conjunction with the recommended backbone network to minimize long distance charges and voice circuits via SIP trunks. VoIP deployment will also enable enhanced collaboration services that are not possible with legacy TDM systems. **Figure B-7** illustrates a converged network.

Figure B-6. Potential Categories of Savings



Source: Cisco Network Investment Calculator (CNIC).

Figure B-7. A Converged Network and Network Services Model



In addition to the OSF Avaya VoIP solution implementation, there are also active projects to covert the capitol complex phones to VoIP. The Oklahoma Employment Security Commission is targeted to convert to this solution in the FY 2011 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 WAN.

Implementation Plan

The transition of the State's telecommunication infrastructure from its current state into an IP convergence, integrated unified communications network requires the following:

- Development of a State-wide WAN backbone connecting all State agencies using optical transport platforms to take advantage of the short ROI for Packet Optical Transport Platform.
- Complete the decommissioning of the current TDM Nortel SL100 switch and replace it by deploying VoIP in all agencies to take advantage of the Capex and Opex savings.
- Embed capabilities in each agency for the integration of media communication of audio, video, messaging tools for a unified message platform, voice mail to e-mail conversion and vice versa, collaborating and web conferencing i.e. virtual meeting with the ability to record and play back and IP mobility (IP phones, soft-phones via soft-phone agents on PC or desktops i.e. network-to-desktop and PC computer telephony integration and virtualization) wired and wireless connectivity.
- Distribute platform capabilities throughout the network such as Class 4 and 5 features, signaling, 800 services, RTP for VoIP/SIP services using soft switch technology.
- Leverage the use of GPON and NG-GPON (FTTx) for more broadband access to agencies.
- Complete integration of the applications and services of all agencies to create an IP convergent unified communications environment leveraging a State-wide backbone.
- Develop shared service management call center for the WAN, infrastructure layer connectivity, business continuity and disaster recovery, network management and telecommunications services maintenance State-wide.

B.3 Other Recommendations for Network and Telecommunications

Capgemini additionally recommends the following:

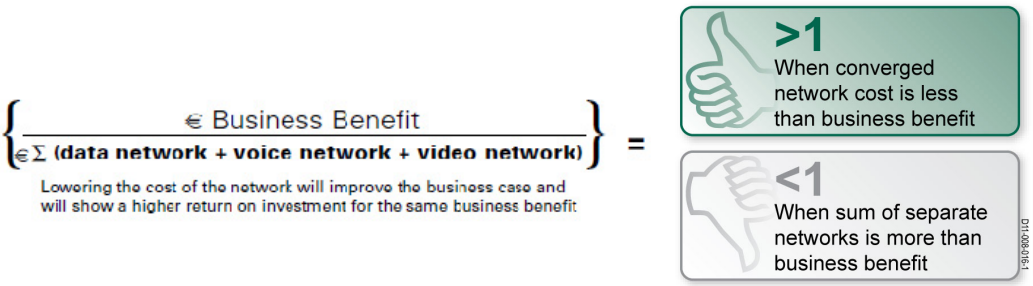
- Consolidate the LAN infrastructure along with servers into the shared infrastructure. Any LAN elements that cannot be consolidated in the central data center and corresponding disaster recovery site should be standardized and managed by a common toolset. Additionally, locations with multi-agency presence can consolidate LAN environments and if segregation of traffic is required, it can be achieved by virtualizing LAN elements.
- Standardize network elements across the State and limit vendors to two. This will enable consolidation of support personnel, tools and processes. Significant total cost of ownership savings can also be achieved by negotiating State-wide purchase and support contracts with selected vendors. Having two vendors will give the State leverage in negotiations and protection from vendor viability and technology offerings.
- Standardize and centralize network management and monitoring tools and base configurations.
- Adopt LAN and WAN virtualization to consolidate network infrastructure across the State for better capacity management and utilization.

B.4 Value Proposition

The following are elements of the value proposition associated with the converged network backbone and IP services.

- **Reduction in expenses.** Using a converged MPLS network onto a single infrastructure the cost savings can be up to 30 percent from frame relay. This has been our observation and also citations from case studies by telecomm providers like Megapath. The State can realize potentially larger savings as multiple WANs can be collapsed into one backbone network
- **Service integration.** Voice, video, and data services can be integrated in a common backbone. Also, integrated network hardware will further help in network performance and optimization providing following benefits:
  - Proper utilization and management.
  - Employee productivity.
  - Cost reduction and cost management.
  - Organizational agility.

Figure B-8. Converging Data, Voice, and Video Networks Provides Increased Benefits



- **Improved service level agreements.** Flexibility, high availability and multi-service support enable the State to provide better service level agreements by having a pathway to troubleshoot faster, and recover faster with proper design. This can be achieved by fewer devices that enable better design for disaster recovery and redundant design.
- **Improved management and performance.** MPLS networks reduce the configuration and management requirements for the State agencies as the WAN service can be provided by a single State entity. Having an optical backbone will also reduce latency and jitter.
- **Enhanced disaster recovery capability.** The State benefits from an improved and simplified disaster recovery process due to an IP network based on a shared L2 WAN instead of P2P connectivity.
- **Lower total cost of ownership.** Convergence of disparate WANs to a single backbone, with management centralized will yield an overall lower total cost of ownership for the State of around 30 percent. A high-speed backbone will also enable deployment of unified communications and further reduce costs by another 20 percent.

B.5 Technology Enablers

The evolution of various technologies over the past decade has revolutionized how IT delivers services to the end users. Networking is no exception to that rule.

Optical Mesh Networks

Optical transport networks have come a long way in the last couple of decades. Synchronous Optical Networking/Synchronous Digital Hierarchy (SONET/SDH) ring architectures were the only option in the 1990s for high-speed, high bandwidth networks. Development of DWDM and CWDM systems in the past few years has revolutionized telecommunication networks. A single pair of fiber can yield several 100 GBs of bandwidth by using the whole light spectrum. Development of ROADMs has also made it possible to create dynamic optical mesh networks. Almost every major telecommunications service provider has started to replace their SONET ring architectures to DWDM with protection paths architectures. The new optical mesh networks support the same fast recovery, previously available in ring networks, while achieving better capacity and efficiency resulting in lower capital cost.

Optical mesh networks are becoming the dominant underlying service provider networks for inter-router or inter-switch connectivity. This enables overlay technologies like IP, MPLS, or any Ethernet-centric architectures. Overlay technologies like MPLS-TP also enables emulated architectures for legacy TDM support without the legacy networks. Availability of technologies like ROADM has enabled design of protection paths to achieve fault recovery akin to SONET/SDH.

Multi-protocol Label Switching

MPLS was invented to solve the problem of bridging multiple disparate protocols such as frame relay, ATM, and Ethernet. Cost reduction through data network convergence to MPLS is an enabler that has garnered widespread adoption.

WAN Optimization

WAN optimization services including congestion management, capacity planning, and traffic analysis are beneficial for a better delivery service to remote locations. A unified backbone will enable traffic engineering to take advantage of capacity in a cohesive fashion for all network traffic, negating the need to build excess capacity into each network. Network vendors have added embedded capabilities to managed quality of service (QOS) and monitoring via SNMP, Netflow, and Jflow etc. This enables network traffic transparency and capacity management.

Unified Communications

Many government entities, including the State, have started using voice and video over Ethernet networks. Traditional PBX and key systems are being replaced by VoIP (Voice over IP). VoIP has become a standard way to provide telephony with high-speed and in high bandwidth networks. Solution providers have matured their offerings for unified communications with the overall goal to no longer focus strictly on the telephony portion of daily 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, and also extends beyond the phone to all devices a person may use.

A single converged network with unified services over an IP network can resolve many time consuming IT management issues, such as providing users with security access across all systems with a single password. The solution frees up IT resources and enables people to focus on delivering valued added IT services. On a larger scale, converged communications enables collaboration across teams, departments, partners and supply chains, bringing them together to act as a single coordinated entity.

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State of Oklahoma CIO Assessment Study

Network Recommendations

Network, Security, and Telecommunications Baseline

Current State

- We are observing very fragmented network services within and across State agencies.
- Multiple platforms for network, telecommunications, and security within an agency and across agencies. This usually results in higher TCO and poor support model.
- No state-wide compliance model for network, telecommunications, and security.
- No State wide (OneNet excluded) shared WAN/extranet .
- Several agencies maintaining their own PBXs and circuits. Telephony is a good example for shared service.
- Too many access points to the Internet casing a potential huge liability risk..

Vision for the Future

- We seek a network and security infrastructure environment that will enable centralized governance and shared services.
- Standardization, rationalization and consolidation is required to achieve the future state vision of centralized technology.
- Future vision includes centralized and common/shared services like telecommunications, shared extranet, insourced or outsourced MPLS cloud used by multiple agencies.
- Services requiring agency-specific competencies will remain at the agency level.

ROADMAP - Blueprint

Build an infrastructure foundation leveraging a common language and reference architecture to enable:

- Simplified, optimized, standardized enterprise IT infrastructure (including telecommunications, network, and security).
- Centralized application and infrastructure services.
- Common, effective management practices.
- Future vision to be enabled through delivery of an integrated project roadmap comprising infrastructure rationalization and capability development initiatives.

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Infrastructure Baseline – Details (Current State Observations)

We are observing disparate technology within and across State agencies as evident by the following facts:

- Multiple vendor equipment for network, network services, security, and telecommunications (traditional and VoIP).
- OneNet adoption is limited to internet connectivity for larger agencies. There is no shared WAN/extranet in place.
- Network services like print/fax/scan is not well-established. Local printers are prevalent across agencies.

We found no cohesive lifecycle management across the technology landscapes, evident by the following facts:

- Lack of tools to manage network upgrade cycles.
- Lack of compliance and lifecycle management tools.
- Critical network equipment that is out of support from vendors.

No central governance model for the technology portfolio (lies within the agencies), as evident by the following facts:

- Very limited statewide support contracts for network and security devices.
- OSF has a very good security control tools in place but other agencies have largely voluntary compliance reporting.
- Network monitoring, change control and service control policies are largely controlled, if at all, by various agencies.

No State-wide shared services, as evident by the following facts:

- Even common services like WAN/extranet, telecommunications, or VoIP are operated and maintained by all large agencies.
- Limited central and shared security services for things like remote access and DMZ.

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Infrastructure Baseline – Details (Future State Objectives)

We seek an infrastructure environment that will enable centralized governance and shared services as supported by the following trends:

- Shared WAN via MPLS backbone and or extranet.
- Consolidate end connectivity (circuits/VPN) to a local MPLS PoP via VRF virtualization to remote State offices.
- Centralize remote access service and DMZ firewalls and IDS/IPS.
- Implement State-wide lifecycle and inventory management.
- Implement a common statewide compliance monitoring tools.

Infrastructure standardization, rationalization and consolidation is required to achieve the future state vision of centralized technology as supported by the following trends:

- Limit network, security, and telecommunications vendors to one or most at two.
- State-wide support contracts.
- Standardize print/scan/fax and telephony. Make print/scan/fax as a network based services and limit local print/scan/fax.

Future vision includes centralized and common/shared business services used by multiple agencies as supported by the following trends:

- Move small and medium agency datacenter into a central location.
- Create or designate single entities for security services and telephony.

**Services requiring agency-specific competencies will remain at the agency. This has to be defined and well understood.*

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State-wide Optical and MPLS Backbone

Network

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	

Description

- Establish a single, State-wide optical backbone using State-owned fiber.
- Deploy WAN virtualization technologies to allow for traffic engineering.
- The MPLS backbone can be designed to be virtualized via VRF for each State entity.
- Establish major PoPs for the backbone and consolidate connectivity to the nearest PoP.
- Consolidation of last mile circuits for remote locations having multi-agency presence.
- Leverage local telcos for last mile connectivity for best price/performance.

Stakeholders

- ISD
- OneNet
- Other agencies (TBD)

Investment

Investment Category	2012	2013	2014
Transformational Costs	$6,000,000	3000000	2000000
Cost Avoidance			
Hard Dollar Savings	$7,638,993	$4,583,395	$3,895,886.

Activities

- Document WAN connectivity for all the agencies – Leverage ATT study.
- Assess environment with regard to existing infrastructure, components and costs.
- Identify a single state entity that would operate the MPLS networks.
- The entity will establish baseline architecture based on requirements from all the agencies.
- Define service parameters and support model.
- Define rollout and agency-level migration plan.
- Design, procure equipment and deploy the MPLS backbone.
- Conduct change management (training on new technology and processes).
- Monitor KPIs and adjust process as needed.

Assumptions

- Leverage existing, State-owned fiber.
- Investments reflect network equipment and labor only and exclude facilities.

Timelines

- Q2Q3 2011– Q4 2012

Dependencies

- Fiber availability for major PoPs that make the MPLS Backbone.
- Establish a single entity that controls and manages the WAN for agencies via MPLS.

Metrics to measure achievement

- Strategy established and agreed upon.
- A state entity identified.
- Design and deployment of the core completed.
- Agencies successfully migrated.
- Cost savings/ added b/w after migration.

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VOIP

Telephony

Risk Assessment

M

Description

- Establish a State-wide VOIP SIP telephony network leverage CapEX and OpEX savings.
- Distributed infrastructure, platforms, and applications as shared services.
- Curb the exponential growth of energy consumption and energy cost which are trending at 9% and 4% annually respectively.
- Ability to scale up and down as business demands changes and maximize efficiency.
- Services delivered based on standardized SLA's.
- Integrate wireless, CDMA /GSM/LTE services, SIP trunking via Session Border Controller.
- State-wide Optical and MPLS Backbone

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- ISD/OneNet
- All agency IT departments including Support, Administration, Operations, Architecture, Engineering, etc.

Investment

Investment Category	2011	2012	2013
Transformational Costs	$4,437,000	$3,786,852	$2,761,956
Cost Avoidance			
Hard Dollar Savings	$7,659,615	$$6,537,261	$4,767,978

Activities

- Remove class 5 switch and Consolidation telephone service across the State footprint.
- Optimize the use of power, connectivity, space and cooling requirements.
- Define service parameters and support model. (Real estate consolidation, Reduce energy consumption, Improve facilities efficiency, Integration of wire line and wireless telephony facilities and management.
- Distribute platform capabilities throughout the network, Class 4 and5 features, signaling, 800 service RTP for VOIP/SIP services using soft switch technology into an IP network.
- Develop a RFP process to Design, Procure equipment and deploy the new network.
- Conduct change management (training on new technology and processes).
- Optimization of work load.

Assumptions

- Leverage existing, State-owned facilities

Timelines

- Q1 – Q4 2013

Dependencies

- Fiber availa bility for major PoPs that make the MPLS Backbone.
- Establish a single entity that controls and manages the WAN for the cloud.

Metrics to measure achievement

- Strategy established and agreed to
- A state entity identified
- Design and deployment of the core completed
- Agencies successfully migrated
- Cost savings/ added b/w after migration
- Agency satisfaction with cloud services

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Centralize Internet Access and IDS/IPS

Security

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Description

- Establish a State-wide redundant Internet gateway.
- Consolidate all internet access from multiple agencies.
- Deploy/extend IDS/IPS to central internet access.
- Deploy/extend webfilter for central access.
- Deploy/extend a single pair of high throughput firewall(s).

Stakeholders

- ISD/OneNet/Outsourced
- All Agency IT departments
- Support, Administration, Operations, Architecture, Engineering, etc.

Investment

Investment Category	2011	2012	2013
Transformational Costs	$1,000,000	$500,000	.
Cost Avoidance	Built into MPLS		
Hard Dollar Savings			

Activities

- Document all internet access points for the State and the b/w.
- Determine if the internet access is exclusively for remote site-site VPN to connect to central office and exclude them consolidation.
- Formulate migration plan to shutdown local internet access and migrate to central access.
- Design and deploy central internet access with a minimum of 25% b/w headroom.
- Execute the migration plan.

Assumptions

- Leverage current Internet access.

Timelines

- Q1 – Q4 2011, Q1-4 2012, Q1-2 2013

Dependencies

- MPLS or single backbone network.
- Shared services.

Metrics to measure achievement

- Strategy established and agreed upon.
- A central access point identified.
- Design and deployment completed.
- Agencies successfully migrated.

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Centralize Security Operations Center

Security

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Description

- Establish a State-wide se curity operations center.
- Consolidate agency-specific security.
- Standardize security infrastructure to two vendors at most.
- Identify tools for security monitoring.
- Identify a state-wide authority for security console and reporting.
- Strongly consider outsourcing security console to a 3rd party reporting directly to the State Security Officer.

Stakeholders

- ISD/Outsourced
- All agency security

Activities

- Document all security devices and tools in current use at all agencies.
- Formulate a standardization plan for security devices.
- Formulate a consolidation plan for security in conjunction with shared services.
- Establish a common SIEM solution.
- Execute the consolidation plan.
- Deploy the central console or identify a outsourcer and finalize security event s escalation plan.
- Establish event correlation and alerting criterion and process.

Dependencies

- Shared services.
- MPLS backbone.

Investment

Investment Category	2011	2012	2013
Transformational Costs	$2,000,000	$1,500,000	.
Cost Avoidance			
Hard Dollar Savings			

Assumptions

- Leverage existing tools.

Timelines

- Q1 – Q4 2011, Q-4 2012

Metrics to measure achievement

- Strategy established and agreed upon.
- Standardization adopted.
- SIEM solution deployed.
- Agencies successfully migrated to SIEM.

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Appendix C—Applications Blueprint

Summary of key findings in the application surveys:	
Number of applications	2,315
Filtered for F&A applications	-1,380 (59 percent)
Total applications	**935 (41 percent)**

These numbers are understated, in that the agencies were inconsistent in their applications survey answers. Based on the data, the confidence level in responses within the application surveys is at the low end. It is estimated the number of applications is understated by 10 to 30 percent. This is based on the conversations with agencies during the governance workshops. It became apparent there were more applications than were included in the survey responses. Based on that premise, the savings and benefits noted are conservative and the expected outcomes would generally be favorable to the State beyond the estimates noted in this applications blueprint.

Another key point to consider, given the decentralized nature of IT practices within State agencies, is that agencies are not necessarily misleading or misconstruing data deliberately. It is a lack of standardized IT practices and management *and* the drive to deliver the solution that best solves the agency's mission. The agency mindset does not include consideration of the State-wide implications of specific agency application activities. Based on that premise the following results are not surprising. The summary breakdown of the filtered application categories is presented in **Figure C-1**.

Figure C-1. Summary of Survey Results

Type of Application	Number of Applications
Financial	76
Time and Attendance	22
Human Capital Management and Training	6
Imaging	17
Reporting and Analytics	48
Pension	3
Subtotal	**171**
Other (typically agency-specific)	764
Total	**935**

C.1 Definition of an Application

The definition of an application for this section is software that supports the finance and administrative (F&A) processes of the State or agencies in support of specific business requirements. For example, PeopleSoft is the main financial system for the State and is a COTS application. The State's child support system is a State-developed F&A application. E-mail is an application, but is considered to be utility software, and belongs in infrastructure; applications that are referred to as non-F&A applications in the survey data represent utility or infrastructure applications.

C.2 The Quality of the Data

In the survey data, 59 percent of the applications identified were non-F&A applications. Out of the 59 percent, 4 percent of responses were not valid and the remaining 55 percent is representative of MS Exchange, MS Office, VM-ware, databases of all kinds (many versions), virus software, and database tools. In general, these applications are utility in nature and considered infrastructure. The BDNA data scan identified some 4,000 applications. The BDNA data and the surveys corroborate that there are more applications being used than noted in the survey data, but not in the thousands. It appears application versions are treated as unique application events in the survey data and represent an estimated 40 to 50 percent of the applications. Certain information was not available via the scan that would enable complete identification of approximately 10 percent. For example, 192 instances of the Oracle database were noted in the BDNA scans. However, some of those instances are test and development platforms for PeopleSoft. In other words, the State does not have three separate versions of PeopleSoft. There is one PeopleSoft application with three database environments in support of it. These types of results contributed to higher application counts by the BDNA scans.

These findings would be consistent with the estimated 350 vendors that the State deals with for the acquisition of software applications. It is also reflective of the lack of IT budgeting, planning, contracting, and fixed asset tracking practices in the current decentralized model. This contributes to distorting the actual counts of applications. However, sufficient data from the surveys and BDNA was enough to obtain reasonable insights into the environment to be able to make recommendations on how to improve the application environment as whole for the State.

C.3 Recommendations

Capgemini presents recommendations regarding shared services and F&A consolidation functions within the State with the expansion of CORE to wider set of agencies, effective July 1, 2011 through 2012-14. The following terms, definitions, and assumptions should be considered as part of the review of applications findings, data, and supporting detail.

- A **hard savings** represents real savings in the period noted and will be effective in that fiscal year. These are real savings in dollars that result from the elimination of full-time equivalents, redundant systems (e.g., shadow accounting systems), and duplication of efforts/hardware. It usually ties to budgeted expense accounts.
- **Cost avoidance** is the dollars that will be spent if the recommendations and actions items are not taken and reflect the **added** ongoing cost of managing IT applications services "as is" in the State. Without changes being made to the processes, these costs will typically continue to escalate over time.
- **Indirect savings** (non-IT savings) represent the gains in efficiencies through self-service and automation that generally result in less human capital to intervene in the process. If the current HR staff is 1:30 because they handle paper changes, such as w4 & status changes for payroll, implementation of an online self-service can increase this ration to 1:300. The implication is that only 1 FTE is now required to manage this process. The indirect savings State-wide is 9 FTE's that are no longer engaged in this process.
- A **State full-time equivalent** is the estimated internal labor resource the State will need to contribute to the initiatives. These estimates are subject to due diligence by the State, but we believe them to be realistic based on Capgemini's experience in public sector with similar initiatives. Each initiative has a spreadsheet with basic assumptions to support the full-time equivalent calculation.
- **Investment** is third party consulting assistance to implement the recommendations. The current ISD staff does not have the bandwidth to handle these initiatives and perform their day jobs during the transition. These estimates are subject to due diligence by the State. We believe them to be realistic based on Capgemini's experience in public sector with similar initiatives. Each initiative has a spreadsheet to support the investment calculation and some basic assumptions.

- **Co-sourcing** is a methodology where a team remains in place after an initiative has been executed successfully with consulting support (e.g., a PeopleSoft upgrade). It allows for a subset of the implementation team to remain onboard for a period of time (six to 18 months) to transition the activity and domain knowledge to the State and ensure service level agreements are not impacted negatively during the hand-off period. It also provides a clear delineation of when outside support services will end and State staff owns the process.
- **Application definition** is any financial, human capital management, or mission-specific (e.g., child support, licensing, revenue) custom built or purchased software to complete the State agency's particular mission. Databases, tools, utility/infrastructure software like e-mail, Microsoft windows/office, servers, and software related to infrastructure or utility in nature is not accounted for in the application tower.

C.4 Key Financial Assumptions for the Applications Initiatives

- For financial calculations, a 70/30 rule for application vs. infrastructure consumption on operations/infrastructure actuals expenditures for 2009 and 2010 was used. This is a lower number than benchmark finding of 35 percent* and is consistent with a conservative approach taken with all findings. This would be the future state ratio. There is a variation probability of minus 10 to 30 percent depending on how aggressive the State is in the adoption of shared services for applications on the 70/30 benchmark. It could effectively be 56/41 if it mimics the United States Postal Services (USPS) end state. The details for the USPS example are listed below. 70/30 takes into account the nature of the State environment with the probability variation that lowers it and is in line with the USPS number. Based on the USPS application number, the application footprint for the State is estimated in the 400 to 700 range. There is a strong probability it is closer to the lower end than the high end of the estimate.

  **The cost of doing nothing: Studies demonstrate that nearly 75 percent of IT budgets are spent maintaining existing applications and that duplicated and/or underutilized applications represent 10 to 20 percent of maintenance spend: CGI Group 2009.*

  An example: when the USPS consolidated and introduced shared service/applications, the CIO at the time (Bob Otto) estimated the USPS at the end of the process had the following ratios:
  - Management and administration 2.7 percent
  - Applications 41.0 percent
  - Shared services 56.3 percent
  - Shared services included network, e-mail, engineering, user support, computing, security, software, and database services.

While the operation of USPS is a different, the consolidation was impressive considering the size and logistics required for the consolidation. More to the point, it was successful with millions of dollars cut from the IT budget and additional savings identified through cost avoidance. Although the State is smaller in size, it does have a similar complexity. Success at such a substantially larger, more complex organization can point the way to success for the State of Oklahoma. Bob Otto was engaged by Capgemini as an independent reviewer of the IT assessment to validate the potential savings for the State.

- Due to non-standard budgeting and planning practices (inconsistent approach between years), 2009/10 actuals and 2011 estimated values based on mid-year burn rate were used as a basis for quantitative analysis. The inconsistency (wide variations year over year estimated at $100 million to $200 million) in the IT/telecommunications plan documents provided were not reliable enough to use in the analysis.
- Actual expenditures were obtained directly from the State's financial system general ledger. Financial data was not audited by the assessment team and was used as is.
- The consulting expenditure number is from actual general ledger accounts.
- Financial data or other inconsistencies were noted as general observation comments for follow-up by the State to validate.
- Survey responses were inadequate for determining actual full-time equivalent application support from a statewide perspective.
- Observation: If the State begins IT staffing consolidation under the State CIO per the Capgemini recommendation, it is imperative to understand the true nature of support provided by the agencies. There appears to be many definitions of applications support vs. infrastructure/operations support. This seems to have contributed to a lack of details in the overall responses. In addition, particular attention needs to be given to unfilled positions as references were made that some open positions are held for salary savings purposes.
- Salary assumptions are based on 2011 IT and Telecommunications Plan.
- Higher education is not included in calculations.
- Observations of underutilization of PeopleSoft are listed below:
  - 55 agencies that would benefit from People Soft projects/grants GPC module were identified by the Office of State Finance through the business process analysis (BPA) process in December 2010. Only 11 agencies are expected to participate in CORE.
  - 40 agencies that would benefit from PeopleSoft's strategic sourcing capabilities were indentified during the BPA.
  - 86 agencies may benefit from the PeopleSoft accounts receivable and/or business intelligence modules, especially licensing agencies.

- 18 agencies would benefit from the use of the fixed asset (inventory) module, and are noted in the Comprehensive Annual Financial Report (CAFR) with inventory valuation. It was noted in the assessment that multiple (seven) fixed assets systems exist.
- Oracle's Insight recommendations of November 2010 to the State found similar findings.

Observation: These numbers illustrate that the agencies are not participating in CORE. Redundant applications are being used to manage these activities, or worse, manual processes are in place. If half of the 86 agencies do not participate in the accounts receivables module and they maintain some kind of separate 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 transaction.

C.5 Current State F&A Applications Cost Basis Based on Actuals

Assumptions

- Actuals from general ledger per fiscal year.
- FY2011 is a based on mid-year January 11, 2011 GL extract, and multiplied by two for comparative purposes on actuals.
- The 2011 FTE Plan (executive) total dollars $100,825.098 x 70 percent = $70,577,568 is the personnel cost bases for applications benchmark assumption.
- The 2011 FTE Plan (executive) total dollars $100,825.098 x 41 percent = $41,338,290 is the personnel cost bases for applications per the USPS model.
- Consulting cost is increased by 20 percent over FY2011 to account for year over year changes trends that appear to understate the number. Consulting actuals per GL 51440 for FY2009, FY2010, and as of January, 2011, $15,000,000 in actuals, projected at $31,000,000 at FY2011 year end. There were procedural changes year over year as to which accounts were used for consulting expenses. It appears there is more consulting that should be included in this calculation as it was indicated that consulting charges could be posted to other accounts, but there was insufficient detail to identify the amounts.

Observations

The State does not use zero-based budgeting in IT planning. Given the decentralized nature of the IT process by the agencies, while the numbers in total are accurate and real in the GL, the decomposition of what makes up an account balance becomes a matter of debate. This, along with budgeting requirement, changes year over year contributed to the statement "they are supposed to use that GL account, but we are not sure if they do…" was not infrequent.

The general approach on the application number was a top down approach, because the total number was known we were able to make certain assumptions and ratios that provide a snap shot of the expenditures.

Figure C-2. General Ledger Sources of Actuals

	2009	2010	2011
Applications Maintenance and Development (Actuals for FY2011 through mid-year)	$71,230,649.73	$60,007,774.61	$31,750,331.22
515350-Customer Computer Programming Services	$24,458,441.62	$25,360,331.93	$10,657,586.53
515360-Computer Systems Design Services	$41,529,578.50	$14,515,020.89	$11,647,943.94
515380-Other Computer Related Services	$3,344,245.74	$13,758,642.95	$5,991,743.58
531230-ERP System Services	$1,898,383.87	$6,373,778.84	$3,453,057.17
Total adjusted for FY2011 mid year	**$71,230,649.73**	**$60,007,774.61**	**$63,500,662.44**
App Maintenance & Dev (Projections for full year FY 2011)	$71,230,649.73	$60,007,774.61	$63,500,662.44
515350-Customer Computer Programming Services	$24,458,441.62	$25,360,331.93	$21,315,173.06
515360-Computer Systems Design Services	$41,529,578.50	$14,515,020.89	$23,295,887.88
515380-Other Computer Related Services	$3,344,245.74	$13,758,642.95	$11,983,487.16
531230-ERP System Services	$1,898,383.87	$6,373,778.84	$6,906,114.34
FY 2011 adjusted, mid-year actuals, projection estimate	$71,230,649.73	$60,007,774.61	$63,500,662.44

The numbers in **Figure C-3** represent different ratios and assumptions for developing a future state cost for the shared services application environment for the State.

Figure C-3. Costing Application Models

	FY 2009	FY 2010	FY 2011
Application Spending Actuals	$71,805,130.39	$61,271,980.79	$63,500,662.44
Personnel Costs (70/30 percent Assumption)	$70,577,568	$70,577,568	$70,577,568
Actual Consulting	$13,005,341	$26,321,755.59	$ 31,000,000
Personnel Costs O&M Application Ratio	1.02	0.87	0.90
Personnel Cost to Consulting Ratio	18 percent	37 percent	44 percent
Total All costs	$155,388,039.39	$158,171,304.38	$165,078,230.44
Year over year percent increase	0 percent	2 percent	4 percent
Application Spending Actuals	$71,805,130.39	$61,271,980.79	$63,500,662.44
Personnel Costs (59/41 percent Assumption)	$41,338,290.18	$41,338,290.18	$41,338,290.18
Actual Consulting	$13,005,341	$26,321,755.59	$31,000,000
Personnel Costs O&M Application Ratio	1.74	1.48	1.54
Personnel Cost to Consulting Ratio	31 percent	64 percent	75 percent
Personnel Costs O&M Application Ratio 70/30	1.02	0.87	0.90
Personnel Costs O&M Application Ratio 59/41	2.48	2.12	2.19
Delta Ratios	1.46	1.25	1.29

The salaries to development cost is for all practical purpose a 1:1 ratio if we assume 70 percent of the personnel activity is application-related per the benchmark. This implies for each dollar spent in the support of applications, an equal amount of labor is required which would indicate almost no productivity gains. What would be expected is something from 1.25 to 1.75. For example, 1 programmer can manage two to three applications. The ratio range is more or less dependent on the complexity of the application.

If we take the 41 percent approach to applications in the fully developed shared services environment at the USPS, the ratios jump dramatically, a general rule is anything above two is indicative of weak cost accounting practices.

If we take the current Department of Human Services and ISD staffing and average the two together (these two agencies also represents 25 percent of total State IT spend on applications and represent a good statistical sample) the result is a projection across the State of total full-time equivalents at 25.37 percent result (see **Figure C-4**) supporting applications. This is 10 percent below the optimal state of 41 percent and even more against the benchmark 70 percent target of executed shared services model.

Figure C-4. Total Estimated Full-Time Equivalents Based on OSF and DHS

Internal Full-Time Equivalents	Internal as a Percentage of Total Internal Full-Time Equivalents
324.4823	25.37 percent
158.2123	12.37 percent
796.3054	62.26 percent
1279	

The variations in the ratios and the actual projected distribution is reflective of the parallel support of redundant (duplicate F&A systems), which also requires a large number of interface programs to keep the systems in synchronization for reporting and reconciliation purposes. Typically when there is no effective governance or centralization of IT activities, there is a large percentage of expenditure in operations and infrastructure, consistent with our projection of 62.26 percent. The number of administrative full-time equivalents is high at 12.37 percent vs. 2.7 percent at an optimal state, but is explainable as there will be substantially more administrative overhead in a decentralized environment.

The BDNA data scan identified 4,000 applications and the survey data indicated 935 +/-. If 500 interface type application are eliminated, and it is assumed there are about 500 applications that were not accounted for in the survey data. If the State adds in redundancy and utility application at 1,000, there are still 1,000 other applications per the BDNA data. The staggering number of applications explains why the ratios and current state of the State full-time equivalency spread by the four major categories are off.

If we mix in the consulting dollars into the ongoing application support financial equation, consulting cost to salaries costs are estimated at 18 percent and 37 percent for FY2009 and FY2010. If estimated at 44 percent for FY2011, they should represent 25 to 27 percent of the overall IT cost. If the average State application rate is used at 25.37 percent based on the current State spend, consulting goes off the charts, a further example of weak cost accounting practices. Another example is the reported number is higher than projected consulting spending of $31 million vs. $37 million ($248,000 x $150,000). Note that not every agency reported the contractor count.

Figure C-5. Total Executive Branch Full-Time Equivalents (excl. OTA and Treasury)

Internal Full-Time Equivalents	Contractors	Internal as a Percentage of Total Internal Full-Time Equivalents	Contractor and Internal Total as a Percentage of Combined Total
272.675	81.9	20.40 percent	22.38 percent
481.865	90	36.06 percent	36.09 percent
253.175	25.1	18.94 percent	17.56 percent
328.725	51.16	24.60 percent	23.97 percent
1336.44	**248.16**		

The estimate on the consulting number needs to be revisited by the State. The lack of detail cost accounting data impacted the reliability of this number. The confidence factor on this number is 30 percent (+/-), but with a confidence variable this large, the amount of consulting and upward trending is mostly reflective of *the ever widening technical morass* the State is maintaining with its current decentralized IT model.

Conclusions

The State is over-spending on applications, from about $5 million to as much as $15 million in any given year. Consulting costs can be reigned in at a 25 percent target and the elimination of duplicative systems (e.g., 100 shadow systems at a $100,000 average cost basis is $10 million). **Figure C-6** presents our findings on application spending in the State. Year over year, for FY2010 and 2011, the trend is upward on spending for applications at 2 percent and 7 percent.

Figure C-6. Findings on the Current State of Application Spending

	2009	2010	2011
Total	$71,230,649.73	$60,007,774.61	$63,500,662.44
OSF/DHS Projection FTE	$30,479,427.13	$30,479,427.13	$30,479,427.13
Consulting	$13,005,341	$26,321,755.59	$31,000,000
	$114,715,417.86	$116,808,957.33	$124,980,089.57
Year over Year Percentage	0 percent	2 percent	7 percent
Year over Year Dollars	$0.00	$2,093,539.47	$8,171,132.24

The State's upward trend is indicative of the escalating support requirements in the current decentralized IT practices but the numbers do not reflect the buried operations and infrastructure support costs for the shadow systems the agencies maintain and are understated.

The current projected full-time equivalency cost is low at 25.37 percent overall to infrastructure vs. the USPS 41 percent in of support 650 applications vs. infrastructure 56.7 percent, and 2.7 percent in overhead in a consolidated state. It is even worse if the benchmark of 70 percent is applied.

On a conservative basis, what is expected upon completion of the recommendation for the shared services model in applications, along with cost accounting and budgeting recommendations, is a shift of some personnel from operations and infrastructure into applications. This will result in a net reduction of application support head count as shared services replace the shadow systems when fully transitioned over three years. 52 full-time equivalents can be eliminated by Year 3. The optimal application support number is expected in the low end of the 400 to 700 range. Assuming the target of 500 applications is the final shared services numbers, the full-time equivalency count could easily be 100 percent more than the current 62 full-time equivalency count savings or 104 full-time equivalents (+/-).

Figure C-7. FTE State Application Actual vs. USPS Future State Model

Total	Projection Actuals 25.37 percent	USPS 41 percent
Total Cost ISD/DHS Projection		
1,500 applications	0.22	0.35
2,000 applications	0.16	0.26
2,500 applications	0.13	0.21
Eliminated 500 shadow systems	52.15	84.27
Eliminated 1,000 shadow systems	104.29	168.55
Full-Time Equivalency Dollars ($500)	$4,092,746.31	$6,614,126.43
Full-Time Equivalency Dollars ($1,000)	$8,185,492.63	$13,228,252.86
Delta on Full-Time Equivalency 25.37 vs. 41 percent	200.79	

The optimal future state based on the USPS number sees an increase in staffing with offsetting by the elimination of shadow systems. Much of the delta for the increase in core will result from the reassignment of full-time equivalents and the decline of administrative overhead, which is assumed to be 25 percent. The current full-time equivalency ratio is 25 percent x 158 = 39.50 full-time equivalents. This is not reflected in these calculations and represents $3 million in additional potential cost savings.

There are several indicators present in all the dollars, personnel costs, and ratios:

- Overall costs are trending upwards year over year.
- Personnel costs are not reflected clearly and are most likely understated for the number of applications supported by the State currently.
- There is a delta of 200 (+/-) full-time equivalents between the optimal model and projections. This indicates staffing shifts are needed from operations and infrastructure into applications.
- Infrastructure appears to consume an inordinate amount of full-time equivalents.
- The application cost vs. total cost is distorted. The infrastructure, operations, and administration represent the reverses of what a normalized application model projection would expect (e.g., 41/57 or 70/30) vs. the States 25/63 and 12 percent for overhead.

Based on these key findings and others, a perfect storm of how "not to do" F&A IT application services is evident with the themes of excessive cost and no mechanism for cost containment in a highly decentralized environment. To correct this situation, a series of F&A application initiatives have been recommended to remedy these deficiencies in conjunction with other IT assessment recommendations:

Key Assumptions for Application Initiatives

- The necessary authority, statutes, or directives are in place on or before July 1, 2011.
- Agency participation is not voluntary in shared services or with the application initiatives recommendations.
- All recommendations are executed by the State, and there is transition period of three years to obtain the optimal solution in a shared services application environment.
- Visibility into agency IT activities and the CIO authority to change agencies practices and approaches for IT processes, acquisitions, budgets, and priorities related to information technology is essential to obtain necessary insights to successfully consolidate functions and implement a shared service F&A model in the State.
- Savings and risk mitigation are predicated on co-sourcing transition model.
- Timelines proposed are aggressive and represent some risk, but given the nature of the decentralized model and how it's been institutionalized in the state, the quicker centralization and consolidation are adopted, the better chance for success. Co-sourcing is the method to mitigate risk because the approach is essentially a big bang approach with the migration of agencies in a short period of time to a shared services F&A model.
- The State standardizes on CORE or any other application with a philosophy of no customization in support of the shared services F&A model. In other words, the State will change their processes and adopt the processes provided by the vendor (which are typically industry leading practices), unless they are in direct violation of Federal/State statutes. In practice there will be some customization, but it should be kept to a minimum.
- The State ramps up its CORE staffing in support of a shared service F&A model, in support of these initiatives.
- The State will purchase COTS whenever possible as opposed to building custom software solutions.

- The State leadership understands there is high probability of service levels being impacted negatively in areas from time to time, and will accept a temporary service level decline as the consolidation initiatives are executed over the two to three year period.
- Indirect savings requires the State to validate upon successful completion of the initiatives the actual results achieved and provide the necessary justifications for execution of those savings.
- Budgeting recommendations are implemented with appropriate cost accounting methodology to support accountability.
- A certain subset of the agencies will be disinclined to participate in these initiatives; typically it is the larger agencies. Speed is of essence to negate activities that would impede the adoption of a shared services model. It has been recommended that a SWAT team be instituted to handle larger agency service level agreements and problem resolution during transitioning.
- Underutilization of the existing CORE applications is estimated at 15 to 25 percent, which represents a cost in shadow systems and interfaces used throughout the State. Adoption of shared services initiatives will mitigate and eventually negate most of this.
- Conservative assumptions are used in all cost and benefit scenarios.

Application Initiatives Preplanning and Activities on or before July 1, 2011

Capgemini recommends that the State implement a State-wide budget preparation system for IT spending and planning with detailed cost accounting information including full-time equivalents, project initiatives, and funding sources, from each agency for the fiscal year beginning on July 1 of 2011.

- CORE has the PeopleSoft Enterprise Performance Management (EPM) module. ISD could use the IT budget initiative as a test project basis for a larger project to roll out EPM to the agencies in a shared services F&A model. It was noted CORE has a future project for a statewide budgeting application.
- The project should be started as soon as possible.
- The agency budgeting process at the fiscal year basis is problematic in that it is not a realistic representation of agency priorities; planned expenditures may or may not be used for IT expenditures. There was insufficient cost detail to assess; the information is summarized in the GL at much higher level than is typically seen. Case in point, FY2009 and 2010 plan and actuals had a delta of $184 million each year (+/-), without the full-time equivalency components.

Figure C-8 represents the summary of the cost and benefit of the budgeting EPM initiative

Figure C-8. Budgeting

Investment Timeline	Year 1 $6M	Year 1 $12M	Year 2 $6M	Year 2 $12M	Year 3 $6M	Year 3 $12M	Totals	OK FTE Estimate
HCM**	1,286,010			1,286,010		1,286,010	3,858,030	
OK FTE's*	266,400		266,400		266,400			799,200
Financials**	2,284,213.50			2,284,213.50		2,284,213.50	6,852,640.50	
OK FTE's*	612,744		612,744		612,744			1,838,232
Investment	3,570,223.50			3,570,223.50		3,570,223.50	(10,710,670.50)	(2,637,432)
ROI BASIS								
Cost Avoidance				4,610,500		4,610,500	9,221,000	9,221,000
Hard Savings				2,009,500		2,009,500	4,019,000	4,019,000
Cost Avoidance				2,296,728.75		2,296,728.75	4,593,457.50	4,593,457.50
Hard Savings				418,500		418,500	837,000	837,000
Hard Savings	2,450,000						2,450,000	
Cost Avoidance				3,850,000		3,850,000	7,700,000	7,700,000
Hard Savings				5,200,000		5,200,000	10,400,000	10,400,000
Hard Savings				4,125,000		4,125,000	8,250,000	8,250,000
	2,450,000			22,510,228.75		2,510,228.75	47,470,457.50	2,450,000
						Net Savings		13,814,477.50
						Less investment	36,759,787	25,956,000
Budget								
Investment								
OK FTE	48,000		48,000					96,000
Consulting	306,000		306,000				(612,000)	
Investment Total							(612,000)	(96,000)
Cost Avoidance*		5,000,000		10,000,000		18,000,000	33,000,000	33,000,000
						Net Savings		
						Less investment	32,388,000	

**This is a medium high estimate, the failure to have plan vs. actuals be realistic, distorts planninng initiatives across the board, this is problematic even if the funding is federal or otherwise in nature & encourgages budgeting practises that hide things as a rule, this a very bad practice.*

***Note that in 2009 & 20010, 184 million delta between the plan and actuals each year, 20 percent of 184mm is 36 million, should be the target delta for the state.*

Key benefit assumptions related to this initiative include:

- Visibility into IT expenditure activities at the detail expenditure level across the enterprise.
- Accurate and realistic planning across the State-wide IT budget landscape.
- Real accountability on planning budgets and expected outcomes.
- Cost avoidance includes eliminating over provisioning at the agency level for IT services. This is estimated at $36 million after taking into account federal funding of projects. This may represent 30 to 50 percent in any given year the reduction between plan and actual expenditures.

Figure C-9 presents the cost of developing an ISD budget solution in the consolidated environment for all IT expenditures

Figure C-9. Cost of Developing an ISD Budget Solution

Initiative Name Budgeting	Proj Init.	Project Planning			Project Execution					Project Closure																														
	Year 1												Year 2												Year 3											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Resources/ Costs																																				
Internal Resources (FTE)	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0	160.0																								
External Resources (FTE)	160.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0																								
Total Resources	320.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0																										
Other Costs	10,000	20,000	20,000	20,000	20,000	20,000																														
Internal Rate	50																																			
External Rate	150																																			
Internal Personnel Costs	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	96,000																							
Consulting Costs	24,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	552,000																							
Other Costs	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000																							
Total Costs	**37,000**	**61,000**	**61,000**	**61,000**	**61,000**	**61,000**	**61,000**	**61,000**	**61,000**	**61,000**	**61,000**	**61,000**	**708,000**																							

Application Initiatives

Short-term recommendations for F&A process changes and savings initiated on or before July 1, 2011 include:

- Adopt the payroll processing recommendations made in March of 2009 to the Senate finance committee and eliminate the anticipatory payroll and go to bi-weekly. This will save net $2.45 million dollars in the first year as presented by the Office of State Finance (OSF).
- Amend Oklahoma State statutes and/or implement Executive directives. Execute the March 2009 payroll recommendations made by the Office of State Finance. Eliminate the anticipatory pay requirement, which is a holdover from the past where funding patterns on the "color of money" for funding reflected lack of automation with real time funding checking. The State may need the office of the Treasury to validate the requirement in coordination with the audit arm of the State. Check with the Attorney General's office on the potential conflict "anticipatory pay" has with federal wage earnings mandates. Typically, the Federal mandates takes precedent, if the State mandates dilutes the Federal directive.
- There may be changes needed related to union contracts or current employee statewide practices (i.e. mandatory direct deposits for payroll checks or self-service for pay advices).
- All changes noted above need to be effective on/or before July 1, 2011, to enable the first full year savings.

Recommendations for F&A process changes and savings Year 2 and 3, to occur on or before November 1, 2011 include:

- The recommendations that Governor Fallin noted in her budget for F&A modernization in February 2011, where appropriate, are included in the human capital management and financial initiatives.
- The State needs to determine if they wish to execute the shared services initiatives for F&A in tandem or in stages. In tandem represents greater risk. Staging the initiatives in two steps reduces the risk, but negates some of the savings into future years beyond the three-year projections. There is a view that the State human capital management and financials teams are engaged in such different processes that a tandem approach is not material, but it is more of a matter of the ability of the State to be able to bring enough internal resources to support the initiative.
- It also recommended that the State upgrade to the latest versions of PeopleSoft as part of these initiatives, if there is a sufficient case that can be made that it enables faster shared service adoption by the agencies because there are more features or functionality available. This is an accelerated schedule from the current plans that ISD has in place.

- Assuming the State can ramp up its hiring initiatives in support of wide spread adoption of the F&A shared services model, it is recommend to do the tandem approach.
- If the State believes it cannot field the personnel to execute the payroll recommendations for Year 1, *and* the financial initiatives for F&A, stage the human capital management initiatives six to 12 months after the start of the financials initiatives. It is important that it be no less or more for the start of the human capital management project as there is a synergy with the financial component that can be leveraged with the human capital management initiatives.
- The time lines are aggressive at one year for both the human capital management and financial initiatives.
- The co-sourcing of the implementation team from six to 12 months by initiative mitigates the risk substantially. It also provides a second benefit in which the State IT employees have time to absorb the domain knowledge and transitioning of the support functions to the State is much smoother and usually more effective.
- Identify the agencies in one to three waves for migration starting with the smaller agencies, and then the medium sized ones. Finally, the larger agencies will need to be evaluated during the initial consolidation waves of 1 and 2 for common and unique requirements. For example, a payment is always a payment which represents a common F&A element. Child support court orders are unique to child support system.

Long-Term Savings Years 1, 2, and 3 for F&A

Figure C-10 presents a summary of costs and benefits for all F&A initiatives with broad-based Agency participation by Year 3.

Figure C-10. Total Investment, Cost, and Estimated Savings

Total Investment	
OK FTE	$(3,229,432)
Consulting	$(12,632,670.50)
Cost Avoidance	$54,514,457.50
Hard Savings	$31,456,000

Figure C-11 presents a summary of all initiatives timelines over three years, including both investment and benefits.

Figure C-11. Total Application Investment and Savings Estimate

Investment Timeline	Year 1 $6M	Year 1 $12M	Year 2 $6M	Year 2 $12M	Year 3 $6M	Year 3 $12M	Totals
Investment							
Investment	3,570,223.50			3,570,223.50		3,570,223.50	**10,710,670.50**
Investment	306,000		306,000				**612,000**
Investment	655,000		655,000				**1,310,000**
	4,531,223.50		961,000	3,570,223.50		3,570,223.50	**12,632,670.50**
FTE Oklahoma							
FTE Oklahoma	266,400		266,400	266,400			**799,200**
FTE Oklahoma	612,744		612,744		612,744		**1,838,232**
FTE Oklahoma	48,000		48,000				**96,000**
FTE Oklahoma	248,000		248,000				**496,000**
	1,175,144		1,175,144	266,400	612,744		**3,229,432**
Hard Savings							
Hard Savings	2,450,000			2,009,500		2,009,500	**6,469,000**
Hard Savings				5,200,000		5,200,000	**10,400,000**
Hard Savings				4,125,000		4,125,000	**8,250,000**
Hard Savings				418,500	5,500,000	418,500	**6,337,000**
	2,450,000			11,753,000	5,500,000	11,753,000	**31,456,000**
Cost Avoidance							
Cost Avoidance				4,610,500		4,610,500	**9,221,000**
Cost Avoidance				2,296,728.75		2,296,728.75	**4,593,457.50**
Cost Avoidance				3,850,000		3,850,000	**7,700,000**
Cost Avoidance		5,000,000		10,000,000		18,000,000	**33,000,000**
		5,000,000		20,757,228.75		28,757,228.75	**54,514,457.50**

Figure C-12 presents a summary of human capital management and financial initiatives assuming tandem (parallel) projects.

Figure C-12. Human Capital Management and Financial Initiatives

Investment Timeline	Year 1 $6M	Year 1 $12M	Year 2 $6M	Year 2 $12M	Year 3 $6M	Year 3 $12M	Totals	OK FTE Estimate
HCM**	1,286,010			1,286,010		1,286,010	3,858,030	
OK FTE's*	266,400		266,400		266,400			799,200
Financials**	2,284,213.50			2,284,213.50		2,284,213.50	6,852,640.50	
OK FTE's*	612,744		612,744		612,744			1,838,232
Investment	4,449,367.50			3,570,223.50		3,570,223.50	(10,710,670.50)	(2,637,432)
ROI BASIS								
Cost Avoidance				4,610,500		4,610,500	9,221,000	
Hard Savings				2,009,500		2,009,500	4,019,000	
Cost Avoidance				2,296,728.75		2,296,728.75	4,593,457.50	
Hard Savings				418,500		418,500	837,000	
Hard Savings	2,450,000						2,450,000	
Cost Avoidance				3,850,000		3,850,000	7,700,000	
Hard Savings				5,200,000		5,200,000	10,400,000	
Hard Savings				4,125,000		4,125,000	8,250,000	
Total ROI	2,450,000			22,510,228.75		22,510,228.75	47,470,457.50	
						Net Savings		
						Less investment	36,759,787	

**Estimates of FTE participation by the State of Oklahoma, for ramping assumptions (informational)*
***Source Spread sheets for HCM & CORE*

Figure C-13 presents the estimated savings associated with State payroll.

Figure C-13. State Payroll Recommendations—Estimated Savings

Opportunity	One Time Savings	Annual Savings
Integrations with projects	$1,000,000	$150,000
Check reversals		$25,000
Reduction in adjustments		$250,000
Elimination of supplemental payrolls		$560,000
Elimination of manual overtime calculations		$1,500,000
Elimination of payments processed		
Total Savings	**$1,000,000**	**$2,485,000**

Figure C-14 presents an overview of the key metrics associated with a State HCM implementation.

Figure C-14. HCM Implementation

Initiative Name: HCM	Project Initiation	Project Planning			Project Execution					Project Closure		
	Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Resources/Costs												
Internal Resources (FTE)	160.0	160.0	160.0	160.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0
External Resources (FTE)	160.0	160.0	160.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0
Total Resources	320.0	320.0	320.0	960.0	1280.0	1280.0	1280.0	1280.0	1280.0	1280.0	1280.0	1280.0
Other Costs	10000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
Internal Rate	50											
External Rate	175											
Internal Personnel Costs	8,000	8,000	8,000	8,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
Consulting Costs	28,000	28,000	28,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
Other Costs	1,500	1,500	1,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
Total Costs	**37,500**	**37,500**	**37,500**	**155,500**	**171,500**	**171,500**	**171,500**	**171,500**	**171,500**	**171,500**	**171,500**	**171,500**

Initiative Name: HCM	Year 2												Year 3											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Resources/ Costs																								
Internal Resources (FTE)	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0
External Resources (FTE)	800.0	800.0	800.0	800.0	800.0	800.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0
Total Resources	1280.0	1280.0	1280.0	1280.0	1280.0	1280.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0
Other Costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Internal Rate																								
External Rate																								
Internal Personnel Costs	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
Consulting Costs	140,000	140,000	140,000	140,000	140,000	140,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000	84,000
Other Costs	7,500	7,500	7,500	7,500	7,500	7,500	7,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500	4,500
Total Costs	**171,500**	**171,500**	**171,500**	**171,500**	**171,500**	**171,500**	**115,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**	**112,500**

Figure C-15 presents an overview of the key metrics associated with a State core financials implementation.

Figure C-15. Core Financials Implementation

Initiative Name: CORE	Project Initiation	Project Planning			Project Execution					Project Closure		
	Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Resources/Costs												
Internal Resources (FTE)		800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0
External Resources (FTE)	160.0	160.0	480.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0
Total Resources	160.0	960.0	1280.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0
Other Costs	10000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
Internal Rate	55											
External Rate	200											
Internal Personnel Costs	0	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000	44,000
Consulting Costs	32,000	32,000	96,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000
Other Costs	1,500	3,000	3,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Total Costs	**33,500**	**79,000**	**143,000**	**280,000**	**280,000**	**280,000**	**280,000**	**280,000**	**280,000**	**280,000**	**280,000**	**280,000**

Initiative Name: CORE	Year 2												Year 3											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Resources/ Costs																								
Internal Resources (FTE)	800.0	800.0	800.0	800.0	800.0	800.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0
External Resources (FTE)	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	1120.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0
Total Resources	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	2240.0	2240.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0	1920.0
Other Costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Internal Rate																								
External Rate																								
Internal Personnel Costs	44,000	44,000	44,000	44,000	44,000	44,000	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600	61,600
Consulting Costs	224,000	224,000	224,000	224,000	224,000	224,000	224,000	224,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000	160,000
Other Costs	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500
Total Costs	**280,000**	**280,000**	**280,000**	**280,000**	**280,000**	**280,000**	**297,600**	**297,600**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**	**229,100**

Key cost benefit assumptions for these initiatives include:

- The elimination of over 75 to 100+ shadow systems.
- The elimination of redundant head count.
- Indirect savings become real when the state redeploys/eliminates full-time equivalents.

Figure C-16 presents a forecasting model for calculating Application shared services initiative both direct and indirect savings as result of implementing the initiatives.

Figure C-16. The CORE Initiative Forecast Model

Assumptions	2011 Staffing Actuals	Staffing Percentages By Tier	Redundant applications	Count and Medium Complexity on Average
Tier 1 FTEs	709	81 percent	Financial	76
Tier 2 FTEs	154	18 percent	Time & Attendance	22
Tier 3 FTEs	12	1 percent	HCM	6
Total	875	100 percent	Training	
			Total	104
			(6)500 interfaces (est.) X FTE.20	100
			Total Applications	104
(4)Net O& M overage on staffing	9,221,000	Cost Avoidance		
Net O& M 77.7k at FTE rate	119.75			
	Model	Actual Tier 1&2	Realistic Curve Tier 1,2,& 3	
Elimination of Tier 1 FTE	98.0	30	Elimination on tier	
Elimination of Tier 2FTE	19.75	87.75	Elimination on tier	
Elimination of Tier 3 FTE	2.0	2	Elimination on tier	
	119.75	119.75		
(2,7) Over spend per employee, adjusted for 70/30	4,019,000	Hard Savings		
(5,7) Excess consulting utilization	4,593,457.50	Cost Avoidance		
(3) HCM bench mark 31,000@9.00X 3 events	837,000	Hard Savings		
(1) Payroll processing recommendations effective 7/1/11	2,450,000	Hard Savings		

Assumptions	2011 Staffing Actuals	Staffing Percentages By Tier	Redundant applications	Count and Medium Complexity on Average
500 interfaces (est.) X FTE.20	100.0			
(6) Interfaces Cost for parallel systems FTE	7,700,000	Cost Avoidance		
(6) Cost for Elimination for Sub systems 104 X 100k				
Net reductions non labor	10,400,000	Hard Savings		
HCM and CORE basis of savings total	39,220,557.50			
(3) HCM 100 agencies 1-3 average = 150 FTE's none IT impacted	8,250,000	Hard Savings	Note: 150 X FTE's X 55k =8,250,000 estimate	
HCM and CORE, plus HR basis of savings total	47,470,557.50			
HR Ratio to staff is 1:60 SB1:300-500 (example)	(net reduction)		Sample model TBD	

Sources

(1)States ISD recommendation March 2009 PPT to SFC.

(2)Application employee data averages Gartner 2010.

(3)HR Benchmarks, June 2010, 61 percent, used 50 percent.

(4)Based on actuals 2010, Gartner 2007 BPS at 38 percent.

(5)State of Connecticut model 27.7 percent.

(6) Capgemini prior experience with initiatives.

(7) 50 percent of employees operate in CORE and HCM by Year 3.

All estimates on the low end of ranges.

Figure C-17 presents the fixed assets summary of costs and benefits for the initiatives.

Figure C-17. Fixed Assets Summary

Investment and Savings Timeline	Year 1 $6M	Year 1 $12M	Year 2 $6M	Year 2 $12M	Year 3 $6M	Year 3 $12M	Totals	OK FTE Estimate
OK FTE	$248,000		$248,000					$496,000
Consulting	$655,000		$655,000				$1,310,000	
Investment Total							($1,310,000)	($496,000)
Cost Avoidance								
Hard Savings*					$5,500,000		$5,500,000	$5,500,000
							Net Savings Less Investment	$4,190,000

*Assuming there are 200 full-time equivalents between the agencies that engage in the course of F&A administration, .24 to 4 on average depending on the size of the agency, on a conservative basis. Assuming a $55K rate at 100 full-time equivalents with automation, self-service, bar-coding, this indirect cost is reduced by 100 full-time equivalents throughout the State. This is another example of the hidden costs of IT data silos. The Department of Transportation is excluded from this calculation.

Figure C-18 presents the fixed asset initiative.

Figure C-18. Fixed Assets Estimated Costs

Initiative Name	Project Initiation	Project Planning			Project Execution					Project Closure		
	Year 1											
	1	2	3	4	5	6	7	8	9	10	11	12
Resources/Costs												
Internal Resources (FTE)	160.0	160.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	640.0	640.0
External Resources (FTE)	160.0	160.0	480.0	480.0	480.0	480.0	480.0	480.0	640.0	640.0	640.0	640.0
Total Resources	320.0	320.0	800.0	800.0	800.0	800.0	800.0	800.0	960.0	960.0	1280.0	1280.0
Other Costs	10000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
Internal Rate	50											
External Rate	125											
Internal Personnel Costs	8,000	8,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	32,000	32,000
Consulting Costs	20,000	20,000	60,000	60,000	60,000	60,000	60,000	60,000	80,000	80,000	80,000	80,000
Other Costs	1,500	1,500	5,000	5,000	5,000	5,000	5,000	5,000	6,000	6,000	6,000	6,000
Total Costs	**29,500**	**29,500**	**81,000**	**81,000**	**81,000**	**81,000**	**81,000**	**81,000**	**102,000**	**102,000**	**118,000**	**118,000**

Initiative Name	Year 2												Year 3											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Resources/ Costs																								
Internal Resources (FTE)	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
External Resources (FTE)	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	320.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Resources	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	800.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Other Costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Internal Rate																								
External Rate																								
Internal Personnel Costs	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000	496,000											
Consulting Costs	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	1,200,000											
Other Costs	3,000	3,000	3,000	3,000	3,000	3,000	3,000	0	3,000	3,000	3,000	3,000	90,000											
Total Costs	**67,000**	**67,000**	**67,000**	**67,000**	**67,000**	**67,000**	**67,000**	**64,000**	**67,000**	**67,000**	**67,000**	**67,000**	**1,786,000**											

Key cost benefit assumptions relative to this initiative include:

- Elimination of multiple fixed asset systems. There are seven known fixed asset systems, but it is understood additional asset systems exist. ODOT is exempt, AGILE deployment is in production.
- Indirect savings become real when the state validates and redeploys/eliminates full-time equivalents.
- Asset visibility is in one place on a State-wide basis.
- There is cost avoidance, but it is difficult to calculate based on the quality of the survey data. Some examples include increased audit/compliance cost, indirect cost calculation, planned obsolescence, and residual dollar value.
- Elimination of the shadow systems is not included in hard cost savings. The survey data did not provide enough meaningful data to determine a value. It could prove to be substantial depending on how many additional shadow systems are discovered during the migration to a single asset management system as it is adopted by each agency. A very conservative estimate is 500-800k in hard savings.
- The Department of Transportation and other agencies (i.e. higher education research) have significant asset accountability at the funding source which is an important consideration.

Figure C-19 presents a summary of all initiative costs and benefits over the three year timeline in support of the F&A shared services model, assuming wide adoption by at least 75 percent of State agencies.

Figure C-19. Total Estimated Costs and Savings over Three Years

Investment Timeline	Year 1 $6M	Year 1 $12M	Year 2 $6M	Year 2 $12M	Year 3 $6M	Year 3 $12M	Totals
Investment							
Investment	3,570,223.50			3,570,223.50		3,570,223.50	10,710,670.50
Investment	306,000		306,000				612,000
Investment	655,000		655,000				1,310,000
	4,531,223.50		961,000	3,570,223.50		3,570,223.50	12,632,670.50
FTE Oklahoma							
FTE Oklahoma	266,400		266,400	266,400			799,200
FTE Oklahoma	612,744		612,744		612,744		1,838,232
FTE Oklahoma	48,000		48,000				96,000
FTE Oklahoma	248,000		248,000				496,000
	1,175,144		1,175,144	266,400	612,744		3,229,432
Hard Savings							
Hard Savings	2,450,000			2,009,500		2,009,500	6,469,000
Hard Savings				5,200,000		5,200,000	10,400,000
Hard Savings				4,125,000		4,125,000	8,250,000
Hard Savings				418,500	5,500,000	418,500	6,337,000
	2,450,000			11,753,000	5,500,000	11,753,000	31,456,000
Cost Avoidance							
Cost Avoidance				4,610,500		4,610,500	9,221,000
Cost Avoidance				2,296,728.75		2,296,728.75	4,593,457.50
Cost Avoidance				3,850,000		3,850,000	7,700,000
Cost Avoidance		5,000,000		10,000,000		18,000,000	33,000,000
		5,000,000		20,757,228.75		28,757,228.75	54,514,457.50

Capgemini recommends that the State focus its initial efforts on CORE staffing in support of F&A shared services model. This includes:

- Aligning State staffing pools for CORE along major functional lines. It is suggested that this include lines for financial reporting, grants/project, and employee self-service. It is noted ISD is already doing some of this.
- ISD is going to need a CORE architect (and one to three senior architects) who can look at the short, mid-term, and long-term outcomes for the major shared services applications. This could be the equivalent of a CTO for the application portfolio. This is the person who knows that a particular CORE module will do the job for an agency once the requirements have been determined. They are business process savvy and functionally know the capability of any given application and its integration points. They are not into the technical weeds; only enough to know what is possible. They have the vision of how and where CORE (shared service F&A) will evolve over the next two to give years.
- Creating major centers of excellence around CORE for business intelligence, procurement, human capital management, reporting, and customer relationship management. It is noted that ISD is doing some of this already. As a practical matter, these centers may depend on enterprise wide application framework (EWAF) initiatives, and typically they morph into new or enhance existing centers of excellence with organizational maturity.

C.6 Applications Shared Services/Unique Agency Applications for F&A

EWAF initiatives is the staffing and maintenance of all non-CORE F&A application previously noted in the human capital management, budgeting, financials, and fixed asset initiatives, and is comprised of the remaining 764 (+/-) applications noted as agency specific applications such as child support, tax, licensing, etc.

Basic Assumptions on CORE integrations with EAWF

- CORE is the single foundational basis for the human capital management and financial framework for the State.
- CORE has API's embedded into the major applications (AP, AR, etc.).
- CORE handles most financial aspects when fully deployed throughout the agencies.
- CORE is not designed to handle unique agency requirements.
- CORE supports generic F&A 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 18-36 months.

Basic Assumptions for EWAF

- Agencies share commonality often in subset groupings*:
  - Payment processing.
  - Licensing and fee activities.
  - Training.
  - Accounts receivable
  - Document imaging
  - Treasury integration
  - GIS

  *Note: This is not a complete list, major initiatives are noted from survey data. Other sources include the State of Connecticut, the State of Ohio, and the GFOA.
- EAWF encompass commonality by processes:
  - Grouping by commonality for data warehousing initiatives.
  - Grouping by commonality for business intelligence and analytical tools.
  - Shared automated tools, workflow, content management, portals.
- COTS/custom-built application commonality for agency-specific needs typically will be:
  - Tax (specialized legal requirements).
  - DMV (specialized legal requirements).
  - Human services (multiple specialized needs by Federal/State mandates).
  - Higher education (student information).
  - Unemployment insurance (specialized legal requirements).

  In this model, these discrete COTS/custom built systems need to leverage Core/EAWF were 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/EAFW, not to replicate it.

Staffing Assumptions for EAWF

- Centers of excellence centers on the common framework as needed.
- Pools of functional rich talent, which perform the necessary analysis.
- Led by senior application architects.

- Staffed by senior and junior business analyst, in shared pools and interdisciplinary skills sets for analysis gathering, refinement, and recommendations.
- Cross pollination of skills set within pools is critical to the success of this model as both a cost containment function and the keeping of domain expertise widely shared to avoid single point of failure issues.
- The staffing consolidation leads to existing agency IT being absorbed into the pools under the State CIO.
- Key agency IT directors/CIOs will evolve to process expertise owners (domain architects); they are tightly integrated with the staffing pools.

There are pros and cons as to who should own these resources. It is recommended they all be under the State CIO given the culture of decentralization in the State. This kind of practice requires extreme measures to reign in 40+ years of decentralization and go it alone agency culture.

Figure C-20 presents proposed timelines for application initiatives for CORE

Figure C-20. Core and Non-Core (EWAF) Timeline View for Initiatives Implementations

	Year 1	Year 2	Year 3	Year 4
Core Staff Ramping (ongoing)*	==========→			
Core Financial Upgrade**	12m=========→			
Core HCM Upgrade**	12m=========→			
Post Implementation Support***			12m==========→	
Agency Analysis (accelerated)	9m========→			
Agency Cutover (Small & Medium)			12m==========→	
Training for Staff (ongoing)	ongoing ==========→			
Large Agency Analysis for Integration ****	ongoing ==========→			

Figure C-21 presents proposed timelines for application initiatives for EWAF.

Figure C-21. Non-Core (EWAF) Frame Timeline View

	Year 1	Year 2	Year 3	Year 4
Transferring of Staff (ongoing)*	6m=======→			
Staffing Pools Alignment	3m=====→			
Skill Inventory	6m=======→			
Skills Upgrading and Training**	9m========→			
Agency Analysis Non-Core	9m========→			
Implement EWAF Platforms (1 to 5)***			12m=========→	
Implement EWAF Platforms (ongoing)				12m=======→

**This is an aggressive schedule and is dependent on the availability of skilled talent.*
***This assumes third part contract to handle to accelerate wider agency adoption*
****Due to the aggressive timelines, it is recommended that consulting support be engaged to mitigate risk*
*****This is dependent upon the completion of the EWAF initiatives.*

Figure C-22 presents a staffing model view based on the benchmark, USPS, and actuals projections to-date.

Figure C-22. Staffing Assumptions CORE and EWAF Tiers 1, 2, and 3

	FTE	Total FTE $
Exec 2011 Plan FTE	1284.65	$100,825,098
70 percent Application	899.26	$70,577,568.60
41 percent Application	526.71	$41,338,290.18
25.37 percent per projection	325.92	$25,579,327.36

Figure C-23 presents the future state of application staffing in the State.

Figure C-23. Staffing Assumptions CORE and EWAF Model

Core	Current	Year 1	Year 2	Year 3
Core Staffing w/Ramp	38	65	85	105+/-
EWAF Projection 25.37 percent	288	261	241	221
41 percent USPS Basis	527	527	527	527
Net Reduction YR 3				<52>
Net Reduction YR 3				<104>
Estimated Application FTE YR 3 Savings Low				475
Estimated Application FTE YR 3 Savings High				371
Adjusted for Contractors at 50 percent (124 X150K)				$5.2M
No administrative overhead reductions taken(3MM)				

**The 41 percent USPS number is realistically a better number, but it assumes centralization and consolidation across the board is already in place.*

Additional Staffing Assumptions

- This assumes the future/to be state is supporting an estimated 400 to 700 applications. During the process of consolidation, the estimated head counts will drop proportionately to the elimination of redundant applications. Potentially there is a delta of 20 to 100 percent on these full-time equivalency counts the lower the number of applications supported.
- Estimated saving is based on a conservative number of $4.6 million; this number is probably closer to $9 to $12 million once consolidation initiatives are accomplished and consulting costs are reduced. The survey data did have enough full-time equivalency detail to refine to a more granular level by agency beyond ISD/the Department of Human Services.
- The benefit in the first year is minimal as the full-time equivalency transition takes six to nine months to complete.
- Year 2 will support additional savings mostly from the payroll recommendation and shadow system elimination. The indirect costs benefit needs to be confirmed by the State.
- Skills assessment showing skills deficits would impact future year savings.
- Ramping of CORE to additional agencies and the expanded shared services model will actually drive costs down further, it is dependent on how wide spread the adoption of the CORE model is and the number of agencies absorbed.
- There will be a 75 percent adoption by agencies of CORE by Year 3.

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State of Oklahoma CIO Assessment Study

Applications Recommendations

Applications Baseline

Current State

- Applications in the State of Oklahoma are characterized by:
- Application silos (in particular legacy applications) .
- Inconsistent attempts at F&A standardization i.e. ERP.
- A culture of go it alone in application acquisition and/or development at the agency level.
- The “we (agency) are unique” phenomena.

Vision for the Future

- The deployment of an applications environment that will enable support of common F&A activities across the agencies.
- Provide a governance model that proactively anticipates the needs of F&A for an agency, or subset of agencies, or statewide .
- A shared services model that is both cost effective short- and mid-term, and cost containment in the long-term (productivity) based on an active governance model.
- Enhance the model to support the development of revenue offset components to none-state agencies which is cost effective and beneficial to all parties.

ROADMAP - Blueprint

Build an application foundation comprising:

- Centralize governance (sharing of commonality).
- Governance prioritization for shared business needs and standardization on generic business requirements – in a F&A (common framework).
- Unique agency requirements are architected into the F&A frame work; with common elements as appropriate .

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Applications Current State

Overall characteristics of the State of Oklahoma applications environment:

- Competing/older technologies in place (legacy/ multiple redundant environments).
- A lack of a coherent application vision (common) environment model.
- This model results in inefficiency at both the agency/state wide level, and increases support cost, results in duplication of processes, and reporting issues. This model is a "self feeding", and cost escalator for the State. To a large extent this triggered the HB 1170 and IT assessment requirement.
- Silo environments contribute to a lack of application visioning by the agencies for common services across state agencies and tends to reinforce the silo mentality.
- The lack of a vision has been a boon to the vendors in terms of unnecessary sales/unfavorable negotiation in software licensing agreements to the agency/State.
- Delegated authority in principle makes sense for the larger Agencies needs due to their uniqueness. Without a good governance model and a single CIO oversight function, this creates application silos.
- Since there has not been a statewide governance model in place nor an application vision/direction, under utilization of application assets has occurred and communication of common needs by the agencies has not occurred in consistent way. This further contributes to under utilization of the application portfolio/acquisition of unnecessary products/services in support of the agencies missions.

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Applications Current State

Application costs

- Under utilization of existing application portfolio, per CGI Group report 2009 (10-20%).
- Excessive Application investment in unnecessary product/services (silo event).
- The real costs of applications and related technology stack are distorted, and impact future planning negatively for these initiatives (over provisioning).
- Unnecessary complexity due to redundant systems, trend overall application support/maintenance costs upwards at much faster pace than in a common application frame work (i.e. shared services environment).

Staffing

- Requires more personnel.
- Skill sets are inconsistent across the agencies.
- Skill sets are not aligned to a shared services model/technology standardization.
- Increased support costs due to lack of pooling common skill sets across the state agencies (shared services support model).
- Applications with no planned obsolescence result in skills sets that are difficult to find or reliance is on 1 to 2 people, representing a point of failure for systems, some of which are mission critical.
- Obsolete applications (legacy systems in particular) staff development or education venues are no longer available in formal training/campus settings.

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Applications Current State

Complexity

- More interfaces/redundant systems in place, real time data issues.
- High number of programming languages and development platforms.
- Reporting/control issues (shadow systems).
- Fewer shared business applications.

Service delivery

- Under-utilization of applications features and functions.
- Common agency information requirements missed (in support of shared services).
- General satisfaction with IT services overall and help desk in particular will be very inconsistent.
- Chronic complaints around reporting/general application capabilities will persist and tend escalate over time.

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Applications Financial Data

Application Financial Assumptions

- 70/30* rule for Application vs. Infrastructure Consumption on Operations actuals for 2009 & 2010.
- Non-Standard Budgeting Practices (inconsistent approach); use 2009/10 actual as basis.
- Consulting Number is based on GL actuals.
- Staffing Assumptions use 2011FTE accounts.
- Salary Assumptions use 2011 Basis.
- Higher Education not included in calculations.

**The cost of doing nothing: Studies demonstrate that nearly 75% of IT budgets are spent maintaining existing applications and that duplicated and/or underutilized applications represent 10-20% of Maintenance spend: CGI Group 2009.*

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Applications Financial Data HR Benchmarks

- **HR Operations**, where the top performing companies saw their HR staff members devoting their time to the most value added of tasks and routinely deploying best practices. Spending valuable staff time on strategic HR issues and workforce management processes made the most significant contributions to company growth and performance. Where HR staff spent more than 40% of their time on Administrative processes, there was no material contribution to company performance.
- **HR Technology** was used by the top performers to increase efficiency by 23%, improve accuracy by 52%, and reduce costs by 61%. The study confirmed a growing trend by top performing HR functions to deploy manager and employee self-service options to complete the majority of administrative activities.

June 2010 – Benchmark HR

http://www.focus.com/briefs/human-resources/benchmark-hr/

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Applications Financial Data

F&A Applications Costs to the State on Combined Agency Basis 2009/10, in Millions

Actuals in thousands	2009	2010
*Gartner defines total Employee IT cost per employee:	7.4	7.5
Applying the 70/30 Application rule to Gartner	5.18	5.25
State Run Rate	5.78	5.64
Total costs Per Gartner* in millions	155,400	157,500
Total costs State of Oklahoma**in millions	171,013*	165,538(actuals)*
The state spend on an annualized basis is running above the average vs. other Public Sector IT.	15,613	8,038

- * Gartner Report 2010 I bench marks report.
- **This is based on a total population of 40k employees. In reality, the work station count of 28k is a more accurate count. Using an application benefit rate on the balance of the population, 2k reduces the balance and results in more realistic employee count of 30k for the IT population . This would indicate a higher run rate than these numbers are indicating on a conservative basis.
- *Unaudited numbers provided by client.

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Applications Financial Data

F&A Applications Cost Basis

Actuals	2009	2010
Application Maintenance & Development	71,805,130	61,271,980
Salaries 70/30 Application rule	70,577,568	70,577,568
Consulting T1A 70/30 Application rule	28,630,234	33,688,726
Total costs	171,012,933 *	165,538,275 *

- What is wrong with these numbers?
  1. Salaries to Development cost is a 1 to 1+ ratio this should be just the opposite.
  2. Consulting cost to Salaries costs are 40% and 47%, they should be 10-25% of over all IT cost.
- Conclusion: The State is over spending on Applications Initiatives from about 5 Million to as much as 15 million in any given year.
- FTE Executive = 1284.65 (100,825,098) at 70/30 = $70,577,568)*
- FTE Tier One Agencies = 1047.25 ($80,919,056)*
- *Unaudited numbers provided by client.

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Applications Shared Service Examples

F&A Applications

This an example of shared services approach taken in Connecticut by DOIT in 2010 for a Sub set of Agencies (licensing) and a State wide initiative (payments):

- DOIT also more than doubled the number of agencies on the **enterprise e-licensing platform**, adding three additional licensing agencies to the cross-agency partnership established in FY 2009.
- The number of agencies using DOIT's **online payment service continues to grow.** Usage will expand to nine agencies by the end of FY 2010. This is a critical component for online e-government transactions.

Source: http://www.ct.gov/doit/lib/doit/4d-14_2010_-_final.pdf

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Applications Shared Service Examples

F&A Applications

This an example of an **Enterprise Document Management** shared services approach taken in Connecticut by DOIT in 2010 for all Agencies:

- In FY 2010, DOIT established a multi-agency partnership to construct a shared platform infrastructure for an Enterprise document management system (EDMS).
- This shared platform, in addition to new enterprise licensing rates secured by DOIT, resulted in an initial savings of more than half a million dollars, with more savings to come as each agency uses this solution.

Source: http://www.ct.gov/doit/lib/doit/4d-14_2010_-_final.pdf

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 1: Focus initial efforts on CORE:

- CORE Enhancements Short term objectives 18 months 2011-2012.
- HCM upgrade to latest release (in tandem/staged TBD).
- Financials upgrade to latest release (in tandem/staged TBD).
- Deploy more features and functions to enable wider adoptions of shared services by the agencies; review Oracle Insight recommendations and prioritization by best ROI. From a practical perspective it is not possible to do them all at once.
- Deploy additional modules to enhance capabilities and enable wider adoptions of shared services by the agencies as needed.
- The State identified in the Catalog Services spread sheet of 12/2010 Core functionality that would enable wider adoption shared services with these CORE modules: GPC, ELM, ARBI, Sourcing, Inventory, Scanning/bar coding. We would recommend you accelerate the adoption and additional analysis requirements noted for each of the areas. These are consistent with the Oracle Insight recommendations, prioritization is required.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 1: Focus initial efforts on CORE Staffing:

- CORE Staffing needs to ramp up from 38 to about 90-105 FTE, this seems to be an accurate number based on other states; Connecticut 105 FTE & Ohio 100 FTE, they have comparable shared services initiatives in place, and their complexity and scope are similar to Oklahoma.
- There will be a training and hiring curve of at least 6 months to a year depending on the pool of talent that is available which could impact an aggressive rollout of shared services.
- Engaging consultants and pairing the key new hires with them is a way to speed up knowledge transfer but tends to increase the consulting cost.
- The ISD Catalog Service spreadsheet is good starting point for the expansion of shared services participation by agency as well as a starting point for the ramped up organization to refine analysis and observe other opportunities.
- Training, training labs, policy and procedures need to ramp up also. We would recommend consultants to get this function in place in tandem with the ongoing analysis CORE deployments. When completed, ISD training Staff should then be able to maintain.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 1: Focus initial efforts on CORE Staffing:

- Align your staffing pools for CORE along major functional lines, for example financial reporting, grants/project, and self service. It was noted ISD is already doing this.
- The State will require a CORE architect (with 1-3 senior architects) who can look at the short, mid term, and long term outcome for the major shared services applications. This could be the equivalent of a CTO of the application portfolio. This is the person who knows that a particular CORE module will do the job for an agency once the requirements have been determined; they are business process savvy and functionally know the capability of any given application and its integration points. They are not into the technical weeds, only enough to know what is possible. They have the vision of how and where CORE (Shared Service F&A) will evolve over the next 2-5 years.
- Create major centers of excellence around CORE for things such as BI, procurement HCM training, Reporting, CRM, etc. It was noted ISD is doing some of this already. As a practical mater these centers placement may depend on Enterprise Wide Application Framework (EWAF)initiatives, and typically they morph into new or enhances centers of excellence with organizational maturity (see phase 2 sections for more details).

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 2: Enterprise Wide Application Framework (EAWF) integrated with CORE

Basic Assumptions on CORE integrations with EAWF:

- CORE is the foundational basis for the financial framework for Oklahoma.
- CORE has API's embedded into the major applications (AP, AR, etc.).
- CORE handles most financial aspects when fully deployed.
- CORE is not currently designed to handle unique Agency requirements.
- CORE supports generic F&A activities &processes w here ever possible throughout the State.

Basic Assumptions on EAWF:

- Agencies share commonality often in sub set groupings*
  - Payment processing.
  - Licensing and fee activities.
  - Training.
  - Accounts receivable.
  - Documentation.
  - Treasury integration.

**Note: This is not a complete list, major initiatives noted from survey data, State of Connecticut, Ohio, and GFOA resources.*

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 2: Enterprise Wide Application Frame work (EAWF)

Basic Assumptions on EAWF:

- Agencies Share commonality often in a sub set groupings* (continued):
  - Human services.
  - Eligibility programs.
  - Taxation.
  - Reporting (external/internal).
  - Compliance programs.
- EAWF encompass commonality by the processes:
  - Grouping by commonality (i.e. licensing and fees).
  - Grouping by shared API integration into CORE.
  - Grouping by COTS/platform development solutions.
  - Phased approach on rollouts/development solution.
  - Reporting (external/internal).

**Note: This is not a complete list, major initiatives noted from survey data, State of Connecticut, Ohio and GFOA resources.*

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 2: Enterprise Wide Application Framework (EAWF)

Basic Assumptions on EAWF:

- EAWF encompass commonality by the processes (continued):
  - Grouping by commonality for data warehousing initiatives .
  - Grouping by commonality for business intelligence and analytical tools.
  - Shared automated tools, workflow, content management, portals, etc.
- COTS/Custom built Application commonality for agency specific needs typically will be *:
  - TAX (specialized legal requirements).
  - DMV (specialized legal requirements).
  - HUMAN SERVICES (multiple specialized needs by Federal/State mandates).
  - HIGHER EDUCATION (student information).
  - UNEMPLOYMENT INSURANCE (specialized legal requirements).
- In this model these discrete COTS/custom built systems need to leverage CORE/EAWF 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/EAFW, not replicate it.

**Note: This is not a complete list*.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 2: Enterprise Wide Application Framework (EAWF)

Basic Staffing Assumptions on EAWF:

- Centers of excellence centers on the common framework as needed, i.e. BI/reporting.
- Pools of functional rich talent that perform the necessary analysis:
  - Led by Senior Application Architect(s).
  - Staffed by Senior and Junior Business Analyst, in shared pools and interdisciplinary skills sets for analysis gathering, refinement, and recommendations.
  - Cross pollination of skills set within pools is critical to the success of this model as both a cost containment function and keeping domain expertise widely shared to avoid single point of failure issues.

Key Assumptions:

- The staffing consolidation leads to existing agency IT being absorbed into the pools, beginning with small- to mid-size agencies, then larger agencies in a phased approach.
- Key agency IT directors/CIO's evolve into process expertise owners (domain architects); they are tightly integrated with the staffing pools. There are pros and cons as to who should own these resources.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 1 CORE Timeline View

	Year 1	Year 2	Year 3	Year 4
CORE STAFF RAMPING (ongoing)*	==========➔			
CORE FINANCIAL UPGRADE**	12m=========➔			
CORE HCM UPGRADE**	12m=========➔			
POST IMPLEMENATION SUPPORT***	12m=========➔			
AGENCY ANALYIS (accelerated)	9m==========➔			
AGENCY CUT OVER (Small & Medium)		12m=========➔		
TRAINING FOR STAFF(ongoing)	==========➔			
LARGE AGENCY ANYALIS FOR INTEGRATION****		ongoing ==========➔		

- *This is an aggressive schedule and is dependent on the availability of skilled talent.
- **This assumes third party contract to handle & accelerate wider agency adoption.
- ***Due to the aggressive timelines, resource assurance for the successful hand off to ISD.
- ****Dependent on Enterprise Wide Application Framework initiatives are in place.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 2 Enterprise Wide Application Frame Timeline View

	Year 1	Year 2	Year 3	Year 4
EWAF	6m======➔			
TRANSFERING OF STAFF (ongoing)*	3m===➔			
STAFFING POOLS ALIGNMENTS	6m======➔			
SKILLS INVENTORY		9m========➔		
SKILLS UPGRADING & TRAINING**		9m========➔		
AGENCY ANALYSIS NON-CORE			12m=========➔	
IMPLEMENT EWAF PLATFORMS (1 to 5)***				12m=====➔

- *This is an aggressive schedule and is dependent on the availability of skilled talent.
- **This assumes third party contract to handle to accelerate wider agency adoption.
- ***Due to the aggressive timelines, we recommend consulting support be engaged to mitigate risk.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Phase 3 High level Application time lines for future years out.

- Pension 2013/14* .
- Content Management 2013-15.
- Training 2012-13*.
- Document Imaging 2013-15.
- GIS & Mapping 2013-14.
- GRC (Governance, Risk and Change) 2012-14*.

**This may be included in CORE up grade. No Priority assignments, dependent on CORE upgrade approach.*

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Staffing Assumptions CORE & EWAF Tier 1, 2 & 3
(Not Adjusted for Applications 70/30 split base number.)

	2010*	2009*
Tier 1 O&M	160,750	140,000
Tier 2 O&M	39,800	69,000
Tier 3 O&M	3,000	4,000

	2011** Dollars	2009* Count
Tier 1 FTE	78,000	1,013
Tier 2 FTE	18,000	220
Tier 3 FTE	800	12

- *Actuals, budgetary process change 2009-11, granularity not available on FTE and costs.
- *Actuals, unaudited numbers in millions.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Staffing Assumptions CORE & EWAF Tier 1, 2 & 3 (Adjusted for Applications 70/30 split base number.)

	2010*	2009	7/30 2010	7/30 2009
Tier 1 O&M	160,750	140,000	111,321	98,700
Tier 2 O&M	39,800	69,000	27,860	48,300
Tier 3 O&M	3,000	4,000	2,100	2,800

	2011** Dollars	2011* Count		
Tier 1 FTE	78,000	1,013	54,600	709
Tier 2 FTE	18,000	220	12,600	154
Tier 3 FTE	800	12	560	8

- *Actuals, budgetary process change 2009-11, granularity not available on FTE and costs.
- *Actuals, unaudited numbers in millions.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Staffing Assumptions CORE & EWAF Tier 1, 2 & 3
(70/30 split base number 38% Assumption, Gartner 2007 BPS) FTE 38%

	2010	2009	2010	2009
Tier 1 O&M	111,321	98,700	42,301	37,240
Tier 2 O&M	39,800	27,860	15,124	10,586
Tier 3 O&M	3,000	4,000	1,114	1,520
		Total	**58,539**	**49,346**

	2011** Dollars	2011** Count
Tier 1 FTE	54,600	709
Tier 2 FTE	12,600	154
Tier 3 FTE	560	12
Total	**67,760**	

- *Actuals, unaudited numbers in millions.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Staffing Assumptions CORE & EWAF Tier 1, 2 & 3 (millions)

(70/30 split base number with 38% Assumption, Forester 2007 BPS)FTE 38%

Mid-year burn rates	2011*	2011**	2011	2010	2009
Tier 1 O&M	99,568	138,395	52,970	42,301	37,240
Tier 2 O&M	7,844	10,981	4,172	15,124	10,586
Tier 3 O&M	3,347	2,343	890	1,114	1,520
		Total	**58,032**	**58,539**	**49,346**

	2011 Dollars	2011 Count
Tier 1 FTE	54,600	709
Tier 2 FTE	12,600	154
Tier 3 FTE	560	12
Total	**67,760**	Net overage FTE: $9,221 = 117fte

- *Actuals as of Jan 1 2011, current burn rate. ** MYx2, for FY rate with 70/30 application split. Note 13% increase FY 09-10, 21% increase FY10-11.
- *Actuals, unaudited numbers in millions.

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Applications Initiatives in Support of Expanded Shared Service Adoptions & EWAF

Staffing Assumptions CORE & EWAF (plug savings O&M for more refinement)

Core	Current	Year 1	Year 2	Year 3
Core Staffing w/Ramp	38**	65	85	105+/-
EWAF	836.5**	771	751	646
		836	836	836
EWAF 38%* calc with burn		753	753	753
Delta to model (to many FTE's 11%)		83	83	83 ($6.86mm)

- *Internal staffing will account for 38% of IT budget per standard Forester IT budgets outlooks 2007 ; basis is 58.5mm/77.7k per FTE=773
- **CORE actual & base number 1,242 FTE 2011 _ (CORE FTE 38) = 1,204 X 70% = 836.5
- ***Confidence factor is +/- 20%, based on the lack of survey FTE data provided by the agencies; based on Capgemini's prior experiences in public sector, we believe the delta number is understated, it does correlate to the other benchmarks noted through out the story board.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Projects in Flight

The data on projects in-flight was not material to the analysis other than to note some of the in-flight projects are related to core and noted in the future projects centered around grant and project accounting activities by ODOT and DEQ/Commerce.

- Projects in flight total dollar value $159,350,382.00.
- 5 Projects in flight account for most of the spend at $134,700,00 (85%):
  - A695 $40 million (tax, pending award)*.
  - A807 $13.7 million (eligibility).
  - A807 $75 million (MMIS 2010, re-bid from 2008)*.
  - A345 $6 million (agile and ports of entry).

**This appears to be a future project, not in-flight.*

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Future Projects

Future projects application survey results

Total dollar value:	$**78,593,662**

5 Agencies account for 93% of the dollars

A807	$18,500,000
A292	$26,000,000*
A131	$2,220,000
A090	$14,275,340
A290	$12,000,000
Total:	**$72,995,340**
All other agencies	**$5,598,322**

* 100% percent federal funding

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Applications Initiatives in Support of Expanded Shared Service Adoptions

Future projects survey results key findings:

- 42 projects related to CORE and expanding its capability and agency adoption comprised the $14,275,340.
- It was noted in the project initiatives that the cost would be 10-15,000,000 and is consistent with the IT Assessment initiatives.
- The remaining agencies future projects accounted for $5,598,332 and it appeared that 20-30% of the activity was related to synchronization with CORE and other systems. With consolidation and shared service, this would represent an additional savings in the 1-1.7mm range as these activities would not be required as the agencies consolidate into the share services model/CORE. Typical activities such as time & attendance and reporting¡ ssues were noted. Depending how quickly the State moves on the initiatives as much as 50-75% of this could eventually be eliminated, along with corresponding head count.

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Applications Initiatives in Support of Expanded Shared Service Adoptions

The Government Finance Officers Associations (GFOA) view:

"Early ERP Implementations typically fell short of delivering enterprise-wide business transformations in both the public and private sector. Today shared services is being seen as a key strategy in realizing the full value of the ERP investments. Shared services comes at a time when government organization simply have to become high performing organizations to meet rising citizen expectations and shrinking resources…"

Technologies for Government Transformation, ERP systems and beyond; GFOA technology solutions series, 2005, pages 261-62

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Applications Survey Findings

Assumptions on Applications Survey Data:

Raw Data from F&A Application Surveys	2,315	
Filtered for F&A Applications	-1,380	(59%)
Actual F&A Applications Count	***935***	
Application Categories		
Financial	76	
Time & Attendance	22	
HCM & Training	6	
Imaging	17	
Reporting & Analytics	48	
Pension	3	
Total	171	
Other (typically agency specific)	764	
Total	***935 ****	

**Note Confidence factor 10-15% +/- there is some overlap between categories*

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Applications Survey Findings

171 applications are the core F&A engines for the State:

- Legacy applications represent (50%+/-) .
- Legacy applications are based on obsolete technology.
- The pool of skilled workers is diminishing rapidly in this technology (retirements est. 55% 2-5 years), and skills are hard to find.
- Integration into the main F&A (CORE) has created a shadow set of processes and systems in a parallel though out the state in basic F&A activities such as:
  - Time and attendance systems.
  - Labor distribution systems.
  - Multiple leave systems.
  - The interfaces and data extraction process are many, we can only estimate that it ranges in the 500-750 estimate range, based on 4,000 applications built on them, beyond desktop automation tools (see infrastructure count).
  - Multiple large financial systems:
    - Legacy based (DOT DHS, DOC, DMV, TAX, DEQ, DPS) .
    - Large COTS-based PeopleSoft (CORE) , Medium Oracle e-Business 11i .
    - A variety smaller to mid-size applications 125-350+/-
    - Small to mid-size departmental built estimated at 400+/- estimates.

Note: The technology stack to support this environment is all over the map .

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Applications Project Initiatives

Project initiatives and legal considerations for an omnibus approach:

- There are number of governing laws that can be in conflict with a shared services environment recommendation due to historical , prior executive/legislative directives, or conflicting audit requirement statutes that have not changed with the adoption of technology in recent years. There is an opportunity to clean the slate and bring the statutes up to date.
- Typically some kind omnibus bill that updates the statues so as not to be in conflict with existing statutory requirements should be proposed and reviewed with Audit, ISD, other affected parties, and the AG. Time spent on this activity simplifies processes and contributes to further cost savings for the State.
- As part of the HCM reimplementation it is recommended that you look at your current statutes and executive orders and consider modifying those that are in conflict. For example, the anticipatory payroll requirements would appear to be in conflict with federal law regarding payroll payments and has a direct impact on (CORE) payroll process, requiring a 2 step process and a separate custom application to support it.
- There are a number of asset /inventory directives that are redundant that should be consolidated into single statute/directive. For example, one single fixed asset system for all the state assets with appropriate classification should be mandated, since there can only be one asset of any kind in the State.
- T&E typically may have multiple directives/requirements.

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Applications Project Initiatives

Applications Non-Legal Statute and/or Directives Assumption:

- Often many requirements or operating guidelines have a tendency to become known as "law" as time goes on within State government.
- The reality is they are more often practices that have been handed down over time and people assume they are law, which they are not.
- In reviewing the CORE enhancements and any other F&A application in support of the shared service model for the agencies, do your homework and make sure some unique process is really based on law. It is surprising how many prior directives and practices will remain in play long after the proponent will have left the Agency/State and it lives on as pseudo law in the minds of agency personnel.
- Time spent on this activity simplifies processes and contributes to further cost savings for the state.

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Applications Project Initiatives

CORE observations and project initiatives assumptions on CORE upgrades:

- The application as it was originally was implemented appears to have followed the legacy framework that they migrated from as the blueprint (not an unusual scenario).
- There as been considerable development work/rework, enhancements, and upgrades to make it a more effective system as a consequence of the initial implementation approach.
- The recommendation is to do the next upgrade to the next major release.
- The objective with this upgrade is to simplify and standardize as well enhance and continue the deployment of CORE to a broader audience.
- This will further the objective of a distributed application environment via shared services.
- It appears based on the current state of the CORE that there has been a moderate amount of customization (4 or 5) on a scale of 1-10. It is the stated direction of ISD to use where feasible the standard implementation of the application. This is consistent with the recommendations in the project initiatives Accounting Part 1 recommendations and supports the simplification and standardization process.

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HCM: Re-implementation/Expanded

Applications

Risk Assessment H M L

Description

It recommended given the current release level, and the issues with T&E, and Pension, that the State consider implementation of the next major release of PeopleSoft , given the number of shadow systems in support of HR functions. Also at that time, it is recommended that Payroll recommendation made in March 2009, by ISD be integrated with this activity to accomplish further savings of 2.45MM +/- on July 1, 2011, this change should be done even if HCM is delayed in starting in 2011.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- OSF & ISD & OPM & Unions

Investment

Investment Category	2011	2012	2013
Transformational Costs	3.8mm	6-12mm	
Cost Avoidance			2-4mm
Hard Dollar Savings	2.45	2-4mm	2.-4mm

Activities

- Plan and scope project phases.
- Phase 1, smaller agency consolidated.
- Phase 2, mid size agencies consolidated.
- Phase 3, consolidate or Integrate large agencies.
- Define software configuration and reporting requirements in small to medium agencies.
- Define software configuration/integration and reporting requirements large agencies.
- Acquire, develop, and test software.
- Develop and train process users.
- Rollout to Phase 1, lesson leaned, phase 2 – lesson learned, phase 3 – lesson learned.
- Develop and distribute performance reports and publish on wiki.

Assumptions

- There are sub initiative related to this reimplementation. This cost saving is an ongoing event.

Phase	Timeline	Duration
CORE HCM	FY2011-12	12-18 months
Pension & Training	FY2013-14	12-18 months

Dependencies

- Possible legislative changes (current wage laws) may be needed to accommodate the recommendations. Union contracts could require modification for unusual T&C's.

Metrics to measure achievement

- % FTE
- % PM

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HCM: Time and Attendance

Applications

Risk Assessment H M L

Description

The Time and Attendance process and tools need to be standardized and centralize across the State agencies to optimize on a set standard and eliminate redundancy, and multiple shadow systems and processes. 22 time and attendance systems were noted in the surveys.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- ISD & OSF

Investment

Investment Category	2011	2012	2013
Transformational Costs		See HCM	
Cost Avoidance			
Hard Dollar Savings			

Activities

- Plan and scope project phases.
- Phase one, smaller agency consolidated.
- Phase two mid size agencies consolidated.
- Phase three consolidate or Integrate large agencies.
- Define software configuration and reporting requirements in small to medium agencies.
- Define software configuration/integration and reporting requirements large agencies.
- Acquire, develop, and test software.
- Develop and train process users.
- Rollout to Phase 1, lesson leaned, phase 2 – lesson learned, phase 3 – lesson learned.
- Develop and distribute performance reports and publish on wiki.

Assumptions

- This will most likely be part of a larger project recommendation to re-implement HCM.

Phase	Timeline	Duration
CORE HCM	FY2011/2012	12-18 months

Dependencies

- Agency participation and governance oversight.

Metrics to measure achievement

- % Cost
- % FTE
- % PM

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Pension

Applications

Risk Assessment

H M L

Description

There are multiple pension applications/activities noted in the application surveys, it is recommended that the state evaluate a package. CORE uses People Soft and People Soft does have a pension administrative package which would (should) be compatible with the existing CORE applications.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- ISD & OSF & OPM

Investment

Investment Category	2011	2012	2013
Transformational Costs		1-2mm	
Cost Avoidance			300k-1.0MM
Hard Dollar Savings			100k- 300k

Activities

- Plan and scope project phases.
- Phase one, evaluate requirements.
- Phase two, evaluate software options, COTS is the preference.
- Phase three, consolidate pension administration by small to medium agencies initially, large agencies one at a time, depending on complexity.
- Define software configuration and reporting requirements in small to medium agencies.
- Define software configuration/integration and reporting requirements large agencies.
- Acquire, develop, and test software.
- Develop and train process users.
- Develop and distribute performance reports and publish on wiki.

Assumptions

- This will most likely be part of a larger project recommendation to re-implement HCM.

Phase	Timeline	Duration
	FY2013/14	12-18 month

Dependencies

- Agency participation and governance .

Metrics to measure achievement

- % Cost
- % FTE
- % PM

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HCM: Training

Applications

Risk Assessment

H M L

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Description

There are a number of training applications throughout the state. It is recommended that they be evaluated, and singe training application should be selected that provides a centralized service that all agencies could participate in. There may be some highly specialized requirements in some agencies, hence more than one application may be needed. Training is a universal constant in state agencies, so a centralized approach would at minimum allow synergy and consistency.

Stakeholders

- Agencies
- OPM & ISD

Investment

Investment Category	2011	2012	2013
Transformational Costs		.5mm-1.5mm	
Cost Avoidance			500k-1.5mm
Hard Dollar Savings			100k-300k

Activities

- Plan and scope project phases for training requirements.
- Evaluate Applications (People Soft or E- business currently owned by DOC, plan upgrade to 12i ,460k leverage in wider upgrade scenario).
- Select and Procure Comprehensive Training application(s).
- Define software configuration and reporting requirements.
- Develop and test software.
- Develop and train process users.
- Rollout in phases to stakeholders.
- Develop and distribute performance reports and publish on wiki.

Assumptions

- Eliminated redundant systems and associated costs . Provide a single point for all types of training (web, real time, etc.)

Phase	Timeline	Duration
CORE HCM	FY2012	12-18months

Dependencies

- This could be part of HCM reimplementation; assuming there is a people soft module equivalent or the state looks to expand the E-business training product , higher end number based on statewide adoption, licensing impact.

Metrics to measure achievement

- % Support and help centralized

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Budgeting

Applications

Risk Assessment

H M L

Description

ISD budget consolidations with line level controls on all IT or project expenditures to be used by all the agencies for all technology, software, consulting, personnel and any related IT costs. Budgeting to include all agency personnel with full loaded costs, including travel/training costs related to there function in the support of IT in the agency. This budgeting model could become the straw man for new centralized distributed budget preparation system if needed by the state.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- OPM & OSF & ISD

Investment

Investment Category	2011	2012	2013
Transformational Costs	March/April	612k	
Cost Avoidance			36mm
Hard Dollar Savings			

Activities

- Utilized People Soft budgeting module, capable of scaling to the states annual process or as a stand alone ISD agency at a minimum (Per recommendations for ISD).
- Define software configuration and reporting requirements.
- Develop and test software.
- Develop and train process users.
- Rollout to Phase 1 Stakeholders.
- Develop and distribute performance reports and publish on wiki.
- This is part of the zero based initiatives made in the application section/IT assessment document plan vs.actuals off by 184mm in 2009 & 2010, distortion is to large for determining the real impact.

Assumptions

- Lack of granularity on IT costs. Good budgeting supports the asset tracking/accountability recommendations.

Phase	Timeline	Duration
	FY2010	24 months

Dependencies

- Possible timing Impact with CORE upgrade; having this start March 1, 2011s the optimal date, how practical it is, and coordination with legislative mandates could be problematic with the nationalization of IT and budgets.

Metrics to measure achievement

- Visibility at line item level, and measurement thru out the year.

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Document Imaging

Applications

Risk Assessment

H M L

Description

There are multiple document imaging applications through out the state, some are specific to COTS applications and are agency specific. A standard imaging application should be used where specific applications requirements & records privacy issues are not an issue, providing a central repository. If more than one repository is needed, replicate and support with the same application to reduce long run costs and leverage IT investment. 17 unique imaging systems were identified .

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- ISD

Investment

Investment Category	2011	2012	2013
Transformational Costs		5mm	
Cost Avoidance			1-2mm
Hard Dollar Savings			500k-900k

Activities

- Assess agencies on imaging needs.
- Define software configuration and reporting requirements by small-med-large agencies.
- Develop and test software.
- Develop and train process users.
- Rollout to agency stakeholders, in a phased approached small-med-large agencies.
- Develop and distribute performance reports and publish on wiki.
- It was noted there is future project with 5mm in funding for this, this needs be revisited in Phase 2.

Assumptions

- Elimination of redundant system.
- We understand there is an evaluation in play in OK.

Phase	Timeline	Duration
	FY2012/13	6-12 months

Dependencies

- Work flow engine(s) can be impacted if the solution is not robust enough to support diverse requirements. Noted in future projects at 5mm, 1-8 systems are small or medium in complexity, others are larger, requiring due diligence on the State's part.

Metrics to measure achievement

- %Cost
- %FTE

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Reporting and Analytics

Applications

Risk Assessment H M L

Description

Reporting tools need to be standardized across all the agencies unless COTS specific apps have there own tool. There are multiple packages and varying levels of skills sets in support of the these activities. It appears the state owns or licenses all of the tools, it is recommended to create a center of excellence in this area, with a pool of talent to support 1 or possibly 2 standards. This would eliminate redundancy, reduce agency FTE's, and consolidate and focus the skills sets and support license consolidations/reductions.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- OSF & ISD

Investment

Investment Category	2011	2012	2013
Transformational Costs		500k-1.5mm	
Cost Avoidance			200k-500k
Hard Dollar Savings			100-300k

Activities

- Evaluate a standard reporting and analytics tool.
- Define software configuration and reporting requirements.
- Develop and test software.
- Develop and train process users.
- Rollout to in Phases to stakeholders.
- Develop and distribute performance reports and publish on wiki.

Assumptions

- Lack of granularity on IT costs. Good budgeting supports the asset tracking/accountability recommendations.

Phase	Timeline	Duration
	FY2011/12	6-12 months

Dependencies

- COTS and mainframe standards may pose a problem in creating a common standards due to disparity in the technology stacks. CORE upgrade considerations/impacts.

Metrics to measure achievement

- % service desk tickets on reporting/analytics.
- % licensing reductions

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Fixed Assets

Applications

Risk Assessment H M L

Description

Multiple fixed assets modules in various agencies, it is recommend an enterprise wide single asset system be implemented to consolidate and eliminate the redundant systems (7 that we know of) and related FTE activities. ODOT is excluded from this recommendation.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- OSF & ISD& Central Services

Investment

Investment Category	2011	2012	2013
Transformational Costs		1.3mm	
Cost Avoidance			1mm-2mm
Hard Dollar Savings			1-5mm

Activities

- Configure CORE FA and require it to be used by all agencies.
- Define software configuration and reporting requirements.
- Develop and test software.
- Develop and train process users.
- Rollout in phased to the small, medium, and larger agency.
- Develop and distribute performance reports and publish on wiki.
- There is a tendency to not execute on this, this transformational cost includes a 10-12 months to configure and migrate the assets to single FA module in CORE, and an on going “co-sourcing” team to get all the States assets in on place, and up to date by year 2, with a hand off to the state to maintain there after.

Assumptions

- Lack of granularity on IT costs. Good budgeting supports the asset tracking/accountability recommendations.

Phase	Timeline	Duration
	FY2013	6-12 months

Dependencies

- CORE upgrade could impact timing and implementation .
- Quality of data could be problematic, based on the different systems in use.

Metrics to measure achievement

- Visibility at the assets level, and measurement thru out the year.

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Travel and Expense

Applications

Risk Assessment H M L

Description

There appears to be several types of travel and expense tracking system, broader use of the PeopleSoft application (deployment) is recommended.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- OPM & OSF & ISD

Investment

Investment Category	2011	2012	2013
Transformational Costs		See CORE	
Cost Avoidance			500k
Hard Dollar Savings			100k-200k

Activities

- Evaluate the PeopleSoft major upgrade release for enhancement to T&E.
- Develop a plan to systematically eliminated all the independent T&E systems.
- A self-service orientated centralized portal T&E system is the optimal state (even if it were to be a throw away type application in the short-term would be acceptable).
- This type of activity tends to be FTE intensive.
- Roll it out over a 60-90 day period.
- Develop and distribute performance reports and publish on wiki.

Assumptions

- Elimination of multiple T&E systems

Phase	Timeline	Duration
Part of HCM possibly	FY2012/13	6-12 months

Dependencies

- CORE upgrade could impact timing and implementation , this is part of the CORE (Financials) initiatives.

Metrics to measure achievement

- Visibility at line item level, and measurement thru out the year.

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Accounting Systems Part 1

Applications

Risk Assessment H M L

Description

There are many accounting systems from small to large. For agency-specific modules with there own financial modules there is only a need to integrate into the CORE frame work. Agencies maintaining separate accounting systems need to be inventoried and consolidated where ever possible. Consider using the next major up grade to the CORE financials and see if the new functionality will aid in the effort and enhance CORE capability to better ensure a robust shared services environment.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- OSF & ISD

Investment

Investment Category	2011	2012	2013
Transformational Costs		6.8	
Cost Avoidance			21,514mm
Hard Dollar Savings			15,245mm

Activities

- Evaluate the next release of financials, the functional enhancements are fairly comprehensive.

Assumptions

- Leverages CORE.
- Supports shared service model.
- Eliminates rogue accounting systems.

Phase	Timeline	Duration
	FY2011	6-12 months

Dependencies

- May impact pension systems. It could be a tandem project with HCM, but it is a lot to tackle. This also needs to take the BI and reporting strategy in to account .

Metrics to measure achievement

- % additional use/leveraging of CORE.

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Accounting Systems Part 2

Applications

Risk Assessment H M L

Description

There are a significant number of old legacy applications built for agency specific needs with there own financial modules. 1) Buy vs. build analysis is recommended. 2) If build is necessary, development & platform standards are needed, to ensure these applications integrate into the CORE (and leverage) frame work. DMV, TAX (currently under RFP 40MM), DHS, ODOT (in process with grants/projects). Given the age of these systems, a strategy needs to be in place to replace/integrate there applications.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- ISD

Investment

Investment Category	2011	2012	2013
Transformational Costs		See part 1	
Cost Avoidance			See part 1
Hard Dollar Savings			See part 1

Activities

- Evaluate the next release of Financial to off load F&A legacy systems.

Assumptions

- Standard development platforms, staffing, and centralization are more efficient

Phase	Timeline	Duration
	FY2012	See part 1

Dependencies

- Note: about $60-70M is spent in legacy applications and support, the move to a standard application development technology stack and skills is required to achieved 10-50% savings targets.

Metrics to measure achievement

- Industry standards in applications development.

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GIS and Mapping

Applications

Risk Assessment H M L

Description

GIS and references to mapping applications were noted, standardize your GIS application for use though out the agencies, and distribute as appropriate. Set a standard mapping program for use by the agencies , which may be desk related.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agencies
- ISD

Investment

Investment Category	2011	2012	2013
Transformational Costs			
Cost Avoidance			500k-1mm
Hard Dollar Savings			100k-300k

Activities

- Define software configuration and reporting requirements for GIS by Agencies that need it.
- Define software configuration for mapping needs.
- Develop and distribute performance reports and publish on wiki.

Assumptions

- Enhanced controls, & accountability required for data consistence

Phase	Timeline	Duration
	FY2011	6-12 months

Dependencies

Metrics to measure achievement

- Enhanced metrics for audit and compliance events in the shared services application environment.

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Governance, Risk, and Control

Applications

Risk Assessment

H M L

Description

The move to a robust shared services model with increased investment in CORE (PeopleSoft upgrades) increased functionality and more utilization by the agencies will most likely require some additional applications, i.e. GRC, to enhance the control of the application environment beyond the roll based security features embedded in the applications.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Audit & OSF & ISD

Investment

Investment Category	2011	2012	2013
Transformational Costs		1.8mm	
Cost Avoidance			1mm-3mm
Hard Dollar Savings	TBD		

Activities

- Evaluate a product that is compatible with the PeopleSoft and the ISD development standards environments.
- Typically this activity is in done in parallel with the upgrades.

Assumptions

- Accountability and auditing processes greatly enhanced, for transparency above role based security models.

Phase	Timeline	Duration
	FY2012	6-12 months

Dependencies

- In parrallel with the CORE up grades, HCM or Financial; project noted in OSF future projects.

Metrics to measure achievement

- Visibility at line item level, and measurement throughout the year.

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Appendix D—Operations Findings, Trends, and Recommendations

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.

D.1 Current State Baseline

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

- 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.

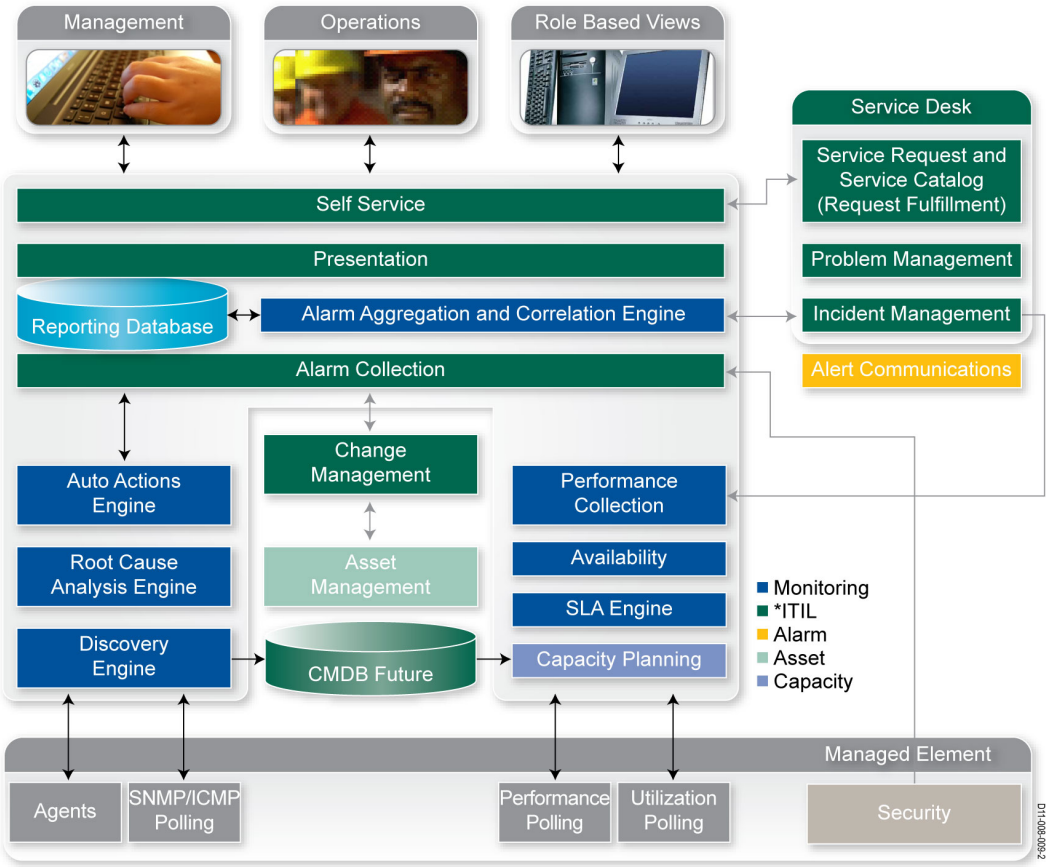
To support service desk operations across the State, 16 different software packages and processes are used.

D.2 Future Vision and Key Initiatives

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 D-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 D-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 subset of the complete ITIL framework.

These selected processes must be integrated to deliver maximum benefit and reduce operating costs. Figure D-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 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 catalogue 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.

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.

D.3 Cost Saving Operations Initiatives

Each initiative is considered a project. Where dependencies align, the projects should be initiated at the same time to leverage the synergies in joint integration and software configuration, particularly with respect to consolidation of the service desk.

IT Asset Management

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.

Recommendations

IT asset management processes and tools need to be standardized and centralized across State agencies to optimize its resource and capacity management capabilities. IT asset management also helps ensure that proper control and oversight processes and procedure are in place and adhered to. Standard use of bar codes and automated inventory agents monitors and records all changes to assets attached to the State network.

Anticipated Benefits

IT information sources, consulting companies, and vendors all indicate that IT asset management can generate savings on assets from 20 to 50 percent. Specific anticipated benefits include:

- Full lifecycle management of State IT assets.
- Software licensing audit compliance, including audits for disappearing assets.
- Optimized software investments through reallocation.
- Consolidation of vendor contracts.
- Reduced support costs via optimized refreshes and re-use of new equipment.
- Enhanced ability to build the business case for additional software and hardware investments.
- Reduced or eliminated overbuying and unauthorized usage.
- Enhanced ability to execute and manage volume licensing agreements.
- Enhanced ability to track lifecycle changes.
- Enhanced ability to track and control cost data.
- Enhanced ability to support incident, service desk, service request, and change processes.

IT asset management is a key enabler for the State's configuration management process and database. It also provides key data for IT chargeback and total cost of ownership analysis.

The key focus areas for the implementation are servers, desktops, network, storage, and software.

Implementation Plan

Capgemini recommends that the implementation plan defined for this project follow a standard ITIL process plan, even if the entire model is not implemented. This will enable full understanding of the components and integration. An IT asset management core group should be responsible for this project, delegating duties to other IT service support staff as needed. The approach should follow a plan, design, configure, test, train, and iterate rollout plan.

IT Service Desk Consolidation and Incident Improvements

IT service desk consolidation will merge 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 the 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.

Recommendations

Capgemini recommends that the State consolidate and standardize its service desk process and tool across State agencies, reducing the current number of separate organizations, software, and processes.

Anticipated Benefits

Significant cost savings are attributed to full-time equivalent reductions, software license savings, and more effective and efficient usage of service desk resources, end user self help, and automated interfaces with monitoring tools.

A service desk modeling tool was used to estimate the staffing requirements and was very conservatively calculated.

Implementation Plan

Capgemini recommends that the State define an implementation plan utilizing the standard ITIL process implementation approach to improve its incident and problem process. The service desk consolidation will be timed to parallel the data center consolidation of various agencies. Key activities include:

- Planning and scoping project phases consolidating other agency service desks (help desks).
- Developing service desk improvements to scale the service for State-wide support.
- Defining software configuration, reporting, dashboard, and end user web access requirements enhancements.
- Strengthening interfaces with incident, problem, and service request process requirements.
- Interfacing with system monitoring tools for automated incident recording and assignment.
- Developing and testing software and process improvements.
- Developing and training process users.
- Rollout to users (service desk and Level 2 support including applications).
- Developing and distributing performance reports, dashboards, and end user access.
- Developing an improvement plan focused on self help.

Problem Management Improvements

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 should:

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

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

Recommendations

Capgemini recommends that the State deploy the tools, processes, and people required to improve application and infrastructure service delivery and resolve recurring incidents to minimize impacts to end users and IT service staff impact.

Anticipated Benefits

Minimized end user outages and impacts reduce cost. In addition, reducing the IT support staff effort required to resolve recurring incidents generates resource savings.

Implementation Plan

This new process requires a small, focused staff. This project should be executed with the incident and service desk initiative. Activities include:

- Planning and scoping project phases.
- Defining process improvements necessary to scale the process.
- Defining software configuration and reporting requirements.
- Refining the process model and procedures.
- Integrating incident, problem, change management, and service request process requirements.
- Developing repeatable training materials.
- Developing and procuring test software.
- Rollout.
- Developing and distributing performance reports and publishing on wiki.

Change Management Improvements

Change management is the coordination and controlling process for all changes to the State's production environments. This process ensures 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 should 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.

Recommendations

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.

Anticipated 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 will be achieved during consolidation and standardization of the process.

Implementation Plan

Capgemini recommends that the State utilize the leading practice tool available through 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. Activities include:

- Planning and scoping project phases.
- Developing process requirements and tool improvement and integration requirements.
- Developing software configuration and reporting requirements.
- Interfacing with incident, problem, service request, and IT asset management.
- Configuring and testing software.
- Developing a repeatable web/video training course.
- Training users (includes project managers, service providers, developers, and IT management).
- Executing rollout in parallel with the data center consolidation and server optimization (detailed in the infrastructure opportunities section of this document).
- Developing and distributing performance reports and publishing on a wiki.
- Rollout to the remaining agencies.

Automated Event Monitoring and Control

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.

Recommendations

Sustaining high quality operations of shared services requires exception-based monitoring and response to reduce service delivery costs, optimize response efforts, and mitigate end user impacts.

Anticipated 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-based event monitoring and control process and procedures and tool requirements.
- Select and procure a monitoring tool set, if required, and define tier monitoring requirements.
- Develop procedures for implementing monitors and alerts.
- Interface with the 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 a Phase 2 improvement plan for next set of infrastructure services.

Availability Management

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.

Recommendations

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.

Anticipated 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 the following process improvement approach. The critical element is to understand the needs of the information audience and the level of detail required. Activities include:

- Planning and scoping the project.
- Developing ITIL availability management process and procedures.
- Integrating the process with monitoring and control, incident, and service level management.
- Designing and developing availability reporting and web portal reporting capacities.
- Developing and testing software and reports.
- Automating data gathering and reporting.
- Determining critical business services and implementing with existing shared services. The implementation should then be included as part of the data center consolidation and server optimization involving production servers.
- Implementing availability management for all production services with a service level target defined.

Service Catalog and Service Request

Service request functionality 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 requests. Service requests require 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.

Recommendations

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.

Anticipated 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 requests and service catalog management are integrated processes with the service desk, but do provide separate services to end users. The leading practice toolset available through the Department of Human Services provides end users with self-service tools including status notifications, further reducing the service desk effort.

The project plan for this initiative should closely parallel the service desk and incident project. Activities include:

- Planning and scoping project phases.
- Developing service request and service catalog system requirements.
- Developing workshops to review existing service requests and create service catalog items.
- Defining software configuration and reporting requirements.
- Configuring service request software and initiating service catalog definitions.
- Testing service requests and the catalog.
- Developing and training process users.
- Executing rollout in parallel with the data center consolidation and optimized servers.
- Developing and distributing performance reports and publishing performance in the web portal.
- Executing rollout to all agencies.

Service Level Management

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.

Recommendations

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

Anticipated Benefits

This will provide the process to communicate with an agency's business leadership to understand their business needs and requirements/expectations 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. Activities include:

- Planning and scoping project phases.
- Developing ITIL V3 service level processes based on the selected enabling tool.
- Selecting and procuring tool set.
- Defining software configuration and reporting requirements.
- Interfacing with incident process.
- Developing and testing software.
- Developing training materials and training process users.
- Executing rollout to critical production systems and shared services.
- Developing and distributing performance reports and publishing monthly reports on the web portal.

IT Chargeback and Cost Allocation

IT chargeback and cost allocation provides information on service usage and cost, enabling 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.

Recommendations

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

Anticipated 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 COTS solution or SaaS solution may be available, reducing customization, and providing the State with 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 web portal.

ITIL Training

The Office of State Finance and a few other agencies are moving forward with standardizing the utilization of 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.

Recommendations

ITIL training should be 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.

Anticipated 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.

Continuous Service Improvement, Marketing, and IT Communications

Consolidated continuous 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.

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 a wide range of end users and stakeholders.

Recommendations

The centralized IT organization should consolidate 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.

Anticipated Benefits

- Consistent communications and messages to stakeholders.
- Continuous improvement of the State IT service delivery process through effectiveness and efficiency analysis.

Implementation Plan

- Define the activities for continual service improvement, marketing, and IT communications.
- Develop a 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

Standardize a capacity planning service for the shared service applications and infrastructure services 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.

Recommendations

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

Anticipated Benefits

Capacity planning 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 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.

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State of Oklahoma CIO Assessment Study

Analysis Kickoff

Operations Baseline

Current State

- Limited operational shared services.
- Variety of IT service management tools in use.
- Very limited service level agreements in use.
- Limited end-user self-service available.
- Upgrading CRM software used for shared services desk.
- IT asset management appears immature.

Vision for the Future

- IT process standardization using ITIL V3 is mandatory for core processes and will mature and expand to meet the service delivery requirements.
- Consolidate operational and service support enabling tools and processes labor hour reduction.
- Provide a consolidated IT service desk for all shared services and infrastructure services and integration with other core IT support processes.
- Accelerate self-service by moving incident resolution closer to the end-user while eliminating problems at the source.
- IT asset management shared service across State IT could save 35% of current IT hardware and software costs.

ROADMAP - Blueprint

- Implement State-wide IT asset management shared service.
- Build and improve an operating service foundation comprising ITIL® Lite core processes (incident, problem, change, event, monitoring, service level management, service catalogue, and service request).
- Consolidate enabling tools utilizing BMC Remedy solution set that is already owned by the State.
- Support shared services with capacity planning services and service level management.

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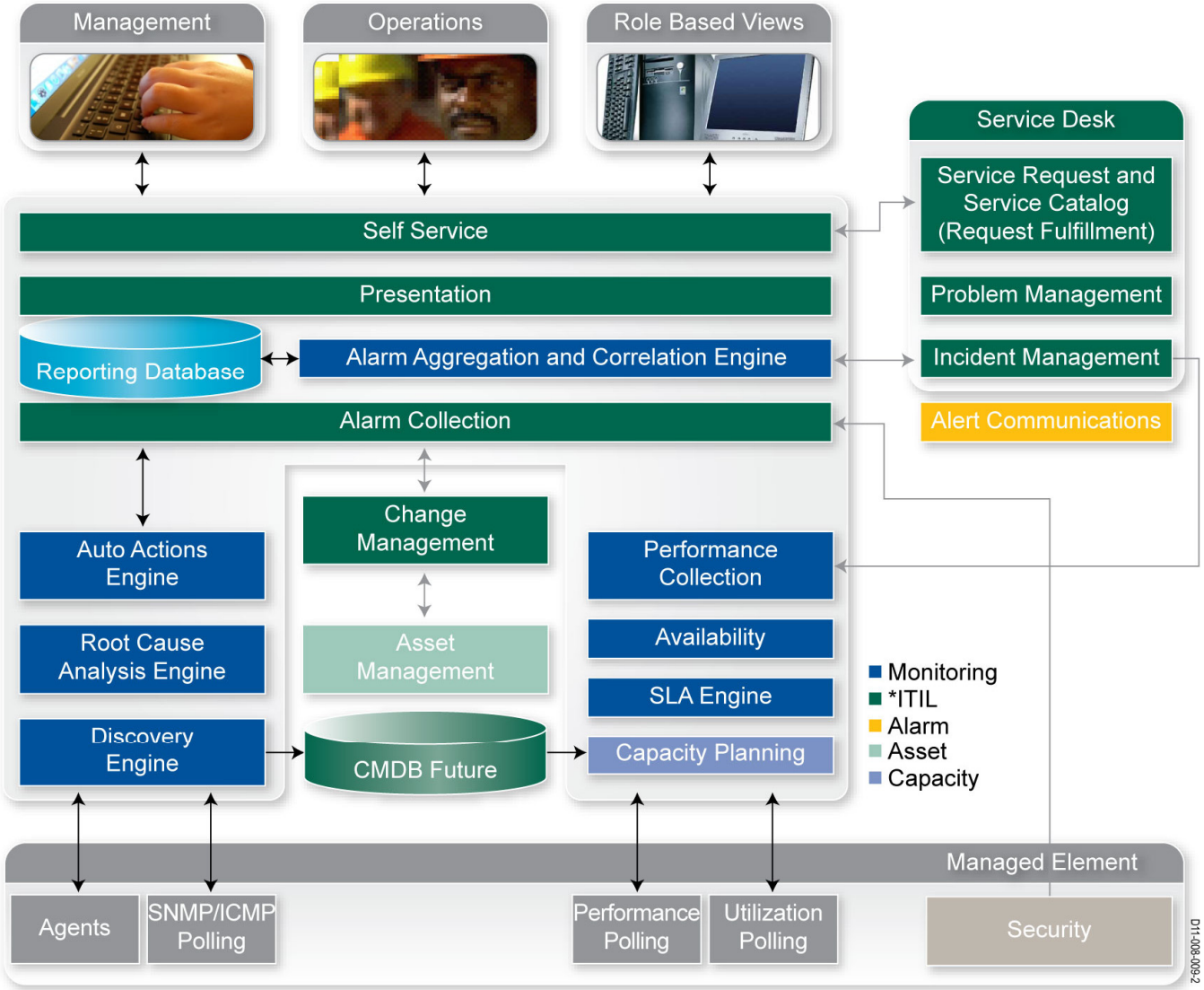
Future State ITSM Solution Architecture



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Operations Baseline – Details

Based on our experience of what works best in the public sector, our approach will help ensure that the end-to-end link from business to delivered solutions is based on strong foundations and can be maintained and measured through the State's IT strategy, enterprise architecture, solution architecture, and delivery process. IT Governance processes will help ensure that this is a "living document" and that the delivery components are aligned with state's strategic directions and process framework.

The System Management Framework is based on the premise that the flow through the ITIL framework must be driven by business requirements and deliver measurable business benefits. ITIL®Lite builds on an approach to implement the processes that are closely aligned to State objectives and can be continually improved to optimize effectiveness and efficiency. Some of these expectations are:

- Designation of the key service(s) where the business impact of major incidents is critical and fast recovery is essential.
- Prioritization of the end to end SLA's from a business perspective to insure service delivery.
- Enhancement to ITIL standard processes to include leading class governance and accountability for these services.
- Pace of continual improvement and the level of investment that the Agency wants to make to services, aligned to the State's strategy.
- Focus on driving down defects and improving services without significant investment.

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Operations Initiatives

These initiatives have been prioritized to support the overall IT transformation and consolidation that requires cost reductions, service improvements, consolidation, and standardization to lower the TCO and enable effective service delivery.

1. IT Asset Management Centralization
2. IT Service Desk Consolidation and Incident Improvements
3. Problem Management Improvements
4. Change Management Improvements
5. Automated Event, and Monitoring and Control
6. Availability Management
7. Service Request and Service Catalogue Management
8. IT Service Level
9. IT Chargeback and IT Cost Allocation
10. ITIL Training
11. Continual Service Improvement, Marketing, and IT Communications

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IT Asset Management Centralization

Operations

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Description

IT asset management process and tools need to be standardized and centralized across the state agencies to optimize the resource and capacity management capabilities and to ensure 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 assets attached to the state network. Cost Saving benchmarks range from 20% - 50% of the cost of IT capital and maintenance assets.

Stakeholders

- All State Agencies
- Infrastructure Service Owners
- Procurement
- State Auditors
- Vendors
- Finance

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	2,005,290	2,438,780	2,750,776
Cost Avoidance			
Hard Dollar Savings	2,699,772	20,410,964	17,813,993

Activities

- Plan and scope project phases.
- Develop ITIL V3 IT asset management process and tool requirements.
- Select and procure tool set.
- Define software configuration and reporting requirements.
- Develop and test software .
- Develop and train process users.
- Rollout to Phase 1 Stakeholders.
- Develop and distribute performance reports and publish on wiki.

Assumptions

- First year savings only reflect the last 3 months even though project rollout is 13 week long. Savings are expected during this period.

Phase	Timeline	Duration
Phase I	FY2012Q1-Q3	34 weeks

Dependencies

- During the IT transformation, all IT assets will be added to the IT asset system during the consolidation due diligence to enable tracking, disposal, or transfer to optimize the cost savings.

Metrics to measure achievement

- % of IT assets captured.
- % of IT assets decommissioned.
- % Accuracy to physical inventory.

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IT Asset Management Supporting Information

IT Asset Management Improvement Opportunities

- Provides for full lifecycle management of IT assets.
- Software licensing audit compliance optimize software investments through reallocation (Gartner 20-25% 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.
- Supports volume licensing agreement and management .
- Tracks asset lifecycle 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.
- Provides data to support maintenance analysis for potential cost savings.

Oklahoma IT 2009 Asset Cost Basis (Capital and Maintenance)

IT Capital and Maintenance Expeditures for 2009 (Executive & Higher Education)	Actual 2009$
532150-Rent of Telecommunication Equipment	691,120
532160-Rent of Electronic Data Processing Equipment	2,813,052
532170-Rent of Data Processing Software	12,071,290
533130-Maint & Repair of Telecommunication Equipment -	5,891,671
533140-Maint & Repair of Data Processing Equipment Outside	9,143,156
533150-Maint & Repair of Data Processing Software - Outside	32,782,278
533230-Maint & Repair of Telecom Equipment - Same Agency	617,387
533240-Maint & Repair of Data Processing Equip - Same Agency	765,736
533250-Maint & Repair of Data Processing Software - Same	203,166
536150-Data Processing Supplies	4,119,078
53 Capital Subtotal	**69,097,935**
541120-Data Processing Equipment	52,160,606
541130-Data Processing Software	29,672,625
541230-Equipment - Telecommunication	24,827,749
543120-Lease Purchase - Data Processing Equipment	1,672,428
543130-Lease Purchase - Data Processing Software	1,673,220
543150-Lease Purchase - Telecommunication Equipment	9,000
54 Maintenance Subtotal	**179,104,564**
54 & 53 IT Capital & Maintenance Total	**248,202,499**

The estimated savings for IT asset management is between 10% - 30% of the IT capital and maintenance total.

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IT Service Desk Consolidation and Incident Improvements

Operations

Description

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. A Remedy implementation is recommended, using the enterprise license from the Department of Human Services. 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. After due diligence, a determination on what service desk remain virtual can be made.

Stakeholders

- State agencies
- IT service owners
- Incident, problem, and service request service owners
- End-users

Activities

- 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, and end-user access.
- Develop Phase 2 Improvement Plan focused on self help.

Dependencies

- Incident, problem, and service request process definition and software configuration requirements.

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	1,333,354	2,876,376	2,876,376
Cost Avoidance			
Hard Dollar Savings	(1,308,354))	(2,851,376))	(2,851,376))

Assumptions

- IT process and function based on ITIL V3.
- Consolidate IT Service Mgmt on BMC Remedy owned by DHS and leverage DHS Remedy trained staff.

Phase	Timeline	Duration
Phase I – OSF & DHS Consolidation	FY2012Q1-Q2	18 weeks
Other Large Agencies	FY2012Q3	11 weeks
Other Agencies	FY2011Q4	10 weeks

Metrics to measure achievement

- Cost per call.
- % resolved at Level 1 and Level 2.
- End-user satisfaction score.

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Problem Management Improvements

Operations

Risk Assessment

L

Description

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

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Stakeholders

- Agency stakeholders
- IT service owners
- Incident, problem, and service request service owners
- End-users

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	461,996	323,996	323,996
Cost Avoidance			
Hard Dollar Savings	(225,999)	(87,999)	(87,999)

Activities

- Plan and scope project phases.
- 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 test software then train users.
- Rollout.
- Develop and distribute performance reports and publish on wiki.
- Develop Phase 2 improvement plan focused on self help.

Assumptions

- IT process and function based on ITIL V3.
- Operating level agreements with Level 2 will be operationalized to meet SLAs.

Phase	Timeline	Duration
	FY2012Q1-Q2	14 weeks

Dependencies

- Interface with other processes like change and service desk software consolidation.
- Interface incident with monitoring tools and production scheduling tools for alerts.
- Service providers are staffed to support severity resolution times.

Metrics to measure achievement

- Resolution time for severity 1,2,3.
- Severity 1 communications.

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Change Management Improvements

Operations

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Description

Change management process based on ITILV3 will be implemented using Remedy as a based 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 to minimize risk, host enterprise wide weekly CABs, lead post-implementation reviews as needed, and coordinate communication collateral needed to support the process.

Stakeholders

- Application service owners
- IT service owners
- Security and capacity
- Business continuity

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	776,134	633,349	633,349
Cost Avoidance			
Hard Dollar Savings	(139,142)	458,637	458,637

Activities

- 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 (project managers, service providers, developers, and IT management).
- Rollout to Phase 1 agencies.
- Develop and distribute performance reports and publish on wiki.
- Rollout to remaining agencies.

Assumptions

- IT process and function based on ITIL V3.
- Remedy software is the bases for IT system management.

Phase	Timeline	Duration
	FY2012Q1-Q2	18 weeks

Dependencies

- Incident, problem, and service desk consolidation projects.

Metrics to measure achievement

- KPI metrics will be determined by process team and IT management.

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Automated Event Monitoring and Control

Operations

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	

Description

- Standardized event and monitoring software and procedures to capture alerts and notify Incident Management to activate the service response. A service monitoring tiered structure will determine the scale of monitoring services to optimize the infrastructure cost based on the service requirement for servers, storage, applications, and network.
- Cost savings are attributed to FTE reductions, software license savings, and more effective and efficient usage of support resources, and tiered monitoring.

Stakeholders

- Agency IT stakeholders
- Infrastructure service owners
- Architects
- Service desk
- Application service owners

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	1,839,926	723,698	723,698
Cost Avoidance			
Hard Dollar Savings	(1,236,587)	770,283	770,283

Activities

- 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 to Phase 1 infrastructure services.
- Develop and distribute monitoring log analysis reports.
- Develop Phase 2 improvement plan for next set of infrastructure services.

Assumptions

- IT process and function based on ITIL V3.
- Interface with Remedy for alert notification and logging.

Phase	Timeline	Duration
Phase I	FY2012Q1-Q3	29 weeks

Dependencies

- Incident management interface for automated alert logging as an incident.
- Define server, network, storage, and application tiers to determine monitoring requirements.

Metrics to measure achievement

- % monitoring incidents captured.
- Proactive caution alerts resolved.

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Availability Management

Operations

Risk Assessment

L

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Description

Implementing standardized monitoring for business and shared services enables the capability to implement Availability Management. Availability monitors and reports the Mean Time Between Failures and tracks the number of hours business services are available and enables the reporting of services levels. There is always considerable cost avoidance with availability because of the focus on service level statistics. Since business system outage data was not available no calculation of this cost avoidance was available. In order to meet SAS70 certification availability is mandatory.

Stakeholders

- Agency IT stakeholders
- Infrastructure service owners
- Architects
- Service desk
- Application service owners
- All end-users

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	400,000	192,500	192,500
Cost Avoidance			
Hard Dollar Savings	(146,503)	60,997	60,997

Activities

- Plan and scope 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 in 1st phase.
- 2nd Phase is the next list of business services having service level targets defined.
- Operationalize production implementation of availability for all production services having a service level target defined.

Assumptions

- System and application monitoring tools are available.
- ITIL process framework is utilized.

Phase	Timeline	Duration
Phase I	FY2012Q1-Q2	22 weeks
Phase II (Ongoing)	FY2011Q3	4 weeks

Dependencies

- Incident management interface for automated alert logging as an incident.
- Cost and tool set are provided by the monitor initiative so this is dependent on that initiative and should be implemented at the same time.

Metrics to measure achievement

- Outage minutes by business system and service.
- % of service targets meet.

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Service Catalogue and Service Request

Operations

Description

Service request eliminates the inefficiencies of fulfilling service requests. End-users can request IT services from an active centralized IT service catalogue. The proposed Remedy solution reuses current state owned software and scales to support the state's IT users. 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, higher employee satisfaction, more effective cost management, as well as a decreased workload on the service desk.

Stakeholders

- Agency CIOs
- IT customers
- IT service owners
- IT project managers

Activities

- Plan and scope project phases.
- Develop service request and service catalogue system requirements for Remedy.
- Develop workshops to review existing service requests and create service catalogue items.
- Define software configuration and reporting requirements.
- Configure service request software and initiate service catalogue definitions.
- Test service requests and the catalogue.
- Develop and training process users.
- Rollout to Phase 1 agencies.
- Develop and distribute performance reports and publish performance in the web portal.
- Rollout to Phase 2 agencies.

Dependencies

- Leverage existing service request workflows and service catalogue definition.
- Dependency on the service desk consolidation to expand the service catalogue for other IT services.

Risk Assessment

L

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	1,275,991	701,991	701,991
Cost Avoidance	106,667	320,000	320,000
Hard Dollar Savings	236,658	1,023,991	1,023,991

Assumptions

- Initiative assumes Remedy solution set. If current Peoplesoft CRM is used, some of the transition costs can be reduced.

Phase	Timeline	Duration
Phase I	FY2012Q1-Q3	28 weeks

Metrics to measure achievement

- Service request on time delivery.
- # of service in catalogue.

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Service Level Management

Operations

Risk Assessment

L

Description

Service level management and reporting provides the process and enabling tools to establish, monitor, and improving 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.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	✓
Optimize	✓

Stakeholders

- Agency CIOs
- IT customers
- IT service owners
- IT project managers

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	489,986	237,162	237,162
Cost Avoidance			
Hard Dollar Savings	(411,987)	(159,163)	(159,163)

Activities

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

Assumptions

Not applicable.

Phase	Timeline	Duration
Phase I	FY2012Q1-Q2	20 weeks

Dependencies

- Ability to capture data from services and process that have standard or target SLAs.
- Critical to establish confidence is shared service delivery.

Metrics to measure achievement

- On time Monthly SLM reports.
- IT CIO Scorecard.
- # of service levels breached.

* Additional process maturity

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IT Chargeback and Cost Allocation

Operations

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Description

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 forecast can be estimated. The process includes activities to gather the data, report usage and costs, provide forecasts, and optimize service costs through benchmark analysis. A software as a service (SAAS) is proposed for quick startup and lower staffing impact. OSF feels current system is adequate for next two years.

Stakeholders

- Agency CIOs
- State CIO
- Infrastructure service owners
- Financial officers
- IT customers

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs			851,000
Cost Avoidance			
Hard Dollar Savings			(851,000)

Activities

- 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 test software.
- Develop and train users and educate agency CIOs on chargeback reporting.
- Rollout to Phase 1 services.
- Develop and distribute reports and publish on web portal.
- Rollout to Phase 2 services.

Assumptions

- Current OSF chargeback system is adequate for the next 2 years.
- SaaS is the proposed long term solution.

Phase	Timeline	Duration
Phase I	FY2014Q1-Q2	18 weeks

Dependencies

- Ability to capture the data for services utilization to drive the services billing.
- Develop initial TCO for services to price the service.

Metrics to measure achievement

- Monthly Reports/Invoices 1 week of month end.
- Next fiscal year charge out rates published by certain date.

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ITIL Training

Operations

Risk Assessment

L

Benefit Theme(s) Supported

Centralize	
Standardize	✓
Simplify	✓
Optimize	

Description

ITIL®3 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 shared services environment. The training provides the necessary base level and advanced training depending on the persons role. Training can be provided via the web and onsite courses for more advanced classes. Ongoing training should be a continuing initiative.

Stakeholders

- Infrastructure service owners
- Process owners
- Shared services IT staff

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	104,300	52,150	52,150
Cost Avoidance			
Hard Dollar Savings	(104,300)	(52,150)	(52,150)

Activities

- 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 Foundations.
- Schedule employee training for Advanced Certification in Operations, Transition, and Design.
- Update and maintain knowledge base on ITIL web portal for training materials and ITIL glossary.

Assumptions

- IT processes and functions based on ITIL V3. ITIL training is already underway in OSF.

Phase	Timeline	Duration
Initial ITIL Training	FY2012Q1-Q2	12 months
Ongoing for new employees and advanced certifications	FY2013	Ongoing

Dependencies

- Not applicable.

Metrics to measure achievement

- % of IT employees ITIL Foundations certified.
- % supervisors ITIL Service Operation and Transition certified.

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Continual Service Improvement, Marketing, and IT Communications

Operations

Risk Assessment

L

Description

- Consolidate continual service improvement responsibility to provide the audit and service performance oversight for the IT delivery services.
- Provide the IT service marketing to sell the state IT shared services and develop new IT service markets for cost effective sate services.
- Consolidate all external and executive IT communications to improve the messaging, align with CIO objectives, and utilize the standard communication methods.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Stakeholders

- Agency CIOs
- IT governance committees
- Service owners
- Service level management

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	493,996	361,996	361,996
Cost Avoidance			
Hard Dollar Savings	(493,996)	(361,996)	(361,996)

Activities

- Define the activities for these three areas: Continual service improvement, marketing, and IT communications.
- Develop RACI 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.

Assumptions

- Communication web portal for IT communications.

Phase	Timeline	Duration
Phase I	FY2012Q1-Q2	16 weeks

Dependencies

- Not applicable.

Metrics to measure achievement

- On-time publication and meeting cadence.

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IT Capacity Planning Service Implementation

Operations

Risk Assessment

M

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Description

- Standardize a capacity planning service for the shared service applications and infrastructure services planned for FY2012. This service manages required capacity based on business drivers to meet the service level metrics. Capacity will monitor, collect, analyze, and report on shared service capacity usage and trends.
- Capacity planning service phase 2 FY2013 provides this service on a subscription basis for applications using the data center services.

Stakeholders

- Shared service owners
- IT governance committee
- Service level management process owner
- Infrastructure service owners

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs		1,108,023	371,837
Cost Avoidance			
Hard Dollar Savings		(979,024)	(125,840)

Activities

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

Assumptions

- During server and storage consolidation a capacity analysis will be undertaken delaying the need for this process and software

Phase	Timeline	Duration
Provide shared service capacity service	Fy2013Q1	19 weeks
Provide subscription service	FY2014	

Dependencies

- Service level management formal or target services agreements.
- Automated monitoring alerts interfaced with Incident Mgmt must be in place.
- Higher priority initiatives such as incident, availability, and monitoring are required first.

Metrics to measure achievement

- 100% daily capacity monitoring data collected.
- Monthly reports delivered on schedule.
- Activated capacity monitoring on schedule.

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Appendix E— Governance Recommendations

This appendix presents Capgemini's governance recommendations.

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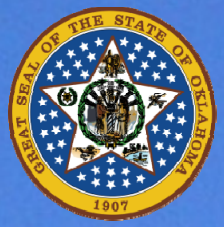

State of Oklahoma CIO Assessment Study

Governance Recommendations

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  - IT governance initiatives
  - Define IT governance implementation and ongoing operational cost
- Appendix
  - Governance knowledge sources
  - IT governance work session attendees

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IT Governance Action Summary

- IT governance is a vital process to accomplish the IT transitional activities to improve the effectiveness and efficiency of Oklahoma IT. Control and compliance activities are required over the IT expenditures, resources, enterprise architecture, and business requirements to meet the objectives of House Bill 1170.
- To support the IT governance initiative actions have already been executed during the CIO Study project. Multiple work sessions held in January 2011 with State IT agency leadership produced a draft IT governance model for the State CIOs' consideration. This document represents information developed or delivered during those sessions and formulate an overall direction for IT Governance for the State.
- A few additional key points are:
  - OSF Portfolio and Project Management – this planned project will be heavily relied on to speed the IT governance workflow and enable project monitoring
  - The IT governance implementation, overall, is broken into a minimum number of projects, some of which can start immediately.

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Current IT Governance Assessment

Future Governance Model

Current State

- No centralized IT governance model for aligning IT service delivery or costs across the State.
- Action pending to empower the State CIO to control the IT expenditures and consolidated services and resources within the State.
- Multiple agency IT Governance models to align individual agency business objectives.
- Very limited cost and resource sharing across the State with no standards for infrastructure or applications.
- Parochial agency view to optimizing State IT resources or instituting a State IT governance model.

Vision for the Future

- Legislated central control of all State IT expenditures and services to align IT costs, resources, projects, to optimize IT costs.
- Multi-layer IT Governance Model that approves, monitors, and standardizes IT service delivery to the State agencies.
- Provide a better return on the state's IT investments utilizing shared services to optimize effectiveness and efficiency.
- Monitor and enforce compliance to architecture, projects, and processes to increase business value and reduce risk.

ROADMAP - Blueprint

- Transition the State's fragmented IT governance model in to a phased implementation utilizing the 3P Model for IT Governance.
- Focus on the immediate opportunities with legislative changes to enforce IT procurement and contracts control
- Integrate the existing initiative for a State-wide Portfolio and Project Management shared service into the IT Governance transition

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Current Governance Baseline - Details

Survey Results

- CIO Study survey questions were focused on a combination of IT governance and enterprise architecture process maturity activities. Agencies were asked to rank their maturity levels. Detailed scores by agency are on the next slide.

Maturity Level Definitions

1. Initial - Processes are ad-hoc, chaotic, or actually few processes are defined.
2. Repeatable - Basic processes are established and there is a level of discipline to stick to these processes.
3. Defined - All processes are defined, documented, standardized and integrated into each other.
4. Managed - Processes are measured by collecting detailed data on the processes and their quality.
5. Optimizing - Continuous process improvement is adopted and in place by quantitative feedback and from piloting new ideas and technologies.

- The survey results that were received in November 2010 reflect a very immature IT Governance capability in the State.
  - Overall IT Governance for 59 agencies is 1.8 out of possible 5 maturity rating.
  - Average IT Governance maturity for Tier 1 (16) agencies is 2.8.
  - Average IT Governance maturity for Tier 2 (32) agencies is 1.7.
  - Average IT Governance maturity for Tier 3 (11) agencies is 1.2.

Conclusion

- There is no overall IT governance for Oklahoma IT expenditures.
- Tier 1 agencies control over 80% of the IT budget and there should be a more mature level of IT Governance. There should be maturity level of 4.

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Surveyed Agency Maturity Levels

Tier 1		2.8
Department of Agriculture	A040	2.1
Office of State Finance	A090	2.1
Department of Corrections	A131	2.6
Corporation Commission	A185	3.8
Employment Security Commission	A290	1.5
Department of Environmental Quality	A292	4.5
State Department of Health	A340	2.7
Office of Juvenile Affairs	A400	2.4
Mental Health and Substance Abuse Services	A452	3.0
Department of Central Services	A580	2.3
Regents for Higher Education	A605	1.6
Department of Veterans Affairs	A650	4.0
Oklahoma Tax Commission	A695	2.0
Department of Rehabilitation Services	A805	3.2
Department of Human Services	A830	3.7

Tier 3		1.2
Alcoholic Beverage Law Enforcement	A030	1.5
OK Board of Architects	A045	0.0
Department of Mines	A125	0.0
State Election Board	A270	3.7
OK Horse Racing Commission	A353	2.0
OK Industrial Finance Authority	A370	0.0
Prof. Engineers & Land Surveyors	A570	0.0
State Bond Advisor	A582	0.0
Quartz Mountain Center and Park	A620	2.7
JD McCarty Center	A670	2.7
Used Motor Vehicles & Parts	A755	0.0

Tier 2		1.7
Indigent Defense System	A047	1.0
Oklahoma Aeronautics Commission	A060	0.0
State Banking Department	A065	1.0
Department of Commerce	A160	3.9
District Attorney's Council	A220	1.6
OK Comm. For Teacher Prep	A269	2.3
State Auditor and Inspector	A300	3.2
Pardon and Parole Board	A306	2.0
Department of Civil Emergency Management	A309	2.5
State Fire Marshal	A310	0.0
Office of Disability Concerns	A326	0.0
Oklahoma Insurance Department	A385	0.0
Department of Labor	A405	2.4
Comm. Of the Land Office	A410	3.0
Council on Law Enforcement Ed & Training	A415	1.0
Oklahoma Lottery Commission	A435	1.0
Marginally Prod. Oil & Gas Wells	A446	0.0
Bd. Of Med. Licensure & Supv.	A450	3.5
OK Bureau of Narcotics	A477	2.9
OK Board of Nursing	A510	0.0
OK Public Employees Retirement System	A515	0.0
Office of Personnel Management	A548	2.0
Secretary of State	A625	2.6
Department of Securities	A630	0.0
Conservation Commission	A645	1.0
Teachers Retirement System	A715	2.0
State Treasurer	A740	0.8
OK Career & Technology Education	A800	2.0
Health Care Authority	A807	4.0
Employees Benefits Council	A815	3.3
Water Resources Board	A835	2.0
Transportation Authority	A978	2.0

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IT Governance Alignment Assessment

Approach

- Capgemini held two IT governance work sessions and a final alignment session with various State agency directors and CIOs during January 2011. The purpose was to obtain input on the future state IT governance model to support the implementation of House Bill 1170. This bill is intending to support the IT asset consolidation and cost savings initiatives within Oklahoma.
- Other state IT governance models and leading practices were presented to provide insight to optimizing and operationalizing IT governance models.
- During these sessions, Capgemini assessed the readiness of the State IT session participants. Some comments received lead to our conclusion that without legislation to support IT consolidation and governance objectives the State cannot be successful with its IT asset, resource, and cost control.
- Trade shows were presented to raise the awareness of IT governance, IT process, IT infrastructure architecture, and application business architecture knowledge among the State participants and form the basis for further discussion.
- Work sessions assignments were facilitated by Capgemini with State personnel providing input, output, and group reporting to the entire work session. These work sessions covered a number of IT governance focus areas that led to a draft IT governance model. Through iterative sessions these areas were continually refined. Outputs discussed included the following:
  - IT governance structure and critical roles.
  - IT governance decision domains.
  - IT governance process activities, inputs, outputs, performance criteria.

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Organizational Change Assessment

During the work sessions participants comments allowed Capgemini to assess the organizational readiness to support the IT governance model changes being proposed. Overall, most participants do not grasp the magnitude of change required by the State to meets its future IT objectives.

In Alignment

- Wants to leverage other state models instead of starting with blank page. Multiple other state models were used as examples.
- Migrate to shared services where it makes sense.
- Willing to "no longer focus on" infrastructure/shared services….so he can focus on the business of his agency.

Out of Alignment

- What was the disengagement model for the governance model (assuming a failed model was going to happen in Oklahoma) like it did in Texas and Virginia, it was explained they failed because they outsourced there operations without an established governance model in place.
- A frequent comment during the sessions that CORE would be the governance model.
- Budgetary and federal match, a great deal of conversation and push back on "why they were special".
- IT Directors/CIO tried to make the case that their current hardware/ their current investments in applications was what should be adopted, the larger agencies in particular. Their view was parochial in that that they see Enterprise IT only at the agency level. This was much more problematic for the larger Agencies.
- The concept that the current IT Directors/CIO's would evolve to a business process expertise, escaped the participants attention.
- Several large agencies, simply believe they will be exempt and the IT governance was for the benefit of the small-mid size agencies.
- Many of the agencies freely talked about their under the radar systems because CORE could not support their needs; and it had to be reiterated over and over that it was due to a lack of a governance model, standards and processes in place.
- The concept of Risk, Governance and Control (GRC) capabilities to support a shared services application model was not even in the agency vocabulary, which is how segmentation and agency specific security and access is managed, monitored , control.

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Aspects of IT Governance

Purpose of “Aspects of IT Governance”

- The IT governance work sessions were based on thought leadership within the IT governance community and research done by NASCIO* that represents state chief information officers.
- Some key thought leadership comes from Weil and Ross’s research across many organizations to determine the effective IT governance approaches. This information was used to formulate the work sessions to focus on the IT governance activities, key decision areas and at what level these decisions need to be made within an organization.
- The following pages in this section show that approach and also introduce the IT process standardization required to support sustained IT services execution. OSF has established ITIL as the standard for IT operational processes.

*NASCIO – National Associate of State CIOs

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Introducing IT Governance – The Right People Making the Right Decisions in the Right Areas

- IT governance is all about decision making within the enterprise:
  - Identifying decision domains.
  - Allocating decision rights and accountability in each domain.
  - Defining decision and monitoring mechanisms, alignment processes and communication channels.
- Effectiveness of IT governance can be assessed on how well it enables IT to deliver on:
  - Cost-effectiveness.
  - Asset utilization (infrastructure and people).
  - Resource optimization.

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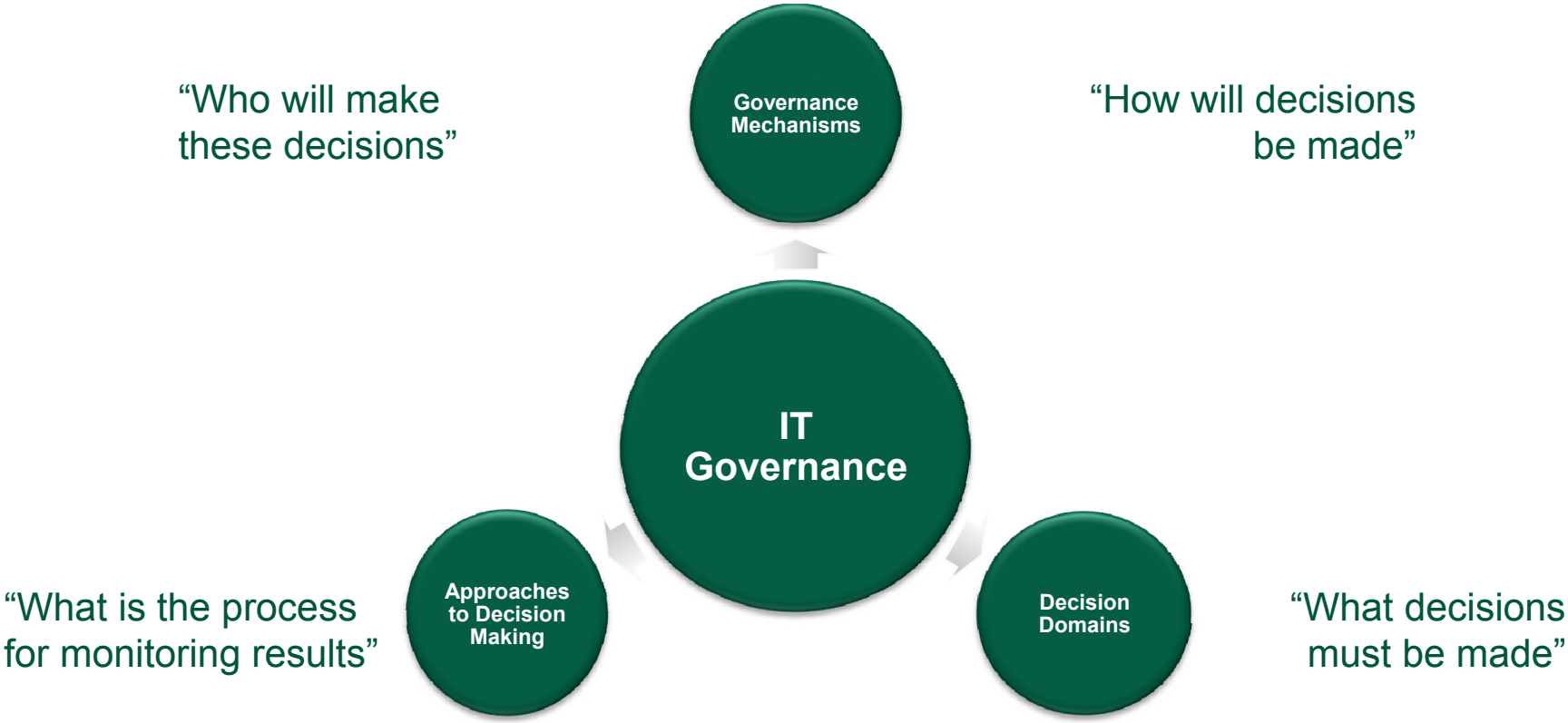
Aspects of IT Governance

IT Governance can be viewed as a combination of three high-level aspects[2]



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Governance Mechanisms

To support decision mapping, a coordinated set of governance mechanisms need to be designed and implemented and used on daily basis.

- Decision-making structure (decision boards, committees, councils, roles, etc.).
- Alignment processes:
  - Management techniques for securing widespread and effective involvement in governance decisions and their implementation.
  - Use standardized processes (Portfolio (PPM), Demand, Resource, Supply, and Financial Management) supporting consistent activity execution.
  - Utilize risk management to prevent or mitigate events that could have an impact on achieving objectives.
- Formal communications:
  - General announcements, regular communication, intranet, one-on-one sessions.
  - Balanced scorecard provides the accountability measures.

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Decision Domains

Decision domains reflect the environment variables that IT governance must manage to obtain its stated objectives.

- IT governance encompasses five major decision domains:
  - IT principles - high-level decisions about the strategic role of IT in the enterprise.
  - IT architecture - integrated set of technical choices to guide the organization.
  - IT infrastructure - centrally coordinated, shared IT services.
  - Business application needs - requirements for purchased or developed IT applications.
  - Prioritization and investment decisions - how much and where to invest.
- Each of those decision domains can be addressed at the:
  - Enterprise level – across all State agencies.
  - Common unit level – at the agency level.
  - Local level – at a department level within an agency.
  - A combination of the all three.

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Archetype Approaches to Decision Making – Right People in the Right Areas

- Six archetypal approaches exist to support IT decision making ranging from highly centralized or highly decentralized.
- Mapping the approaches to decisions domains produces a valuable decision tool for responsibility alignment.

Governance Archetype	Decision Domain: IT Principles		IT Architecture		IT Infrastructure Strategies		Business Application Needs		IT Investments	
	Input	Decision	Input	Decision	Input	Decision	Input	Decision	Input	Decision
Business Monarchy	•Chairman and CEO									•Investee Commitment
IT Monarchy		•CIO		•CIO •EAO	•EAO					
Federal			•Architecture Exception						•Funding Authorization	
IT Duopoly					•Services Catalog	•IT Council •SSB			•IT Council •SS Board •CIO	
Feudal			•TAC				•All Business Leaders	•Business CIOs •Some Business Leaders •TAC		

Most common patterns in all companies

Legend: EAO – Enterprise Architecture Organization; SSB – Shared Services Board; TAC – Technology Architecture Committee

Sample Data Provided in *"A Matrixed Approach to Designing IT Governance "*

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Supporting IT Processes

For IT governance to be effective and efficient, standardized IT services, IT processes, and architecture must be implemented and sustained through the IT governance function.

- To support IT process standardization, most organizations are standardizing on the following:
  - International Standards from the Information Technology Information Library (ITIL®V3).
  - Project Management Institute (PMI®) through its standards and guidelines (PIMPOK®).
  - Capability Maturity Model® (CMMI).
  - Control Objectives for Information and related Technology (Cobit). Cobit and the IT Governance Institute (http://www.itgi.org/) are the standards for IT governance.
- IT governance will utilize some of the core IT processes and provide input and then receive output.

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Supporting Key IT Processes

Effective IT governance requires consistency in its core support processes. These processes are a combination of standards from ITIL®V3 and PMI®. The following is a list of IT governance supporting processes.

- IT service strategy-objective setting and long-term planning to achieve the overall vision to align service requirements with service delivery.
- Financial management-functions and process activity for managing IT service provider budget, accounting, and charging requirements, and total cost of ownership (TCO) models.
- IT service portfolio management (portfolio and project management) — used to manage the entire lifecycle of all services including proposed, live, and retired services.
- Resource management — manage resources required to delivery IT services. These infrastructure and people resources are critical to project execution and timely delivery.
- Sourcing management — sourcing strategy, approach, and execution on whether to provide services internally or externally.
- Demand management — at a strategic level, understanding the business demands and user profiles; tactically adjust demands to available capacity.
- Risk management (can be combined with project management) — responsible for identifying, assessing, and controlling risks.
- IT organization strategy — the IT organization requires capabilities, functions, and capacity to support the IT services defined by the service strategy and included in the service catalog.

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Proposed IT Governance Model

Oklahoma IT Governance Objectives

Overview

- House Bill1170 mandates that Oklahoma must “define and implement a governance model for requesting services and monitoring service level metrics for all shared services”.
- The office of the State of Oklahoma’s CIO is developing a proposal to reduce costs and complexity while increasing reliability and service levels.

Objectives

- Federated model inclusive of State agencies, and other branches of government.
- Single, unified, and tiered IT governance structure to monitor IT across agency IT and shared services into a consolidated services model.
- Transparent communication on IT performance covering IT service delivery, budget, and resources.
- Single responsible authority for all IT financial control and IT resource management.
- Process and standards compliance across the decision domains: IT investments, IT architecture, business application needs, IT infrastructure strategies.
- Simplify IT policy lifecycle management.
- Standardize IT processes for effective and efficient service delivery.

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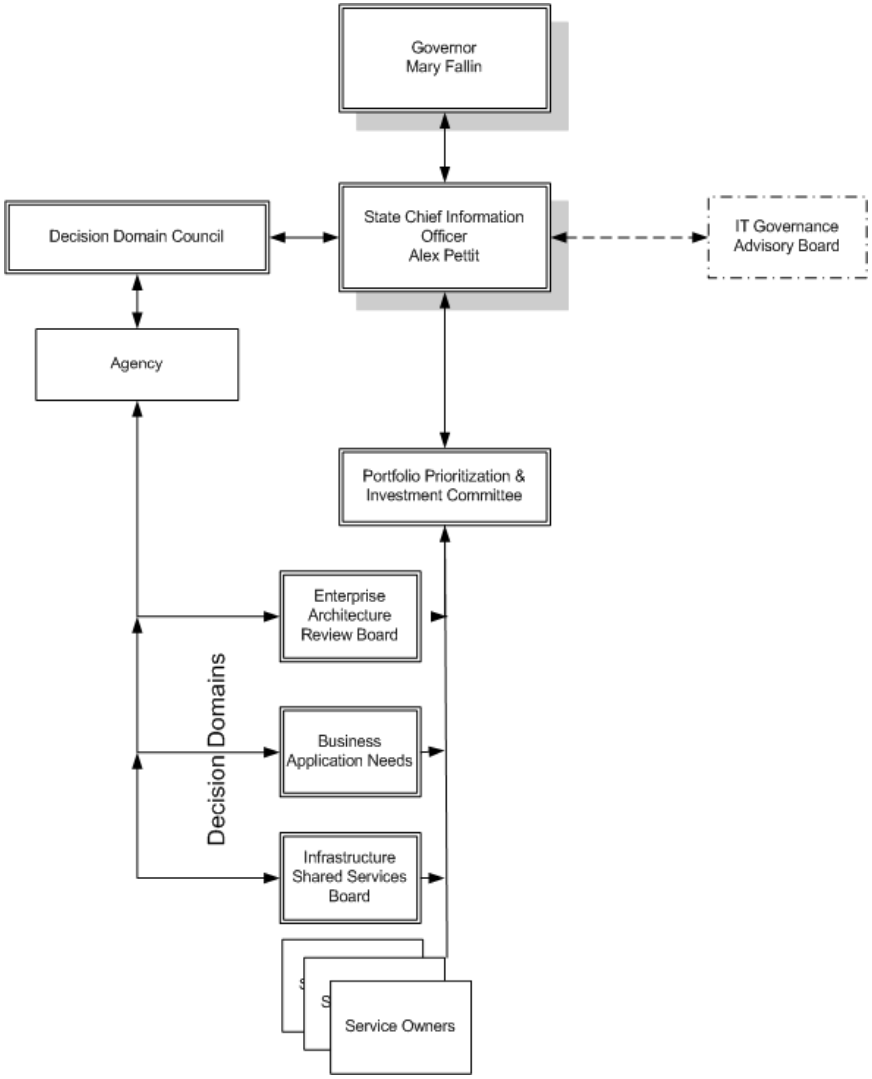
IT Governance Organizational Structure

- The Oklahoma hierarchical State IT governance structure supports the IT governance objectives. It is similar to other states' IT governance models.
- The State's governor provides the strategic direction for effective IT expenditure across the state's programs.
- The State CIO owns the IT services portfolio, IT budget, and delivers IT projects with the advise of supporting IT decision domains.
- State IT Governance Advisory Board advises the State CIO on external influences that can impact State IT business demand and infrastructure.
- Decision Domain Council also advises the State CIO but on current operational issues, project risks, and IT Plan input.
- Agency reflects the business demands from the State agencies that interact with the decision domain council and IT service delivery areas for project and services supported through shared services. For agency standalone services request still flow through the governance process if no shared services are involved these reviews are skipped.
- Portfolio Prioritization and Investment committee analyzes and recommends approval for all State IT projects with advise from the decision domains.
- State agency business application needs are represent in the Business Application Needs decision domain.
- Other decision domains represent particular IT service delivery areas.



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IT Governance Roles and Responsibilities

	Role	Responsibilities
State CIO	• Direct Report to the Governor	• Approve and communicate Annual and Quarterly IT Plan. • Accountable for all IT expenditures, resources and projects. • Implement the governor's IT strategy and fiscal directions. • Develop realistic IT performance measurement plan.
IT Governance Advisory Board (ITGAB)	• External / Corporate Advisory	• Identify State business process areas for improvement. • Suggest pilot projects. • Improve Alignment between State and Business. • Advise State CIO on emerging technology impacts.
Decision Domain Council (DDC)	• Represent Decision Domains, Advise State CIO, Governance Boards & Agencies	• Deliver IT services required by the business and directed by the CIO. • Coordinate and develop IT annual plan for State IT services. • Mediate project decision disputes. • Review shared services performance.
Agency	• Agency Business Process Representative	• Develop business requirements and project request packages to improve agency service delivery. • Provide input into the State IT plan.
Portfolio Prioritization & Investment Committee (PPIC)	• State IT Service Portfolio Stewards and Financial Leadership	• Analyze and prioritize IT expenditures and investments. • Monitor IT project expenditures and project performance. • Assess resource impacts for ongoing services and projects. • Assess and monitor project and financial risks.
Enterprise Architecture Review Board (EARB)	• State Enterprise Architecture Architects	• Develop State IT architecture standards. • Pilot emerging technology. • Develop service architecture solutions. • Analyze new architecture requirements and impact.
Business Application Needs (BAN)	• Business Application and Shared Service Representatives and Owners	• Deliver efficient and effective application services. • Identify shared services opportunities. • Maximize State IT Resources and insure appropriate skills. • Develop agency and shared service input to State IT Plan.
Infrastructure Shared Services Board (ISSB)	• Infrastructure Shared Services Service Owners	• Deliver efficient and effective IT shared services. • Develop and implement shared services. • Recommend IT service delivery improvements and cost reductions. • Support project reviews with service impact estimates.
Service Owners	• IT Service Delivery Owner for State IT Services both Shared Services and Agency Standalone	• Delivery IT services consistent with policy, service levels, and architecture. • Advise the ISSB & BAN. • Manages interaction with service and project requestors. • Benchmark services cost against alternative service delivery options.

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IT Governance RACI with Decision Domains

RACI Template

Roles / Decision Domains	Governor	State CIO	IT Governance Advisory Board	Decision Domain Council	Portfolio Prioritization and Investment Committee	Business Application Needs	Enterprise Architecture Review Board	Infrastructure Shared Services Board	Shared Service Owners	Agency CIOs
IT Principles	I	A	I	C	C	C	C	C	I	R
IT Architecture		R	I	C	C	R	A	C	I	R
Business Application Needs	I	R	I	C	C	R	R	C	I	R
IT Infrastructure Strategies		R	I	C	C	I	A	R	C	R
IT Investment & Prioritization	I	A	I	C	R	I	C	C	I	R

Legend	
	Responsible (R)-Those who do the work to achieve the task. There is typically one role with a participation type of *Responsible*, although others can be delegated to assist in the work required.
	Accountable(A) (also Approver or final Approving authority) - The one ultimately accountable for the correct and thorough completion of the deliverable or task, and the one to whom *Responsible* is accountable. In other words, an *Accountable* must sign off (Approve) on work that *Responsible* provides. There **must** be only one *Accountable* specified for each task or deliverable.
	Consulted (C)- Those whose opinions are sought; and with whom there is two-way communication.
	Informed (I)- Those who are kept up-to-date on progress, often only on completion of the task or deliverable; and with whom there is just one-way communication.

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IT Governance Roles and Activities

The alignment of activities and roles was an output of the IT governance work sessions. The activity names were changed to align with the IT Governance Institute standard activities.

	State Chief Information Officer	Decision Domain Council	IT Governance Advisory Board	Portfolio Prioritization & Investments Committee	Agency Business Application Needs	Shared Services Business Application Needs	Enterprise Architecture Review Board	Infrastructure Shared Services Board	Agency
ACTIVITIES									
Review, Compliance, Coordinate	☑	☑			☑	☑	☑	☑	☑
Prioritization	☑	☑		☑		☑		☑	☑
Decision	☑	☑		☑	☑	☑	☑	☑	☑
Funding	☑			☑					☑
Communicate	☑	☑	☑	☑	☑	☑	☑	☑	
Advise	☑	☑	☑				☑		

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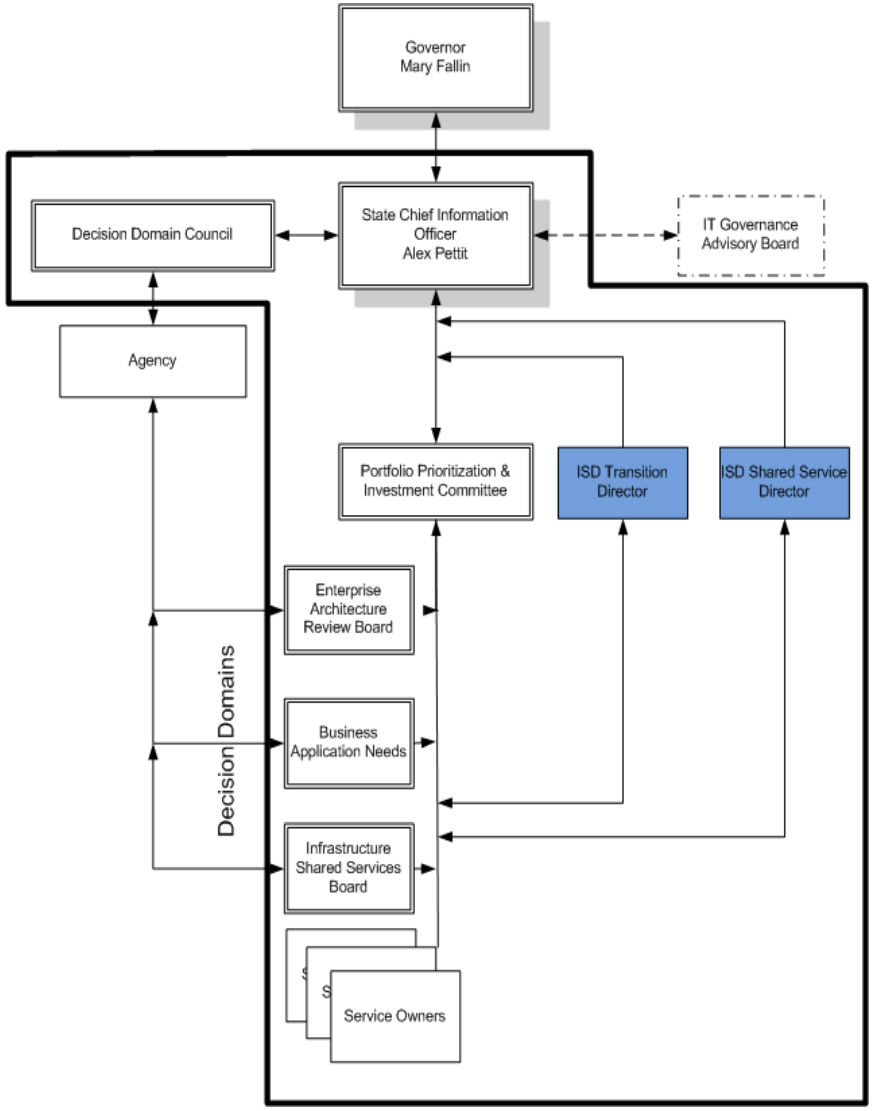
IT Governance Model with Additional Operational Entities

The area outlined in black is the recommended ISD organization.

The two ISD organizational entities represent the key operational positions:

- ISD Shared Services Director manages the daily execution of the IT shared services.
- ISD Transition Director is a temporary position that manages the State agencies IT consolidation and service improvements into the shared services environment and oversees the current state IT operations.



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Additional Operational Entity Roles

	Role	Responsibilities
ISD Shared Services Director	• Direct report to the State CIO. • Director of daily operational of all State IT Shared Services.	• Submit shared services assessment and improvements for the Annual IT Plan and Quarterly IT Plan. • Accountable for all IT shared services expenditures, resources, service levels. • Support the implementation of the governor's IT strategy and fiscal directions. • Support shared service transition from the transition program.
ISD Transition Director	• Direct report to the State CIO. • Temporary role implementing the CIO study recommendations. • Leads all consolidation and service improvements. • Director of daily operations for all State non shared services.	• Manage the daily operations of State IT non shared services. • Manage and direct the CIO Study Transition Plan. • Accountable for the transition program expenditures, resources, and infrastructure. • Submit transition and non shared services operational recommendations for the Annual IT Plan and Quarterly IT Plan.

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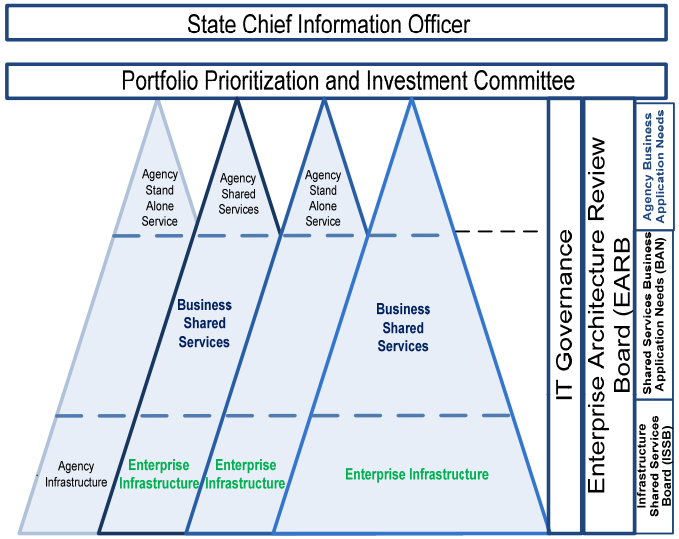
IT Service Portfolio

- To properly govern the state's IT service portfolio an understanding of the current service portfolio characteristics led to a consolidation of these service into four characterizations. The key characteristics are driven by what services are shared and which are not.
- As we can see in the diagram on the right. The four pyramids in the middle have three sections. The top allows either an agency shared service or a agency standalone service. The middle section is only for business shared service. The bottom section represents either enterprise infrastructure shared service or an agency standalone infrastructure supporting an agency's standalone service.
- As the State-wide IT service portfolio is built it is the expectation that very few services will fall into agency standalone. Thus enabling more infrastructure and business services being shared across multi ple agencies.



- This figure shows the four IT service characteristics in the center all being under the control of the IT Governance Model. As previously shown Portfolio Prioritization and Investment Management covers all the other pyramids. Each of the other decision domains have specific responsibility for sections of the pyramids.
- On subsequent slides are current examples from OSF are provided to clarify what services are in the middle , business shared services and bottom, enterprise infrastructure services.

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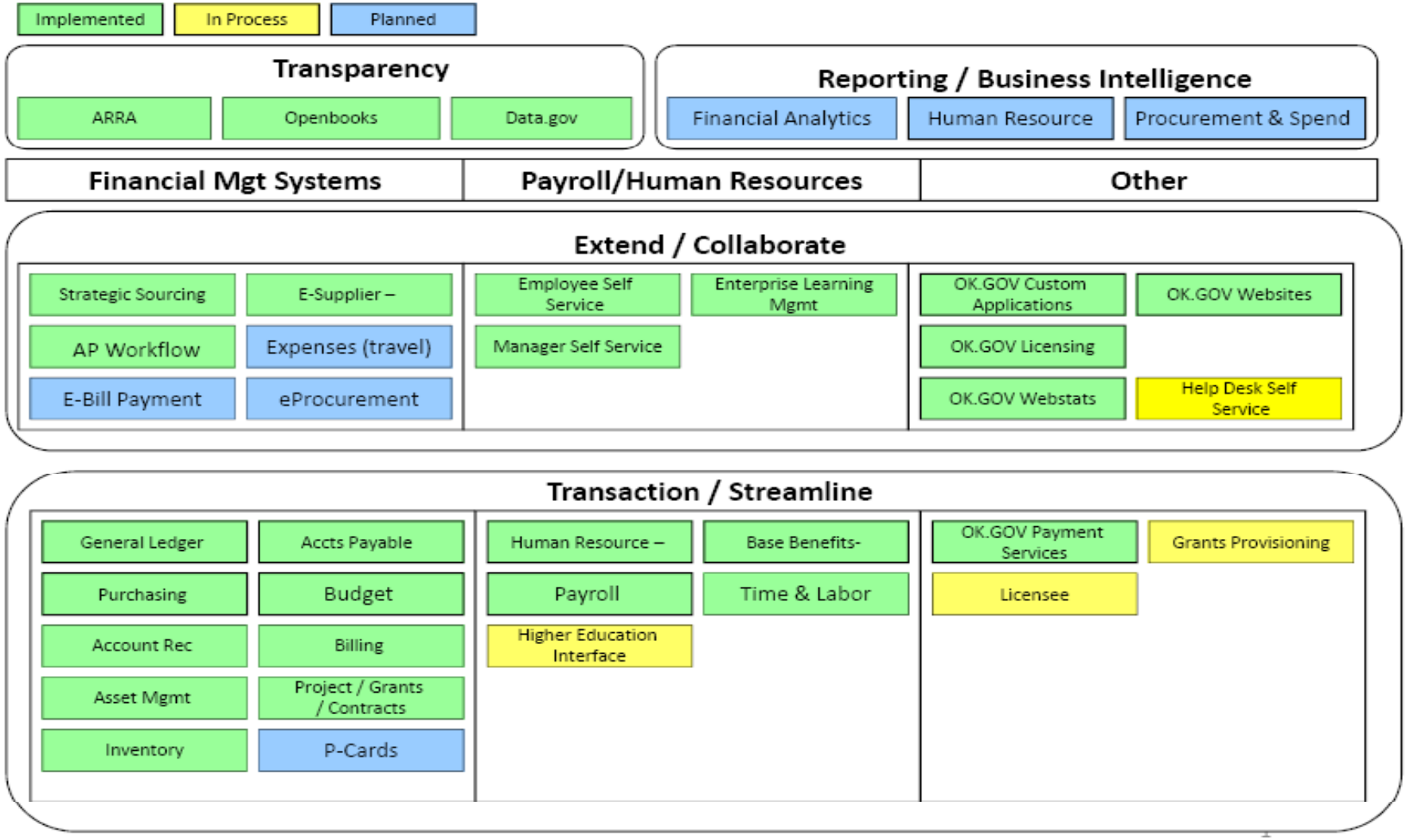
Business Shared Services



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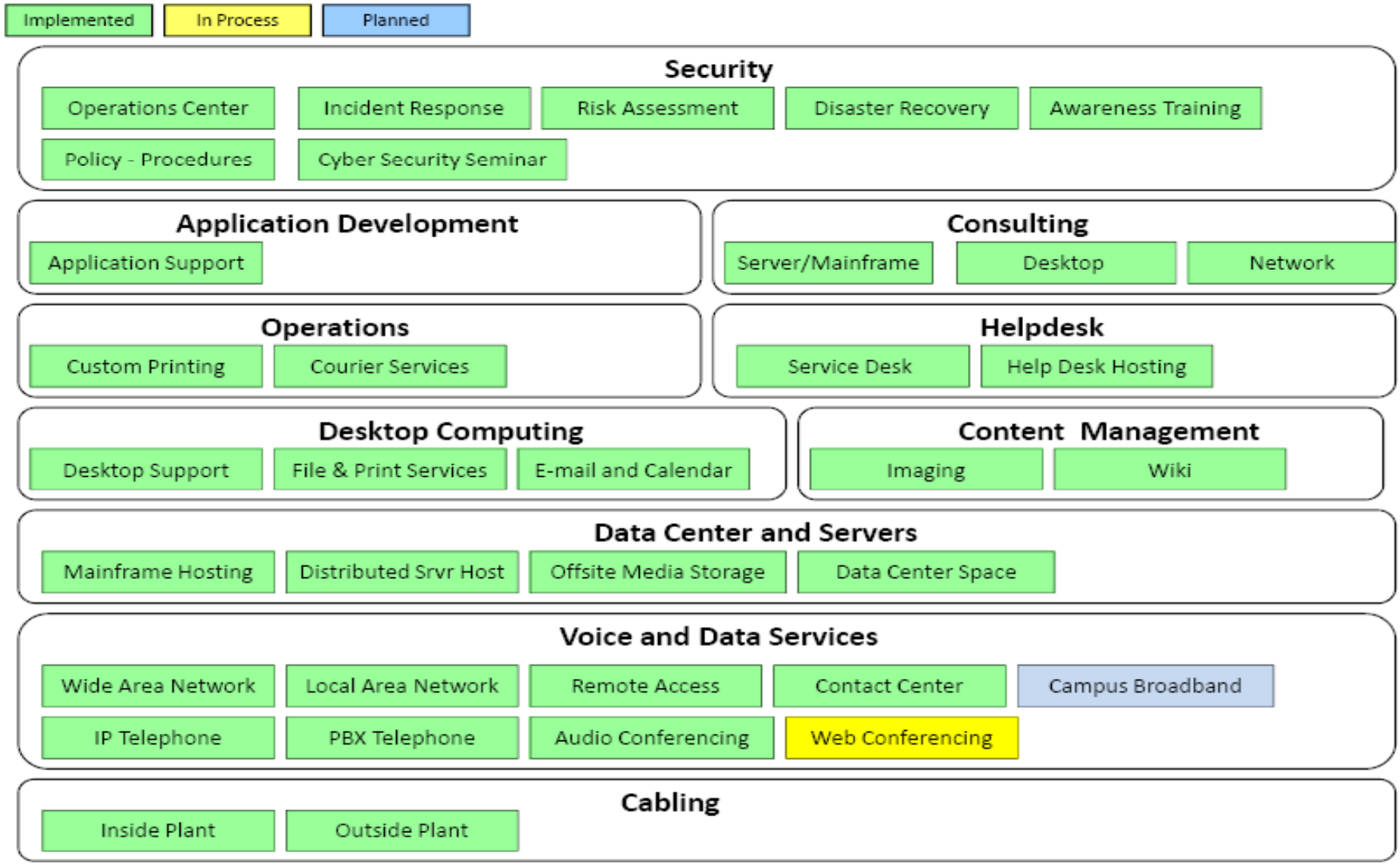
Enterprise Infrastructure Services



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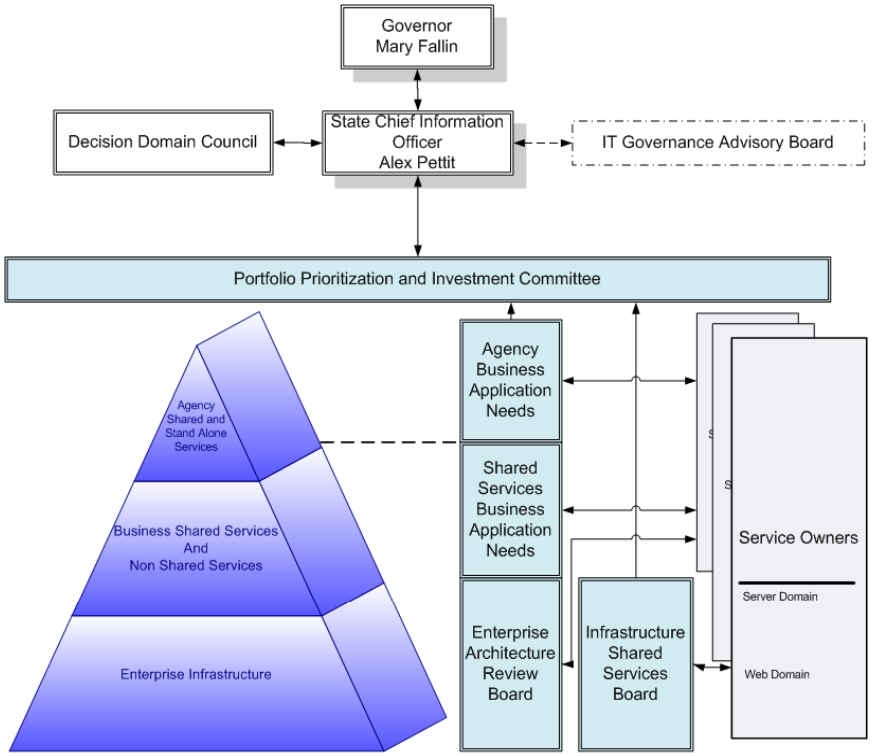
Decision Domains Focus

- The figure shows the service portfolios collapsed into one pyramid to reflect the decision domains governance focus on that particular service portfolio area. In all cases both the service owner (individual responsible for the daily operational service delivery) and a decision domain are communicating and governing those services. Only for the pyramid bottom are there three responsible entities. Service owners, Infrastructure Shared Services Board (ISSB), and Enterprise Architecture Review Board (EARB).
- Each entity has its own responsibility areas. Service owner for the daily operations of the shared service. ISSB oversight of all enterprise shared services operations and proposed improvements or changes, and the EARB ensures infrastructure architecture standardization.



In this figure the arrows reflect the communication flow to support governance project and decision reviews by the governance boards and committees with the service owners.

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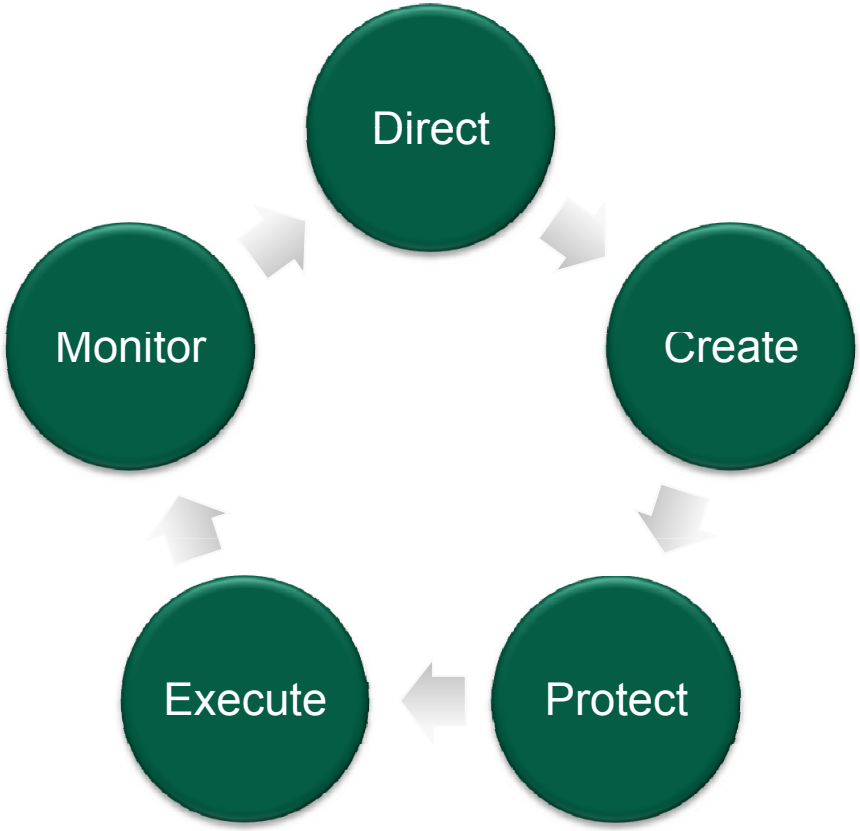
IT Governance Process

IT Governance Process Life Cycle Activities



IT Governance Activities Definition

- Direct - focuses on strategic alignment for the business and IT strategies.
- Create – focuses on the value delivered through improved IT financial and services performance and portfolio alignment with the strategies.
- Protect – focuses on risk management during project approval, initiation, and development and existing service delivery.
- Execute – focuses on the governance model maturity through improved cost control, delivery processes and service performance.
- Monitor – focuses on communicating the performance of new, existing, and developing services and projects, strategic initiatives through transparent internal and external communications.

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Process Inputs

	State Chief Information Officer	Decision Domain Council	IT Governance Advisory Board	Portfolio Prioritization & Investments Committee	Agency Business Application Needs	Shared Services Business Application Needs	Enterprise Architecture Review Board	Infrastructure Shared Services Board	Agency
INPUTS									
Agency Vision	☑	☑			☑				☑
Architecture Exceptions	☑	☑					☑	☑	
Business Case / TCO	☑	☑		☑	☑	☑	☑	☑	
Conflict Resolution Requests		☑		☑		☑	☑	☑	
Cost Estimates				☑	☑	☑	☑		☑
Existing Principles & Policies	☑	☑		☑	☑	☑	☑	☑	☑
Impact Analysis		☑		☑	☑	☑	☑	☑	
Major Architectural Changes		☑	☑				☑	☑	
New Requirements	☑	☑	☑	☑	☑	☑	☑	☑	☑
Request Form				☑	☑	☑	☑	☑	☑
Standards & Methods Recommendations					☑	☑	☑	☑	☑
State CIO Plan (Annual) & Reports (Qtrly)		☑	☑	☑	☑	☑	☑		☑
Strategic Plan	☑	☑	☑	☑	☑	☑	☑	☑	☑

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Process Outputs

	State Chief Information Officer	Decision Domain Council	IT Governance Advisory Board	Portfolio Prioritization & Investments Committee	Agency Business Application Needs	Shared Services Business Application Needs	Enterprise Architecture Review Board	Infrastructure Shared Services Board	Agency
OUTPUTS									
Agency Vision		☑							☑
CIO Referral		☑							
Cost Allocation				☑					
Cost Estimates							☑		☑
Decision (Approve, Deny, Defer)	☑	☑		☑	☑	☑	☑	☑	☑
Defined Architecture							☑		
Distributed Model					☑				
Enterprise Vision	☑								
Execution		☑				☑		☑	
Updated Principles & Policies		☑					☑		
Feedback			☑						
Funding Strategy	☑			☑					☑
Impact Assessment		☑				☑	☑	☑	
New Requirements		☑							☑
Prioritized Investment				☑					
Recommendation / Validation	☑				☑			☑	☑
Request Form					☑	☑		☑	☑
Resolution		☑					☑	☑	
Service Catalog						☑		☑	
Services Portfolio						☑		☑	
Special Requests			☑						
Standards Categorization							☑		
State CIO Plan (Annual)	☑								
Strategic Plan	☑								
Quarterly Report	☑	☑		☑	☑	☑	☑	☑	☑
TCO / ROI				☑					
Updated Enterprise Architecture							☑		

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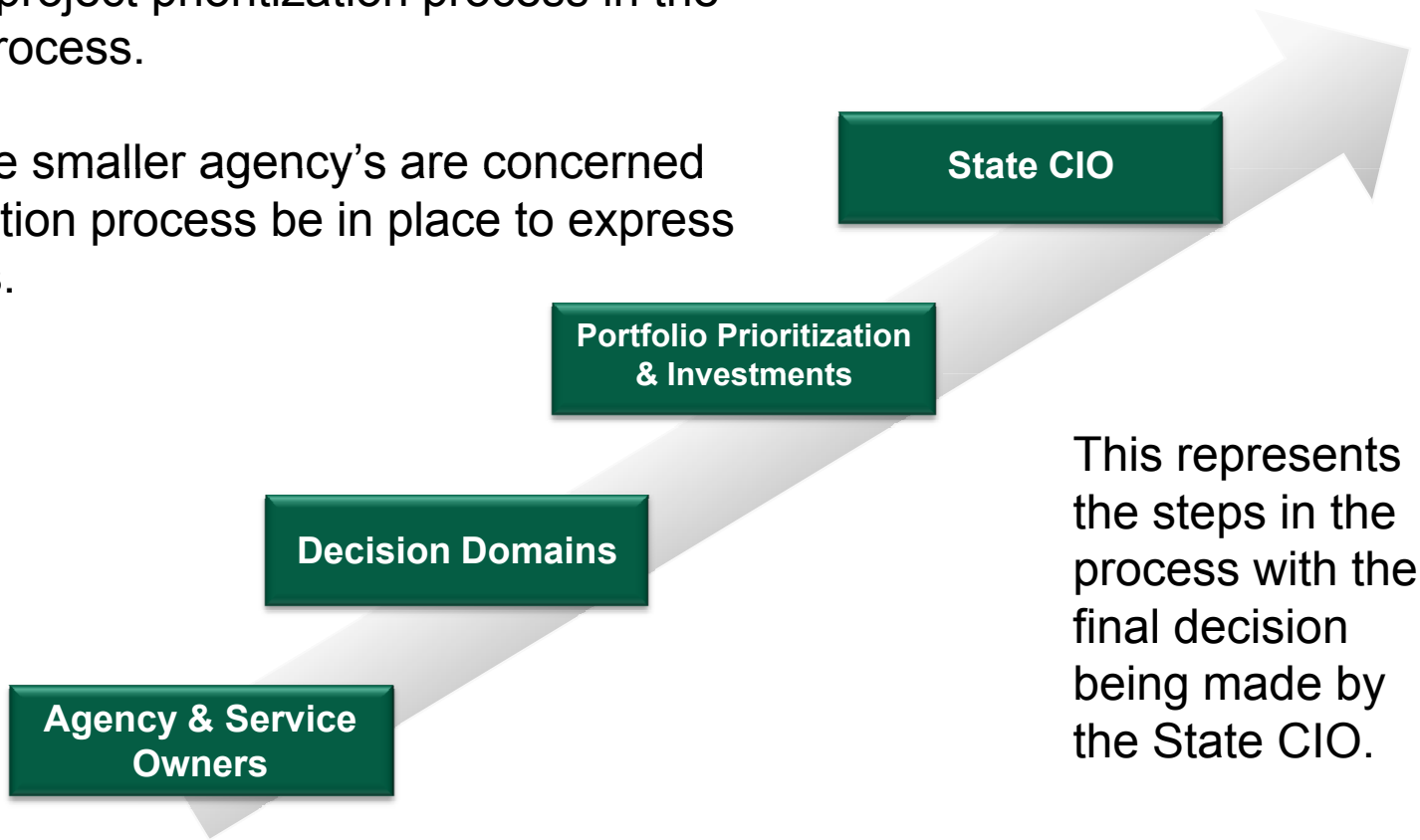
Escalation Mechanism

Project request escalation is a concern expressed by the work session participants due to the additional project review oversight, investment analysis, and project prioritization process in the governance process.

Particularly the smaller agency's are concerned that an escalation process be in place to express their concerns.



This represents the steps in the process with the final decision being made by the State CIO.

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Operationalize IT Governance

Project Approval and Service Request Thresholds

- Concerns were raised about the delay in project approval required by IT governance. During the discussion it was pointed out that two capabilities already exist for fast service requests scheduling and execution. A service catalog of existing services is available for immediate orders. The OSF service request process supports two types of service requests:
  - Assisted requests after approval are executed based on the defined delivery time.
  - Enhanced requests are ordered from the service catalog but require scheduling activities to align the appropriate resources to complete the request.
- Major projects will be processed through the governance flow and the additional time needs to be minimized in the governance process development and automation. The expectation is that the portfolio and project management shared service can be adapted to facilitate an optimized workflow.
- It is expected that the service catalog will grow as shared services are expanded so increasingly more services are orderable through the service request service and do not require governance approval and oversight.

Major Projects	Enhanced Requests	Assisted Requests
≤ 10k or ≤ XX man hours	**Service Catalogue Request requiring scheduling**	**Service Catalogue Request immediately scheduled**
Governance Approval Required	Governance Approved Service	Governance Approved Service

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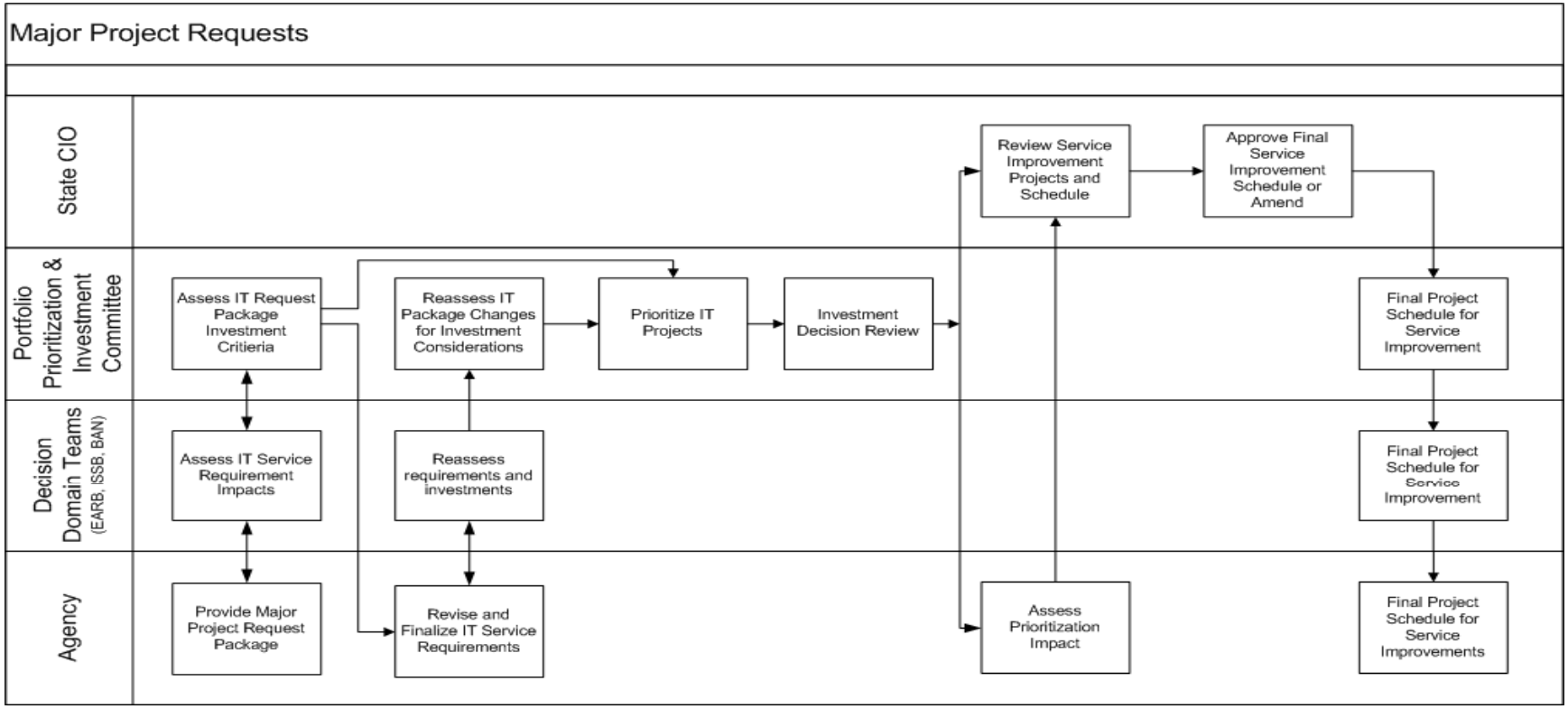
Major Project IT Governance Process Flow

The major project submission flow is shown below. It was reviewed during the IT governance working sessions with the participants. The high-level process flow shows the major project package submission coming from the agency and flowing through governance boards and committee reviews depending on the project's impact and costs. The flow ends with a decision by the Portfolio Prioritization and Investment Committee with their recommendation going to the State CIO for the final decision.



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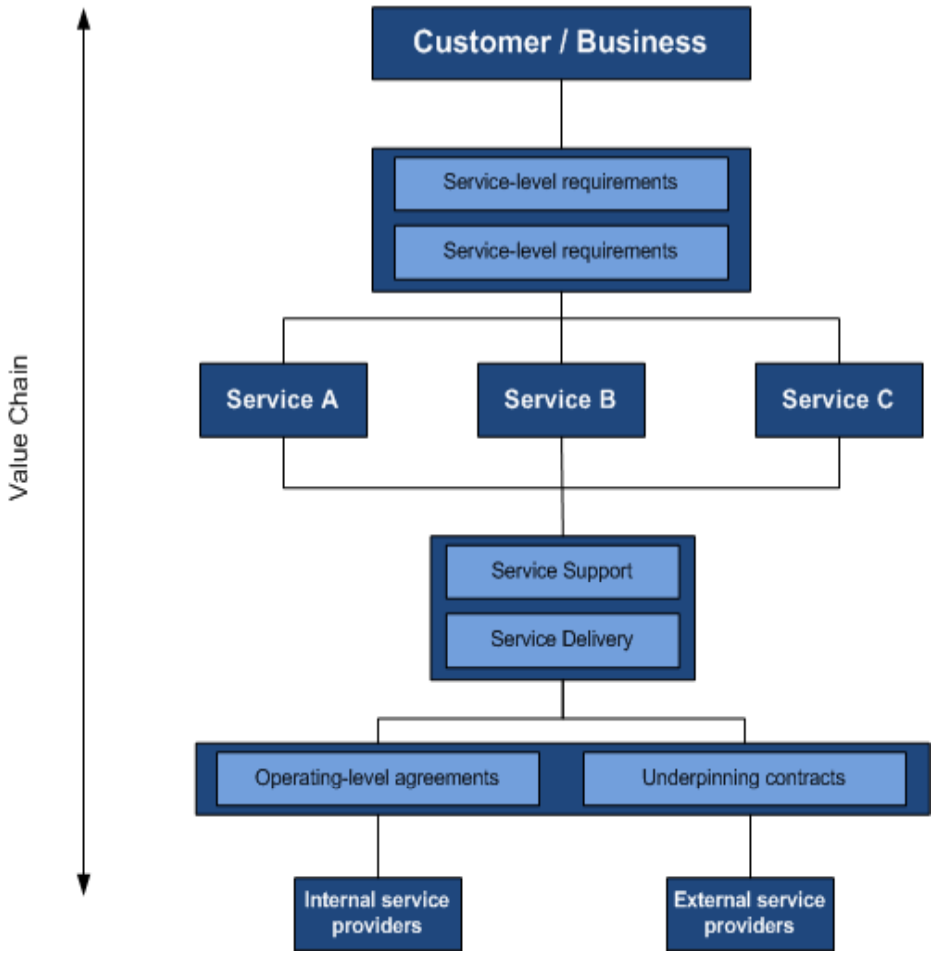
Monitoring Service Levels and Performance

- Service level management (SLM) is an ITIL®3 framework process that is central to the IT service value chain. As customers order service from the service catalog the documented service expectations have to be monitored and managed to maintain service quality.
- SLM is critical to the governance process to ensure that expectations are met. The service owners are ultimately responsible for the service delivery. That is why they are a key responsible party in the governance model to review and understand the impact of projects and requested changes to their services.
- The figure shows the service value chain from the business / customer to the internal and external service providers. Most of the value chain is the responsibility of the service owners.
- To ensure this value chain additional service processes improvements are recommended in the IT governance initiatives.



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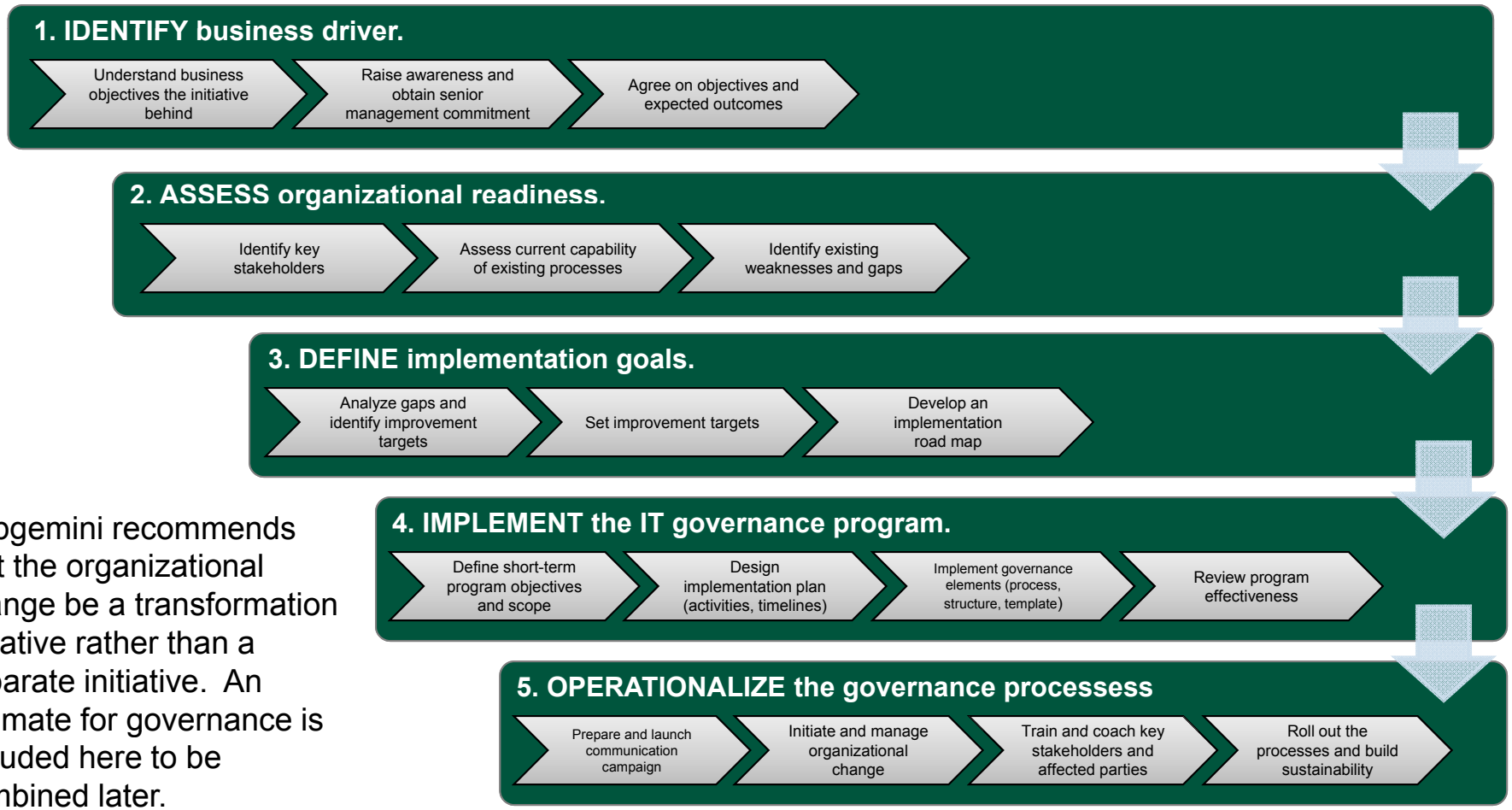
Implementation Roadmap

Staged Implementation Approach

The five IT Governance implementation steps are from the IT Governance Institute's IT Governance Implementation Guide4. Implementation Stages 1 through 3 are already been in progress. The last two stages, 4 and 5, will be detailed in the following roadmap.



Capgemini recommends that the organizational change be a transformation initiative rather than a separate initiative. An estimate for governance is included here to be combined later.

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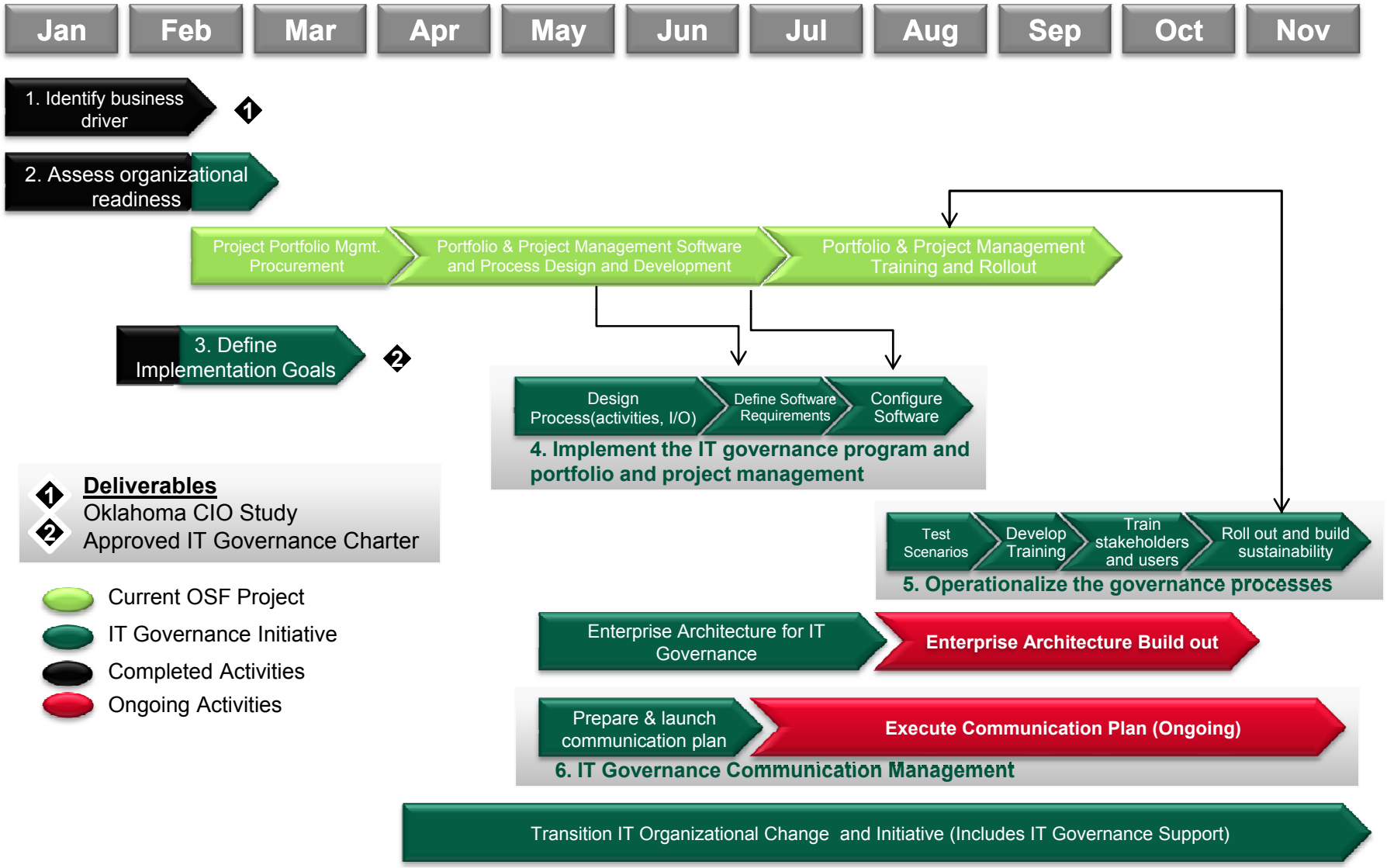
Implementation Road Map



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IT Governance Initiatives

Short Term Initiatives

- Legislative action to consolidate IT authority.

Transitional Initiatives

- Implement the IT governance processes and portfolio and project management.
- Organizational change in Support of IT governance.
- Operationalize the governance processes.
- IT governance communication management.

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Legislative Action to Consolidate IT Authority

IT Governance

Risk Assessment M

Description

IT governance model compliance requires legislative changes to implement the IT Governance Advisory Boards and decide on the board members. Other activities include reviewing the State CIO's legal authority over IT resources, IT projects, IT procurements, IT budgets and expenditures.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	

Stakeholders

- Governor Fallin
- State and Agency CIOs
- IT Governance Committees
- Service Level Process Owner, Service Owners
- Oklahoma Legislature

Investment

Investment Category	FY 2011	FY 2012	FY 2013
Transformational Costs			
Cost Avoidance			
Hard Dollar Savings			

Activities

- Perform IT governance workshops with stakeholders to develop the appropriate model for Oklahoma (completed).
- Present findings from IT governance workshops for State CIO review (in process).
- Present suggested IT governance model for Governor Fallin's review (in development).
- Draft legislation to create the IT Governance Advisory Board.
- Draft IT Governance Charter.

Assumptions

- The correct model has been identified.
- There is buy-in from the executive branch.

Phase	Timeline	Duration
	FY2011Q3-Q4	

Dependencies

- Complete activities relative to identifying business drivers.
- Complete activities relative to assessing organizational readiness.

Metrics to measure achievement

- Execute project activities on schedule.

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Implement the IT Governance Process and Portfolio and Project Management

IT Governance

Risk Assessment M

Description

Implement the IT governance model approved by State executive management. The model contains the control over IT projects, IT expenditures, enterprise architecture, project approvals. Larger projects will be monitored. These activities support the process definition, inputs and outputs, roles and responsibilities, PPM software configuration requirements, workflow procedures and templates. This initiative completes after final testing.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Stakeholders

- State and Agency CIOs
- IT Governance Committees
- Service Owners
- Project Managers
- Director of IT PPM

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	455,500	37,500	37,500
Cost Avoidance			
Hard Dollar Savings	(455,500)	(37,500)	(37,500)

Activities

- Staff a project team to define and implement the process.
- Design the processes (activities, inputs, outputs).
- Define the software requirements, collaborating with the PPM process team.
- Configure the software, coordinating with the PPM software configuration effort.
- Define project and charter to develop the IT governance process.
- Develop the process documentation, templates, workflow.
- Test the process with scenario walkthrough.
- Develop supporting procedures, reports, communications templates.
- Test the software configuration.

Assumptions

- Portfolio and project management is an active project and requirements are known.

Phase	Timeline	Duration
	▪ FY2011Q1 – FY2012Q2	11 weeks

Dependencies

- PPM project assumed awarded. Estimated cost $250,000 for the software.
- Agency alignment and participation.

Metrics to measure achievement

- Complete project activities on schedule.
- Actively monitor issues.

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Operationalize the Governance Processes

IT Governance

Risk Assessment M

Description

This initiative flows the IT governance development. Operation alizing the process develops the training materials, coordinates the training, rolls out the process and support PPM tool for governance users access. Coordination with the PPM project is mandatory. Monitoring and coaching project managers and governing boards through the use of the process will be required during the rollout and a few months afterwards.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	

Stakeholders

- State CIO and Agency CIOs
- IT Governance Committees
- Service Owners
- Project Managers

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	771,192	564,193	564,193
Cost Avoidance			
Hard Dollar Savings	(771,192)	(564,193)	(564,193)

Activities

- Design final rollout plan and training schedule (activities, timeline).
- Develop training materials and reusable delivery capabilities.
- Train stakeholders, consolidated shared services help desk, and users.
- Roll out and build sustainability through monitoring and coaching.
- Review rollout effectiveness.
- Revise rollout based on effectiveness review.
- Operationalize standard reports for status and project monitoring.

Assumptions

- PPM project alignment and coordination is required and the software must be available.

Phase	Timeline	Duration
	▪ FY2012Q1-Q2	12.5 weeks

Dependencies

Not applicable.

Metrics to measure achievement

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Enterprise Architecture for IT Governance

IT Governance

Risk Assessment

L

Description

Enterprise architecture (EA) standards and the communication of these standards is an important source document for the EARB to review project requests. There are two initiatives for EA. This initiative focuses on the EA process development and integration with the overall IT Governance process. Develops the EA Project Package submission requirements. Develop the workflow for developing and approving EA standards and provide training so this activity can be executed in the second EA initiative.

Benefit Theme(s) Supported

Centralize	
Standardize	✓
Simplify	
Optimize	✓

Stakeholders

- State CIO and Agency CIOs
- IT Governance Committees
- Service Owners
- Project Managers
- Enterprise Architects & Solution Architects

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	202,949	0	0
Cost Avoidance			
Hard Dollar Savings	(202,949	0	0

Activities

Develop project plan. Phase I is the following:

- Define, develop, and document the EA process with workflow, and review activities.
- Identify the method and template to communicate the enterprise architecture standards.
- Develop the EA project package requirements and integrate with the PPM project.
- Develop EA process, project package and standards review training materials.
- Training enterprise architect and selected other solution architects.

Assumptions

- Web portal available to enable enterprise architecture to communicate the standards.
- No software acquisition is planned for this initiative.

Phase	Timeline	Duration
	▪ FY2012Q1	11 weeks

Dependencies

- Enterprise Architecture Review Board is established and resources are available to create and implement the initial enterprise architecture process.

Metrics to measure achievement

- Complete project activities on schedule.
- Provide timely updates as the architecture changes.

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Enterprise Architecture Build-out

IT Governance

Risk Assessment M

Description

Enterprise architecture build-out continues the previous EA project and focused on the development of all the architecture standards. These activities will provide the enterprise architecture online standard to enable project managers and solution architects to design using the State-wide enterprise standards.

Benefit Theme(s) Supported

Centralize	
Standardize	✓
Simplify	
Optimize	✓

Stakeholders

- Agency CIOs
- IT Governance Committees
- Service Owners
- Service Level Management
- Project Managers
- Architects

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	768,447	335,396	335,396
Cost Avoidance			
Hard Dollar Savings	(768,447)	(335,396)	(335,396)

Activities

- Prepare and launch architecture standards development effort.
- Plan architecture capability, communication key activities and timeline.
- Develop communications on architecture standards development and benefits.
- Assign standards development domains.
- Review drafted standards.
- Obtain IT governance approval.
- Publish on approved medium and method.
- Provide process feedback and suggest workflow improvements.

Assumptions

- If a tool is required to support future state architecture capabilities, leading candidates are ARIS IT Architect, Troux, System Architect.

Phase	Timeline	Duration
	▪ FY2012Q1-Q3	25 weeks

Dependencies

- Tool selection would be a Phase 2 activity at earliest.

Metrics to measure achievement

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Organizational Change in Support of IT Governance

IT Governance

Risk Assessment H

Description

IT governance process implementation and operationalization requires consistent support from the organizational change team to support the overall IT transition. Considering the expect impact of these changes within the State IT and agency communities aggressive culture awareness, executive support, and change teams will be required. This activity is specific for the IT governance effort to accelerate the project startup and then moves into a steady part-time support role for this process stream.

Benefit Theme(s) Supported

Centralize	
Standardize	✓
Simplify	
Optimize	✓

Stakeholders

- State CIO and Agency CIOs
- IT Governance Committees
- Service Owners
- Project Managers
- Governance process users

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	114,000		
Cost Avoidance			
Hard Dollar Savings	(114,000)		

Activities

- Analyze organizational readiness.
- Identification of key stakeholders and their ability to impact and support the initiative, executed through workshops.
- Identification of committees/councils/boards, their roles and responsibilities as well as meeting cadence and provide change agent training and support.
- Attend governance sessions to monitor and propose corrective leadership and meeting actions.
- Develop a change agent network and leaders to accelerate IT governance support.

Assumptions

- Assumes sufficient resources are available to execute the required activities.

Phase	Timeline	Duration
	▪ FY2011Q4-2012Q2	19 Weeks

Dependencies

- IT governance organizational change is a stream within the overall transition change management process. This enables consistent focus, sharing of resources and materials. State executive involvement will be required for this to succeed.

Metrics to measure achievement

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IT Governance Communication Management

IT Governance

Risk Assessment

M

Description

Develop a IT governance communication plan to support the effective messaging to all affected parties. Build the communication templates, workflow, approval mechanism to optimize communication flow. Build different level messaging for the varied audiences and assist with drafting. Coordinate communication distribution and distribution lists.

Benefit Theme(s) Supported

Centralize	✓
Standardize	✓
Simplify	
Optimize	✓

Stakeholders

- State CIO and Agency CIOs
- IT Governance Committees
- Service Owners
- Project Managers
- State IT Advisory Board
- Governance End Users

Investment

Investment Category	FY 2012	FY 2013	FY 2014
Transformational Costs	119,999	77,999	77,999
Cost Avoidance			
Hard Dollar Savings	(119,999)	(77,999)	(77,999)

Activities

- Develop, and prepare then launch the communication campaign. May be initiated before the large transition program is started.
  - Proactively communicate the timeline of key IT governance activities.
  - Highlight and focus on the on the benefits and the expected outcomes.
- Coordinate and manage communications for the organization change initiative.
- Train and coach key stakeholders and affected parties on IT governance messaging.
- Identify mode of communication and target audience.
- Develop communication workflow and approval mechanism.
- Develop a communication schedule.

Assumptions

- Utilize State-available web portals and other communications methods.

Phase	Timeline	Duration
	▪ FY2011Q4 – FY2012Q1	7 weeks

Dependencies

- Coordinate and integrate resources with the overall transition plan execution.

Metrics to measure achievement

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Appendix

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Session 1 & 2 Attendance

January 10th & 11th — **Attendance**

Agency #	Agency Name	Attendee	10-Jan	11-Jan
40	Department of Agriculture	Steve Enterline	X	X
90	Office of State Finance	Joe Fleckinger	X	X
90	Office of State Finance	Pat Elwood	X	X
90	Office of State Finance	Cynthia Shackelford	X	X
90	Office of State Finance	Joe Hausknecht	X	X
131	Department of Corrections	George Floyd	X	X
290	Employment Security Commission	Mike Evans	X	X
292	Environmental Quality	Roy Walker	X	X
308	OSBI	Ben Gherezgiher	X	X
340	Health	Patsy Leisering	X	X
345	Transportation	David Ooten	X	X
345	Transportation	Tim Gatz	X	X
400	Juvenile Affairs	Len Morris	X	X
452	Mental Health	Kevin Marble	X	X
585	Public Safety	Gene Thaxton	X	X
605	Higher Ed	Nancy Connally	X	X
605	Higher Ed	Ricky Steele	X	X
605	Higher Ed	James Deaton	X	X
650	Veterans Affairs	Shane Sealock	X	X
695	Tax	David O'Bryant	X	X
805	Rehabilitation	John Marcellus	X	X
830	Human Services	Sarjoo Shah	X	X
830	Human Services	James Randall	X	X
830	Human Services	Connie Schlittler	X	X
185	Corporation Commission	Michelle Smith	X	X
185	Corporation Commission	Dennis Eppley	X	X
185	Corporation Commission	Jackie Huff	X	

January 12th & 13th — **Attendance**

Agency #	Agency Name	Attendee	12-Jan	13-Jan
477	Narcotics	Don Vogt	X	X
516	Employee Group Insurance Board	Bo Reese	X	X
516	Employee Group Insurance Board	John Santos	X	X
90	Office of State Finance	Joe Fleckinger	X	X
90	Office of State Finance	Pat Elwood	X	X
90	Office of State Finance	Cynthia Shackelford	X	X
90	Office of State Finance	Joe Hausknecht	X	X
49	Attorney General	Justin Baustert	X	X
127	Children & Youth	Jack Chapman	X	
127	Children & Youth	Dan Ingram	X	X
160	Commerce	Mike Widell	X	X
220	District Attorneys	Robert Eubank		X
265	Department of Education	Kathryn Henson	X	X
300	Auditor/Inspector	Sheila Adkins	X	X
306	Pardon & Parole	Terry Jenks	X	X
306	Pardon & Parole	Ronnie Ladd	X	
435	Lottery	Jim Reazer	X	X
548	Personnel Management	Oscar Jackson	X	X
548	Personnel Management	Marilyn Capps	X	X
548	Personnel Management	Hank Batty	X	X
566	Tourism	Lisa McKim	X	X
566	Tourism	Chuck Rosser	X	X
625	Secretary of State	Tod Wall	X	X
715	Teachers Retirement	Rocky Cooper	X	
740	Treasurer	Lee Cosby	X	X
807	Healthcare Authority	Kyle Janzen	X	X
815	Employees Benefit Council	Frank Wade	X	X
835	Water Resources	Brian Vance	X	

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Alignment Session Attendance

January 18th **Attendance**

Agency #	Agency Name	Attendee	18 Jan
477	Narcotics	Don Vogt	X
516	Employee Group Insurance Board	Bo Reese	X
516	Employee Group Insurance Board	John Santos	X
40	Department of Agriculture	Steve Enterline	X
90	Office of State Finance	Joe Fleckinger	X
90	Office of State Finance	Pat Elwood	X
90	Office of State Finance	Cynthia Shackelford	X
90	Office of State Finance	Joe Hausknecht	X
131	Department of Corrections	George Floyd	X
290	Employment Security Commission	Mike Evans	X
292	Environmental Quality	Roy Walker	X
340	Health	Patsy Leisering	X
345	Transportation	David Ooten	X
345	Transportation	Randy Jones	X
400	Juvenile Affairs	Len Morris	X
452	Mental Health	Kevin Marble	X
585	Public Safety	Gene Thaxton	X
605	Higher Ed	Nancy Connally	X
605	Higher Ed	Ricky Steele	X
605	Higher Ed	James Deaton	X
131	Department of Corrections	George Floyd	X
650	Veterans Affairs	Shane Sealock	X
830	Human Services	Sarjoo Shah	X
830	Human Services	James Randell	X
830	Human Services	Connie Schlittler	X
185	Corporation Commission	Michelle Smith	X
185	Corporation Commission	Jackie Huff	X

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IT Process Maturity

The IT Process Maturity Model provides the framework for targeting goals and assessing results in each iteration of improvement. Originally based on the CMMI model from Carnegie Mellon but adapted to IT service management by Capgemini.

Desired Future State

Managed Services
(Level 5)

(Level 1)

Few tools, few processes, no integration, undefined expectations.

Inconsistent processes, limited success, unclear expectations, tactical point tools.

Defined processes, central monitoring, limited expectations, integrated tools.

environment, refined processes, defined expectations, intelligent tools.

business focused, managed by exception, automated.

Ability to provide effective management and support services

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Appendix F—Supporting Financial Data

This appendix presents detailed charts of supporting financial data.

Agency	2009 Actual IT Expenditures (Excl. Salaries)	2009 Planned IT Expenditures (Excl. Salaries)	Difference
00700 - Ok. Capitol Complex & Centennial Comm.	$85.97	$0.00	-$85.97
02000 - Oklahoma Accountancy Board	$84,454.15	$700,198.00	$615,743.85
02200 - Oklahoma Abstractors Board	$14,293.01	$34,238.00	$19,944.99
02500 - Oklahoma Military Department	$3,503,244.58	$2,248,528.00	-$1,254,716.58
03000 - Alcoholic Bev. Laws Enforcement (ABLE Comm)	$113,201.98	$425,625.00	$312,423.02
03900 - Boll Weevil Eradication Org.	$43,301.99	$96,290.00	$52,988.01
04000 - Department of Agriculture	$1,269,820.62	$1,554,749.00	$284,928.38
04500 - Oklahoma Board of Architects	$10,171.33	$13,000.00	$2,828.67
04700 - Indigent Defense System	$240,311.70	$631,738.00	$391,426.30
04900 - Attorney General	$372,248.26	$653,000.00	$280,751.74
05500 - State Arts Council	$61,440.49	$41,642.00	-$19,798.49
06000 - Oklahoma Aeronautics Commission	$47,195.18	$38,060.00	-$9,135.18
06500 - State Banking Department	$148,592.17	$269,350.00	$120,757.83
09000 - Office of State Finance	$17,816,170.70	$36,246,582.00	$18,430,411.30
09200 - Tobacco Settlement Trusts	$41,767.54	$215,400.00	$173,632.46
10500 - Capitol Improvement Authority	$175,165.73	$0.00	-$175,165.73
12500 - Department of Mines	$85,500.88	$95,600.00	$10,099.12
12700 - Commission on Children & Youth	$177,423.88	$1,148,083.00	$970,659.12
13100 - Department of Corrections	$11,054,054.41	$10,475,616.00	-$578,438.41
14000 - Podiatric Medical Examiners Board	$590.00	$0.00	-$590.00
14500 - State Board of Chiropractic Examiners	$10,588.30	$4,400.00	-$6,188.30
16000 - Department of Commerce	$1,370,502.43	$2,569,230.00	$1,198,727.57
17000 - Construction Industries Board	$91,067.74	$94,492.00	$3,424.26
18500 - Corporation Commission	$3,941,837.72	$9,974,955.00	$6,033,117.28
19000 - Cosmetology Board	$27,953.78	$31,500.00	$3,546.22
20400 - JM Davis Arms & History Museum	$16,427.59	$6,400.00	-$10,027.59
21500 - Board of Dentistry	$11,080.98	$18,200.00	$7,119.02
22000 - District Attorneys Council	$1,089,323.25	$1,364,000.00	$274,676.75
26500 - Department of Education	$9,193,528.55	$13,300,332.00	$4,106,803.45
26600 - Oklahoma Education Television Authority	$5,720,831.43	$1,070,000.00	-$4,650,831.43
26900 - Oklahoma Commission for Teacher Prep	$66,503.56	$90,000.00	$23,496.44
27000 - State Election Board	$2,204,078.49	$2,284,719.00	$80,640.51
28500 - Oklahoma Funeral Board	$10,129.83	$12,500.00	$2,370.17
29000 - Employment Security Commission	$4,841,117.12	$42,994,160.00	$38,153,042.88
29200 - Department of Environmental Quality	$2,546,370.82	$2,623,544.00	$77,173.18
29600 - Ethics Commission	$21,468.55	$162,951.00	$141,482.45
29800 - Merit Protection Commission	$37,015.13	$12,420.00	-$24,595.13
30000 - State Auditor and Inspector	$185,447.51	$449,000.00	$263,552.49
30500 - Governor	$67,774.50	$45,000.00	-$22,774.50
30600 - Pardon and Parole Board	$70,804.58	$82,280.00	$11,475.42
30700 - Oil & Gas Compact Commission	$13,421.62	$5,280.00	-$8,141.62
30800 - State Bureau of Investigation	$2,568,828.32	$7,372,871.00	$4,804,042.68
30900 - Department of Emergency Management	$530,085.73	$286,000.00	-$244,085.73
31000 - State Fire Marshal	$77,593.55	$60,000.00	-$17,593.55
31500 - Firefighters Pension & Retirement System	$168,923.50	$332,600.00	$163,676.50
32000 - Department of Wildlife Conservation	$608,993.34	$443,462.00	-$165,531.34
32600 - Office of Disability Concerns	$14,897.42	$15,872.00	$974.58
34000 - State Department of Health	$8,635,587.98	$20,246,906.00	$11,611,318.02
34200 - Board of Medicolegal Investigations	$165,612.99	$121,996.00	-$43,616.99
34500 - Department of Transportation	$12,135,839.90	$19,646,386.00	$7,510,546.10
34600 - Oklahoma Space Industry Dev. Auth.	$60,058.12	$1,200,000.00	$1,139,941.88

Agency	2009 Actual IT Expenditures (Excl. Salaries)	2009 Planned IT Expenditures (Excl. Salaries)	Difference
35000 - Historical Society	$523,174.96	$162,351.00	-$360,823.96
35300 - Oklahoma Horse Racing Commission	$116,633.91	$157,483.00	$40,849.09
35500 - Oklahoma Human Rights Commission	$28,876.53	$37,000.00	$8,123.47
35900 - Oklahoma Energy Resources Board	$49,762.44	$0.00	-$49,762.44
36000 - Oklahoma Indian Affairs Commission	$10,354.71	$24,300.00	$13,945.29
37000 - Oklahoma Industrial Finance Authority	$1,112.60	$3,625.00	$2,512.40
38500 - Insurance Department	$443,996.21	$1,105,178.00	$661,181.79
39000 - CompSource Oklahoma	$3,914,186.09	$17,419,341.00	$13,505,154.91
40000 - Office of Juvenile Affairs	$1,625,041.08	$1,446,500.00	-$178,541.08
40500 - Department of Labor	$186,512.03	$471,033.00	$284,520.97
41000 - Commissioners of the Land Office	$114,300.63	$329,893.00	$215,592.37
41500 - Council of Law Enforcement Education & Training	$173,445.66	$180,500.00	$7,054.34
41600 - Oklahoma Law Enforcement Retirement System	$43,395.65	$144,950.00	$101,554.35
43000 - Department of Libraries	$536,724.71	$1,734,383.00	$1,197,658.29
43500 - Oklahoma Lottery Commission	$158,833.67	$617,411.00	$458,577.33
44000 - Lieutenant Governor	$25,588.48	$19,085.00	-$6,503.48
44400 - LP Gas Research, Marketing & Safety Commission	$15,652.48	$0.00	-$15,652.48
44500 - Liquefied Petroleum Gas Board	$21,012.84	$50,400.00	$29,387.16
44600 - Marginal Well Commission	$22,623.12	$40,000.00	$17,376.88
44800 - Oklahoma Board of Licensed Alcohol & Drug Counselors	$4,022.81	$7,500.00	$3,477.19
45000 - Board of Medical Licensure & Supervision	$272,799.37	$420,700.00	$147,900.63
45200 - Mental Health and Substance Abuse Services	$4,842,838.71	$4,675,172.00	-$167,666.71
47500 - Oklahoma Motor Vehicle Commission	$19,185.58	$29,050.00	$9,864.42
47700 - Bureau of Narcotics & Dangerous Drug Control	$833,130.09	$3,358,114.00	$2,524,983.91
50900 - Long Term Care Administrators Board	$24,957.98	$10,700.00	-$14,257.98
51000 - Oklahoma Board of Nursing	$220,870.16	$283,452.00	$62,581.84
51500 - Oklahoma Public Employees Retirement System	$247,683.10	$818,823.00	$571,139.90
51600 - State & Education Employees Group Insurance Board	$1,179,457.09	$3,695,281.00	$2,515,823.91
52000 - Optometry Board	$4,536.35	$12,200.00	$7,663.65
52500 - State Board of Osteopathic Examiners	$10,040.20	$12,500.00	$2,459.80
53500 - Oklahoma Peanut Commission	$3,470.36	$2,500.00	-$970.36
54800 - Office of Personnel Management	$374,279.27	$638,097.00	$263,817.73
55700 - Police Pension & Retirement System	$412,736.74	$1,029,222.00	$616,485.26
56000 - State Pharmacy Board	$44,278.78	$170,600.00	$126,321.22
56300 - Private Vocational Schools Board	$3,160.99	$4,900.00	$1,739.01
56600 - Department of Tourism and Recreation	$2,013,705.40	$1,765,454.00	-$248,251.40
56800 - Scenic Rivers Commission	$8,655.07	$8,900.00	$244.93
57000 - Professional Engineers and Land Surveyors Licensure Bd	$26,103.75	$22,018.00	-$4,085.75
57500 - Board of Psychologists Examiners	$4,314.46	$8,574.00	$4,259.54
58000 - Department of Central Services	$2,104,771.55	$985,131.00	-$1,119,640.55
58200 - State Bond Advisor	$6,579.48	$6,000.00	-$579.48
58500 - Department of Public Safety	$12,277,573.98	$27,541,711.00	$15,264,137.02
58800 - Oklahoma Real Estate Commission	$60,170.92	$232,350.00	$172,179.08
61900 - Physician Manpower Training Commission	$6,863.88	$12,000.00	$5,136.12
62000 - Quartz Mountain Center and Park	$119,584.30	$78,468.00	-$41,116.30
62200 - Oklahoma State Board of Licensed Social Workers	$5,366.28	$16,000.00	$10,633.72
62500 - Secretary of State	$371,780.97	$11,783,500.00	$11,411,719.03
62800 - Center for Advancement of Science/Technology	$281,175.52	$317,496.00	$36,320.48
62900 - Oklahoma School of Science and Mathematics	$151,895.54	$56,350.00	-$95,545.54
63000 - Department of Securities	$91,127.61	$552,897.00	$461,769.39
63200 - Speech-Language Pathology & Audiology Board	$4,021.73	$2,560.00	-$1,461.73

Agency	2009 Actual IT Expenditures (Excl. Salaries)	2009 Planned IT Expenditures (Excl. Salaries)	Difference
63500 - Commission on Consumer Credit	$80,040.09	$57,000.00	-$23,040.09
64500 - Conservation Commission	$1,410,677.28	$386,020.00	-$1,024,657.28
65000 - Department of Veterans Affairs	$2,829,643.17	$2,685,578.00	-$144,065.17
67000 - J.D. McCarty Center	$192,682.43	$323,550.00	$130,867.57
67800 - Council on Judicial Complaints	$5,446.30	$2,000.00	-$3,446.30
69500 - Oklahoma Tax Commission	$7,182,083.99	$14,450,316.00	$7,268,232.01
71500 - Teachers Retirement System	$298,698.01	$1,601,808.00	$1,303,109.99
74000 - State Treasurer	$586,028.69	$1,250,315.00	$664,286.31
75500 - Used Motor Vehicle & Parts	$36,689.57	$44,584.00	$7,894.43
77200 - Board of Tests for Alcohol/Drug	$4,872.31	$3,900.00	-$972.31
79000 - Board of Veterinary Medical Examiners	$12,513.78	$10,400.00	-$2,113.78
80000 - Oklahoma Career and Technology Education	$1,174,589.09	$2,921,077.00	$1,746,487.91
80500 - Department of Rehabilitation Services	$3,118,439.79	$6,863,784.00	$3,745,344.21
80700 - Health Care Authority	$35,209,064.93	$46,156,154.00	$10,947,089.07
81500 - Employees Benefits Council	$894,303.31	$1,143,380.00	$249,076.69
82500 - University Hospitals Authority	$31,061.19	$27,700.00	-$3,361.19
83000 - Department of Human Services	$41,117,949.36	$60,821,062.00	$19,703,112.64
83500 - Water Resources Board	$494,194.96	$1,215,869.00	$721,674.04
87500 - Wheat Commission	$25,600.57	$26,000.00	$399.43
88000 - Will Rogers Memorial Commission	$28,828.41	$37,500.00	$8,671.59
Grand Total	**$220,538,501.95**	**$404,338,805.00**	**$183,800,303.05**

Under plan between 10% and 19%
Under plan between 20% and 49%
Under plan by over 50%

Appendix G—Survey/Scan

This appendix presents the Tier 1 Qualitative Survey Response Assessment.

Figure G-1. Tier 1 Qualitative Survey Response Assessment

	Tier 1	Roll-Up Score	
	Agency	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

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in partnership with

State of Oklahoma CIO Assessment Study Survey Quality Tracker

January 10, 2011 Quality Analysis

Survey Tracker

House Bill 1170 mandates an independent and objective assessment be conducted of all technology services in use by and deployed throughout the State of Oklahoma.

Surveys were sent to each State agency in order to complete a self-assessment of the agency's IT landscape. Areas of focus were:

- Application services.
- IT financials.
- Infrastructure.
- Non-application services (i.e., ITIL, ITSM maturity).
- People.

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Response Quantity

Surveys were distributed to 108 agencies.

Agencies were divided into tiers classified by their IT budget and the criticality of their mission in support of the State of Oklahoma

- Tier 1 Responses Received: 18 out of 18.
- Tier 2 Responses Received: 42 out of 65.
- Tier 3 Responses Received: 14 out of 25.

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Response Quality

Each component of each survey received was given a score of zero to three, based upon the following criteria:

0 – Did not return the survey or did not enter any value on the survey .

1 – Represents a partially completed submission - less than 25 percent of the survey components were responded to in spreadsheet tab.

2 – Completed with moderate attention to detail - supplied between an estimated 25 to 75 percent of the data requested (may have varied from instructions) or acknowledged a section was not applicable (where the reason for non-applicability was not obvious).

3 – Completed with a high attention to detail and per the instructions - regardless of agency size - survey included all or most of data. Additional documentation was provided, or acknowledged a section was not applicable (with the rationale) or acknowledged a section of the survey is managed by a service contract with another agency.

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Scoring

When scoring each submission, an attempt was made to account for the size of the agency and interpret the accuracy and intent of what was recorded.

The following are examples of this interpretation:

- A Tier 3 indicates 'N/A' for high end computing – this is understood as the agency does not have a mainframe-type system the agency receives a scoring value of 3. There is also no interpretation of best practices during the scoring.
- A Tier 2 indicates that they do not have a disaster recovery practice, or have any service level agreement practices—this is understood as an accurate and complete answer and scored a 3.
- If an introductory question has multiple follow on queries and the initial question is answered as a 'no'—all follow on questions are assumed complete:
- Q: Do you have a San? A: No
- All follow on San questions are considered to be effectively answered.

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Scoring

- A **maximum quality score** is 100 percent, indicating that all questions were either answered with an appropriate degree of completeness. The accuracy of the response is assumed the responsibility of the agency
- **A target quality score** is 90 percent. Indicating that most questions were either answered with a degree of completeness . The accuracy of the response is assumed the responsibility of the agency.

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Top 10 by Tier and Leaders Providing Supplemental Material

Tier 1 - Components Received — Maximum of 38

	AGENCY	#	Count
1	OFFICE OF JUVENILE AFFAIRS	400	37
2	DEPARTMENT OF HUMAN SERVICES	830	37
3	OFFICE OF STATE FINANCE	90	36
4	DEPARTMENT OF CENTRAL SERVICES	580	36
5	DEPARTMENT OF CORRECTIONS	131	35
6	REGENTS FOR HIGHER EDUCATION	605	33
7	DEPARTMENT OF VETERANS AFFAIRS	650	32
8	DEPARTMENT OF AGRICULTURE	40	32
9	OKLAHOMA TAX COMMISSION	695	32
10	CORPORATION COMMISSION	185	32

Tier 2 - Components Received — Maximum of 38

	AGENCY	#	Count
1	ST. & EDUC. EMP. GRP. INS. BD.	516	37
2	CNTR. FOR ADVANC. OF SCIENCE/TECHNOLOG	628	37
3	DEPARTMENT OF LABOR	405	36
4	OKLAHOMA LOTTERY COMMISSION	435	36
5	HEALTH CARE AUTHORITY	807	36
6	WATER RESOURCES BOARD	835	36
7	SECRETARY OF STATE	625	35
8	CONSERVATION COMMISSION	645	35
9	COMMISSION ON CHILDREN & YOUTH	127	35
10	STATE TREASURER	740	35

Tier 3 - Components Received — Maximum of 38

	AGENCY	#	Count
1	ALCOHOLIC BEV. LAWS ENFORCE.	30	37
2	SCENIC RIVERS COMMISSION	568	37
3	PROF. ENGI. & LAND SURVEYORS	570	35
4	STATE ELECTION BOARD	270	35
5	QUARTZ MOUNTAIN CENTER & PARK	620	34
6	OKLAHOMA HORSE RACING COMMISSION	353	33
7	DEPARTMENT OF LIBRARIES	430	32
8	J.D. MCCARTY CENTER	670	30
9	STATE BOND ADVISOR	582	29
10	OKLA. BD. OF ARCHITECTS	45	29

Top 10 - Supplemental Information

	AGENCY	#	Count
1	HEALTH CARE AUTHORITY	807	48
2	DEPARTMENT OF HUMAN SERVICES	830	22
3	DEPARTMENT OF VETERANS AFFAIRS	650	20
4	OFFICE OF STATE FINANCE	90	16
5	DISTRICT ATTORNEYS COUNCIL	220	7
6	ST. & EDUC. EMP. GRP. INS. BD.	516	6
7	OFFICE OF JUVENILE AFFAIRS	400	4
8	DEPARTMENT OF COMMERCE	160	4
9	INDIGENT DEFENSE SYSTEM	47	4
10	STATE DEPARTMENT OF HEALTH	340	4

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Tier 1 Statistics

Tier 1 Respondents—18.

- Total Tier 1 score for all agencies who responded = **80.60 percent.**
- There are five surveys which factored into the overall quality score. The values of each are shown in the table #1 below.
- The Tier 1 leading aggregate scores are represented in Table #2 below. Each response has an equal weighting of 1. Scores are represented as a percentage of the maximum raw value of 111,with 100 percent being the maximum score and **90 percent** representing a target.

Table #1 Survey	Maximum Score
Application	15
Financial	24
Infrastructure	48
Non-Application	15
People	9
Maximum Combined Score	111

Table #2 - Tier 1 - Top 10 Roll-Up Score

	AGENCY	#	Raw	Score
1	OFFICE OF JUVENILE AFFAIRS	400	110	99.1%
2	DEPARTMENT OF HUMAN SERVICES	830	110	99.1%
3	OFFICE OF STATE FINANCE	90	108	97.3%
4	DEPARTMENT OF CENTRAL SERVICES	580	107	96.4%
5	DEPARTMENT OF CORRECTIONS	131	105	94.6%
6	REGENTS FOR HIGHER EDUCATION	605	97	87.4%
7	DEPARTMENT OF VETERANS AFFAIRS	650	96	86.5%
8	DEPARTMENT OF AGRICULTURE	40	95	85.6%
9	OKLAHOMA TAX COMMISSION	695	94	84.7%
10	OK. PUBLIC EMPLOYEES RET. SYS.	515	92	82.9%

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Tier 1 Respondents

	Tier 1	Roll-Up Score	
	AGENCY	#	Score
1	OFFICE OF JUVENILE AFFAIRS	400	99.1%
2	DEPARTMENT OF HUMAN SERVICES	830	99.1%
3	OFFICE OF STATE FINANCE	90	97.3%
4	DEPARTMENT OF CENTRAL SERVICES	580	96.4%
5	DEPARTMENT OF CORRECTIONS	131	94.6%
6	REGENTS FOR HIGHER EDUCATION	605	87.4%
7	DEPARTMENT OF VETERANS AFFAIRS	650	86.5%
8	DEPARTMENT OF AGRICULTURE	40	85.6%
9	OKLAHOMA TAX COMMISSION	695	84.7%
10	OK. PUBLIC EMPLOYEES RET. SYS.	515	82.9%
11	DEPARTMENT OF TRANSPORTATION	345	81.1%
12	DEPT. OF ENVIRONMENTAL QUALITY	292	79.3%
13	CORPORATION COMMISSION	185	62.2%
14	EMPLOYMENT SECURITY COMMISSION	290	61.3%
15	DEPARTMENT OF REHABILITATION SERVICES	805	61.3%
16	STATE DEPARTMENT OF HEALTH	340	60.4%
17	DEPARTMENT OF PUBLIC SAFETY	585	51.4%
18	MENTAL HEALTH AND SUBSTANCE ABUSE SERV	452	50.5%

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Tier 2 Statistics

Tier 2 Respondents—41.

Total Tier 2 score for all agencies who responded—**67.02 percent.**

There are five surveys which factored into the overall quality score . The values of each are shown in the table #1 below. The Tier 2 leading aggregate scores are represented in Table #2 below. Each response has an equal weighting of 1. Scores are represented as a percentage of the maximum raw value of 111, with 100 percent being the maximum score and **90 percent** representing a target.

Table #1 Survey	Maximum Score
Application	15
Financial	24
Infrastructure	48
Non-Application	15
People	9
Maximum Combined Score	111

Table #2 - Tier 2 - Top 10 Roll-Up Score

	AGENCY	#	Raw	Score
1	ST. & EDUC. EMP. GRP. INS. BD.	516	110	99.1%
2	CNTR. FOR ADVANC. OF SCIENCE/TECHN	628	110	99.1%
3	DEPARTMENT OF LABOR	405	108	97.3%
4	OKLAHOMA LOTTERY COMMISSION	435	108	97.3%
5	HEALTH CARE AUTHORITY	807	108	97.3%
6	WATER RESOURCES BOARD	835	108	97.3%
7	SECRETARY OF STATE	625	103	92.8%
8	CONSERVATION COMMISSION	645	103	92.8%
9	COMMISSION ON CHILDREN & YOUTH	127	102	91.9%
10	STATE TREASURER	740	101	91.0%

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Tier 2 Respondents

	Tier 2		Roll-Up Score
	AGENCY	#	Score
1	ST. & EDUC. EMP. GRP. INS. BD.	516	99.1%
2	CNTR. FOR ADVANC. OF SCIENCE/TECHNOLOG	628	99.1%
3	DEPARTMENT OF LABOR	405	97.3%
4	OKLAHOMA LOTTERY COMMISSION	435	97.3%
5	HEALTH CARE AUTHORITY	807	97.3%
6	WATER RESOURCES BOARD	835	97.3%
7	SECRETARY OF STATE	625	92.8%
8	CONSERVATION COMMISSION	645	92.8%
9	COMMISSION ON CHILDREN & YOUTH	127	91.9%
10	STATE TREASURER	740	91.0%
11	EMPLOYEES BENEFITS COUNCIL	815	89.2%
12	BD. OF MED. LICENSURE & SUPV.	450	88.3%
13	DEPARTMENT OF COMMERCE	160	87.4%
14	DISTRICT ATTORNEYS COUNCIL	220	87.4%
15	Okla. Career and Technology Education	800	87.4%
16	POLICE PENSION & RET. SYSTEM	557	85.6%
17	OK. COMM. FOR TEACHER PREP.	269	82.9%
18	DEPARTMENT OF SECURITIES	630	79.3%
19	OKLA. BOARD OF NURSING	510	78.4%
20	OKLAHOMA AERONAUTICS COMMISSION	60	75.7%

	Tier 2		Roll-Up Score
	AGENCY	#	Score
21	COMM. OF THE LAND OFFICE	410	75.7%
22	STATE BANKING DEPARTMENT	65	74.8%
23	STATE AUDITOR AND INSPECTOR	300	74.8%
24	OKLA. BUREAU OF NARCOTICS AND DANGERO	477	70.3%
25	DEPARTMENT OF CIVIL EMERGENCY MANAGEM	309	69.4%
26	OKLA. TRANSPORTATION AUTHORITY	978	68.5%
27	OFFICE OF PERSONNEL MANAGEMENT	548	67.6%
28	COUNCIL ON LAW ENFORCEMENT ED & TRNG	415	63.1%
29	INDIGENT DEFENSE SYSTEM	47	62.2%
30	TEACHERS RETIREMENT SYSTEM	715	60.4%
31	COMM. ON CONSUMER CREDIT	635	42.3%
32	DEPARTMENT OF EDUCATION	265	40.5%
33	OFFICE OF DISABILITY CONCERNS	326	35.1%
34	STATE FIRE MARSHAL	310	29.7%
35	ATTORNEY GENERAL	49	28.8%
36	PARDON AND PAROLE BOARD	306	21.6%
37	OKLAHOMA INSURANCE DEPARTMENT	385	21.6%
38	HISTORICAL SOCIETY	350	19.8%
39	STATE ARTS COUNCIL	55	14.4%
40	OKLA. SPACE INDUSTRY DEV. AUTH.	346	9.0%
41	MARGINALLY PROD. OIL & GAS WELLS	446	0.9%

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Tier 3 Statistics

Tier 3 Respondents—14.

Total Tier 3 score for all agencies who responded —**72.14 percent.**

There are five surveys which factored into the overall quality score. The values of each are shown in the table #1 below. The Tier 3 leading aggregate scores are represented in Table #2 below. Each response has an equal weighting of 1. Scores are represented as a percentage of the maximum raw value of 111, with 100 percent being the maximum score and **90 percent** representing a target.

Table #1 Survey	Maximum Score
Application	15
Financial	24
Infrastructure	48
Non-Application	15
People	9
Maximum Combined Score	111

Table #2 - Tier 3 - Top 10 Roll-Up Score

	AGENCY	#	Raw	Score
1	ALCOHOLIC BEV. LAWS ENFORCE.	30	109	98.2%
2	SCENIC RIVERS COMMISSION	568	108	97.3%
3	PROF. ENGI. & LAND SURVEYORS	570	102	91.9%
4	QUARTZ MOUNTAIN CENTER & PARK	620	102	91.9%
5	STATE ELECTION BOARD	270	99	89.2%
6	OKLAHOMA HORSE RACING COMMISSIO	353	99	89.2%
7	DEPARTMENT OF LIBRARIES	430	95	85.6%
8	STATE BOND ADVISOR	582	87	78.4%
9	J.D. MCCARTY CENTER	670	86	77.5%
10	OKLA. BD. OF ARCHITECTS	45	82	73.9%

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Tier 3 Respondents

	Tier 3		Roll-Up Score
	AGENCY	#	Score
1	ALCOHOLIC BEV. LAWS ENFORCE.	30	98.2%
2	SCENIC RIVERS COMMISSION	568	97.3%
3	PROF. ENGI. & LAND SURVEYORS	570	91.9%
4	QUARTZ MOUNTAIN CENTER & PARK	620	91.9%
5	STATE ELECTION BOARD	270	89.2%
6	OKLAHOMA HORSE RACING COMMISSION	353	89.2%
7	DEPARTMENT OF LIBRARIES	430	85.6%
8	STATE BOND ADVISOR	582	78.4%
9	J.D. MCCARTY CENTER	670	77.5%
10	OKLA. BD. OF ARCHITECTS	45	73.9%
11	USED MOTOR VEHICLE & PARTS	755	56.8%
12	DEPARTMENT OF MINES	125	39.6%
13	OK. INDUSTRIAL FINANCE AUTH.	370	32.4%
14	BD. OF PRIV. VOCATIONAL SCHOOLS	563	8.1%

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Application Survey—Top 40

The enterprise response to the application survey was 71.42 percent.

Top 40 - Application Quality Target Score - 90%*

	AGENCY	#	Tier	Application Survey	*Overall*
1	OFFICE OF JUVENILE AFFAIRS	400	1	100.00%	*99.10%*
2	OFFICE OF STATE FINANCE	90	1	100.00%	*97.30%*
3	DEPARTMENT OF CENTRAL SERVICES	580	1	100.00%	*96.40%*
4	DEPARTMENT OF CORRECTIONS	131	1	100.00%	*94.59%*
5	DEPARTMENT OF AGRICULTURE	40	1	100.00%	*85.59%*
6	OKLAHOMA TAX COMMISSION	695	1	100.00%	*84.68%*
7	OK. PUBLIC EMPLOYEES RET. SYS.	515	1	100.00%	*82.88%*
8	ST. & EDUC. EMP. GRP. INS. BD.	516	2	100.00%	*99.10%*
9	OKLAHOMA LOTTERY COMMISSION	435	2	100.00%	*97.30%*
10	HEALTH CARE AUTHORITY	807	2	100.00%	*97.30%*
11	WATER RESOURCES BOARD	835	2	100.00%	*97.30%*
12	SECRETARY OF STATE	625	2	100.00%	*92.79%*
13	CONSERVATION COMMISSION	645	2	100.00%	*92.79%*
14	EMPLOYEES BENEFITS COUNCIL	815	2	100.00%	*89.19%*
15	BD. OF MED. LICENSURE & SUPV.	450	2	100.00%	*88.29%*
16	Okla. Career and Technology Educati	800	2	100.00%	*87.39%*
17	STATE BANKING DEPARTMENT	65	2	100.00%	*74.77%*
18	ALCOHOLIC BEV. LAWS ENFORCE.	30	3	100.00%	*98.20%*
19	PROF. ENGI. & LAND SURVEYORS	570	3	100.00%	*91.89%*
20	QUARTZ MOUNTAIN CENTER & PARK	620	3	100.00%	*91.89%*

Top 40 - Application Quality Target Score - 90%*

	AGENCY	#	Tier	Application Survey	*Overall*
21	OKLAHOMA HORSE RACING COMMI	353	3	100.00%	*89.19%*
22	STATE BOND ADVISOR	582	3	100.00%	*78.38%*
23	J.D. MCCARTY CENTER	670	3	100.00%	*77.48%*
24	USED MOTOR VEHICLE & PARTS	755	3	100.00%	*56.76%*
25	DEPARTMENT OF HUMAN SERVICES	830	1	93.33%	*99.10%*
26	DEPARTMENT OF REHABILITATION SI	805	1	93.33%	*61.26%*
27	CNTR. FOR ADVANC. OF SCIENCE/TE	628	2	93.33%	*99.10%*
28	COMMISSION ON CHILDREN & YOUT	127	2	93.33%	*91.89%*
29	OKLA. BOARD OF NURSING	510	2	93.33%	*78.38%*
30	COMM. ON CONSUMER CREDIT	635	2	93.33%	*42.34%*
31	SCENIC RIVERS COMMISSION	568	3	93.33%	*97.30%*
32	OKLA. BD. OF ARCHITECTS	45	3	93.33%	*73.87%*
33	EMPLOYMENT SECURITY COMMISSIC	290	1	86.67%	*61.26%*
34	OK. COMM. FOR TEACHER PREP.	269	2	86.67%	*82.88%*
35	STATE ELECTION BOARD	270	3	86.67%	*89.19%*
36	DEPARTMENT OF VETERANS AFFAIRS	650	1	80.00%	*86.49%*
37	DEPT. OF ENVIRONMENTAL QUALITY	292	1	80.00%	*79.28%*
38	DEPARTMENT OF LABOR	405	2	80.00%	*97.30%*
39	DEPARTMENT OF COMMERCE	160	2	80.00%	*87.39%*
40	POLICE PENSION & RET. SYSTEM	557	2	80.00%	*85.59%*

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Financial Survey—Top 40

The enterprise response to the financial survey was 68.33 percent.

Top 40 - Financial Quality Target Score - 90%*

	AGENCY	#	Tier	Financial Survey	*Overall*
1	OFFICE OF JUVENILE AFFAIRS	400	1	100.00%	*99.10%*
2	DEPARTMENT OF CENTRAL SERVICES	580	1	100.00%	*96.40%*
3	DEPARTMENT OF HUMAN SERVICES	830	1	100.00%	*99.10%*
4	HEALTH CARE AUTHORITY	807	2	100.00%	*97.30%*
5	CNTR. FOR ADVANC. OF SCIENCE/TE	628	2	100.00%	*99.10%*
6	COMMISSION ON CHILDREN & YOUT	127	2	100.00%	*91.89%*
7	COMM. ON CONSUMER CREDIT	635	2	100.00%	*42.34%*
8	DEPARTMENT OF LABOR	405	2	100.00%	*97.30%*
9	DEPARTMENT OF SECURITIES	630	2	100.00%	*79.28%*
10	STATE TREASURER	740	2	100.00%	*90.99%*
11	DISTRICT ATTORNEYS COUNCIL	220	2	100.00%	*87.39%*
12	ALCOHOLIC BEV. LAWS ENFORCE.	30	3	100.00%	*98.20%*
13	PROF. ENGI. & LAND SURVEYORS	570	3	100.00%	*91.89%*
14	QUARTZ MOUNTAIN CENTER & PARK	620	3	100.00%	*91.89%*
15	OKLAHOMA HORSE RACING COMMI	353	3	100.00%	*89.19%*
16	SCENIC RIVERS COMMISSION	568	3	100.00%	*97.30%*
17	CORPORATION COMMISSION	185	1	95.83%	*62.16%*
18	ST. & EDUC. EMP. GRP. INS. BD.	516	2	95.83%	*99.10%*
19	SECRETARY OF STATE	625	2	95.83%	*92.79%*
20	OKLAHOMA AERONAUTICS COMMIS	60	2	95.83%	*75.68%*

Top 40 - Financial Quality Target Score - 90%*

	AGENCY	#	Tier	Financial Survey	*Overall*
21	EMPLOYEES BENEFITS COUNCIL	815	2	91.67%	*89.19%*
22	OFFICE OF STATE FINANCE	90	1	87.50%	*97.30%*
23	DEPARTMENT OF CORRECTIONS	131	1	87.50%	*94.59%*
24	OKLAHOMA TAX COMMISSION	695	1	87.50%	*84.68%*
25	DEPARTMENT OF VETERANS AFFAIRS	650	1	87.50%	*86.49%*
26	OKLAHOMA LOTTERY COMMISSION	435	2	87.50%	*97.30%*
27	WATER RESOURCES BOARD	835	2	87.50%	*97.30%*
28	CONSERVATION COMMISSION	645	2	87.50%	*92.79%*
29	Okla. Career and Technology Educati	800	2	87.50%	*87.39%*
30	OKLA. BOARD OF NURSING	510	2	87.50%	*78.38%*
31	DEPARTMENT OF CIVIL EMERGENCY	309	2	87.50%	*69.37%*
32	STATE BOND ADVISOR	582	3	87.50%	*78.38%*
33	STATE ELECTION BOARD	270	3	87.50%	*89.19%*
34	DEPARTMENT OF AGRICULTURE	40	1	83.33%	*85.59%*
35	OK. PUBLIC EMPLOYEES RET. SYS.	515	1	83.33%	*82.88%*
36	DEPARTMENT OF TRANSPORTATION	345	1	83.33%	*81.08%*
37	BD. OF MED. LICENSURE & SUPV.	450	2	83.33%	*88.29%*
38	DEPARTMENT OF COMMERCE	160	2	83.33%	*87.39%*
39	STATE AUDITOR AND INSPECTOR	300	2	83.33%	*74.77%*
40	OKLA. BD. OF ARCHITECTS	45	3	83.33%	*73.87%*

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Infrastructure Survey—Top 40

The enterprise response to the infrastructure survey was 73.12 percent.

	Top 40 - Infrastructure Quality		Target Score - 90%*		
	AGENCY	#	Tier	Infr 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	DEPARTMENT OF VETERANS AFFAIRS	650	1	100.00%	*86.49%*
4	CNTR. FOR ADVANC. OF SCIENCE/TE	628	2	100.00%	*99.10%*
5	DEPARTMENT OF LABOR	405	2	100.00%	*97.30%*
6	ST. & EDUC. EMP. GRP. INS. BD.	516	2	100.00%	*99.10%*
7	OKLAHOMA LOTTERY COMMISSION	435	2	100.00%	*97.30%*
8	WATER RESOURCES BOARD	835	2	100.00%	*97.30%*
9	DEPARTMENT OF LIBRARIES	430	3	100.00%	*85.59%*
10	OFFICE OF JUVENILE AFFAIRS	400	1	97.92%	*99.10%*
11	STATE TREASURER	740	2	97.92%	*90.99%*
12	DEPARTMENT OF COMMERCE	160	2	97.92%	*87.39%*
13	OK. COMM. FOR TEACHER PREP.	269	2	97.92%	*82.88%*
14	SCENIC RIVERS COMMISSION	568	3	97.92%	*97.30%*
15	OKLA. BOARD OF NURSING	510	2	95.83%	*78.38%*
16	ALCOHOLIC BEV. LAWS ENFORCE.	30	3	95.83%	*98.20%*
17	PROF. ENGI. & LAND SURVEYORS	570	3	95.83%	*91.89%*
18	DEPARTMENT OF CENTRAL SERVICES	580	1	93.75%	*96.40%*
19	DEPARTMENT OF CORRECTIONS	131	1	93.75%	*94.59%*
20	OK. PUBLIC EMPLOYEES RET. SYS.	515	1	93.75%	*82.88%*

	Top 40 - Infrastructure Quality		Target Score - 90%*		
	AGENCY	#	Tier	Infr Survey	*Overall*
21	REGENTS FOR HIGHER EDUCATION	605	1	93.75%	*87.39%*
22	DEPARTMENT OF PUBLIC SAFETY	585	1	93.75%	*51.35%*
23	HEALTH CARE AUTHORITY	807	2	93.75%	*97.30%*
24	SECRETARY OF STATE	625	2	93.75%	*92.79%*
25	CONSERVATION COMMISSION	645	2	93.75%	*92.79%*
26	BD. OF MED. LICENSURE & SUPV.	450	2	93.75%	*88.29%*
27	OFFICE OF PERSONNEL MANAGEME	548	2	93.75%	*67.57%*
28	OKLAHOMA HORSE RACING COMMI	353	3	93.75%	*89.19%*
29	POLICE PENSION & RET. SYSTEM	557	2	91.67%	*85.59%*
30	DEPT. OF ENVIRONMENTAL QUALITY	292	1	89.58%	*79.28%*
31	Okla. Career and Technology Educati	800	2	89.58%	*87.39%*
32	OKLA. TRANSPORTATION AUTHORIT	978	2	89.58%	*68.47%*
33	DEPARTMENT OF TRANSPORTATION	345	1	87.50%	*81.08%*
34	STATE DEPARTMENT OF HEALTH	340	1	87.50%	*60.36%*
35	COMMISSION ON CHILDREN & YOUT	127	2	87.50%	*91.89%*
36	DISTRICT ATTORNEYS COUNCIL	220	2	87.50%	*87.39%*
37	EMPLOYEES BENEFITS COUNCIL	815	2	87.50%	*89.19%*
38	STATE ELECTION BOARD	270	3	87.50%	*89.19%*
39	STATE BANKING DEPARTMENT	65	2	85.42%	*74.77%*
40	OKLAHOMA TAX COMMISSION	695	1	83.33%	*84.68%*

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Non-Application Survey—Top 40

The enterprise response to the non-application services survey was 61.83 percent.

Top 40 - Non-Application Quality — Target Score - 90%*

	AGENCY	#	Tier	Non App 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	OKLAHOMA TAX COMMISSION	695	1	100.00%	*84.68%*
8	DEPARTMENT OF AGRICULTURE	40	1	100.00%	*85.59%*
9	CNTR. FOR ADVANC. OF SCIENCE/TE	628	2	100.00%	*99.10%*
10	DEPARTMENT OF LABOR	405	2	100.00%	*97.30%*
11	ST. & EDUC. EMP. GRP. INS. BD.	516	2	100.00%	*99.10%*
12	OKLAHOMA LOTTERY COMMISSION	435	2	100.00%	*97.30%*
13	WATER RESOURCES BOARD	835	2	100.00%	*97.30%*
14	HEALTH CARE AUTHORITY	807	2	100.00%	*97.30%*
15	POLICE PENSION & RET. SYSTEM	557	2	100.00%	*85.59%*
16	OKLA. TRANSPORTATION AUTHORIT	978	2	100.00%	*68.47%*
17	DISTRICT ATTORNEYS COUNCIL	220	2	100.00%	*87.39%*
18	COUNCIL ON LAW ENFORCEMENT E	415	2	100.00%	*63.06%*
19	TEACHERS RETIREMENT SYSTEM	715	2	100.00%	*60.36%*
20	SCENIC RIVERS COMMISSION	568	3	100.00%	*97.30%*

Top 40 - Non-Application Quality — Target Score - 90%*

	AGENCY	#	Tier	Non App Survey	*Overall*
21	ALCOHOLIC BEV. LAWS ENFORCE.	30	3	100.00%	*98.20%*
22	QUARTZ MOUNTAIN CENTER & PARK	620	3	100.00%	*91.89%*
23	DEPARTMENT OF CENTRAL SERVICES	580	1	93.33%	*96.40%*
24	BD. OF MED. LICENSURE & SUPV.	450	2	93.33%	*88.29%*
25	STATE ELECTION BOARD	270	3	93.33%	*89.19%*
26	EMPLOYMENT SECURITY COMMISSIC	290	1	86.67%	*61.26%*
27	CONSERVATION COMMISSION	645	2	86.67%	*92.79%*
28	COMMISSION ON CHILDREN & YOUT	127	2	86.67%	*91.89%*
29	J.D. MCCARTY CENTER	670	3	86.67%	*77.48%*
30	STATE DEPARTMENT OF HEALTH	340	1	80.00%	*60.36%*
31	DEPARTMENT OF REHABILITATION S	805	1	80.00%	*61.26%*
32	OK. COMM. FOR TEACHER PREP.	269	2	80.00%	*82.88%*
33	SECRETARY OF STATE	625	2	80.00%	*92.79%*
34	OKLAHOMA HORSE RACING COMMI	353	3	80.00%	*89.19%*
35	EMPLOYEES BENEFITS COUNCIL	815	2	73.33%	*89.19%*
36	COMM. OF THE LAND OFFICE	410	2	73.33%	*75.68%*
37	STATE AUDITOR AND INSPECTOR	300	2	73.33%	*74.77%*
38	DEPARTMENT OF SECURITIES	630	2	73.33%	*79.28%*
39	DEPARTMENT OF TRANSPORTATION	345	1	66.67%	*81.08%*
40	STATE TREASURER	740	2	66.67%	*90.99%*

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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 COMMISSIC	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/TE	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 AUTHORIT	978	2	100.00%	*68.47%*
24	DISTRICT ATTORNEYS COUNCIL	220	2	100.00%	*87.39%*
25	COUNCIL ON LAW ENFORCEMENT E	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	477	2	100.00%	*70.27%*
37	OFFICE OF PERSONNEL MANAGEME	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%*

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