PERFORMANCE AUDIT

DEPARTMENT OF ADMINISTRATION

INFORMATION SERVICES DIVISION

STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

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November 2, 1995

Members of the Arizona Legislature

The Honorable Fife Symington

Mr. Rudy Serino, Director
Arizona Department of Administration

Transmitted herewith is a report of the Auditor General, A Performance Audit of the Department of Administration, Information Services Division. This report is in response to a May 5, 1993, resolution of the Joint Legislative Audit Committee. The performance audit was conducted as part of the sunset review set forth in A.R.S. §§41-2951 through 41-2957.

This report is the fifth in a series of reports to be issued on the Department of Administration. The report addresses the need for greater statewide oversight over the State's information technology resources and the need for the Information Services Division (ISD) to better adapt its computing services to its customers' modern computing needs. Specifically, we recommend that the State establish a Chief Information Officer, separate and apart from the Department of Administration, to effectively guide statewide information technology in accordance with the State's overall strategic direction. Additionally, we recommend that the State look toward a more integrated approach to funding information technology to focus financing efforts on statewide priorities, benefits, and long-term costs. Finally, we recommend that regardless of any changes to its statewide planning duties, ISD improve the direct services it provides to agencies by focusing its service provision on newer, distributive technology. This will require that ISD address its current overreliance on mainframe revenues to fund its operations as well as improving its business planning and customer service.

My staff and I will be pleased to discuss or clarify items in the report.

This report will be released to the public on November 3, 1995

Sincerely,

Douglas R. Norton
Auditor General

Enclosure

SUMMARY

The Office of the Auditor General has conducted a performance audit of the Department of Administration (DOA), Information Services Division, pursuant to a May 5, 1993, resolution of the Joint Legislative Audit Committee. This audit represents the last of six audits scheduled for the Department and was conducted as part of the sunset review set forth in Arizona Revised Statutes (A.R.S.) §§41-2951 through 41-2957.

Information Technology Important

Today's information systems are transforming the way organizations do business. Whereas automation equipment of the past offered greater efficiency for routine tasks, modern technology is: 1) decentralizing data processing to allow a wider variety of workers to adapt and use information, 2) increasing organizations' ability to rapidly move information over large geographic areas, and 3) increasing organizations' ability to share information from a common source. By deploying the correct resources in a well-coordinated manner, organizations are enhancing their decision-making abilities and crossing geographic areas and organizational divisions. As a result, current technology offers government agencies unprecedented opportunities to provide higher quality services faster and at a lower cost.

The State Needs a Chief Information Officer
(See pages 5 through 15)

Despite spending nearly $200 million annually on information resources, Arizona has no central authority to provide guidance toward the State's overall strategic direction for acquiring, implementing, and utilizing information technology. Although DOA is statutorily mandated to coordinate the State's "utilization of automation equipment, techniques and personnel," the Department's placement of this responsibility within its Information Services Division (ISD) provides insufficient authority to effectively solicit the high-level input and support needed to achieve this mandate. Moreover, this oversight role often conflicts with ISD's service provision role as it is primarily focused on meeting the needs of individual agencies, rather than coordinating information technology resources from a statewide perspective. This ineffective structure has been previously recognized by the Auditor General, the Joint Legislative Budget Committee (JLBC) staff, Project SLIM, and a private consulting firm. Each has pointed out the need for a high-level position that is focused on statewide information resource management. By contrast, states that manage

information technology well use a chief information officer (CIO) to direct their technology resources separately from the provision of such services.

Without central, strategic direction, Arizona is prone to mismanaged information technology resources. Specifically, the planning and financing for technology projects is focused on agency rather than statewide needs, and evaluation and oversight for such projects is often insufficient. As a result, projects can exceed their originally projected costs, while at the same time taking the risk of not achieving their intended purpose. Moreover, millions of dollars are wasted annually through the purchase of duplicated, underutilized, and overly expensive resources. For example, a 1992 Project SLIM study revealed that the State could have saved between $640,000 and $1.6 million annually had its six separate data centers (operated by different agencies) purchased the same basic software as a single entity.

Similar to other states, Arizona needs to establish a strong CIO position, removed from the DOA, that can effectively guide statewide information technology in accordance with the State's overall strategic direction. Specifically, the CIO would lead an information technology agency responsible for advocating strategic technology implementation and developing uniform policies, procedures, and standards for technology project planning and implementation. The position would also review and approve agency information technology plans and major projects. ISD's role would then be focused primarily on service provision (as discussed in Finding III, pages 23 through 30).

Arizona Should Change Its Process for Funding Technology (See pages 17 through 21)

The State needs to focus its technology financing efforts on statewide priorities, benefits, and long-term costs. Currently, there is minimal central oversight of information technology funding. Specifically, funding is not tied to information technology planning as ISD has little interaction with either of the State's budget agencies concerning major technological issues. Therefore, agencies, for the most part, are able to obtain technology funding using their own appropriated or otherwise dedicated funding with only immediate, agency-specific benefits in mind. As a result, technology purchases are prone to duplication and cost inefficiencies. Moreover, the current method for funding technology projects provides little consideration of the long-term costs associated with the upkeep and eventual replacement of these systems.

To support statewide information technology coordination, Arizona's information technology planning and funding should be integrated. This would require the State's CIO to provide the State's budget offices with reviews and recommendations regarding state agencies' information technology funding requests prior to budget office approval. These reviews could be enhanced by establishing standardized criteria for evaluating agencies' plans and projects, focusing on major projects, and funding information technology projects by phases. In addition, Arizona should consider changing the mechanism by which the

State funds information technology. For example, pooling the State's resources would allow the State the opportunity to facilitate central coordination of statewide priorities for technology. The State could also offer financial incentives to encourage agencies to achieve measurable savings, cost avoidance, and increased productivity in their technology projects. Additionally, the State could dedicate funding to be set aside for future reinvestment in technology assets.

ISD Fails to Adapt to the Modern Computing Needs of Its Customers (See pages 23 through 30)

Regardless of changes made in its statewide planning duties, ISD needs to improve the direct services it provides to agencies. Specifically, ISD needs to focus its service provision on newer, distributive technology that allows for greater computing flexibility and allows users to customize processes at their desktops. While ISD has made limited efforts to provide these newer services to its customers, its endeavors have been poorly received. A survey of ISD services' major users revealed that agency technology managers had concerns regarding the quality, value, and timeliness of the services. For example, 11 of the 16 managers who use the statewide data communication system complained of poor service quality and downtime.

ISD has not shifted to the newer distributive technologies, which deploy networks of personal computers, primarily because it has an economic incentive to continue with central information processing, which deploys mainframe technology. A sizable portion of its operating revenues are derived from mainframe-based services. For example, ISD generated over $8.6 million from its largest mainframe computer processing service, while the cost to provide this service was approximately $5 million. Meanwhile, mainframe revenues are used to subsidize the costs to provide newer services that are charged out to customers at artificially low rates. As a result, in fiscal year 1993-94, one agency paid approximately $1.8 million more than the cost of the services it received. Other factors that have hindered ISD's efforts to successfully move toward newer technology services include inadequate business planning and lack of a coordinated customer service structure.

ISD must enhance its role as a service provider by offering competitive services and improving its capacity to develop contemporary, marketable services. As other states and local governmental agencies and businesses have done, ISD needs to reexamine its service provision to determine which services are economically viable and which can be effectively outsourced. In addition, to ensure that it meets the computing needs of its customers, ISD also needs to combine its planning efforts with an improved customer service structure to effectively utilize customer feedback.

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INTRODUCTION AND BACKGROUND

The Office of the Auditor General has conducted a performance audit of the Department of Administration (DOA), Information Services Division, pursuant to a May 5, 1993, resolution of the Joint Legislative Audit Committee. This audit represents the last of six audits scheduled for the Department and was conducted as part of the sunset review set forth in A.R.S. §§41-2951 through 41-2957.

DOA Mandated to Coordinate and Provide Information Technology Resources

In 1972, the Legislature statutorily charged DOA with statewide coordination of technology resources and the provision of information technology services to state agencies by enacting A.R.S. §41-712. According to the statute, "DOA shall provide for an efficient and coordinated utilization of automation equipment, techniques and personnel to achieve optimum effectiveness, economy and productivity." Moreover, the statute mandates DOA to "develop, implement and maintain a coordinated statewide plan for automation and data communication systems, including the establishment of operations centers."

DOA attempts to meet this mandate through its Information Services Division (ISD). For example, ISD tries to monitor the State's acquisition of resources by reviewing and approving agency purchases. In addition, it attempts to coordinate statewide resources by collecting information from agencies regarding their current and planned use of technology. However, ISD has had limited success in controlling the State's technology resources, as many agencies circumvent its efforts to coordinate statewide resources.

Organization and Staffing

Under the direction of an Assistant Director, with approximately 265 Full-Time Equivalent staff (FTEs), ISD provides three general services: computer services, telecommunications services, and statewide information technology planning and development.

■ **Computer services** — Approximately 138 FTEs are responsible for operating the DOA Data Center, which provides technical support and data processing and storage for 60 state agencies. Specifically, technical specialists provide support in the operation of computers, communication systems between computers, and the application of computer programs.

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■ **Telecommunications services** — Approximately 52 FTEs provide 94 agencies with telecommunications services involving both voice and data transmissions. Specifically, the Division provides voice communication services by essentially operating as a telephone company for state agencies. Through its data communications services, ISD connects agencies' data communications devices together into systems referred to as networks. The Division also provides technical support for some of these networks.

■ **Technology planning and development** — Approximately 75 FTEs support agencies' technology needs and develop computer program applications for agencies' use. For example, ISD account executives serve as points of contact for agency support and to help agencies develop automation plans, system designs, and technology-related cost estimates. Additionally, ISD's application development personnel set up systems for smaller agencies that cannot develop systems for themselves. They also operate statewide computer systems, such as financial and human resource systems.

Funding

The bulk of ISD's funding comes from two separate funds (Automation Fund and Telecommunications Revolving Fund) that derive revenues from charges to state agencies for computer and telecommunications services. In fiscal year 1995, both funds generated approximately $27 million in revenues for ISD. While each fund generated virtually equal amounts of revenue, most of ISD's staff is funded with Automation Fund monies. This occurs because the Telecommunications Revolving Fund pays more for vendor-supplied services versus the Automation Fund, which pays more for services directly provided by ISD.

In addition, the Legislature appropriated approximately $2.4 million from the General Fund to operate the State's financial information and human resources systems. Finally, the Division is responsible for the Emergency Telecommunications Revolving Fund, which accounts for receipts from the telecommunications services excise tax levied against monthly telephone bills and remitted by the telephone companies. These monies are then passed through to political subdivisions of the State based on funding needs for equipment, ongoing maintenance, and the telephone circuits used to implement and operate emergency telecommunication services (i.e., 911). In accordance with A.R.S. §41-702.01, ISD retained an estimated $160,700 from the Fund in fiscal year 1994-95 to pay for two FTEs and other operating expenses.

Audit Scope and Methodology

This audit focused primarily on ISD's ability to facilitate and coordinate statewide information technology planning as well as its ability to provide reliable, competitive computer services to state agencies. To determine the adequacy of statewide information technology planning and coordination, several meetings of a council of chief technology man-

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agers of major state agencies were observed as they discussed statewide technology issues. In addition, we conducted focus groups of major technology managers from large public and private organizations to discuss topics relative to information resource management. Further, we reviewed previous studies conducted by the Joint Legislative Budget Committee (JLBC) staff and the Governor's Office for Excellence relating to statewide information resource management issues. Finally, states noted for groundbreaking innovations in government information technology planning and implementation were contacted.

To assess customer satisfaction with ISD's computer and telecommunications services, we surveyed the largest users of ISD's services, comprising 98 percent of the combined Automation Fund and the Telecommunications Revolving Fund. In addition, we compared ISD's service planning and structure to other local entities as well as other states. Based on our agency survey, we found that ISD was doing relatively well in its provision of voice telecommunication services (i.e., telephone), receiving high marks for quality, value, and timeliness.

During the course of our audit, it became apparent that DOA has historically struggled to fulfill its statutory role of statewide coordination and provision of information technology. In fact, our 1981 audits of the Department uncovered some of the same problems that exist today. For example, at that time, DOA had not effectively coordinated statewide resources or provided effective guidance for the acquisition of new resources. Further, data center services were provided without regard to efficient use of resources and the planning process was plagued by insufficient coordination with user agencies. Our current audit also found fundamental deficiencies in ISD's coordination of technical resources and provision of technical services. Therefore, findings and recommendations were developed in three areas.

■ The need for a strong chief information officer to better coordinate the State's information technology resources,

■ The need to examine funding mechanisms that would enhance the State's management of information technology resources, and,

■ The need to better adapt ISD's computer services to the modern computing needs of its customers.

This audit was conducted in accordance with government auditing standards.

The Auditor General and staff express appreciation to the Director of the Department of Administration and the staff of the Information Services Division for their cooperation and assistance throughout the audit.

FINDING I

THE STATE NEEDS A
CHIEF INFORMATION OFFICER

Arizona needs an effective chief information officer (CIO) to establish statewide direction and coordination over its annual information technology expenditure of approximately $200 million. Although statutorily mandated to coordinate the State's use of technology, the Department of Administration (DOA) is poorly structured to perform the function effectively. As a result, the State inadequately manages its investment in technology, often acquiring overpriced and underutilized resources. Therefore, Arizona should remove statewide information technology coordination from the DOA and establish a chief information officer position in a new agency specifically dedicated to this function.

The State spends approximately $200 million each year on information technology resources. Arizona's information technology-related expenses include data processing equipment, software, personnel, consultant fees, and operating expenses. The State uses these resources to develop and maintain systems that process, store, secure, and transmit information. The type of equipment the State deploys ranges from large computers found in data centers, to personal computers and telephones found on thousands of employees' desks.

DOA an Inappropriate
Organization for an Effective CIO

DOA's structure inhibits its ability to serve as the central authority over the State's $200 million annual information technology investment. Arizona statutes mandate DOA to function as the State's coordinator and central service provider for information technology. However, the coordination role lacks oversight authority. Furthermore, DOA's service provider role detracts from its oversight role. By contrast, states that manage information technology well use a chief information officer (CIO) to direct their technology resources separately from the provision of such services. Furthermore, recent studies and proposed legislation have recognized the weakness of DOA's structure and recommended stronger central direction over the State's technology resources.

DOA mandated to coordinate resources and provide central services — DOA is statutorily mandated to coordinate the State's information technology resources. To fulfill this mandate, the Assistant Director of DOA's Information Services Division (ISD) requires state agencies to submit three-year automation plans that explain agencies' current and planned uses for information technology. Also, before agencies purchase any information technology goods or services, they must first gain approval from the Assistant Direc-

tor. Furthermore, the Assistant Director may reject the agencies' planned use and acquisition of information technology resources if they do not match statewide plans for automation, or previously approved agency plans. In addition to its coordination role, statutes also mandate ISD to establish operating centers that serve state agencies. As a result, ISD operates an information processing center that computes and stores data for agencies, and the equivalent of a phone company to provide telecommunications services to agencies. ISD charges agencies for its services, which generates the bulk of ISD's funding.

Oversight role lacks authority — Despite the ISD Assistant Director's official authority, we feel that any individual (past, present, or future) would not effectively be able to enforce either the automation plans, or the request for approval requirements, due to the current placement of the position within DOA. Historically, agency directors have successfully challenged the position's authority when ISD has decided the agencies' preferred information systems are not in the State's best interest. A common reason attributed to the Assistant Director's inability to assert his or her authority is the position's lack of political and organizational status (two levels below an agency director). According to Phoenix-area CIOs contacted from both public and private organizations, political support of a CIO is critical to the position's effectiveness.[1] Furthermore, these CIOs agreed that the ISD Assistant Director position in the State's organizational structure lacks the necessary high-level input and support.

Failing to direct agency compliance, recent assistant directors have unsuccessfully turned to cooperative efforts to coordinate statewide resources. For example, in 1993, both DOA and more than 13 other state agencies acknowledged the State's technology management problems and committed to a 5-year strategic plan to improve the situation. Provisions of the plan included, among other things, establishing statewide standards to allow agencies to share resources, and improving the process for procuring resources. ISD anticipates the plan will result in a total five-year savings or cost avoidance of $39.2 million. However, agencies' information technology managers working with ISD to carry out the provisions complained that there was no commitment or direction from agency directors or the Governor's Office to implement the measures. Currently, ISD and the agencies have failed to carry out any of the plan's provisions.

Service role detracts from oversight role — Furthermore, ISD's service provision responsibilities create a conflicting set of priorities. For instance, ISD views agencies as customers in that it provides them services for which they are charged. As a result, ISD rightly feels some obligation to meet customer demands. However, this can inhibit ISD's coordination of statewide resources, which often requires sacrificing agency preferences to achieve a more efficient and effective statewide deployment of resources. Furthermore, as discussed in Finding III (see pages 23 through 30), it appears to be in the State's best interests

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[1] To gain an outside perspective on the viability of the State's information management structure we discussed the assistant director's position with a panel of current and former CIO's from the City of Phoenix, Maricopa County, Salt River Project, Kraft Foods, Arizona Public Service, MicroAge, and a professor of Management Information Systems at Arizona State University.

to move toward personal computer-based technology, but ISD is heavily dependent on the revenues it obtains from providing mainframe services to other agencies. As a result, the need for this revenue may influence ISD's actions when it comes to decisions regarding statewide information technology.

Other states use CIOs — To compare ISD's structure against leading states, we reviewed the management practices of six states known for managing their technology resources effectively.[1] Each of these states uses a high-profile CIO to set their state's information technology policy (including developing information technology vision and direction, advocating strategic technology application, and facilitating resource sharing across agency lines) through direct interaction and cooperation with the governor and top state agency directors. This interaction ensures information technology policies conform to statewide business priorities and are backed by the highest level of executive decision makers. For example, Florida's CIO directs a staff that reports to the State's information resource commission consisting of the governor and members of Florida's cabinet. The State created the commission in 1984 to address ineffective technology planning, regulation, accountability, and standards. Today, Florida is recognized as a leader among states in technology planning.

In recent years, many states have recognized the need for stronger management control of information technology. In fact, in a 1994 National Association of State Information Resource Executives survey, 23 states reported having a CIO with authority extending beyond the executive branch. Furthermore, in leading states, this management control is usually separated organizationally from the provision of technology services. For instance, Utah's statewide coordinator operates in the Governor's Office, while central services is a function of the State's Department of Administration. This division allows the coordinator to develop statewide policies, and the service function to implement information technology through providing service to its customers.

Criticism of DOA structure not new — Recommended changes to DOA's ineffective structure have been presented on at least four occasions in the past four years. Specifically:

■ A letter from the **Auditor General**, November 1991, to the President of the Senate and the Speaker of the House described the need for Arizona state government to better manage information technology so that its full potential can be realized. The letter noted that during the course of our audits, we have observed an alarming number of instances where state agencies failed to achieve effective gains in productivity after having invested huge sums of money in information systems. For example, agencies seemed to follow a pattern of purchasing a major system, experiencing problems, and then acquiring a new system to resolve the problems. In other instances, projects by-

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[1] We selected these states based on their identification in industry publications as well-established programs, or programs with highly respected information technology planning. The six states are Florida, Kentucky, Minnesota, North Carolina, Utah, and Washington.

passed the scrutiny of the budget process because they were acquired with federal funds. Finally, the letter states that there was no requirement for a central review of technology projects and that lessons learned from one effort are not applied to other agencies. The need to improve in all of these areas continues even today.

- **Project SLIM** conducted a 1992 study, which recognized the State's need to improve utilization and control over the development and application of technology. To achieve this end, the report proposed creating a CIO-led staff directed by a committee of agency directors advised by a committee of technical experts. The recommended organization would have evaluated new technology products, created and reviewed state standards, and reviewed agency compliance with the standards. Agencies would have been responsible for providing their own operational support, and monitoring their agency's automation practices as directed by the committee of directors.

- **Integrated Systems Solutions Corporation (ISSC)** conducted a 1993 efficiency study of the State's large agency information processing centers. This study recommended creating a state CIO position, with an organization to develop common data communication, technical support, and administration over all these centers. According to the study this would eliminate duplicated work, reduce costs, and improve the centers' effectiveness.

- **H.B. 2470** developed by the Joint Legislative Budget Committee (JLBC) staff during the 1995 legislative session, recognized the need for statewide oversight and planning to increase sharing of information across the State's organizational lines. However, because the ISD Assistant Director position lacks this authority, H.B. 2470 proposed establishing a CIO position at the agency director level. According to the bill, the CIO would head an agency responsible for establishing agency compliance with statewide standards, studying new technology, and approving agencies' technology plans and major projects. Furthermore, the bill proposed a committee of agency directors, legislators, and private sector representatives to review technology standards, propose needed legislation, and approve major technology projects. This proposed bill was assigned to a legislative committee, but was never heard during the legislative session.

Until recently, efforts to adopt any of these proposals have been stalled. In 1993, apparently in response to DOA's appointment of an assistant director of ISD and the development of a five-year strategic plan, an Office of Excellence in Government (OEG) report concluded that the State was poised to manage its information technology well. The report further stated that the need for changing organizational lines was not as important as it may have been in the past. Despite these claims, the strategic plan, lacking high-level support, was never implemented. Further, the Assistant Director position remained vacant for 14 months. However, more recently, the OEG and the DOA have been actively working together to strengthen the CIO function as it currently exists within the DOA. DOA just recently filled the Assistant Director position in October 1995 and upgraded the

position to a Deputy Director position focused on statewide planning. An ISD Deputy Assistant Director position has also been created and filled to function as the day-to-day operations manager over ISD's technology services. Furthermore, the statewide strategic plan is currently being updated. Finally, the Office of Excellence in Government, the Office of Strategic Planning and Budget, and the DOA believe that eventually the CIO could function outside the DOA.

Technology Poorly Managed

Lacking a strong commitment to statewide oversight and coordination, Arizona has inadequately managed its technology resources. Specifically, the State focuses its information technology planning and funding on agency-specific issues instead of the statewide application of technology resources. Additionally, there is insufficient central evaluation and oversight of agencies' major information technology projects. As a result, the State suffers from duplicated resources and the purchase of underutilized and overly costly resources.

Planning and financing overly focused on agencies — Without a high-level commitment to establishing a statewide direction, Arizona's technology planning is fragmented and disjointed, leading to an agency focus rather than a statewide focus. As a result, agencies create independent systems, which are incompatible with other agency systems, therefore inhibiting resource sharing. Not surprisingly, this type of decentralized approach is very expensive. According to one well-respected research and consulting firm, organizations with a centralized approach pay 30 to 60 percent less for information technology support and management.

An effective method of establishing statewide coordination of technology resources is to incorporate agency management into statewide policy direction and application. For example, Minnesota's Information Policy Council, consisting mainly of agency executives, advises the State's CIO on information management issues. The Council has established information management principles and actively promotes their application. These principles include: 1) agencies must manage information resources as a core executive responsibility, 2) agencies should share data across organizational lines, and 3) the State must standardize its information resources as necessary to link state agencies and other levels of government.

Further, to ensure agencies comply with statewide direction, some states require CIOs to review agencies' technology plans and major projects before the State releases technology-related funding to the agencies. This is done in several leading states, such as Washington, Minnesota, and Florida. In addition, technology managers from Arizona agencies said that tying statewide technology planning to the State's budget process was critical for getting agency directors' commitment to technology planning. (See Finding II, pages

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17 through 21 for further details on needed strategic funding practices.)

Insufficient evaluation and oversight of information technology projects — Arizona's management of technology resources is further plagued by ISD's subjective evaluations and insufficient oversight of agencies' technology projects. A common CIO duty is to establish clear standards to evaluate major projects' potential success. For example, in states like Minnesota, the CIO requires technical expertise and established planning before it recommends projects for funding. By contrast, while the Assistant Director of ISD reviews project proposals, there are no defined standards to realistically estimate projects' scope, cost, benefit, and timeliness. As a result, project evaluations are subjective and risk approval without reasonable and unbiased expectation that agencies will complete them as originally envisioned.

Further, other states use their CIOs to oversee large projects to ensure they stay on track. For example, Washington's CIO must approve a major project's progress and direction through specific phases before the State releases funding for the next phase. Washington set up this practice to address its experience with major projects overrunning their budget and time frames. Meanwhile, the ISD Assistant Director provides limited project oversight, predominantly as a by-product of helping agencies to manage specific projects. However, few agencies want this oversight, and ISD has not always had the resources to provide project management as a service. The following examples display ISD's poor evaluation and oversight of projects:

■ **Example One** — The Arizona Department of Transportation's (ADOT) project to develop a combined driver's license and title and registration system received legislative approval in 1989 for approximately $8.8 million over a four-year period. In 1992, after two years of project planning and development, ADOT produced an "Implementation Alternatives Report," proposing a change to technology format for the project and estimating its completion in 1995 at a cost of $26 million. Since that time, ADOT has adjusted the scope of the project and now anticipates a July 1996 completion and a final estimated cost of approximately $30 million. However, despite the project's size and scope, ISD has not been actively involved in project oversight, according to one ISD manager. In fact, due to ISD's lack of guidance, the Agency's 1994 automation plan provides very little information regarding the project's progress, estimated costs, scope, or timeliness.

Through much of its history, project oversight within ADOT lacked stability, impacting upper management's ability to direct the project with sufficient input from skilled and impartial parties able to evaluate it from a statewide perspective. Moreover, internal project management and control mechanisms for the project have been inadequate. For example, as noted above, in 1992 (three years into the project), the Agency departed dramatically from its originally proposed technology. While both the Joint Legislative Budget Committee and the Governor's Office for Strategic Planning and Budget were informed of the change and approved additional funding, ISD did not review or evaluate the feasibility and appropriateness of the new direction. In addition, despite involving one of ADOT's most critical processes (i.e., driver's licensing),

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this change to a newer, perhaps riskier, technology was done without knowing the full ramifications of the different technology. In fact, when a risk assessment was subsequently completed in 1994 (five years after the project was initiated, and two years after the decision to change technology), it revealed substantial problems. For example, the assessment revealed ADOT's inability to ensure that changes to the system were adequately assessed prior to their application. Perhaps as a result, the project's finished product will be later, smaller, and more expensive than anticipated.

■ **Example Two** — The Arizona State Retirement System started its $4.1 million effort to automate several agency functions, without a business plan, project steering committee, project manager, experienced programmers, or involvement from the intended system users. ISD's Assistant Director was aware of these significant problems, but according to current ISD managers, the Assistant Director lacked the political clout to stop the project. Not surprisingly, the Agency was two years into project implementation, and spent $2.9 million, before suspending the project because of funding concerns, missed deadlines, and inadequate project development. Planned as a two-to-three-year project in 1991, it is now scheduled for completion in 1998, nearly seven years after its inception.

Had these projects been subjected to Minnesota's and Washington's processes, the CIO could have required stronger evidence that the projects would be successful before approving them. Further, when the projects strayed from their original course, the CIO could have stopped funding for them until the agencies proved they had established acceptable progress and direction.

Resources duplicated, too costly, and underutilized — Left to their own accord, state agencies have a track record of purchasing the same equipment, at higher rates and less usefulness than could be achieved with a coordinated approach. For instance, the State misapplies its money by acquiring the same resource several times, instead of sharing resources between agencies. The State also buys resources at a higher per-item price, instead of purchasing in bulk.[1] Finally, the State's practice of not acquiring resources specifically designed to operate together hinders the utility of the resources. The following examples illustrate these problems:

■ **Example One** — Six of the State's largest agencies operate their own data centers to maintain and process essential management information. These data centers basically depend on the same software to run their largest and most powerful computers. Had the State contracted for the software as a single entity, instead of separately by agency,

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[1] While the State does utilize statewide contracts to allow agencies to purchase a wide variety of information technology hardware and software, DOA officials agree more needs to be done in the area to reduce purchasing costs.

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it could have saved between $640,000 and $1.6 million annually, according to a 1992 study by Project SLIM.[1] Furthermore, the agencies contracted for different versions of the software, which has had negative impacts on the interaction and sharing of resources and data between the centers. This costs the State an additional $500,000 to $1 million annually, according to the study. Also, if the State had purchased compatible software for the data centers it could more easily standardize the data networks (telecommunication lines and devices that move data over phone lines) which connect the data centers to other computers. This would save Arizona untold additional dollars through increased efficiency and the ability to buy more resources in bulk. By contrast, states with strong CIOs establish compatibility standards for information technology hardware and software and guide agencies to purchase items that meet those standards. Moreover, some states have successfully reduced their technology costs and helped standardize their information technology resources by buying them in bulk. For example, Texas developed statewide contracts, through which agencies purchase discounted equipment that complies with statewide standards.

- **Example Two** — Besides running their own data centers, Arizona agencies have established at least 8 separate data networks to provide electronic communications to locations throughout the State via more than 3,000 telecommunications lines.[2] The 1992 Project SLIM study estimated that the State could save approximately $4 million annually by consolidating multiple, redundant statewide voice and data networks. As with the data centers, the State has not standardized its data networks, which hampers interaction and shared resources between agencies. Conversely, Utah's CIO helped create a unified statewide data network, credited with reducing Utah's telecommunications costs and enhancing its provision of services.

The Legislature Should Consider Strengthening Technology Resources Management with a Strong CIO

To manage the State's technology resources effectively, the Legislature should consider establishing a new information technology management agency, headed by a CIO. This agency should develop statewide direction for information technology and ensure that state agencies follow that direction. In addition, based on models used in other states with highly regarded information technology management programs, the Legislature should also consider establishing an agency-represented information policy body and a technical advisory council.

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[1] The Project SLIM study was conducted when there were five data centers; since that time, the Department of Health Services has developed its own.

[2] A data network is commonly defined as a configuration of data processing devices and software connected for information interchange.

CIO to head a new agency — Given ISD's structural weaknesses and history of ineffectiveness, the Legislature should consider establishing a CIO to head a new agency to manage statewide technology planning and coordination. This agency should be separate from the provision of information technology services currently provided by ISD. Therefore, the Legislature should consider repealing A.R.S. §41-712 which requires the DOA to coordinate statewide technology resources, and transfer that responsibility to the newly created agency.

Based on the responsibilities of information technology management agencies in other states, the new agency should be expected to fulfill the following responsibilities:

- **Establish information technology vision** — through advocating strategic technology application, facilitating shared resources and interoperability across agency lines, and studying new technology.

- **Establish information technology direction** — through developing uniform policies, procedures, and standards for statewide planning and project implementation.

- **Establish agency compliance** — through reviewing and approving agencies' information technology plans, and major projects.

Agencies involved in setting policy and technical advice — During the course of our audit we discovered that states with strong information technology management have each recognized the importance of agency input. This input is typically achieved through a commission of agency directors or a commission with representatives from various government branches and levels, as well as private sector business and media representatives. Although each leading state has different commission structures and duties, each state's information technology management agency focuses on the development and implementation of policies and procedures. For example:

- **Florida** — as noted earlier, Florida's CIO directs a staff that reports to the State's information resource commission comprised of the Governor and members of Florida's cabinet. The commission has information technology responsibilities including policy, planning, standards, procedures, agency plan reviews, and assessment of multi-agency use opportunities. The high level of the commission provides the ability to coordinate planning with the Governor and the cabinet members and ensures a common statewide direction. It also provides the opportunity to create a broad composite of agency input.

- **Kentucky** — Kentucky's CIO directs the State's central information technology service agency, but is advised on technology management issues by an independent pub-

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lic/private commission. The commission is represented by cabinet-level agency heads, the private sector, the judicial branch, and regents officials, and recommends legislation, coordinates planning, approves agencies' plans, and promulgates administrative regulations. The commission also oversees the activities of the central information technology services agency. This structure allows statewide planning and policy to be concentrated outside of agency lines, which allows the commission to be aware of activities and opportunities in all agencies. Further, the structure insulates the commission from some political influences.

■ **Minnesota** — Minnesota's information technology policy organization and central service organization are both housed in the State's administrative department, but as separate entities. The CIO's policy organization develops policies regarding the structure of statewide systems and the process used to manage information. The organization also reviews budget requests and makes funding recommendations. A committee of agency executives advises the CIO on information management issues. By setting information policy from a central department, the State can effectively address multi-departmental issues and aid in developing common technology standards and promoting greater efficiency and effectiveness.

If the Legislature establishes a new information technology agency, a governing structure similar to the models used in other states should be provided. Currently, Arizona has the Governor's Automation Advisory Council whose membership includes both agency directors and information technology experts from the private sector. However, the Council has negligible authority and is lightly regarded in terms of its influence over statewide information technology. Therefore, if the Council is to be expected to provide statewide business direction, its authority as outlined by A.R.S. §41-714 would need to be increased. Specifically, such a group should be responsible for establishing the statewide information policies to be implemented by the new agency. Such direction is necessary to ensure information technology policies reflect statewide business priorities and are supported by the highest level of executive decision makers. This group would also be responsible for directing the planning and implementation of technology as it pertains to high-level, management issues, such as information needs identification, data sharing, privacy, and security.

To support its policy-setting body, the Legislature should consider establishing an advisory group that provides a technical perspective to information technology policies the State implements. Other states, such as Minnesota and Utah, have established committees to provide technical input. Currently, Arizona has a council of agencies' technology managers, referred to as the CIO Council. However, the Council does not formally report to anyone, and has no clear duties or direction. As such, Arizona should formalize the duties of the CIO Council and specify to whom it is responsible.

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RECOMMENDATIONS

1. The Legislature should consider establishing a new state agency to develop statewide direction for information technology and ensure that state agencies follow that direction. This will require legislation to create the agency and to transfer relevant authority and responsibility currently assigned to the Department of Administration to the director of the new agency.

2. To ensure information technology policies reflect statewide priorities and are supported by high-level executive decision makers, the Legislature should consider establishing a formal information technology policy board comprised of state agency directors. If the Legislature desired to utilize the currently existing Governor's Automation Advisory Council to achieve this end, A.R.S. §41-714 would need to be revised to increase the Council's authority over statewide information technology issues.

3. To advise the policy board and the CIO on the technical application of statewide policies and standards, the Legislature should also consider establishing a technical advisory council comprised of agency technology experts. If the existing CIO Council were to be used to fill this role, its reporting structure and duties should be formally defined.

FINDING II

ARIZONA SHOULD CHANGE ITS
PROCESS FOR FUNDING TECHNOLOGY

Arizona needs to apply a strategic focus to its technology funding. Current Arizona practices for funding information technology are narrowly focused and undermine the State's control over information technology expenditures. To improve its statewide coordination, Arizona should integrate its information technology planning and funding.

Financing Methods Undermine
Central Coordination

Arizona's information technology funding inhibits effective statewide planning and coordination. Arizona allocates its funding to benefit agencies specifically, rather than concentrating its funding on a common set of priorities. Also, the State fails to look past technology resources' immediate costs to fund their longer-term operational maintenance and eventual replacement costs.

Central coordination undermined — Not tying the budget process to central oversight and statewide planning weakens Arizona's control over information technology expenditures. For example, as mentioned in Finding I (see pages 5 through 15), ISD requires (although there is widespread noncompliance) agencies to develop automation plans that explain the agencies' current and planned use of information technology. Furthermore, agencies are to submit these plans to the ISD Assistant Director for approval each year. However, this process is not coordinated with the budget process to ensure that the State funds information technology from a statewide perspective.

Furthermore, ISD does not interact with either of the State's budget agencies to comprehensively assess state agencies' information technology budget proposals. Close interaction might be expected, given that the Governor's Office of Strategic Planning and Budgeting (OSPB) and the Joint Legislative Budget Committee (JLBC) staff generally review and recommend approval for these proposals. Furthermore, given that neither budget office has extensive in-house technical expertise or knowledge of the State's information technology expenditures, other than on an agency-by-agency basis, frequent interaction between the budget offices and ISD should be considered essential. Yet, the OSPB director noted that some agencies bypass executive branch oversight altogether by approaching the Legislature directly for support and approval of their technology expenditures.

By contrast, leading states, such as Washington, Minnesota, and Florida, closely tie their technology planning process with their state budget process. In these states, information technology-related funding recommendations are made based on the acceptability of the agencies' technology plans and the feasibility of major projects. For example, in Washington, statutes require the State's information technology policy office and the State's financial management office to establish budget evaluation criteria for information technology. The goal of these statutes is to justify funding requests and identify specific funding required to carry out the State's overall implementation plan.

Funding too focused on specific agencies — Reflecting the State's weak central oversight, Arizona continues to fund its technology investments, as it has for decades, through agency-by-agency appropriation or budget approval. As indicated in Finding I (see pages 5 through 15), this decentralized approach is very expensive. Meanwhile, other states have set up collective funding to manage their technology investments from a statewide perspective. For example, Massachusetts funds its major technology initiatives through a centralized bond fund. Through the process, agencies submit proposals to the State's central information resource management (IRM) policy-setting committee. The committee decides which projects best fit the State's overall IRM goals. In 1994, the State emphasized technology funding for projects that provided positive return on investment within 18 months; or involved a program that was a Governor's administration priority; or addressed large, budget-sensitive programs. Although the funding source was collective, resulting projects benefited both the whole State, and specific agencies as well. Sample projects include consolidating data centers, automating a statewide accounting function, and automating three agency-specific case management systems. According to the State's chief information officer, the fund has afforded Massachusetts the opportunity to set priorities for initiatives and establish much greater statewide coordination.

Furthermore, although today's technology offers broad benefits to the State, agencies typically use their appropriated or otherwise dedicated funding to acquire resources for their own agency-specific benefit. For example, large agencies, with their own goals in mind, have received their own funding to develop eight separate statewide networks. As mentioned in Finding I, duplication among these eight networks, as estimated by Project SLIM, costs the State approximately $4 million annually. In contrast, other states have funded consolidated statewide networks to provide effective and efficient telecommunications throughout their states. For example, Utah has made a major commitment to its statewide telecommunications, connecting nearly all departments at sites throughout the State. Utah anticipates the system will improve its productivity and decision making while reducing its communications and travel expenses.

Other states have also employed financial methods that support shared data and resources. For example, the New York State Legislature appropriates money to a university-run technology center for technology research and development. The center also receives in-kind support from participating agencies and the private sector. The center tests technology proposals for agencies and shares the results with the public sector at large. For ex-

ample, the State's motor vehicle department partnered with the center to test a proposed imaging system. Though the motor vehicle department was the primary beneficiary of the project, the research center shared the project's results with 35 other agencies through demonstrations and presentations.

Long-term costs not considered — Not only is the State's funding for technology investments too narrowly focused on agency-specific issues, the consideration of the long-term costs associated with these systems is also neglected. Specifically, Arizona has not set up a process to consider the multi-year costs of developing, using, and eventually replacing the systems over time. Rather, state agencies essentially justify their systems as if they were one-time, immediate solutions for agency problems. This short-term view can ultimately result in higher costs and delays in information processing.

In contrast, other states have addressed the costs of maintaining and eventually replacing technology systems. For example, since 1990, Minnesota agencies have analyzed information system life cycle costs as a budget guideline for evaluating the costs of proposed projects. This analysis examines a technology system's entire useful period, paying attention to the various activities that an organization must fund and manage over the life of the system. While Arizona statutes require life cycle costing for technology purchases, the requirements are tied to the procurement process instead of project planning and are seen by DOA representatives as insufficient.

In addition, Kansas partially funds the replacement of its technology resources by calculating depreciation of its resources and charging this value to agencies that are customers of its central technology service. Payments for depreciation are then transferred to a revolving fund that Kansas uses strictly to reinvest in its technology resources. While ISD includes depreciation in its service charges, it does not set money aside in a separate fund to replenish its resources.

Arizona Should Coordinate Information Technology and Planning

To support statewide information technology coordination, Arizona's information technology planning and funding should be integrated. The State's information technology policy development should be formally integrated with the State's budget process. Further, the State should consider specific funding mechanisms that could enhance broader, more strategic application of information technology.

State should integrate information technology policy with funding — Arizona should coordinate statewide technology planning and budgeting. This should include tying the review and approval of agencies' information technology plans and major projects with agencies' requests for funding. This will require the cooperation of the State's budget

offices and a central agency to set information technology guidelines. As is done in other states, a review of agencies' plans and projects and the recommendations for their funding should be statutorily required, before agencies receive funding for information technology related expenditures. This review could be enhanced by:

- **Establishing evaluation criteria** — The State should require the new agency to develop standardized, specific criteria for evaluating agencies' plans and projects. Example criteria for agency plans could include identifying how the agency plans to use its information technology to make its data easier to access for the public and exchangeable with other state agencies. Major projects could be evaluated on such factors as cost, risks, need for, and ability to meet deadlines.

- **Focusing on major projects** — Many states focus their oversight on major projects, as defined by their cost, need, or risk. For example, in Washington only projects that exceed $3 million or 4 percent of an agency's budget must be reviewed.

- **Funding information technology projects by phases** — Some states fund technology projects in phases to ensure sufficient oversight throughout a project. Washington, for instance, funds its major projects incrementally. Project funding across the State's two-year budget cycles is continued as long as the State's information technology policy organization approves the project's progress. This helps accelerate the funding process for major projects and reduces the risk involved.

State should consider other funding — In addition to changing the process by which agencies' information technology funding requests are approved, Arizona should also consider changing the mechanism by which the State funds information technology. For example:

- **Collective Funding** — Arizona could fund all of its major technology initiatives through a common mechanism. Both OSPB and JLBC staff suggest that a method such as the one used to fund the State's capital building renewal process would be a workable concept for information technology funding. Such a system allows agencies to develop plans, identify needed expenditures, and make funding requests to a central agency. The central agency is then able to prioritize requests and identify the total funding needed for priority projects. Once this process is completed, the complete funding package is forwarded to the budget offices, which make funding recommendations to the Legislature. Similarly, Minnesota uses a process in which its financial division sets a target amount for investing in information technology, and its information technology policy organization recommends priority projects to be funded within that amount.

■ **Incentive Funding** — Arizona could adopt incentive funding, which is used by other states, to encourage agencies to carry out statewide priorities. For example, Florida has set up a fund to encourage agencies to carry out new technology that better delivers services and saves money for the State. The State's Legislature appropriates money for the fund ($4 million in fiscal year 1994-95). The State's management services department administers the fund and the State competitively grants ($3 million) or loans ($1 million, interest free) money to agencies. Agencies are encouraged to submit proposals, large or small, that will result in measurable savings, cost avoidance, or increased productivity. In fiscal year 1994-95, sample innovations included a $300,000 proposal to use computerized scientific instruments to provide DNA analysis more efficiently and effectively. The proposal is to net the State approximately $1.2 million in benefits.

RECOMMENDATIONS

1. To improve statewide coordination of major information technology projects, the Legislature should consider requiring the State's CIO to:

   ■ Work in conjunction with JLBC staff and OSPB to define specific criteria for evaluating state agencies' strategic plans and major technology projects to be reviewed and approved before recommending appropriation of monies for such projects.

   ■ Provide JLBC staff and OSPB reviews and recommendations regarding all appropriation requests for projects meeting the predetermined criteria prior to these organizations' budget approval recommendations.

2. To streamline the funding and ensure continued justification for major technology investments, the Legislature should consider appropriating monies for such projects in phases.

3. The Legislature should consider adopting additional funding mechanisms to enhance broader, more strategic application of information technology, such as:

   ■ Collective funding to facilitate central consideration of statewide priorities for technology; as well as application of technology resources, and research and development that benefits multiple agencies

   ■ Considering the long-term demands on the technology resources and budgeting accordingly

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FINDING III

ISD FAILS TO ADAPT TO THE MODERN COMPUTING NEEDS OF ITS CUSTOMERS

Regardless of changes made in its statewide planning duties, the Information Services Division (ISD) needs to improve the direct services it provides to agencies. DOA should particularly focus on bringing distributive technology to agencies. Despite significant movements in computer technology in recent years, ISD has made limited efforts in the area, largely ignoring the needs of its customers. Movement toward newer technology has been thwarted by ISD's dependence on mainframe computer revenue while service quality has been hampered by poor planning and a lack of customer focus. To establish itself as a competitive and reliable "vendor," ISD must reexamine its services and adopt better business planning methods.

Modern Computing Environment Is Changing

The rapid growth of personal computers (PCs) is shifting data processing away from the mainframe computer. The mainframe is a centrally located computer system that stores shared information and manipulates a vast quantity of data for the many users connected to it. Although there will always be a need for mainframe computers, PCs are now performing many traditional mainframe functions. PCs allow users to customize their processes at their desktop to achieve greater flexibility. Moreover, when PCs are linked together they form networks that can combine the ability to share information with a PC's flexibility. This kind of technology is often called "distributive" because the computing activity is spread throughout the computer network.

ISD's Distributive Computer Efforts Limited and of Uncertain Quality

While ISD has made limited efforts to adopt modern distributive computing technologies, these endeavors have been poorly received. ISD currently does not provide many important distributive services. Moreover, when ISD does provide these services, agencies suggest they are often of mediocre quality.

ISD neglects distributive needs of state agencies — Despite increased demand by state agencies for distributive services, ISD has done little to meet agency needs. For example, as of August 1993, there were an estimated 85 computer networks and over 8,000 PCs

operating in the executive branch of state government.[1] However, ISD provides technical support for only 2 of these 85 networks (the DOA and the Governor's Office), and provides no personal computer support beyond assigning one technician to react to emergency calls. Furthermore, only 11 of the 44 ISD staff members assigned to developing computer systems and software are considered by ISD management to be skilled in the planning, design, and construction of modern distributive systems.

Agencies give mixed reviews of existing services — Of those newer technology services ISD does provide, certain services particularly drew criticism from agencies. We distributed a survey to 57 of the largest users of ISD services to determine customer needs and satisfaction regarding the timeliness, quality, and value of ISD's services.[2] Distributive services such as the statewide communications network, program design, and project management were clearly identified by respondents as important to their agency's operations. However, the managers also said that as important as these services are, their quality, value, and timeliness need improvement.

For example, ISD's Multi-Governmental Network, or MAGNET, links 25 state agencies and their networks together to form a statewide data communication system.[3] State agency representatives ranked MAGNET as very important (8.44 on a scale of 1 to 10), but their written comments suggested that the network needed improvement in quality, timeliness, and value. In addition, of the 16 responding agency representatives who used MAGNET, 11 complained of poor service quality or excessive downtime.[4]

ISD was also criticized for its performance in developing computer programs and helping manage automation projects for its customers. Again, representatives rated highly both the importance of ISD's project management (8.14) and program development services (9.63).[5] Yet, the quality, value, and timeliness of these services scored two to three points lower than the services' importance. Moreover, of the 10 agencies' representatives

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[1] Based on the Joint Legislative Budget Committee's 1995 Staff Report on Government Information Technology. Figures do not include the universities.

[2] The survey was sent to 57 of the largest users of ISD's telecommunications services, representing over 98 percent of ISD's combined telecommunications and automation revenues for fiscal year 1993-94. A total of 45 agencies responded.

[3] In addition to the 25 state agencies linked to MAGNET, 7 city or county organizations have access to the MAGNET network but were not included in the survey.

[4] While some agencies noted concerns in our survey, the DOA officials contend that the MAGNET has minimal downtime, operating 99.5 percent of the time.

[5] In our survey, 8 agencies reported using ISD's program design services and 7 used its project management assistance in fiscal year 1993-94.

that indicated they had used either or both of ISD's project management or computer program development services, one half complained of the poor quality of these services. Examples of the impact of poor and untimely service from ISD include:

- A state licensing board requested ISD's assistance with the development of an automated telephone system to verify the status of licensees, a system similar to ones used by several other states. Currently, the board dedicates two full-time employees to answer the approximately 750 to 1,000 calls received **daily** requesting information on the status of licensees. ISD officials agreed to help determine equipment needs, but at the end of 15 months there was no progress in the requested system. As a result, the licensing board officials turned to a vendor to provide this expertise. When contacted, ISD officials stated that they lacked sufficient expertise to meet the agency's needs.

- Currently, the Departments of Transportation and Economic Security use separate lines to carry both voice and data telecommunications to Yuma through private suppliers. To address this inefficiency, in February 1995 a committee primarily composed of information technology officials from several state agencies discussed a pilot project to centralize these duplicate telecommunications lines and possibly attract other state agencies with this new system. However, when it appeared ISD would be responsible for administering the data telecommunications line, the participating agencies' resistance to the project effectively ended the effort. According to the committee's report, concerns over ISD's involvement primarily included a lack of trust in ISD's abilities compared to vendors, coupled with a history of poor communications by ISD officials and agency personnel.

- A small state agency contracted with ISD to work with a commonly used software program for its network of personal computers. While ISD initially estimated the project would be finished in "a few months," it wasn't completed until approximately two years later. Among the many reasons given for the delay, ISD informed the agency that the programmer ISD assigned to the project needed to complete a training program to familiarize himself with the agency's PC network; a network used by many agencies.

Reliance on Mainframe Revenues Prevents Change

ISD's distributive efforts are limited by its emphasis and dependency on older mainframe technology. ISD relies on profits from many of its mainframe services to fund its operations. ISD then uses these profits to subsidize services that do not pay for themselves.

ISD reaps profit from many mainframe services — ISD relies on mainframe revenues to support its division-wide operations. In fact, mainframe computer processing accounts for approximately 79 percent of ISD's total automation revenues. Much of this revenue is profit. For example, ISD generated over $8.6 million from its largest mainframe computer processing service in the 1993-94 fiscal year. At the same time, ISD's documented costs for this service were $5 million, approximately 42 percent less than the costs charged to the mainframe customers. As a result, agencies who are large users of mainframe services contribute a great deal toward ISD's other operations. For example, in fiscal year 1993-94, the Arizona Health Care Cost Containment System (AHCCCS), ISD's single largest customer, paid an estimated $1.8 million beyond the calculated costs of the services it received.

This dependency on mainframe computing revenues hampers ISD's ability to provide modern computing services. Since mainframe and distributive systems can perform similar functions, any shift of services toward supporting distributive computing can negatively impact the mainframe revenue source that ISD depends on for a large portion of its revenue. Therefore, this process works as a disincentive for ISD to provide or support distributive computing services to state agencies.

Profits used to subsidize services — ISD's dependence on mainframe revenues is intensified when it uses the excess revenues generated from older technologies to support services that fail to pay for themselves. For example, in fiscal year 1993-94 those agencies using ISD's mini computer services paid only $331,000 (or 52 percent) of the estimated $632,000 it cost ISD to establish and maintain the system.[1] The remaining balance was reallocated from surplus revenues generated by ISD's other customers.

Poor Planning and a Lack of Customer Focus Hinder Service Quality

While ISD's dependency on mainframe revenues prevents decisive movement to newer technology services, ISD's record of poor planning and customer focus hamper its ability to provide quality services. ISD's capacity to provide efficient, quality service is impeded by its poor efforts at business planning and inability to coherently address customer concerns. Historically, ISD has not created a business plan before undertaking a new technology project, resulting in the development of services that fail to recover their costs. Additionally, ISD's fragmented customer service organization makes it difficult to focus on the needs of its customers.

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[1] These figures are based on ISD's fiscal year 1993-94 Rate Development Schedule. This schedule figures the costs per unit for each service by dividing the budget for the entire service by the number of units it expects to sell.

ISD's business planning inadequate — ISD's efforts to provide efficient, quality distributive services are hindered by its failure to undertake appropriate business planning prior to establishing a new technology service. Specifically, ISD often plans for new services and invests in new equipment without measuring customer preferences and developing a plan to recover its costs. For example:

■ ISD's major telecommunications network project, MAGNET, was initiated more than seven years ago without any type of business plan. Consequently rudimentary business planning items such as an analysis of customer needs, pricing strategy, and cost recovery were not carried out until five years after the project began. As a result, in 1995 MAGNET's losses threatened to bankrupt the Telecommunications Revolving Fund. ISD avoided this largely through reducing services and delaying hiring a complete MAGNET support staff. Nevertheless, MAGNET experienced a loss of approximately $996,000 in fiscal year 1994-95 and ISD estimates it will lose another $900,000 in fiscal years 1995-96.[1]

■ ISD replaced its old IBM minicomputer system with IBM's newest model without first conducting a business plan. Only later did ISD's analysis reveal that its rates would not cover the higher costs of the new system. A fear of losing customers prevented ISD from charging a rate sufficient to fully recover the costs of the new system. As a result, the minicomputer system lost approximately $300,000 in fiscal year 1994 alone.[2] ISD recovered this deficit by reallocating surplus revenue generated from its mainframe customers.

ISD's uncoordinated customer service structure affects service quality — While ISD's inadequate planning allows for the development of services that are unable to pay for themselves, ISD's fragmented customer service structure fails to provide coordinated, quality customer support for its services. For example, to deal with strategic customer service issues, ISD maintains two separate customer service contacts for agencies — one for telecommunications and one for automation issues. Moreover, for automation issues, agencies' first contact with ISD is its "HELP desk," which is not combined into a single organizational unit. Instead, it is a collection of separate help desks divided by type of technology. For example, some ISD staff provide telephone assistance regarding the State's payroll and accounting computer system, while a separate group is dedicated to answering questions regarding mainframe issues. Instead of reporting to ISD's client services section, these varied groups work with the managers of each technology section, hindering a coordinated response to agency needs and concerns.

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[1]   Based on 1995 preliminary budgets.

[2]   Based on ISD's fiscal year 1993-94 rate development calculations and revenue reports.

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Survey results for ISD's technical support services resemble the MAGNET situation described earlier. Agency representatives felt that the HELP desk was very important to their operations (8.73) yet gave mediocre ratings on items such as service quality (6.77) and timeliness (6.31). Over one-third of the responding HELP desk users commented on service issues such as lack of staff knowledge and slow response times. Other criticisms highlighted ISD's lack of a cohesive approach to the customer. For example:

- One large user of ISD's services commented — "There is no effective communication among internal ISD areas. Each interacts with their customers independently. When issues or problems occur in one ISD area, the customer is responsible for coordinating related activities with other DOA areas."

- A smaller user described their customer service contacts — "When ISD set up their system of account representatives, it became very hard to directly talk to the person who could solve your problem and involved more time on our part."

- A third agency described their experiences with ISD's computer support telephone hotline — "Very slow. Not inclined to want to help. 'Not my problem' syndrome. They've often said to call someone else."

ISD Must Alter Its Practices to Meet Industry Changes

Regardless of the placement of statewide planning duties as discussed in Finding I, ISD must focus on its role as a service provider. To offer competitive services and improve its capacity to develop contemporary, marketable services, ISD must do two things. First, ISD needs to reexamine its service provision and pricing system to stop depending on the mainframe to support inefficient services. In addition, ISD needs to incorporate better business planning that includes customer participation into its future service provision decisions.

Reexamine services — ISD needs to reexamine the spectrum of services it currently provides and determine which services are economically viable. Services that cannot support themselves must be improved or considered candidates for outsourcing. Some organizations are making such decisions by examining their service composition in order to develop a more modern service emphasis. For example, Salt River Project is using a highly regarded consulting service to identify and measure the quality of its computing services. This information will help determine which services can be left to vendors and which should be retained. In addition, the City of Phoenix decided to turn over its mainframe operations to a private vendor, allowing its information processing agency to concentrate on the distributive role of information processing.

Once ISD has decided which services to provide, its charges need to be based on the actual costs of providing the services rather than artificially low rates. While ISD plans to alter future rates to bring some services closer to their estimated costs, current practices continue to depend on mainframe processing to subsidize services that operate at a loss. In contrast, Kansas and Washington avoid this kind of subsidy by requiring each service to come as close as possible to paying for itself. To do this, they conform to a rigid cost accounting system that prevents the redistribution of overhead costs.

Better business planning — ISD also needs to develop a sound business process that combines better financial planning with strong customer feedback into planning and carrying out new services. An accurate, realistic system for cost recovery must be developed during the planning process to assess the validity of the project. Moreover, customer demand and preferences for new services must be taken into account in any new service direction. ISD has improved in this area through several recent efforts such as surveying customer preferences for network support services. Also, ISD formally reviewed its voice telecommunications and LAN services in March of 1995 and expects newly created business plans for these services in October of 1995. However, ISD's other existing services need to be examined. This was done in Minnesota with a major refocusing effort to develop a business plan that would meet current and future customer needs. Minnesota used a comprehensive survey of customers and employees to determine the viability of existing services and on a continual basis obtains customer feedback, and monitors customer preferences and their changing computer needs.

To enable ISD to better solicit customer preferences, it should provide its customers with a single, convenient organization for analyzing customer preferences. As noted earlier, the current ISD structure provides agencies with many separate customer contacts organized around services rather than customers.[1] Other organizations have responded to this problem by elevating contacts to a level where representatives have the authority to effectively address agency needs. For example, North Carolina has combined many of its customer service sections with a new unit designed to focus on agency needs. Moreover, Minnesota and the City of Phoenix assign high-level agency managers the responsibility

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[1] With the Deputy Director and Assistant Director positions now in place and filled, DOA has recently begun to review the adequacy of its current customer service structure.

for relationships with its key customers. This is not only a powerful communication tool, but it provides customers with an effective advocate within the information resource agency's management.

RECOMMENDATIONS

1. ISD should reexamine the services it currently provides based on customer demand and economic viability. Services that fail to meet these standards should be improved or considered candidates for outsourcing.

2. ISD needs to position itself to take greater advantage of emerging new technologies by:

   ■ Reducing ISD's dependency on mainframe revenues by adopting rates based on the actual costs to provide services.

   ■ Consolidating its decentralized customer service functions to both improve current service quality and better respond to the changing needs of ISD's customers.

3. ISD needs to develop a strong business planning approach in designing new services. ISD should examine economic viability and customer preferences before it undertakes any new project.

Agency Response

ARIZONA DEPARTMENT OF ADMINISTRATION

OFFICE OF THE DIRECTOR

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October 30, 1995

Mr. Douglas Norton
Auditor General
2910 N. 44th Street, Suite 410
Phoenix, Arizona 85018

Dear Mr. Norton:

Per our discussion last week, the Department of Administration's written response to the performance audit of the Information Services Division is attached for your review.

Although we may not agree with all of the recommendations, the performance audit has been extremely helpful in reassessing and validating key issues and improvement opportunities.

Sincerely,

Rudy Serino
Director

cc: John McDowell
      Deputy Director
      IRM Group

Department of Administration, Information Services Division

- *Response* -

to the

Auditor Generals' Performance Audit

October 26, 1995

Audit Finding I.
The State Needs A Chief Information Officer

Audit Recommendation 1

The Legislature should consider establishing a new state agency to develop statewide direction for information technology and ensure that state agencies follow that direction. This will require legislation to create the agency and to transfer relevant authority and responsibility currently assigned to the Department of Administration to the director of the new agency.

Response:

The Department disagrees that a new agency is required at this time.

The Department has recently filled the State Chief Information Officer (CIO) position and elevated it to Deputy Director, creating a strong CIO position within ADOA. This is a leadership issue, rather than a structural or statutory issue, and the existing statutes are more than adequate.

The State CIO is in the process of developing a significantly improved planning and oversight process, and there is no reason to delay or to incur additional costs for a new agency.

Effective leadership, with a closer working relationship to the Governors' Office, and removing the Chief Information Officer from most service and operational issues, will accomplish the same goals and objectives without creating additional bureaucracy.

Audit Recommendation 2

To ensure information technology policies reflect statewide priorities and are supported by high-level executive decision makers, the Legislature should consider establishing a formal information technology policy board comprised of state agency directors. If the Legislature desired to utilize the currently existing Governors' Automation Advisory Council to achieve this end, A.R.S. §41-714 would need to be to increase the Council's authority over statewide information technology issues.

I. *Chief Information Officer*

2. *Establish A Policy Board Of Agency Directors* (Continued)

Response:

The Department disagrees that new statutes are required, but agrees that minor revisions may be appropriate and that statewide direction and policy-setting processes needs to be significantly improved.

The Governor's Office has the authority, within existing statutes, to revise or strengthen the role of the Governors' Automation Oversight Committee or to establish another review board to better address statewide directions and policies. This process could also include more formal analysis, plans, oversight, and periodic briefings with the Cabinet and budget offices.

It is agreed that an improved (and more formal) statewide direction and policy review process is needed, and a proposal is being developed at this time. This will require additional resources. However, the issue is one of effective leadership, rather than structure or statutes.

Audit Recommendation 3

To advise the policy board and the CIO on the technical application of statewide policies and standards, the Legislature should also consider establishing a technical advisory council comprised of agency technology experts. If the existing CIO Council were to be used to fill this role, its reporting structure and duties should be formally defined.

Response:

The Department agrees that more formal roles and duties should be established for the CIO Council, which has informally functioned in a statewide technical advisory role for several years. The Council's role, mission, and membership have evolved over time, and this is currently being reevaluated. However, it should be recognized that additional resources will be required to develop and implement a quality statewide planning and oversight function.

I. Chief Information Officer
3. Establish Technical Advisory Board

Response (Continued)

A formal charter for the CIO Council, with defined roles and responsibilities, will be developed and implemented within three months.

Audit Finding II.
Arizona Should Change Its Process For Funding Technology

Audit Recommendation 1

To improve coordination of major information technology projects, the Legislature should consider requiring the State's CIO to:

- *Work in conjunction with JLBC staff and OSPB to define specific criteria for evaluating state agencies' strategic plans and major technology projects to be reviewed and approved before recommending appropriation of monies for such projects.*

- *Provide JLBC staff and OSPB reviews and recommendations regarding all appropriation requests for projects meeting the predetermined criteria prior to these organizational budget approval recommendations*

Response:

The Department agrees, and the State CIO is actively developing a process to address these issues.

Working with the OSPB and the JLBC, the State CIO (and staff) are developing a "Project and Information Technology Investment Justification" process. These processes, standards, and procedures will significantly improve agency and statewide analysis, planning, and oversight.

The agencies will be required to assess the project or investments from a business, financial, and technical perspective, and provide

II. Change Process For Funding Technology
1. Improve Coordination Of Major Projects

Response (Continued)

measurement criteria. This will include life cycle cost information, risk assessments, cost/benefits analysis, periodic monitoring and variance reporting, and it will accommodate multiple year projects.

Subject to the review and approval of both budget offices, with additional resources (which will be requested), a pilot project could be introduced within three months.

Audit Recommendation 2

To streamline the funding and ensure continued justification for major technology investments, the Legislature should consider appropriating monies for such projects in phases.

Response:

The Department agrees, and the State CIO is actively developing a process that will address this issue. However, the proposed process, and related standards and procedures, will require additional resources before it can be effectively deployed statewide. (Refer to the above response, II. 1).

Audit Recommendation 3

The Legislature should consider adopting additional funding mechanisms to enhance broader, more strategic application of information technology, such as:

- *Collective funding to facilitate central consideration of statewide priorities for technology as well as application of technology resources, and research and development that benefits multiple agencies.*

- *Considering the long-term demands on the technology resources and budgeting accordingly.*

- *Setting aside monies for reinvestment in technology assets based on calculated depreciation amounts.*

II. Change Process For Funding Technology
2. Streamline Funding, Consider Appropriating In Phases (Continued)

> • *Incentive funding that encourages measurable savings, cost avoidance, and increased productivity through the application of technology resources.*

Response:

The Department agrees that the current funding mechanism for some statewide and strategic information technology investments needs to be revisited. This is a particular concern in regard to multiple funding sources and common infrastructure needs.

An important and complex issue, the Department will request assistance from both budget offices to identify alternatives and develop a recommendation. The State CIO will initiate discussions with the budget offices within a few weeks and (assuming consensus) will implement new funding mechanism as soon as it is feasible.

Audit Finding III.
ISD Fails To Adapt To The Modern Computing Needs Of Its Customers

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The Department disagrees with this finding. ISD is a modern service provider and has generally not failed to meet the needs of its customers. The specific type of technology is secondary to how it is applied, with appropriate management practices, to address customer-driven needs.

First, although we certainly can improve, we have not failed to meet our customer's needs. We provide quality services at a competitive cost for many agencies, such as AHCCCS, DOC, Water Resources, and dozens of other agencies (and have done so for many years). We provide connectivity to all agencies, exchange data with the six major data centers and vendors daily, directly support thousands of state employees, and we provide crucial statewide systems and services in a highly reliable and cost effective manner.

III. ISD And Needs Of Its Customers (Continued)

Secondly, our services are modern, and we are continuing to move into new areas. We have, for example, recently developed a state-of-art Local Area Network that supports over seven-hundred employees.

Thirdly, meeting customer needs is not so much about a technology as it is to responding to their needs in a cost effective and pragmatic matter. The mainframe will continue to be a valuable, and cost effective, platform for some applications for many years. Although the Department continues to train staff and to acquire, and deploy, PC, LAN and client/server-oriented technologies, there are times when a mainframe solution is more appropriate.

Audit Recommendation 1

ISD should reexamine services it currently provides based on customer demand and economic viability. Services that fail to meet these standards should be considered as candidates for outsourcing.

Response:

The Department agrees, and this is being actively addressed.

ISD, with new leadership and management, is currently in the process of reexamining all of its service offerings. The audit discussion has correctly identified many of the shortcomings with past management practices, such as weak business planning and inadequate service response to customer-driven needs. However, this issue is not so much related to a specific type of technology, as it is to the need to deploy professional management practices that are based upon customer-driven needs.

This is an ongoing improvement process, but some positive results have already been achieved. For example, several non value-added activities have already been discontinued, new customer-driven service offerings have been identified, action plans are being prepared, and no new projects or investments will be incurred without a business, financial, and technical assessment and plan.

In summary, the Department agrees with the statement that "to establish itself as a competitive and reliable 'vendor', ISD must reexamine its services and adopt better business planing methods"

III. ISD And Needs Of Its Customers
1. Need To Reexamine Services

Response (Continued)

(per page 23). Several steps have already been taken, and more are planned that will significantly improve customer services, and those services that are not based upon a customer demand or are not economically viable will be either discontinued or outsourced.

Audit Recommendation 2

ISD needs to position itself to take greater advantage of emerging new technologies by:

- *Reducing ISD's dependency on mainframe revenues by adopting rates based on the actual costs to provide services.*

- *Consolidating its decentralized customer service functions to both improve current service quality and better respond to the changing needs of ISD's customers.*

Response

The Department agrees to some of the components of this recommendation, and disagrees with others.

The Department agrees that value-added customer services need to be improved, that fragmented service functions need to be consolidated, and that emerging technologies need to be deployed to address customer needs (as appropriate). However, the Department disagrees that this is a technology-driven issue, and disagrees that existing mainframe operations or revenues are pertinent to this issue.

ISD's only focus should be to provide value-added, quality and cost competitive customer services. If these value-added services require new technologies, then new technologies will be deployed (based upon a business, financial and technology assessment). The priority is for ISD to position itself to meet customer expectations, not necessarily a set of technologies. The issue is not so much about improving technology as it is about the need to improve customer responsiveness, planning execution, and management effectiveness. As noted above, ISD's new management team is making progress in these areas.

III. ISD And Needs Of Its Customers
2. Take Advantage Of Emerging Technologies

Response (Continued)

Mainframe operations and revenues are unrelated to providing improved customer services to agencies on a fee-for-service basis. This is a different sub-program. The Department disagrees with this recommendation as these revenues allow for growth and the pursuit of new technologies.

It is agreed that various customer support functions have been fragmented and poorly coordinated in the past. Several of these functions have now been consolidated and, with new managers, are better coordinating resources and customer services.

Audit Recommendation 3

ISD needs to develop a strong business planning approach in designing new services. ISD should examine economic viability and customer preferences before it undertakes any new project.

Response:

The Department agrees with this recommendation.

In the past, there has been a weakness in business planning, customer responsiveness, and some management practices. It is recognized that significant improvements are required, and this a priority.

ISD is under new management that are well qualified, and committed, to making the needed changes. Some corrective steps have already been made, and others are in progress or planned. For example, ISD has now adopted a policy that requires a business planning approach (and assessment) prior to any new investment or project, a formal planning activity has been initiated (that is customer based), and professional management practices are being introduced. This is a departure from the past practice of investing in technology products with no clearly defined user-driven business objectives.

In summary, the Department strongly agrees that a strong business planning approach is needed (with other improved management practices), and that this is a priority.