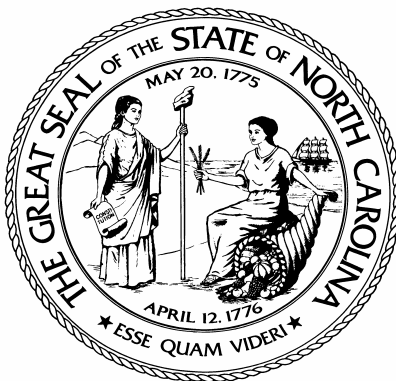# Information Technology Systems: Consolidation and Management Since Senate Bill 991

Office of State Budget and Management
January 2006

Executive Summary

Background

Legislation passed by the General Assembly in 2004 directed the Office of State Budget and Management, in conjunction with others, to develop a plan to consolidate information technology (IT) infrastructure, staffing, and expenditures in executive branch departments where a statewide approach would be more economical. (Session Law 2004-129, Section 47(b)) Within that broad mandate, the legislation specifically called for recommendations to convert some contractor positions to state positions and a plan to provide IT services to small departments that lack adequate technical or budgetary resources.

The consolidation study was part of a broader measure, Senate Bill 991, that accelerated the state's award-winning efforts to better plan, budget and manage IT. Senate Bill 991 is working. The IT project approval process codified by the bill has greatly improved the development of IT systems, for example. However redundant IT operations are wasting scarce resources. Within and across departments, multiple IT shops perform essentially the same role—sometimes even in the same building.

Consolidation

The administration is currently piloting the consolidation of IT infrastructure in five departments: the Office of the Governor, the Office of the Lieutenant Governor, the Office of State Budget and Management, the Department of Administration, and the Office of State Personnel. The focus will be on five core areas of IT infrastructure: the network that links state departments to each other, and to the rest of the world; security; data centers; desktop computer management, and the management of intra-department networks that link department employees with each other. The departments were chosen for several reasons. They are the "government" within state government, they are located close to each other physically—most of them in the same building— and they are relatively small.

After careful study of the IT operations in each of the departments, including the development of business cases and cost and benefit analysis, the core IT functions will be consolidated in the summer of this year. If the pilot substantiates the savings, the second phase is tentatively scheduled to begin early in the fourth quarter of 2006, after a comprehensive review of lessons learned from phase one.

Recommendations for Improving Efficiency

Consolidation:

- As part of the IT project approval process the State CIO should start collecting structured data on the operating components of department systems as well as their business function.

Organization:

- All department CIOs should report to their department head or to a deputy that has operational oversight for the entire department.

- Departments with decentralized or partially decentralized IT organizational structures should move toward a centralized IT organization structure with the objective of controlling 100% of the IT resources and spending.

- CIOs for all departments should meet standardized job requirements, developed by the Office of State Personnel in consultation with the State CIO and OSBM, to ensure the integrity and competency levels that the CIO position demands.

- The State CIO should be involved in the interview and screening process for all department and agency CIOs.

- During the consolidation implementation, an analysis should be completed to determine if merging similar departments' IT organizations (e.g. lines of business that cover similar subject matters) could provide the scale of resources necessary for proper management.

- ITS Enterprise Services must be constantly evaluated against the needs of small departments.

Contract Management:

- Regarding hardware bulk purchases, the SCIO should negotiate staggered delivery schedules for departments that cannot accept bulk loads all at once due to space and resource limitations.

- The SCIO should schedule a bulk purchase cycle toward the end of the fiscal year to allow for departments to optimize their end of year IT purchases.

Department IT Management:

- OSBM and other appropriate agencies should periodically evaluate department level management of IT using objective evaluation measurement processes.

A. Background

The General Assembly in 2004 passed legislation that required the Office of State Budget and Management (OSBM), in conjunction with others, to develop a plan to consolidate information technology (IT) infrastructure, staffing, and expenditures in executive branch departments where a statewide approach would be more economical. (Session Law 2004-129, Section 47(b)) As part of that broad plan, the Legislature called for specific recommendations in two areas: converting contract employees involved in recurring activities to state employees, and a plan to consolidate information technology systems under a centralized authority where departments lacked the budgetary and technical resources to operate modern, secure systems.

The legislation also directed departments, with some exceptions, to conduct a thorough examination of their IT infrastructure, contracting, and spending, and to identify IT functions that could be performed more economically through a statewide approach. (Session Law 2004-129, Section 47(a)). To help departments meet that requirement, the State Budget Officer and the State CIO sent a memo to all department heads in December, 2004, requesting information about their department's IT operations. The data submitted to OSBM included the department's IT organizational structure, expenditures, resources, operations, contractor conversions and consolidation ideas. The department information provided one of the key building blocks for this report.

B. Introduction

North Carolina has taken major steps in recent years to improve the planning, budgeting and management of IT. Three of the state's initiatives won national recognition in 2005 with awards from the National Association of State Chief Information Officers. North Carolina and Michigan, which also captured three awards, were the only states to win more than one of the prestigious honors.

Session Law 2004-129, more commonly known as Senate Bill 991, accelerated the state's efforts to better manage IT. Improvements include:

- The State CIO created an Enterprise Project Management Office to review proposed IT projects and to monitor their progress. At the end of 2005, the office was tracking 116 projects with a total estimated cost approaching $850 million.

- A bulk purchasing program implemented by the State CIO for desktop and laptop personal computers and for printers saved state departments close to $7 million in its first year of operation.

- The State CIO used a new Information Technology Fund created by SB 991 to increase security training for state departments, improve the security of the state network and begin a portfolio management program that will greatly improve the management of the state's IT assets. Funds also were used to help departments' better plan for business disruptions, and to begin planning for the replacement of the state's legacy applications, or older hardware and software that perform a specific business function.

- The Office of State Budget and Management significantly increased its oversight of information technology. OSBM now evaluates the costs and benefits of every IT system that passes through the State CIO IT project approval process. The Budget Office also ensures that no budget revision related to an IT system is processed unless it has been through the IT approval process or the system is well managed (as determined by the State CIO). Department expansion budget requests for IT systems that make it into the Governor's budget must go through a similar evaluation. In addition, OSBM approves the ITS budget, rate structure, and any department e-commerce fees.

But much of the state's previous effort to improve IT management has focused on processes, such as procurement and project approval, not operations. As a result, the day-to-day operation of IT in state government remains fragmented and poorly focused. Departments are spending scarce IT resources on basic functions, such as maintaining desktop computers, while department specific needs are not addressed. Within departments, multiple IT shops perform essentially the same role—sometimes even in the same building.

This report outlines the administration's plans for IT consolidation. It further reviews IT operations inside departments, bulk purchasing, contracting, and department IT management. It makes recommendations to improve all of these processes.

C. Statewide IT Consolidation

The consolidation provisions of SB 991 provide an opportunity for North Carolina to restructure and refocus information technology. This restructuring of management and personnel is needed to better align people, hardware and functions so that departments focus on their core missions.

The overarching principle of IT consolidation is simple: departments should devote more of their efforts to IT needs unique to their departments, not basic infrastructure. The goal is to provide better services to the citizens of North Carolina as efficiently as possible.

Organizations have competing pressures. The pressure for cost savings drives toward a centralized organization structure. The pressure for local response and customization drives toward a decentralized organization structure. In general, it is more efficient for common or shared processes to be centralized and unique processes to be decentralized. To this end, our consolidation approach is to centralize the common IT infrastructure (much like phone service in the past) across departments under the Office of Information Technology Services (ITS). This change would allow the department CIOs to focus on their core business applications that are more directly involved in delivering services to the public. However, when business processes are in common it may make sense to combine them as well.

Infrastructure Consolidation

In general, it is more efficient for common or shared processes to be centrally managed and unique processes to be locally managed. In the data submitted to OSBM, departments suggested several potential areas for any consolidation effort. These included centralized infrastructure; security

functions and standards; e-mail and calendar; managed desktop services, including support; asset management, and statewide bulk purchasing. Based on the department's input and best practices information collected from consolidation efforts in other states (see Appendix I, External Input), we developed a conceptual infrastructure consolidation plan with a phased roll out.

Government departments in North Carolina and across the country have been moving toward shared services and consolidation over the past several years—some more quickly than others. Below are three diagrams that show the evolving IT landscape.

Diagram 1, Government Agencies in the Past, depicts services provided by stovepipes, with duplication in IT services, infrastructure, facilities, functions and processes. Some agencies still operate under this type of structure, but most have realized that traditional, department-centric solutions are uneconomical, inefficient and poorly serve the users and customers.

Diagram 1
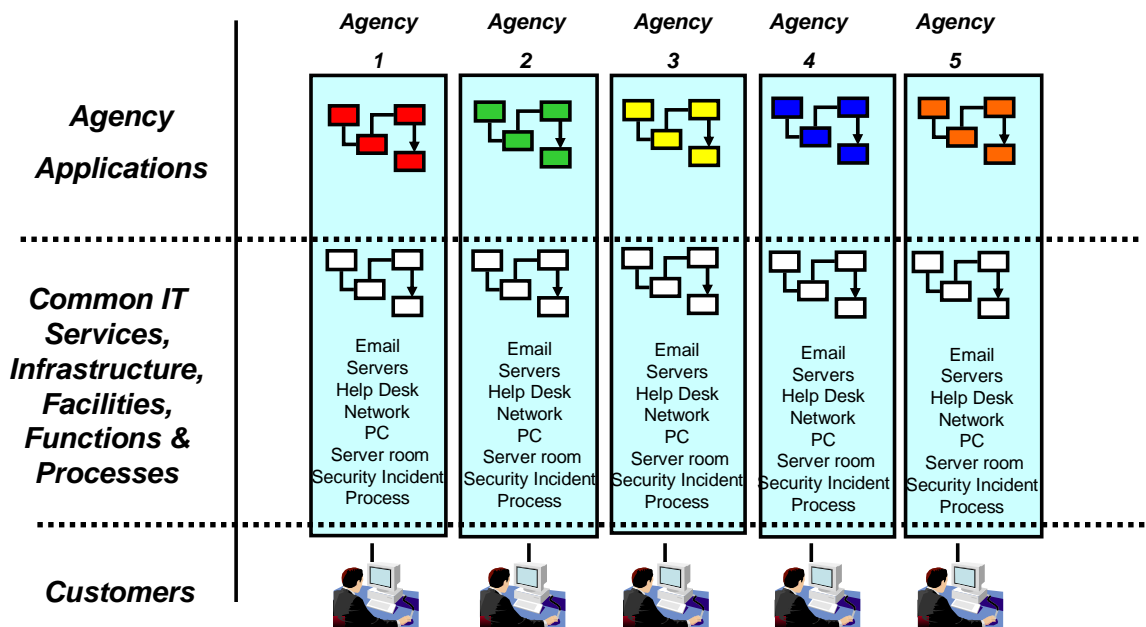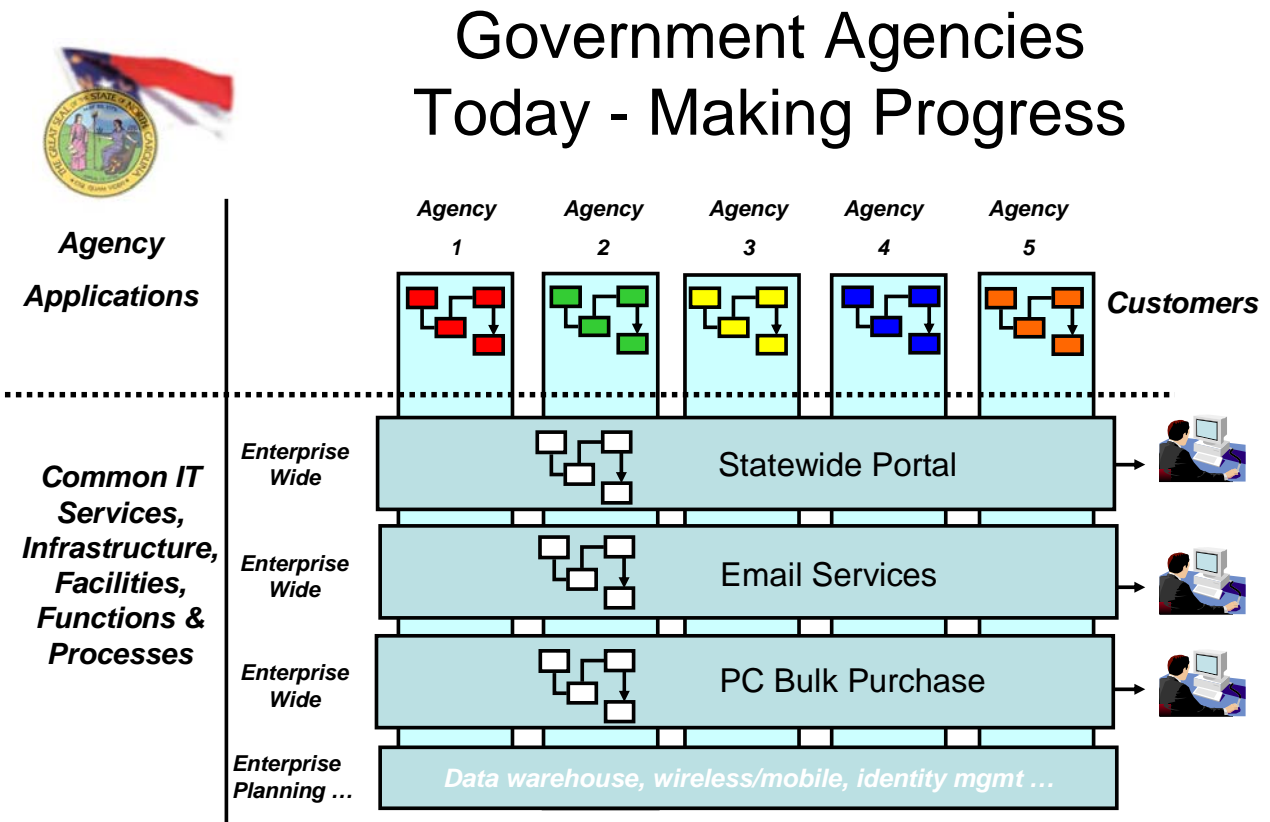
Government Agencies – in the Past

Diagram 2 represents many government agencies today, with some services being provided horizontally across the vertically aligned agencies.

Diagram 2

Government Agencies
Today - Making Progress

In the final stage in transforming the IT landscape (Diagram 3), the IT infrastructure and internal government functions, such as payroll, cut across all agencies. Services that are used by multiple agencies, such as online transactions that require the use of a credit or debit card, are shared while business applications that are used by only a few agencies are operated jointly. This is the stage that best balances the competing demands for overall cost savings and local response.

It is the bottom layer, computer operations, the statewide network, security, and desktop and local area networks that we plan to consolidate with this effort.

Diagram 3

Government Agencies – The Future – Shared Services and Consolidation
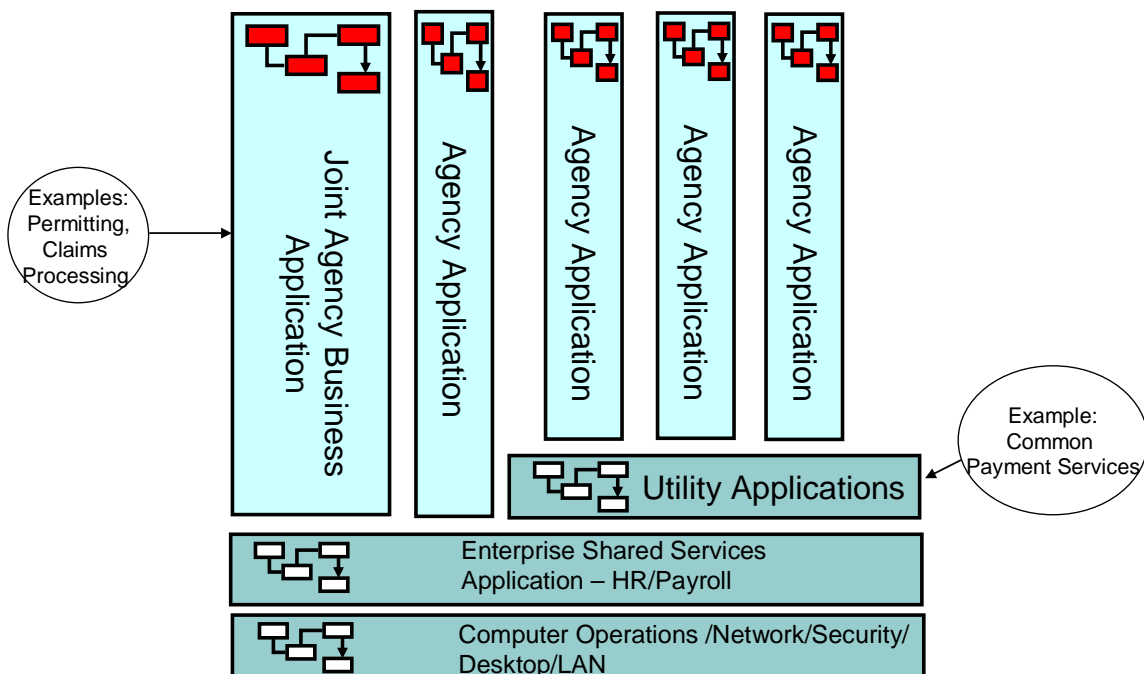
To better understand the magnitude of the task, it is useful to look at the staff currently allocated to various IT functions. As the following chart shows, 29% of the state's IT employees support the infrastructure component—the bottom layer of the IT landscape shown in Diagram 3. This is the largest single piece of the total staffing allocation.

The next largest groupings of staffing allocation are in application maintenance and application development garnering 23% and 17% respectively of the staffing allocation. These functions should generally stay within departments since they are mostly specific to the department's customer facing mission.

IT Staff Allocation to Functions

Other IT Functions
6%

Database Admin and Data Analysis
8%

General Management & Administration
8%

Project Management
6%

Application Development
17%

Website Application & Maintenance
2%

IT Procurement
1%

Infrastructure
29%

Application Maintenance
23%
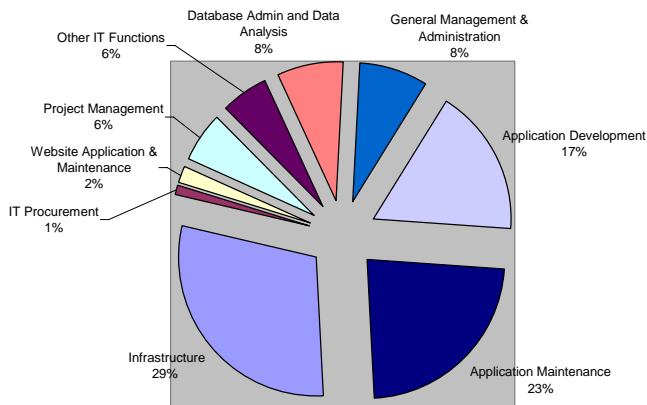
The following chart shows a breakdown of the 29% of IT employees who support the infrastructure.

IT Staff Allocation to Infrastructure

Management allocation to infrastructure
5%

Help Desk
24%

LAN,Desktop & Server Mgmt & Support
56%

Security & Disaster Recovery
7%

Network Management
8%
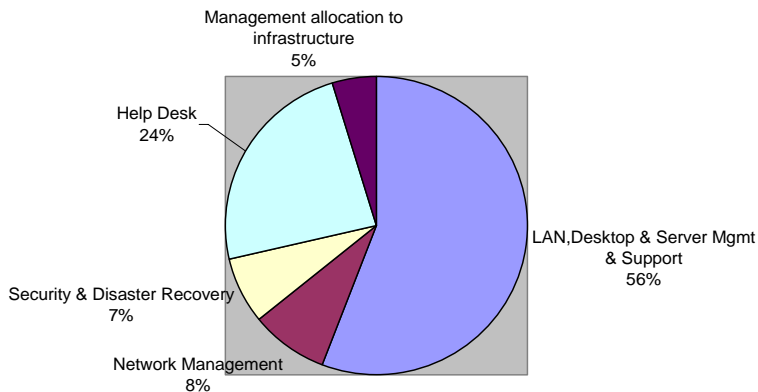
Consolidation Benefits

Consolidation, and the resulting economies of scale, will lead to cost reduction and cost avoidance through multi-department licensing agreements, aggregated purchasing, less duplication of tools and technology and standardized hardware and software.

Estimates of savings from consolidating IT infrastructure elsewhere range from 15% to 30%, and sometimes more. In Texas, a data center consolidation generated annual savings of 23%. Michigan reduced staff by 15% and spending by 25% with its consolidation efforts.

Cost savings are not the only benefits of consolidating IT infrastructure. Others include:

- By strengthening their focus on their core mission, departments could respond more quickly to customer and citizen needs and devote more attention to application support and development, project management, portfolio management and web site content and improvements.

- Improved infrastructure and additional support would lead to better incident management. That will reduce overall risk of downtime because of security breaches, hardware failure, network failure, vendor non-performance and facility issues such as power outages.

- Improved security and critical infrastructure protection would reduce risk and downtime due to viruses, spyware, intrusions and hacking. Consolidation would also enable improved disaster recovery and business continuity planning.

- Improved infrastructure support and services would allow for round-the-clock operational and help desk support, industry best practices for service delivery, established and agreed-to service level agreements, performance and costs measured against comparable organizations and improved development and testing environments.

Infrastructure Consolidation plan:

The functions under review to consolidate are Network Operations, Security Operations, Data Center Operations and Desktop and LAN (Local Area Network) Management. Consolidation in these areas would allow the departments to focus on their 'core business applications' and relieve them of dealing with the 'plumbing' (infrastructure related activities that are common across all departments).

Any consolidation would be carried out in phases, beginning with five 'headquarter' departments (OSBM, DOA, OSP, Governor's and Lt. Governor's offices) in which we are piloting the consolidation of the network, security and server operations into ITS. This effort is already under way.

Meetings were held with executive branch departments in November and December to review and discuss the themes gathered from the department data submitted to OSBM, and to share the consolidation goals with all departments.

In the pilot, an inventory will be taken of each department's IT environment. This will include both an equipment and resource inventory centered on infrastructure-related activities.

Following completion of the inventory and mapping of the 'current state' of the IT environment, we will design the "future state" infrastructure. As part of this state, we will address business process changes, organizational changes, procurement and licensing modifications and budget and funding flows. A business case will be developed to show the costs and benefits of the "future state" IT environment. Consolidated services would be finalized in a service level agreement.
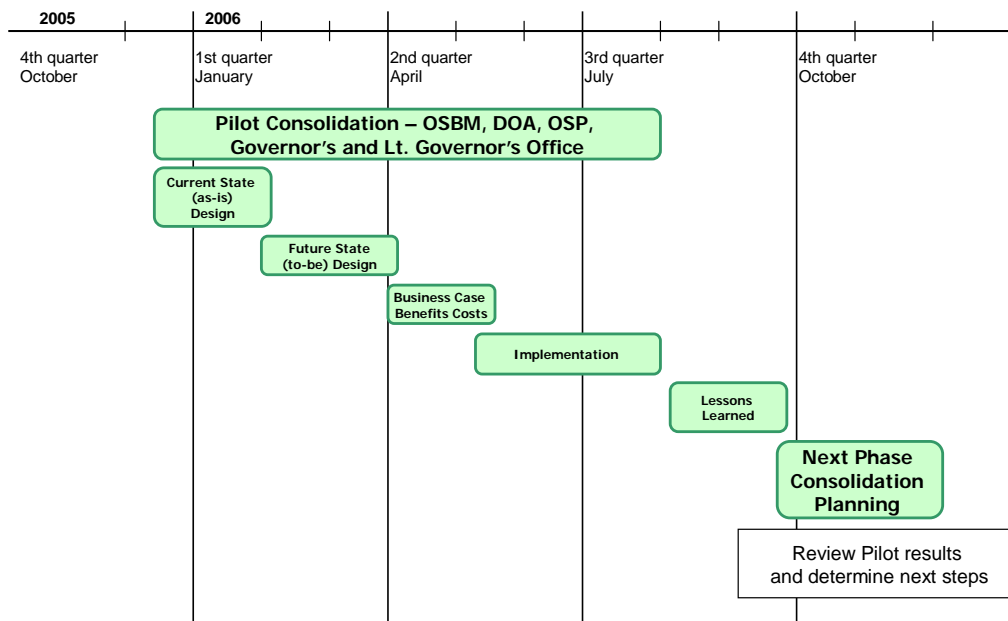
Any realignment of state employees would be achieved through attrition, retraining and reassignment. Some job re-classifications could be necessary. The Office of State Personnel has agreed to help with the human resource issues.

Following implementation, a thorough review of lessons learned will be completed to ensure the next departments to be rolled out are handled with the least impact to their businesses.

The road map for the pilot phase is shown here:

IT Consolidation Roadmap

2005	2006			
4th quarter October	1st quarter January	2nd quarter April	3rd quarter July	4th quarter October

Pilot Consolidation – OSBM, DOA, OSP, Governor's and Lt. Governor's Office

Current State (as-is) Design

Future State (to-be) Design

Business Case Benefits Costs

Implementation

Lessons Learned

Next Phase Consolidation Planning

Review Pilot results and determine next steps

Pilot to have post mortem 6 months following implementation.

Details of the pilot consolidation plan are shown in Appendix II and Appendix III.

The phased consolidation of IT infrastructure provides the best route for North Carolina. This careful, measured effort will allow us to learn as we go, give departments a greater opportunity to provide input and minimize disruptions. However, it is worth noting that other states have gone down a different path. The State of Michigan, Virginia and Minnesota (reference Appendix I External Input) have realigned all department CIOs so they report to the State CIO. This approach ensures all parties are marching in the same direction and have the same level of motivation to achieve the State's IT infrastructure consolidation goals.

Business Process Consolidation

While consolidation of the state's IT infrastructure will increase efficiency and cut costs, any savings pale in comparison to what could be achieved by consolidating some business applications that cross departments. The Statewide Business Infrastructure Program (SBIP) implements an Enterprise Resource Planning (ERP) system replacing several of the state's antiquated legacy applications that pose risks from outdated technology and potential for failure. As such, SBIP is the largest 'live' example of such a consolidation initiative. By addressing HR, payroll, data warehousing, and financials, the state is poised to capture substantial operating improvements. One potential benefit of the IT infrastructures consolidation is that it will make the consolidation under SBIP smoother.

Recommendations

- Beyond SBIP there are probably other opportunities for the state to consolidate some back end systems and save resources. Permitting and grants are two examples of business processes used by multiple departments where consolidation may generate efficiencies. As part of the IT project approval process and the application portfolio management process, the State CIO should start collecting structured data on the operating components of department systems as well as their business functions. This information could be used to identify future opportunities.

D. Department Level Organization

While there is a need for consolidation across departments there is also a need for consolidation at the department level for the State to maximize its use of IT resources.

There are four dimensions of IT organization structure[1]. Organizations are typically aligned by *technology silos*, *structure of business* or *IT service*. A technology silo is mainframe operations, or any pure technology not associated with a particular business function. Structure of the business is built around the historical hierarchy of the organization like departments, agencies, and divisions. IT service is a matrix dimension of the first two, applying a technology service (e.g. desktop maintenance) across the structure of the business. Today, 95% of organizations fit into

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[1] Taken from discussions with the Gartner Group.

one of these categories. The last category is **business process** which entails organizing IT around a service to citizens like criminal justice, benefit delivery or environmental protection.

North Carolina's departments mostly use a mix of the first three organizational structures. Mixing the structures makes it difficult to focus resources and spending. The IT infrastructure consolidation will create some uniformity around particular IT services in the departments, but alone it will not eliminate inefficiency and duplication. Consolidation also must occur within departments.   Today, many departments do not have a centralized reporting or IT budget structure. They operate multiple IT shops within the same department.

There is another problem; a skills gap in departments. Some departments simply do not have the right people with the right skills that they need to adequately support their most critical business needs. They are simply too small to have the variety of skills necessary to solve their information system challenges. Relieving departments of the responsibility of the IT infrastructure will not solve the problem, but it will help. IT employees can and should be retrained so their skills better match the needs of the departments. We are also helping in planning. The Office of State Personnel is currently working with ITS, State Controller, and the State Retirement System to analyze our current state workforce, identify gaps, and plan for attacking major gaps. New software will analyze and predict the workforce of North Carolina State Government.

Decentralization Inside Departments

Information submitted by the departments indicated that 18 out of 26 department CIOs report to someone other than the head of their department.   In most cases the CIO reported to the deputy or an assistant head of the department, many without oversight of the entire department. The data also showed that some departments are decentralized with most IT personnel not reporting to the CIO.

	CIO FTE	Total IT FTE*	FTE % CIO Control		CIO $'s	$M Total IT $'s	$'s % CIO Control
CCPS	3	51	6%		0.4	21.4	2%
DENR	21	150	14%		2.5	20.3	12%
Commerce	9	37	24%		1.0	6.2	16%
Labor	5	17	29%		0.5	2.0	25%
NCSSM	3	8	31%		0.3	0.6	49%
HHS	130	369	35%		50.6	171.1	30%
DOA	11	28	39%		0.8	3.5	23%
Agriculture	15	38	39%		1.2	4.3	28%
Scty State	5	11	45%		0.4	1.0	39%
Cult Res	7	15	47%		0.7	2.4	30%
Revenue	75	142	53%		13.6	21.2	64%
Corrections	78	121	64%		9.9	28.5	35%
DOT	201	288	70%		61.1	87.3	70%
Treasurer	35	41	85%		6.4	12.7	51%
DPI	88	101	87%		14.2	34.2	42%
DOJ	83	95	87%		9.9	12.3	80%
Wildlife	14	15	93%		3.0	5.3	56%
Insurance	14	15	93%		1.4	2.7	54%
Courts	137	142	97%		20.7	27.1	76%
JJDP	31	32	97%		2.9	6.2	46%
NCCCS	51	52	99%		14.8	15.0	99%
SBE	5	5	100%		1.3	3.0	42%
OSBM	7	7	100%		0.9	1.0	85%
Auditor	7	7	100%		1.1	1.1	93%
OSC	23	23	100%		4.5	5.9	76%

IT FTEs / Spending Under Agency CIO 'Control'
Sorted by lowest to highest FTE's under CIO Control

* Some agencies contain non IT personnel which distorts the FTE % CIO control number
Data Source: OSC drill down reports on IT Expenditures FY 2005

Some CIOs do not control all -- or even most -- of the IT resources and spending within their departments. CIOs in 11 out of 26 departments control less than 60% of their IT resources directly.   From a spending perspective, 17 out of 26 departments controlled less than 60% of their IT spending directly.[2] On an encouraging note, more than 90% of the departments control their IT spending to some degree by approving all IT procurements.

Skill Gap and Department Size

Smaller departments often do not have the resources to execute, manage, and operate IT systems and infrastructure that must exist regardless of their size. They do not keep project managers on staff because so few new projects come through. In addition, larger departments can leverage their size for lower prices.

In part, ITS exists to minimize some of these gaps. Bulk purchasing at the statewide level allows smaller departments to get large volume discounts. The IT consolidation initiative will allow smaller departments to focus their expertise on business applications rather than spreading it over infrastructure where they can not afford the same quality as larger departments. Enterprise Services in ITS has established a project manager pool that is available to departments on a per

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[2] For some departments this may be a little misleading since some employees may be classified incorrectly as IT personnel.

hour billing basis below market rates typically charged by private sector firms. Since the smaller departments infrequently required this skill, it did not make sense for them to keep a FTE with project management skills on board all the time. Another example of an enterprise service that would be unaffordable for any one department to fund is electronic document management (EDM). There is currently work underway to ascertain the feasibility of building an affordable EDM services model with ITS handling the infrastructure of the service and the departments handling their scanning needs.   The key to success for this enterprise service offering will be establishing a broad enough user base to obtain the economies of scale which will drive affordable subscription rates for the participating departments.

Recommendations

- All department CIOs should report to their department head or to a deputy that has operational oversight for the entire department. This will increase accountability, provide more direct oversight and better align IT with a department's strategic goals.

- Departments with decentralized or partially decentralized organizational structures should move toward a centralized organization structure with the objective of controlling 100% of the IT resources and spending.   For most departments this means that all department IT shops should report to the department CIOs. At a very few large departments, there may be a need for a limited number of specialized positions outside the central organization.

- CIOs for all departments should meet standardized job requirements to ensure the integrity and competency levels that the CIO position demands. The Office of State Personnel, working in conjunction with the State CIO, should develop job requirements for department CIOs and other senior IT management. Appendix IV (The Role of the Department CIO) suggests the key roles a CIO should perform in a department.

- The State CIO should be involved in the interview and screening process for all department and agency CIOs.

- Many services from ITS have helped minimize the difficulty of maintaining the threshold of properly managed information systems. However, IT management in the departments is still uneven and other options should be examined. Over the course of the IT consolidation initiative, smaller departments should be examined to see if merging similar departments' IT organizations (e.g. lines of business that cover similar subject matters) could provide the scale of resources necessary for proper management. However, the reporting structure of a CIO that served multiple departments would need to be closely examined.

- ITS Enterprise Services must be constantly evaluated against the needs of small departments through direct department feed back and through analysis of the IT management measures discussed in Section E. Consistent problems in particular areas among smaller departments should prompt new services.

E. Contract Management

As part of this study, OSBM was directed to develop specific recommendations to convert contractor FTE to State positions for recurring activities where the contractor positions have been filled for 12 months, beginning July 1, 2003. The nature of the work being performed by the contractors, the level of technical expertise required for the work, and whether the use of State positions would be more economical was used as the framework for making these evaluations.

Departments have identified in excess of 300 contractor positions for conversion to state employee positions. $12 million could be obtained with conversion of these positions, but budget constraints and other considerations may require some time to realize all the savings. It is possible that additional conversions will be identified at each department during the detailed study conducted in each phase of the consolidation effort.

Through December, the Office of State Budget & Management has approved 180 conversions which include conversions from prior programs (e.g. Department of Public Instruction)[3]. Some dollar savings have been redeployed to department's IT needs, and overall annual savings from those converted should generate approximately $2 million in fiscal year 2006.

	Contractor Conversions				
$K	# of Potential Positions to be Converted	Potential Annual $ Savings	# of Positions Approved To Date	Estimated Annual $ Savings*	To-Go Positions to Convert
DOT	139	$4,646	42	$1,769	97
NCCCS**	25	$2,128	0	$0	25
DENR	10	$1,580	2	$316	8
HHS	78	$1,201	78	$1,201	0
DPI	39	$1,006	28	$722	11
SBE	9	$482	9	$482	0
DJJDP	8	$267	0	$0	8
Treasurer	5	$237	0	$0	5
Wildlife	3	$232	3	$232	0
Revenue	12	$174	6	$87	6
Commerce	2	$162	1	$81	1
DOJ	2	$93	2	$93	0
CCPS	2	$86	2	$86	0
Insurance	3	$63	3	$63	0
OSC	4	$63	4	$63	0
Corrections	7	$12	0	$0	7
	348	$12,432	180	$5,195	168

*Positions may be approved but not fully executed/transitioned for 3-6mths, therefore lag in timing of savings

**Contractors on board till 7/2007 project end date.   Summarycontconv1.xls

Aggregated Purchases Enterprise License Agreements (ELAs)

Since November, 2004, 4 bulk PC purchases consisting of ~13000 desktops / laptops and 2 bulk printer purchases consisting of ~3900 printers have been made. These bulk purchases generated close to $7 million in savings. The bulk purchases are executed approximately every 3 months and generally range from 2500-4000 units per transaction.

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[3] The Department of Public Instruction via the Budgetary Actions for the 2004 General Assembly were directed to have an appropriation reduction and to reduce contractor labor cost thru contract conversions.

Three ELAs were negotiated, one with SAS in December, 2004, ESRI in July, 2005 and Novell (Identity products) in October, 2005. All of these generated ~$5 million in savings / cost avoidance. Two other vendors (Oracle and Microsoft) for ELAs are under review. As part of the infrastructure consolidation program, inventory templates have been issued to departments to inventory existing software contracts to see if any other ELAs are appropriate to initiate with vendors to accrue more savings.

ITS has also executed four multi-year infrastructure maintenance agreements in accordance with the 2004 legislative session special provision, Section 21.2(a). The four maintenance agreements have generated cost savings of ~$2.5 million this fiscal year. Adding together last year's estimated savings of $4.1 million brings the total cost savings in the 2 years of the pilot program to more than $6.5 million.

It is clear that the process efficiencies of establishing common configurations and system images drive the savings benefit of bulk purchasing power. However, refinement to this process is required to preserve the front end bulk savings, by ensuring that the departments are not incurring extra cost on the back end of the process. To that end, a representative group of has been selected to interface with ITS to provide updated specifications for desktops/laptops in advance of bulk purchases. By getting the specifications ironed out in advance, it will prevent costs from being incurred by the departments to add accessories after the bulk order has been delivered.

Recommendations

- Regarding hardware bulk purchases, the SCIO should negotiate staggered delivery schedules for departments that cannot accept bulk loads all at once due to space and resource limitations. Departments should plan in advance to be able to deploy the requested equipment within a 30 day time frame of receipt.

- The SCIO should schedule a bulk purchase cycle toward the end of the fiscal year to allow for departments to optimize their end of year IT purchases.

F. Department IT Management

A year and a half since SB991, the Office of the State CIO oversees information systems more directly and completely. It does this in four ways:
- The IT project approval process.
- The monthly status reporting of projects being implemented, and
- The legacy application assessment.
- Working with OSBM on review of department IT budgets.

All four of these processes work to ensure spending on IT is delivering results for the programs of State, and ultimately the public.

	Number of Active IT Projects in FY06
HHS	25
DOT	19
ITS	15
DENR	9
Commerce*	7
DPI	6
CCPS	6
DOJ	6
Wildlife	4
DOA**	4
ESC	3
NCCCS	2
Treasurer	2
OSC	2
SBE	2
Revenue	1
Agriculture	1
Insurance	1
Labor	1
Total	116

* Commerce includes Port Authority

** DOA includes OSP

The above table shows the number of active IT projects by department that have been reported to ITS.

Measuring Performance

If project spending does not flow through one of the above processes it cannot be evaluated, improved, and monitored. The percentage of department dollars that flow through a review process is the *visibility* of the department's IT portfolio. The department's visibility is a strong indicator of the health of IT management at a department. Higher visibility means an increased coordination of IT systems and more outcome oriented spending. Unfortunately, this level of data is currently not available. The State CIO is in the process of gathering legacy application information and plans to continuously monitor it in the future through Application Portfolio Management. In addition, the Office of State Controller is working with the State CIO to use data from the IT project approval process to supplement the Information Technology Expenditure Report. With these two changes the visibility of department IT spending will become more apparent.

Currently some measurement is taking place. The SCIO collects monthly status reports from all known IT projects in implementation. The data and the criteria used to evaluate it are consistent. This enables an accurate depiction of "how is the project doing" through published performance metrics. Problems become known and resources can be brought to bear to correct them. In addition, ITS is starting to use an international set of IT service management standards to measure their own performance.

Similarly, measurement can be used to evaluate how entire departments are managing all their IT systems, not just particular projects, applications or services. Improving department management of IT requires measuring its performance. Without transparency of management issues they are often avoided and ignored. Here are two examples of performance metrics being used on a quarterly basis to evaluate the IT management of departments.

The State of Virginia is using this technique at www.vaexcels.governor.virginia.gov/. Virginia measures three aspects of department IT management:

- **IT PLANNING:** Integrates information technology into business operations effectively by implementing a successful Department IT Strategic Plan tied to the business issues of the department. Use of information technology continuously leads to efficiencies in business operations.
- **IT PROJECT MANAGEMENT:** Manages and reviews department-based information technology projects to ensure that projects are on schedule, within budget, and meeting business-oriented performance measures. Takes prompt corrective action to address project cost, schedule and performance baseline breaches.
- **POLICY ADHERENCE:** Adheres to statewide information technology policies and standards for the management of all department IT investments.

In addition, the Federal government evaluates Departments on a performance metrics at www.results.gov. They evaluate:

- **IT JUSTIFICATION**: Percentage of department major IT investments with sound business cases.
- **SECURITY**: Percentage of secure IT systems.
- **IT PROJECT MANAGEMENT**: Percentage variance of cost and schedule goals for major IT investments.

Both the Federal government and the State of Virginia assume a significant visibility of their portfolios as they are only measuring the IT systems that are reported. In addition, other measurement areas are often used such as department architecture compliance, business continuity compliance, and contract management.

Recommendations:

- OSBM and other appropriate agencies should periodically evaluate department level management of IT using objective evaluation measurement processes.

G. Conclusion

SB991 has allowed but does not guarantee proper management of information technology systems. So far the savings have been significant:

- Many departments are changing the way they think about IT projects as part of investments in their operational infrastructure. They are beginning to quantify the benefits

of their information systems investments so that the most valuable projects can be chosen and so they have a true measure of the project's success.

- The information technology project approval process has proven extremely valuable. While the need for disapprovals and project suspensions has been rare, over 90% of projects reviewed were modified to improve their success. These modifications have avoided wasted time, resources, and money.
- We have already seen progress made to date on contractor conversions with savings already being realized.
- Statewide bulk hardware and software procurement has allowed the state to save through better pricing.

The consolidations planned in the infrastructure pilot and SBIP hold the key for greater savings and efficiencies in the future. However, it is important to understand that North Carolina's information technology spending per employee, excluding Universities, is 6% less than the total government sector and 16% less than the Services sector.[4] Since we are spending less than the industry standard it becomes even more important that we spend what we do have well. SB991 affords the opportunity to redirect redundant IT spending to critical IT investments to maximize the return for the state of North Carolina.

Progress reports on department IT infrastructure consolidation pilot will be provided to the Information Technology Advisory Board on a regular basis.

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[4] Gartner 2004 IT Spending and Staffing Survey Results published October 29,2004. The Services sector, though not a 100% comparable, is a reasonable area to bench mark since many of the State's departments are in the business of servicing the public.

APPENDIX I

External Input

Data Sources
Best practices data from the following sources, Gartner   http://www.gartner.com ; Robert Francis Group http://www.rfgonline.com/ ; NASCIO https://www.nascio.org/ ; and the Digital Government http://www.govtech.net/ were reviewed as well as progress on what other states have been doing. All areas of input confirm that the direction to move toward some level of infrastructure consolidation is consistent with the industry direction.

From the best practices reviews mentioned above and specifically from the Federal CIO Survey which was made up of 29 civilian agencies, 9 defense departments and 6 legislative offices, the findings were that CIOs and IT managers are focused on system consolidation and security. They also stated that CIOs top priorities include risk management, integrating physical and IT security and assessing vulnerabilities of less critical systems.   In addition, the IT Association of America Survey stated that CIOs are looking to reduce the number of email, file and print servers in use and cut the number of data centers. They also view a move to Enterprise software licensing as important.

Michigan, Virginia and Minnesota have been aggressive in consolidating their IT organizations and have taken a 'big bang' approach by consolidating IT personnel into one centralized department.

Michigan: http://www.michigan.gov/dit/
Michigan's landscape of IT was like most states today. It consisted of siloed IT organizations within agencies, several data centers and server rooms spread throughout the state, several desktop operating systems in use, multiple Local Area Networks with various vendor/technology LAN infrastructures, multiple tools to support application development and a significant amount of databases using many different database management systems and multiple email applications in use.

The Michigan Department of Information Technology (MDIT) was created in October 2001 by Executive Order No. 2001-3 to achieve a unified, cost-effective approach for managing information technology among all Executive Branch agencies. Michigan centralized information technology resources and functions from 19 state agencies, encompassing all IT personnel (1,700 plus), equipment, and activities. This single department uses a strategic, statewide service approach to address the challenges of declining resources, increasing demand, security, and government transformation goals. The Department's initial charge included centralizing IT policy-making, unifying strategic information technology planning; improving information, project, and systems management; managing enterprise projects; consolidating infrastructure and application development; and addressing enterprise security needs.

Michigan used a phased approach, spanning four years, and having the full executive sponsorship of two administrations. A premium was placed on change and risk management, customer, cross-boundary and service relationships, and outreach processes. Existing organizations and functions were consolidated, several were materially strengthened or changed, and a number of new

functions, processes and organizational units were created. New functions and processes included Agency Services, the Services Delivery Improvement Initiative, a consolidated infrastructure organization, Office of Technology Partnerships, Outreach Office, Center for Geographic Information, and the establishment of the internal and external liaison and advisory bodies MITEC and CyberMichigan.

The consolidation enabled major reductions in staff and expenditures, while maintaining or increasing service levels. Total Interdepartmental grant spending (IDG) was reduced from $465.6 to $350.5 million (24.7%). State employee staff was reduced from 2,064 to 1,762 (15 %), and contractors from 1,764 to 469 (64 %), for a total reduction of 34 percent. (1)

Virginia: http://www.vita.virginia.gov/
Virginia has consolidated IT resources and personnel of 90 executive branch agencies into the Virginia Information Technologies Agency (VITA). Virginia has also recently made the decision to outsource the rebuilding of VA's government computer & communications systems to Northrop Grumman. The outsourcing plan is the largest such effort undertaken by a U.S. state government. The deal is worth ~$2 billion over 10 years. The state believes that cost will be about $38M a year less than VITA spends annually now on the state's IT system hardware.   Virginia is also negotiating with a firm to modernize its software systems. Both the outsourcing and the software contracts will touch the work of 6800 state government employees (about 10% of the state's regular work force). (2)

Minnesota: **http://www.governor.state.mn.us/Tpaw_View_Article.asp?artid=1308**
Minnesota has what they refer to as their Drive to Excellence initiative which is a transformation from an individual agency model to an enterprise model. The state believes that an enterprise strategy and structure is necessary to equalize information technology systems, eliminate redundant expenditures, strengthen security, and increase compatibility. Their roadmap calls for creating an enterprise-wide structure for managing information technology that will leverage investments, consolidate data collection, develop shared applications, accelerate the use of electronic forms, use enterprise-wide licensing software, and other reforms. An executive order (05-07 April 4, 2005) is in place that directs the state departments to support the implementation activities of the Drive to Excellence Reform Initiative. The CIO is a member of the Department's executive staff and is responsible to manage the Information Technology ("IT") resources of the State, develop and implement policies, procedures, and standards ensuring the optimal leveraging of IT across the state enterprise, and manage consistency and efficiency in IT activities including standardization of policies, procedures, data, and tools.

The State of Minnesota's CIO is also responsible for:

a. Refining the vision and structure of IT governance including roles and responsibilities for both central IT and state departments;

b. Designing and implementing a robust enterprise-wide IT organization and track associated savings with aligned processes, management, and administrative practices;

c. Defining a decision-making process that will be used to set standards for enterprise-wide IT, with an initial emphasis on common processes, policies, and systems;

d. Defining and implementing a Service Level Agreement process for defining, developing, and delivering common infrastructure services;

e. Defining an exception approval process for any department- or program-specific needs determined to be inconsistent with established state architecture, technology or process standards;

f. Defining a process for coordinating shared IT planning, program management, performance measurement, and application development among departments; and

g. Using reorganization orders, statutory changes and other agreements consistent with state law to achieve the goals of the Drive to Excellence order. (3)

If all aspects of the Drive to Excellence initiative are implemented, which will include IT, purchasing, licensing, code consolidation, grant management and real property management , overall savings could be as much as $570M by 2011.

(1) MDIT Implementation of Consolidated IT Services Digital Government Management
(2) TimesDispatch.com Richmond Times-Dispatch 10/26/2005
(3) Executive Order 05-04 dated April 4, 2005 Providing Direction to State Departments Regarding Information

APPENDIX II

Department IT Consolidation Project Plan

Program and Project Team Management and Logistics
- Communication to Phase 1 Departments of IT Consolidation Project.
- Creation of Department, ITS, OSBM, OSP and OSC IT Consolidation project team.
- Communication plan and strategy
- Consolidation Web Site
- Change Management
- Change Agent role within the department

Inventory of current IT environment in the Phase 1 departments to include:
Hardware, software, applications, middleware, interfaces, network infrastructure, telecom infrastructure, security infrastructure, desktop, contracts, licenses, leases, IT expenditures, processes, organization.

Assessment of current IT environment (current state/"as-is") to include:
Summarization of inventory, review and verification of current state IT infrastructure environment, review and verify current organization, review and verify IT expenditures, review and verify current processes, finalize department costs associated with IT infrastructure and consolidation.

Development of future state design (future state/"to-be") for the IT Consolidation of the Phase 1 departments to include:
- Technical "to-be" infrastructure – network design, security design, data center design, desktop design and LAN management design.

- Identify and resolution of application software, middleware and interface changes as a result of the "to-be" infrastructure design.

- Identification of business, organization, work and funding processes that may have to change as a result of the future state design. This includes asset management, help desk, technology planning functions and any governance or policy changes.

- Identification of opportunities to leverage enterprise contracts.

- Identification of how smaller departments could benefit from IT Consolidation.

Finalization of benefits and costs associated with Department IT Consolidation based on an initiative by initiative basis.

APPENDIX III

Management Process of Consolidation Effort

Assumptions
- The Office of Information Technology Services will be ready to assume IT consolidation for infrastructure areas such as network operations, security operations and data center/server room operations as the phases are undertaken.
- ITS has a strategic initiative and work group in place to make recommendations for consolidation of desktop and LAN management, support and services.
- Executive support and sponsorship will help to overcome resistance or barriers to change.
- It is assumed that all core team members will be available to complete assigned tasks by scheduled target dates and will be able to make the commitment to this effort during the timeframes specified.
- Potential funding may be required to overcome initial costs so that longer term tangible and/or intangible savings can be realized.
- The departments selected in Phase 1 will have the resource time to help perform change management, communication and the due diligence process.
- Larger departments must consolidate within their own organization prior to ITS consolidation.
- The ITS Data Center will have facility space to host additional equipment.

Dependencies
- Desktop and LAN Management strategy is needed by third quarter 2006.
- Execution of successful consolidation within department prior to ITS consolidation
- The development of Service Level Agreement (SLA) templates and the SLA process must be completed by July 2006.

Constraints
Inventory data will be able to be maintained manually with spreadsheets for the Phase 1 departments, after the Phase 1 completion, an inventory database or asset management function will need to be developed for additional consolidation implementation.

Risk Management
Risks associated with Department IT Consolidation to be considered are:
- Lack of management sponsorship,
- lack of department resources,
- lack of ITS resources,
- resistance to change and entrenchment,
- poor documentation and lack of standards,
- limited funds,
- lack of approval for organizational change,
- high cost of depreciation write offs or lease extensions/buyouts,
- inability to meet service level agreements,
- no desktop or LAN management strategy and immature or undeveloped processes.

Monitoring and Control Mechanisms

Adherence to the project plan will be monitored, tracked and controlled with the following mechanisms:

- Microsoft Project Plan with key deliverables associated with milestones and documented with a specific deadline and budget will be published and agreed to.
- The Enterprise Project Management Office (EPMO) will provide oversight to the project.
- Weekly project team meeting will help to determine and report on the progress of the project.
- Project status report will provide updates to key sponsors and team members.
- Issues log will help to manage project concerns, technology questions, resource constraints or any risk related issues. The issues log will be reviewed every project team meeting.
- Steering committee meetings will be held monthly to review progress of the project and make decisions on any key issues with the project.

APPENDIX IV

The Role of the Department CIO

The following guidance for departments regarding the role of the department CIO is recommended to ensure clear accountability for information resources management activities.

Government is primarily a service delivery organization that is dependent on information systems. Proper information systems management is critical for the efficient operation of government and its interaction with the public.

A. Role in the Department

The Chief Information Officer must:
1. have information systems management duties as her/his primary duty;
2. report directly to the department head or to a deputy that has operational oversight for the entire department.
3. have the visibility and management responsibilities necessary to advise the department head on the design, development, and implementation of information systems;
4. be primarily responsible for:
    a. the operation of department-wide information systems,
    b. systems that span multiple divisions or business units, or
    c. other information assets or information resource functions that are not unique to the mission-critical functions of the divisions or business units;
5. set departmental information systems management policy; and
6. have oversight responsibility for all information systems management activities including the authority to implement and enforce applicable State-wide and department information systems management laws, policies, principles, standards, and guidelines.

B. Goals of the CIO

The Chief Information Officer should:
1. carry out the department's information systems management activities to improve department productivity, efficiency, and effectiveness;
2. promote the effective and efficient design and operation of all major information systems management processes for the department, including improvements to work processes;
3. direct the use of information technology to reduce burden on the public and improve responsiveness to the public;

C. Strategic Planning and Architecture

The Chief Information Officer must:
1. develop, maintain, and facilitate the implementation of a sound and integrated information systems architecture for the department that conforms with the State architecture and conforms with the strategic goals of the department;

2. actively participate during all department strategic management activities, including the development, implementation, and maintenance of department strategic and operational plans;
3. advise the department head on information system implications of strategic planning decisions; and
4. advise the department head on department-wide consolidation or business process re-engineering that could improve operational efficiency or reduce public burden;
5. annually, as part of the strategic planning and performance evaluation process, assess the requirements established for department personnel regarding knowledge and skill in information systems and project management and the adequacy of such requirements for facilitating the achievement of the performance goals established for information systems operation and implementation. Further, the CIO must, in order to rectify any deficiency in meeting those requirements, develop strategies and specific plans for hiring, training, and professional development; and report to the head of the department on the progress made in improving information systems management capability.

D. Information Systems Selection

The Chief Information Officer must:
1. Establish a process for the selection of major department information systems with other department senior executives that
   a. is integrated with budget, financial, and program management decisions;
   b. ensures adequate security planning and implementation;
   c. ensures adequate privacy protection;
   d. ensures conformity with public records policy, regulation, and laws;
   e. ensures conformity with state and department architecture;
   f. ensures the information system is the most cost effective method of achieving the goals of the department;
   g. ensures adequate performance measures;
   h. ensures the project is doable and has an acceptable chance of success;
2. advise the department head on budgetary implications of information systems decisions; and
3. be an active participant throughout the department budget process in establishing investment priorities for department information systems.

E. Information Systems Oversight

The Chief Information Officer must:
1. monitor and evaluate the performance of all information systems through an investment control process on the basis of applicable performance measures;
2. report and recommend corrections to any violations of department or state-wide policy contained in an department information system; and
3. advise the department head on whether to continue, modify, redirect, or terminate information systems.