

Management Practices

This portion of the assessment focused on determining the overall capability of the IT organizations, the use of technology, and the effectiveness and maturity of IT management practices (e.g., budgeting, chargeback, supplier management, development, education, service management, and project management). We conducted a high-level management practices workshop with all twelve agencies to gain an assessment of their IT organization. This workshop gauges the maturity of the IT organization's processes and is structured to draw out the perception of how responsive the IT organization is to its current environment, and also determine how the IT organization builds and maintains relationships. In addition, at OIR, we conducted an in-depth workshop on the application development and maintenance function and one for data center operations. The process of determining the overall maturity and effectiveness of the IT organization generates findings and observations that lead to shifting the organization to one better able to deliver the strategic demands placed on it.

Finding: *The only state agency that was found to employ performance measurement and reporting was OIR. While OIR reports on many metrics related to workload and performance, it does not report on level of service or value provided.*

OIR does capture and report on many metrics related to workload and performance. They include:

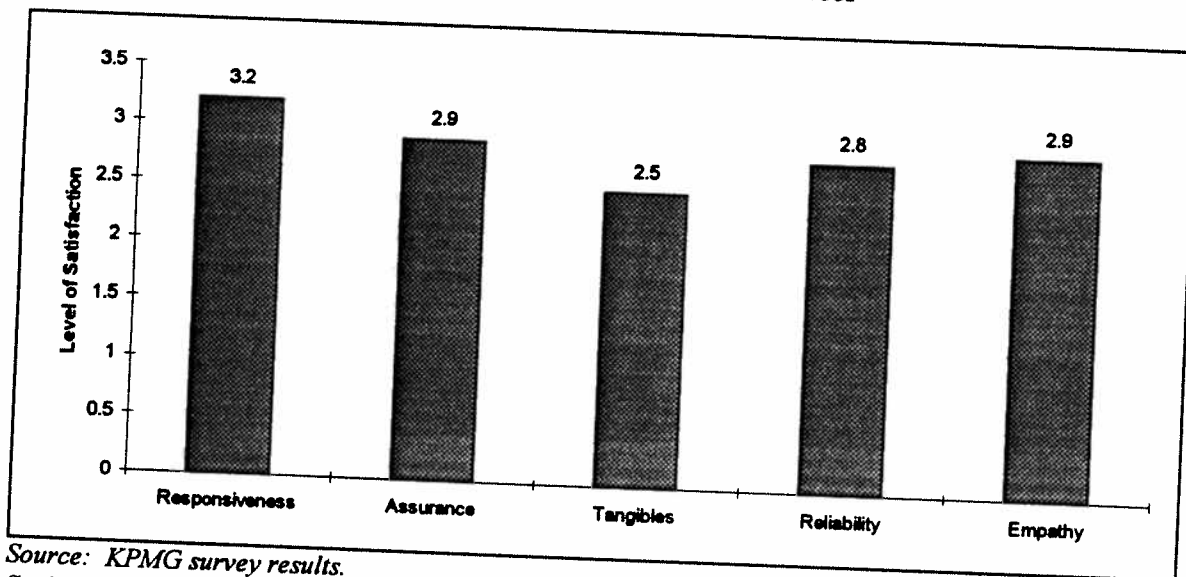
- Telecommunications
 - Number of service/repair orders
 - Number of employees trained
 - Number of attendant calls
 - Number of telephone ports
 - Number of voice mailboxes
 - Time to complete a service/repair order
 - Number of telephone calls blocked
 - Percentage of billable time by technician
 - Cost avoidance using state employees
 - Number of lines per technician
 - Telephone rates
 - Costs of telephone lines and telephones
- End User Computing
 - Number of LAN's supported
 - Number of LAN customers supported
 - Number of E-mail users supported
 - Number of servers supported
 - Number of gateways supported

- Number of training classes and customers trained
 - Training revenue
 - Number of help desk calls
 - LAN availability
- Data Center
 - Number of networked devices supported
 - Number of individuals customers supported
 - Number of jobs processed
 - Number of lines printed
 - Percentage of jobs completed on schedule
 - Number of tape mounts
 - System availability

Most of OIR's measures are expressed in technology terms, not in a manner meaningful to agency leaders. Not all key components are measured for cost, performance, and quality. To date, there has been little ongoing benchmarking of performance to comparable states' agencies or the private sector.

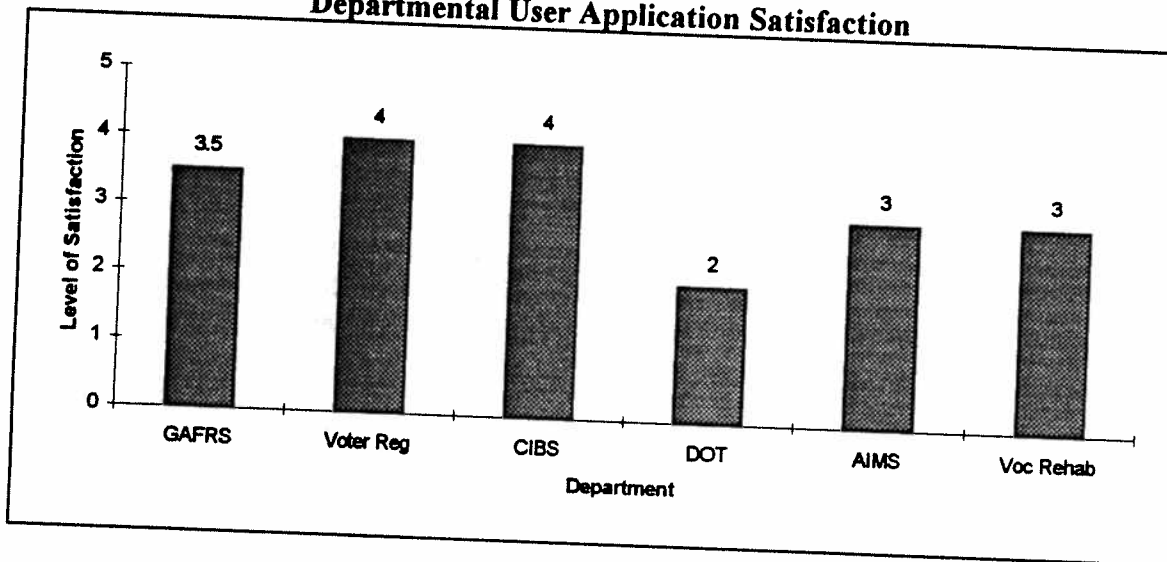
A key performance indicator that should be measured is customer satisfaction. In a limited survey to a sample of some users, we found that overall satisfaction was good. The graphics on the next page and in the appendix section depict the results of the survey. Users are most satisfied with the OIR's responsiveness to their questions and needs. The area singled out requiring change was OIR's ability to understand and solve agency business problems.

Exhibit 3 - 1
User Satisfaction with OIR Services



Source: KPMG survey results.
Scale: 0 = lowest
4 = highest

Exhibit 3 - 2
Departmental User Application Satisfaction



Source: KPMG survey results.
Scale: 0 = lowest
4 = highest

Most agencies perform little or no performance measurement of the services they provide. The concept of service level agreements is not utilized at any of the agencies we interviewed. Without statistics, they are unable to demonstrate the amount of activity performed and the value they add.

Recommendation: State agencies should implement measurements and a reporting system that measure their performance in a balanced approach.

Common procedures, monitoring, measurement and regular reporting of performance will allow a greater understanding of what is done and greater appreciation of value received for the funding spent. Many world class organizations utilize a balanced scorecard approach to define success metrics. The four key components of the balanced scorecard score card approach include customer satisfaction, financial performance, business process improvement and organization learning and growth. Some indicator level metrics that should be considered by state agencies that have IT organizations include:

- Data Center
 - Number of FTEs
 - Technology spending
 - Total spending
 - Processor utilization
 - Response time
 - System availability
 - Performance against negotiated service level agreements
 - Production job failure rate
- End User Computing
 - Time to complete a move/add/change
 - Mean time to repair
 - Performance against negotiated service level agreements
 - Cost per workstation
 - Number of employees per support personnel
 - Speed of answer in seconds by the help desk
 - Percentage of clients satisfied with one help desk contact
 - Abandon rate of telephone calls to the help desk
- Telecommunications
 - Number of FTEs
 - Technology spending
 - Total personnel spending
 - Total spending
 - Network utilization
 - Response time
 - Availability
- Application development and maintenance
 - Task completion date compared to projected schedule
 - Task completion cost compared to projected cost
 - Extent to which projected benefits of IT initiatives are achieved

- Customer satisfaction, both "transactional" (project) and time-based

Finding: *The state has not fully implemented modern application development and project management tools and techniques.*

The following findings were found during discussions and workshops conducted with OIR and twelve other agencies:

- Many agencies have significant backlogs of program modification requests
- A standard system development life cycle (SDLC) and software evaluation process do not exist
- A formal project management methodology and associated tools do not exist, which hinders the ability to track costs and dates
- Project management estimates are unsupported and therefore tend to be unrealistic
- Common development standards (naming conventions, project management, design, coding, testing) do not exist
- Applications are not developed in a consistent manner across technology organizations
- There is limited involvement between developers and users during the development process
- The quality of documentation (program, user, operational) for current systems is inconsistent
- There is no common change control methodology or tools for program version control
- The application development groups are not currently using automated estimating, design or testing tools

Recommendation: *The IRC should recommend modern and improved systems development and project management tools and techniques throughout the state.*

The state should adopt a System Development Lifecycle (SDLC) methodology (including standards) to guide all application development and maintenance efforts throughout all agencies. In addition they should implement formal project management methodologies. It should include standardizing on a project management tool (e.g., Microsoft Project, Project Workbench, etc.). The state should evaluate and implement productivity enhancement tools to support estimating, design, testing, and software control.

Data Center Consolidation

The state has recognized that opportunities exist to significantly reduce the level of expenditures and improve the effectiveness of the Information Technology function. Historically, the state has not viewed its IT needs in an enterprise fashion, thus allowing each agency's IT unit to operate independently. The resulting disparate technology infrastructure has made it difficult for agencies to share hardware, software and data. This has created inefficiencies, redundancies and additional costs. It has also resulted in small IT organizations that are unable to realize economies of scale, attract talented professionals and efficiently manage and operate their technology. The state completed a study last January that described a consolidation approach to their largest mainframe (MVS and NON-MVS) data centers. The study projected that combining eleven of the twelve major data centers into two would result in savings over \$30,000,000 in 10 years. The Employment Security Commission would be a separate and independent data center due to the issues related to federal funding. In addition, this effort is expected to facilitate in creating enterprise standards and sharing data and resources as well as creation of a disaster recovery plan. The following findings and recommendations are related to the data center consolidation effort that is underway.

Finding: *OIR's approach to the data center consolidation effort is sound and covers all aspects of a project of this magnitude.*

Data center consolidation is one of the most significant opportunities to reduce costs. The OIR group is leading this effort and will manage the new data center. They have plans to utilize an outside consulting agency to assist in this endeavor. OIR has eight separate teams that are focusing on the different aspects of the consolidation. The teams and their main responsibilities include:

- Facilities planning - Selection, design, and construction of new data center.
- Financial planning - Determine costs, budget, funding and chargeback formulas.
- Hardware and software planning - Analysis, selection and acquisition of hardware and software required.
- Network planning - Determine, select and acquire network components to allow agencies to communicate to the consolidated data center.
- Personnel planning - Determine staffing requirements for the consolidated data center.
- Scheduling team - Determine order of agencies to be converted as well as the conversion approach.

- **Systems integration** - Perform project management of the consolidation project. Includes determining service level agreements, implementation and roll-out of software, hardware and selected agency application systems.
- **Public Relations** - Communicate schedules and events to employees and constituents.

Current plans call for building a new site that will house the 30,000 square foot facility on state owned property that is out of the flood plain. Print services will be distributed at two existing facilities.

Recommendation: OIR should investigate and implement initiatives to achieve recommended efficiencies in the management and operation of the consolidated data center.

The DCC plan is based on the concept that the system integrator will help the state design a combined data center that will utilize automation software, hardware, and proven techniques to achieve efficiencies in areas such as storage management, problem and change management, console management, capacity management, batch job scheduling, on-line print viewing, and disaster recovery planning. During the data center management practices workshop conducted with OIR, KPMG found that many of these tools and techniques are not currently in use. These tools help reduce staff, optimize utilization of hardware, minimize printing costs and improve service and performance.

Telecommunications

The State of South Carolina provides voice, data and video services for many departments which are geographically dispersed throughout the state and has done so for many years. Many of these services are combined into a state-wide infrastructure supported centrally by staff in the Columbia area, with field service staff located in higher density areas. This infrastructure allows the state to communicate with many agencies in an efficient manner and coordinate major upgrades and renewal efforts. New initiatives underway will also provide connectivity to schools throughout the state allowing them to communicate with each other and the state as well as the Internet.

KPMG interviewed staff members within the Telecommunications section of the Office of Information Resources to determine the extent of the network infrastructure, general architectures, support provided, costs, and service levels of contractors and vendors. Following is our assessment of the telecommunications operations of the State of South Carolina.

Financial Review

OIR provided KPMG with General Ledgers and Direct Expenditure Forms for April 1997. The ledgers provided summary and limited detailed information by budget unit within the OIR. The expenditure forms included vendor invoices. In most cases the detail pages

were omitted. Customer Service Records (CSR) from the primary telecommunications provider (Vendor "A", below) were not available.

The specific OIR units covered by these documents are:

- DIRM-Special Projects
- Telecommunications
- Microwave Services
- Field Services

Carrier-related expenses were reviewed for each OIR budget unit. Most of the communications expenditures appear in the Telecommunications unit. Of the selected expenses, items for April represented 31 different vendors and totaled \$1.403 million.

Finding: *There are 31 carriers or service providers represented on the accounting report.*

Three vendors account for over 90% of the expenditures. They are:

<u>Vendor</u>	<u>Expenditures</u>
"A"	\$ 879,000
"B"	\$ 220,000
"C"	\$ 192,000
Total	\$1,291,000

Four additional vendors account for 7%, or \$98,000, of the expenditures. The remaining \$14,000 is spread across 24 vendors.

Recommendation: *Minimize the number of bills to be paid to simplify the bill payment and accounting processes, reduce overhead, and contribute to the potential reduction of administrative staff.*

Determine which of the medium and low-end vendors (e.g., those with monthly billing less than \$10,000) provide duplicate-type services and continue to do business with those which provide the best service and coverage for the state. KPMG recognizes that implementing this recommendation for medium and low-end vendors may not be feasible in all areas of the state at this time due to the fact some small telephone companies are the only service providers in their respective areas.

Work with each vendor to explore opportunities to minimize the number of invoices being paid. Consolidate billing across vendors, especially for vendors whose billing is greater than \$10,000 per month.

OIR should investigate opportunities to reduce billing overhead for low-end vendors (e.g., those with monthly billing \$1,000) by arranging to be invoiced quarterly or annually in

advance for services. This may require policy changes by the Comptroller General's Office to implement this recommendation. There are 10 vendors whose monthly bills were less than \$80. Quarterly payments would reduce the annual number of checks drawn by 80 (from 120 down to 40).

Finding: *A single long distance vendor (Vendor "C") is carrying the bulk of the long distance calls; however, there are instances of calls being routed to other carriers, as well as non-contracted service with that same long distance vendor.*

Several Vendor "A" invoices contain charges for long distance carriers other than the primary long distance vendor. Routing calls to vendors other than the primary long distance vendor has an impact on gross volume for which the state may be eligible for discounts. It is possible that the base rates being charged for these calls may be higher than those from the primary long distance vendor. The latter could not be validated from the review of the bills supplied. OIR is currently working to correct these issues.

In addition, Vendor "A" is billing calls to the state for traffic routed to the primary long distance vendor. It is possible that these calls are being billed at the long distance vendor's standard rate instead of the proper contract rate established with Vendor "C".

At least 11 other long distance carriers appeared on the Vendor "A" bill as well. This is largely due to other long distance vendors changing the PIC (preferred interexchange carrier) from Vendor "C" to their organization. As indicated by OIR, this has been a problem in a number of areas, including state government, and the FCC continues to address this problem.

Recommendation: **Direct additional calls to the primary contracted long distance service in order to reduce costs.**

Based on April 1997 invoices, OIR estimates annual savings from implementing this recommendation to be approximately \$127,000 annually.

Review all Vendor "A" billing for calls being misdirected and initiate an order with this vendor to redirect all circuits, trunks and lines to the proper primary long distance service.

Recommendation: **Perform a detailed audit of primary long distance vendor billing against OIR's contracted rates with this long distance carrier.**

KPMG reviewed the General Ledgers and Direct Expenditure Forms for April 1997. The ledgers provided summary and limited detailed information by Budget Unit within the OIR. Since KPMG's initial analysis, OIR has performed a detailed audit of the April 1997 vendor invoices and determined an annual savings of approximately \$104,000 could be

realized by having these calls billed by the primary vendor at proper contract rates instead of the vendor's standard rates.

Contract Review

Nineteen documents including contracts, addenda and other related materials were provided. The following 17 contracts were identified:

- Vendor "A" (9 contracts): Equipment, Pay Phones, ISDN, ETN, Megalink, Multipoint Video Conferencing, 911 Service, Inside Wiring and Private Line Long Distance
- Vendor "C" (2 contracts): Long Distance and Internet Access
- Vendor "D" (2 contracts): Equipment & Service and Termination Access
- Vendor "E" (1 contract): Paging Service
- Vendor "F" (1 contract): Cellular Service
- Vendor "G" (1 contract): Cellular Service
- Vendor "H" (1 contract): Radio Networks

Finding: *A number of these contracts have expired or will expire within the next six to twelve months.*

It should be noted that OIR continues to use the competitive solicitation process wherever possible and is currently developing or conducting a number of competitive solicitations. In some cases, OIR may enter into short term contracts to take advantage of future competition and innovations in cases of regulatory requirements, immature markets, limited competition, and the like.

Recommendation: **Evaluate the appropriateness of converting month-to-month contracts to term contracts. Prepare to engage in a competitive bid process for those contracts expiring within the next six months.**

Potential cost reductions for contracts expiring within the next six months could be as high as 20%.

The Vendor "C" long distance contract term expires in February 1998. OIR should solicit bids from Vendor "C" and several other major carriers to leverage for the best rate structures, discounts and credits for long distance and 800 service. Based on the sample

month, expected long distance savings could be as high as \$461,000 annually. OIR is currently evaluating options in this area.

Recommendation: Consolidate the number of contracts with Vendors "A" and "C", thereby reducing contract management overhead.

Concentrate on working with the primary telecommunications service provider (Vendor "A") to simplify and reduce the number of contracts where permitted by regulatory agencies.

Technical Review

High level diagrams were provided for 5 networks; these included MetroNet, SNA Network, Frame Relay, Connectionless Data Service, and ETN/ESSX.

A list of 6 network management systems in use was provided; these included Monitor 1, Trouble Tracker, Terranova, Decision Pro, TMON, and Microwave Alarm and Control System.

Finding: *The network supports legacy applications and is slowly being migrated to TCP/IP applications. It is currently supporting 1,129 sites at an average location cost of \$154 per tail circuit and a data rate of 14.0kbps.*

Recommendation: Consolidate multiple data networks onto one highly reliable backbone and develop a more proactive conversion approach to migrate SNA to the TCP/IP platform.

Consolidation of multiple networks will allow the state to take advantage of newer, more reliable, technologies as well as provide better service levels and lower overall costs to the state. A consolidated network architecture will also provide the state with a plan to consolidate data centers, thereby allowing a consistent migration of network traffic onto a consistent network infrastructure.

Finding: *Tools available to staff to manage the network are minimal and make troubleshooting difficult and time consuming.*

OIR does not have a common approach and tools to proactively monitor and manage their extensive data network. This is further complicated by agencies having their own networks without tools to properly control and manage. World class IT organizations utilize a common method to control all components (i.e. hubs, routers, DSU/CSUs, etc.). This results in significant manual effort to administer as well as difficulty in problem solving.

Recommendation: OIR should develop a proactive method and approach to manage the state's network with tools capable of providing

**proactive monitoring and management of networked resources
(i.e., hubs, routers, DSU/CSUs, etc.).**

The state continues to rely on its network infrastructure as more applications are made available to state agencies and staff become reliant on electronic mail, web access, and file sharing. As this occurs, the network becomes more critical to the running state government and service delivery delays occur when it is not available.

Management of the network infrastructure becomes critical as does the ability to detect and remedy problems and outages before they occur. Management tools within the state are minimal and pose a risk of increasing downtime as well as service delivery interruptions. Tools to perform network management are readily available at reasonable costs and can be implemented in such a way as to keep pace with growing network complexity. Staff training should also occur and be maintained as network management tools are sophisticated requiring knowledgeable staff to manage the network proactively.

OIR has initiated the planning process and software evaluation necessary to implement this recommendation. Ultimately, implementation of this recommendation will permit OIR to begin the agency-level network consolidations directed by the Data Center Consolidation Study and provide other network management services to its customers.