

A REVIEW

*State Agency Use of
Computer Consultants*

01-6

March 2001

2001-2002 Joint Legislative Audit Committee Members

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March 16, 2001

Senator Gary R. George and
Representative Joseph K. Leibham, Co-chairpersons
Joint Legislative Audit Committee
State Capitol
Madison, Wisconsin 53702

Dear Senator George and Representative Leibham:

We have completed a review of the use of private-sector computer consultants, as requested by the Joint Legislative Audit Committee. We estimate that executive branch state agencies exclusive of the University of Wisconsin System spent \$93.6 million for information technology (IT) consulting services during fiscal year 1998-99, the last year for which statewide purchasing data are available. These services supplemented the work of 1,383 full-time equivalent state IT employees.

When agencies need to develop large new information systems, manage peak workload periods, or use special skills on an intermittent basis, use of contracted IT services is consistent with state purchasing statutes. However, agencies also routinely engage contractors to perform more routine tasks without conducting cost analyses anticipated by the statutes, largely because of past labor market conditions and restrictions on their numbers of authorized positions. Among a sample of 32 hourly contractors performing routine responsibilities, hourly costs of 29 were higher than those of comparable state employees, and 4 of these were more than twice the hourly cost of state employees. In light of recent improvements in the State's ability to attract and retain IT staff, we recommend that cost analyses be performed before IT contractors are hired for routine work.

It is not uncommon for large-scale IT systems development projects to exceed original budgets for cost or time, or to perform fewer functions than originally planned. Based on our review of the professional literature, we have described a series of best practices for contracting and monitoring large IT projects.

We appreciate the courtesy and cooperation extended to us by all of the 50 state agencies that provided information for this review, particularly the departments of Administration, Corrections, Health and Family Services, Justice, Transportation, and Workforce Development, where we conducted additional work. A response from the Department of Administration is Appendix 3.

Respectfully submitted,

Janice Mueller
State Auditor

JM/DB/ao

Summary

Increased reliance on information technology (IT) has led state agencies to purchase significant amounts of IT equipment, supplies, and services. The State uses IT to determine who is eligible for government programs and services, make information available through the Internet, record financial transactions, manage agency records, and otherwise carry out government's programmatic and administrative responsibilities. In fiscal year (FY) 1998-99, state agencies' purchase orders for IT goods and services totaled approximately \$320.5 million and accounted for 37.1 percent of all state purchase orders. In the five-year period ending in FY 1998-99, IT purchase orders increased 139.2 percent, compared to a 6.7 percent increase in total state purchase orders.

To receive specialized services such as systems design and computer programming, executive branch agencies spent an estimated \$93.6 million to hire IT consultants from the private sector in FY 1998-99. Contractors have been paid hourly rates ranging from \$18 to \$195. In addition, executive branch agencies excluding the University of Wisconsin System employed 1,383 full-time equivalent (FTE) professional IT employees at an estimated cost of more than \$87.8 million.

As contracts for IT consulting services have increased, questions have been raised about the full extent of contracting and whether relatively high hourly rates paid to contractors have been cost-effective or made retention of state IT employees more difficult. State IT managers agree that the use of consultants is economical and efficient for the development of large new information systems, when additional IT staff are needed for peak-workload periods or special projects, or when there is an intermittent need for specialized skills. However, state agencies also obtain hourly professional IT services to carry out routine work, including responsibilities that are also performed by state employees. It appears that few of the 50 state agencies we contacted compare the cost and efficiency of state employees and hourly IT contractors when choosing between hiring and contracting, as statutes governing the purchase of any professional services require. We noted several cases in which IT contractors had been retained by an agency for several years, performing duties similar to those performed by state IT employees. In one case, a contractor worked full-time in an agency for nine years.

To determine whether cost comparisons might have been worthwhile, we asked IT managers in five of the larger state agencies to assist us in identifying a sample of hourly contractors whose FY 1998-99 work schedules and responsibilities were similar to those of full-time,

permanent state IT employees. We compared the hourly rates of 32 contractors to the average hourly cost, including salary and fringe benefits, of state employees performing comparable work. We found that 29 of the 32 contractors in our sample cost more than state employees. In four cases the contractor's rate was more than twice the average hourly cost for a comparable state employee.

State IT managers commonly cited two reasons for their use of hourly IT contractors when state employees were capable of doing comparable work at a lower cost: the labor market pressures of the late 1990s, and controls on the number of employees they were authorized to hire.

The difficulties that state agencies faced in hiring and retaining professional IT staff in the tight labor market of the late 1990s led to concerns that state staff may have been voluntarily resigning and then returning to work as hourly IT contractors—at the same or different agencies—for higher pay. We identified seven examples of former state IT employees returning to state agencies as hourly contractors. In each case the contracted hourly salary was more than twice the employee's former state salary, and in three cases it was more than three times greater. In one case an employee left a state position that paid \$19.12 per hour and returned as a contractor at the rate of \$101 per hour.

The successful turnover of most computer systems on January 1, 2000, has reduced demand in both the public and the private sector for some types of IT professionals. In addition, the Department of Employment Relations began in 1997 to work with IT managers to improve hiring and retention by, for example, modifications to the pay plan that allow higher pay for senior and advanced IT positions. As a result, several IT managers have indicated that while the market is still highly competitive overall, their ability to attract and retain IT employees has improved. Some IT managers cited examples of former IT employees seeking to return to state service.

The second reason IT managers gave for hiring higher-cost IT contractors was constraints on the number of employees they are authorized to hire. In recent years, both the Governor and the Legislature have been generally reluctant to increase overall state position authority. The Department of Administration's instructions for 2001-03 biennial budget requests directed agencies to anticipate the need for a 5 percent reduction in authorized positions. One agency's 1999-2001 biennial budget request demonstrated the cost-effectiveness of hiring additional permanent IT staff but used contractor funds, which it noted were the highest-cost alternative, in response to "the concern that state government generally has in increasing permanent position authority." Many IT managers indicated they did not see a purpose in conducting cost analyses because they believed they were not to request additional positions.

In light of changes in the job market and the improved ability of the State to compete for and retain IT employees, accurate cost comparisons between hiring additional contractors or additional state IT employees, either through reallocation of existing positions or increasing position authority, may be increasingly useful to state policymakers. To promote cost comparisons, the Legislature could require additional information to be submitted in the biennial strategic IT plans that are currently required by s. 16.971, Wis. Stats. For example, agencies could be required to reassess all existing uses of purchased professional IT services to determine cost-effectiveness.

For large-scale systems-development projects, agencies could assess whether existing or proposed state staff oversight is adequate to allow for ongoing understanding and maintenance of the system. For other uses of contractors, agencies could assess the relative costs of private contractors and state employees and determine whether any additional cost of contracting is justified by other considerations, such as current labor market conditions, unique skills, or temporary peak-workload periods.

We also reviewed seven large-scale IT projects with original budgets from \$345,400 to more than \$59.4 million. We found that only one of the seven, the Client Assistance for Reemployment and Economic Support (CARES) system, was reported to be completed on time, within its original budget, and with all intended functions. The other six systems have either exceeded their original budgets, fallen behind schedule, had reduced functionality, or had a combination of two or more problems.

The reasons that six of the projects have not met all basic criteria for project success include inadequate cost estimates, changes in program requirements that required project design changes, and poor performance by the contractor. For example, the Wisconsin Statewide Automated Child Welfare Information System was originally scheduled to be completed in 2001 at a cost of \$53.8 million. However, the Department of Health and Family Services had to terminate its contract with the first vendor for non-performance and modify the project with the State's assumption of child welfare in Milwaukee County. The current projected completion date is 2004, at a cost of \$78.9 million.

For another large IT project we reviewed, a centralized human resources system related to state employment, costs increased from an original budget of \$965,000 to a total of \$5.0 million. In addition, the system was implemented one-and-one-half years after the original intended completion date.

Through a review of project management literature, and especially IT management literature, we identified best practices for IT project development that include seeking fixed prices for specific deliverables,

clearly communicating system requirements to the contractor, using modular contracting to minimize problems caused by program changes, negotiating contracts that specify performance and results, and managing contractor performance. While such practices cannot guarantee project success, they may at least reduce the extent of cost overruns and time delays.

The Legislature will need to consider a number of issues relating to the proposal in the Governor's 2001-2003 Biennial Budget Proposal to create a Department of Electronic Government, headed by a Chief Information Officer (CIO). The Governor has proposed transferring 227.3 FTE positions and an operating budget of \$132.4 million from the Department of Administration to the new department. Four new positions outside the classified service would be created: the CIO, a deputy, an executive assistant, and a division administrator.

In reviewing the Governor's proposal, the Legislature will need to consider a number of issues, including the need for a state CIO and the potential scope of the agency's authority. The Governor has proposed that the new CIO and Department of Electronic Government have broader IT authority than is currently granted the Department of Administration. The Governor's proposal provides the CIO:

- authority to review and approve state agency IT plans;
- authority to assume direct responsibility to plan and develop any system in the executive branch that the CIO deems necessary, with or without the consent of the affected agency; and
- authority to transfer any IT position, and its funding support, from any executive branch agency to the Department of Electronic Government or any other executive branch agency, unless such a transfer would be inconsistent with existing state or federal law.

The Legislature will also need to consider issues involving the composition and governance of the proposed agency. Under the Governor's proposal, the Governor would appoint the CIO, who would serve at his pleasure. In turn, the CIO would be advised by an Information Technology Management Board attached to the Department of Electronic Government and composed of the Governor, the CIO, two agency heads appointed by the Governor to serve at his pleasure, and two other persons appointed to four-year terms.

Other states vary considerably in their management of IT activities. While some maintain CIO functions within various agencies, others have created separate IT agencies or commissions. CIOs in some states and municipalities have been perceived to contribute to the efficient functioning of IT activities throughout the government. However, the position and function of a CIO has not been universally accepted because of concerns about increased cost and perceived over-centralization of IT project authority.

Retaining statewide IT coordination within the Department of Administration would be consistent with existing practices in Wisconsin and would likely have the lowest administrative expenses. Creating a separate agency, as the Governor has proposed, would likely involve some additional administrative expenses but could also highlight the importance of the CIO function.

Introduction

Information technology is used to carry out state government responsibilities.

State government agencies in Wisconsin rely extensively upon information technology (IT) to carry out their responsibilities. The use of electronic means to collect, store, process, report, and communicate information electronically has both programmatic functions, such as determining individuals' eligibility for services and providing public information through the Internet, and administrative functions, such as recording financial transactions and managing agency records.

In FY 1998-99, state agencies spent more than \$320.5 million to purchase IT goods and services.

To carry out these IT functions, state agencies need tangible goods, such as computers, as well as services, such as programming. Services can be purchased from private vendors or provided by state-employed IT professionals. In fiscal year (FY) 1998-99 state agencies issued purchase orders totaling approximately \$320.5 million for IT-related goods and services.

Anecdotal information about IT contracting prompted questions among legislators about the full extent and cost of the use of private-sector consultants. In addition, concerns have been raised about potential differences between what the State has paid private consultants compared to its own IT staff, and whether such differences result in high turnover among state staff.

In response to these concerns and at the request of the Joint Legislative Audit Committee, we reviewed:

- statewide expenditures for computer consulting services;
- the number and types of IT vendors used by the State;
- the rates paid to hourly contractors, including those for services that are similar to services performed by state staff; and
- available information on staff leaving state service in order to be rehired as consultants.

Based on our review of professional literature on the use and management of IT consultants, we also developed a list of best practices for state agencies to follow in developing large-scale IT projects. In conducting this review, we interviewed IT professionals in 50 state agencies; reviewed work of the IT Directors' Council; examined state

purchasing and payroll records; reviewed efforts by the Department of Employment Relations to improve recruitment and retention of state IT staff; and reviewed reports of IT project development experience in Wisconsin and seven other states, as well as professional literature on IT project management.

Use of IT by State Agencies

State agencies have used information technology in new and varied ways in recent years.

As is the case with every large public or private enterprise in the early 21st century, state agencies have made IT integral to nearly all functions they perform. Fifteen years ago, computers were found in only a limited number of offices, but they can now be found in nearly every office. Computers are increasingly being linked to each other, which allows users to share information. For example, in 1995 the Department of Administration (DOA) maintained e-mail connections to approximately 20,000 state employees. By 2000, that number had grown to over 32,000, an increase of 60 percent.

Currently, the State relies upon IT for uses as diverse as:

- providing information on Wisconsin government agencies and programs to all citizens via the state's World Wide Web homepage, www.wisconsin.gov;
- verifying eligibility for Medical Assistance, Wisconsin Works (W-2), food stamps, subsidized child care, and other benefits using statewide information systems;
- allowing the purchase of hunting and fishing licenses at over 1,300 locations throughout Wisconsin and other nearby states, and making sales locations available through an interactive map application on the Department of Natural Resources' Web site;
- recording and tracking immunizations of children with the Department of Health and Family Services' Wisconsin Immunization Registry;
- monitoring traffic on 120 miles of highway in the Milwaukee metropolitan area in order to improve efficiency and safety by reducing accidents and congestion; and

- performing accounting and budgeting for all state expenditures and revenues using the WiSMART accounting system.

Reliance on information technology by state agencies can be expected to increase. On September 19, 2000, then Governor Thompson issued Executive Order No. 408, “Relating to the Development and Implementation of Electronic Commerce Methods for the Delivery of State and Local Government Services,” indicating his support for “outstanding citizen-centered electronic government services.” To that end, DOA, with cooperation from many state agencies, developed the Wisconsin E-Government Portal, which went on-line in January 2001. In addition, Governor McCallum has proposed in his 2001-03 Biennial Budget Proposal the creation of a Department of Electronic Government to be headed by a State Chief Information Officer (CIO).

DOA has important IT responsibilities.

While all state agencies use IT goods and services, DOA has several unique roles. In addition to being a substantial consumer of IT services for its own needs, DOA is responsible for:

- overseeing the purchasing practices that govern how other state agencies procure IT services and assisting state agencies in their procurement activities;
- assisting and coordinating IT planning among state agencies, encouraging shared use of technology, leading statewide projects, and researching developing technologies;
- developing and coordinating “enterprise standards,” the technical specifications that allow state agencies’ IT systems to interact;
- developing statewide technology standards and guidelines and operating the statewide telecommunications voice, data, and video network;
- providing mainframe computer services—the large computers and operating systems necessary to run them—on which other state agencies can operate their own applications; and
- providing basic IT services to smaller state agencies.

DOA does not, however, have responsibility for the development and operation of other state agencies’ applications. For example, the Department of Revenue is responsible for the creation, maintenance, and use of automated systems for tax administration, although these

applications are run on the large mainframe computers operated by DOA. In addition, while DOA has overall responsibility for state purchasing practices, it does not establish guidelines or monitor how state agencies contract for IT consulting services.

IT Goods and Services Purchased by State Agencies

Spending for IT purchases has grown faster than spending on other goods and services.

Increased reliance on integrated computer systems and the Internet has led state agencies to purchase increasing amounts of IT equipment, supplies, and services. DOA’s Purchasing Data Processing System, which was used through FY 1998-99 to record purchase order amounts, provides the most consistent information available on purchase orders, which approximates—but does not exactly match—expenditure information. As shown in Table 1, the value of IT-related purchase orders increased 139.2 percent from FY 1994-95 through FY 1998-99, while total purchase orders increased 6.7 percent. Data for subsequent fiscal years are not available because the system was unable to process dates later than 1999.

Table 1

Percentage Increase in Purchase Orders

	<u>FY 1994-95</u>	<u>FY1998-99</u>	<u>Percentage Increase</u>
All Purchase Orders	\$810,482,245	\$865,065,747	6.7 %
IT Purchase Orders	133,979,103	320,525,765	139.2

Source: DOA Purchasing Data Processing System

Data must be considered estimates of expenditures because: 1) although purchase orders might identify more than one commodity to be purchased, the system allocated the entire amount of the purchase order to the first commodity code listed on each order; and 2) actual expenditures may have been less than the amounts shown on the purchase orders.

The increasing proportion of purchase orders attributable to IT is shown in Table 2.

Table 2

IT Purchase Orders

<u>Year</u>	<u>IT Purchase Orders</u>	<u>All Purchase Orders</u>	<u>IT as a Percentage of All Purchase Orders</u>
FY 1994-95	\$133,979,103	\$810,482,245	16.5 %
FY 1995-96	184,144,696	815,776,405	22.6
FY 1996-97	258,609,698	814,905,440	31.7
FY 1997-98	285,151,082	832,019,987	34.3
FY 1998-99	320,525,765	865,065,747	37.1

Source: DOA Purchasing Data Processing System

Data must be considered estimates of expenditures because: 1) although purchase orders might identify more than one commodity to be purchased, the system allocated the entire amount of the purchase order to the first commodity code listed on each order; and 2) actual expenditures may have been less than the amounts shown on the purchase orders.

Data from earlier years are not comparable because of changes in reporting categories. The Purchasing Data Processing System was discontinued July 1, 1999.

IT purchases include hardware, such as keyboards, monitors, disk drives, and cables; computer supplies, such as printer paper, floppy disks, and other recording media; and software programs that enable computers to process information. Software can be purchased either as a packaged standard commodity or as a product custom-made to meet an agency's specialized needs. To operate IT services, state agencies may also incur expenditures to:

- rent hardware or software;
 - train their workers or customers in new uses of technology;
 - repair or update equipment and software; and
 - obtain the services of IT professionals to assist in the planning, design, creation, implementation, maintenance, and operation of IT systems and hardware.
-

Purchases of IT consulting services accounted for almost half of all IT purchases.

Table 3 shows the amount of purchase orders recorded for several categories of IT commodities. The category for IT consulting services had the largest recorded purchase order amount and accounted for almost half the value of all recorded IT purchase orders. Purchase orders in this category were issued to 508 different vendors in FY1998-99. The total value of purchase orders issued to individual vendors ranged from less than \$100 to more than \$38.3 million.

Table 3

IT Purchase Orders by Type
FY 1998-99

	<u>Purchase Order Amount</u>	<u>Percentage of All Purchase Orders</u>
IT Consulting Services	\$150,057,449	46.8%
IT Hardware, Software, and Supplies	138,084,775	43.1
Rental/Leasing and Other Services	10,718,528	3.4
Educational, Communication, and Other Services	10,597,645	3.3
Maintenance and Support Services	7,783,753	2.4
Other Commodity Classes*	<u>3,283,615</u>	<u>1.0</u>
Total	\$320,525,765	100.0 %

* Includes electronic communication equipment, computer furniture and furnishings, and computer paper.

Source: DOA Purchasing Data Processing System

Data must be considered estimates of expenditures because: 1) although purchase orders might identify more than one commodity to be purchased, the system allocated the entire amount of the purchase order to the first commodity code listed on each order; and 2) actual expenditures may have been less than the amounts shown on the purchase orders.

The ten largest vendors of IT consulting services in FY 1998-99, based on the value of purchase orders issued, are shown in Table 4. Appendix 1 identifies the top 100 vendors of IT services and the agencies for which they performed the most work.

Table 4

**Ten Largest Vendors of IT Consulting Services, by Value of Purchase Orders
FY 1998-99**

<u>Vendor</u>	<u>Total Purchase Orders</u>	<u>Percentage of Total</u>
EDS	\$ 38,358,585	25.6%
IBM	19,701,442	13.1
GTECH	11,560,000	7.7
Deloitte & Touche	9,925,644	6.6
Omni Resources	4,771,789	3.2
Allegis Group (Aerotek/Maxim/TEKsystems)	4,802,613	3.2
Interim Services	3,258,045	2.2
Endeavor Information Systems	2,796,535	1.9
Greenbrier & Russel	2,421,620	1.6
Cap Gemini	2,406,066	1.6
All Others	<u>50,055,111</u>	<u>33.4</u>
Total	\$150,057,449	100.0%

Source: DOA Purchasing Data Processing System

Amounts may represent several contracts with various state agencies. Purchase order amounts do not equal actual expenditures because actual expenditures may have been less than the amounts shown on the purchase orders.

The four vendors with the largest purchase order totals were:

- EDS, which contracts with the Department of Health and Family Services to operate portions of the Medical Assistance (Medicaid) program. Under this contract, EDS provides the IT services necessary to operate the program's information system and also provides non-IT services, including receiving and processing claims for reimbursement of covered medical expenses, operating a hotline for providers and recipients, and providing management reports.
- IBM, which contracted with eight state agencies to provide a variety of services. The largest single contract was with the Department of Workforce Development, under which IBM worked on continuing design and modification tasks for the statewide automated child support information system.

- GTECH, which contracts with the Department of Revenue to operate portions of the Wisconsin Lottery. Under this contract, GTECH provides the IT services necessary to maintain and operate the information systems supporting many of the Lottery's games and also provides non-IT services, including tracking the retail sales of all games, providing technical support to retailers, and designing and procuring play slips that players use to choose numbers.
- Deloitte & Touche, which contracts with the Department of Workforce Development to continue maintaining the hardware and modifying and enhancing the software for the information system that supports programs including W-2, subsidized child care, and the Food Stamp Program.

Much of the spending on IT services went to firms providing temporary hourly IT staff.

Other vendors identified in Table 4 provided temporary hourly IT professionals who worked under the supervision of state managers, such as the Allegis Group, which served 14 state agencies, and Omni Resources, which served 11 state agencies. These temporary staff provided services that in many cases were similar to the services provided by state IT employees. One question that we were asked to review was whether these purchased services were cost-effective compared to the services of state employees.

State agencies use hourly IT contractors to supplement the work of state IT employees.

State agencies outsource some IT projects or functions, such as the development of large-scale projects. In addition, agencies engage hourly IT contractors as temporary staff for functions and projects that are managed in-house. These hourly contractors may work for short terms during peak-workload periods but also may work for longer periods on routine, ongoing responsibilities. State agency IT managers indicate that temporary hourly IT contractors are engaged when the agencies are unable to recruit new employees, or when they have insufficient position authority to employ enough permanent staff to address their ongoing workload demands.

Specialized technical skills provided by both state IT staff and consultants include:

- help desk services to assist computer users with their questions and complaints;
- designing and developing systems that enable computers to perform tasks;
- planning, designing, creating, and maintaining systems for storing and retrieving large amounts of electronically encoded information;
- operating and maintaining the machines;
- enabling communication and the coordination of tasks among different computers;
- maintaining and installing hardware and software; and
- assisting agency managers with strategic planning for their future use of IT.

State-Employed IT Workforce

Approximately \$87.8 million was spent for state IT employees in FY 1998-99.

State agencies rely on both employees and contracted vendors to provide these necessary services. Executive branch agencies employed 1,383 FTE IT professionals in FY 1998-99, as shown in Table 5. Salaries for these employees (including merit awards and overtime) totaled approximately \$65.0 million. With an additional 35 percent

added for benefits such as retirement, health and life insurance, and workers' compensation, the state agencies' total costs for these employees can be estimated at \$87.8 million.

Table 5

**Professional IT Employees in Executive Branch Agencies
FY 1998-99**

<u>Agency</u>	<u>Permanent FTE*</u>	<u>Project FTE</u>	<u>Total</u>
Workforce Development	279.0	0.1	279.1
Transportation	256.1		256.1
Administration	193.5		193.5
Health and Family Services	161.5		161.5
Natural Resources	112.5	2.1	114.6
Revenue	112.5	1.0	113.5
Justice	36.1		36.1
Public Instruction	29.6	0.7	30.3
Employee Trust Funds	26.8		26.8
Corrections	25.5		25.5
All other agencies	<u>145.2</u>	<u>0.8</u>	<u>146.0</u>
	1,378.3	4.7	1,383.0

* Figures include classified permanent and project IT employees at executive branch agencies, excluding UW System. Unclassified IT employees at the Investment Board are also included. An additional 65.6 FTE limited-term employees worked as IT professionals during FY 1998-99.

Purchased IT Professional Services

We identified expenditures for IT consulting services in 50 executive branch agencies.

While the State's accounting system contains a data processing service category, state agencies code expenditures to this category in various ways, such that it cannot be used consistently to distinguish purchases of professional IT services from other types of professional services or other types of IT commodities. Therefore, to estimate expenditures for the executive branch agencies' purchase of professional IT services, we contacted 50 agencies to request expenditure information for professional IT services. We excluded UW System and its member campuses because expenditure records that would have enabled us to identify each purchased commodity as professional IT services are

maintained by the individual schools and colleges, so that identification and tabulation of these expenditures would have required a prohibitive amount of travel and time.

Agency staff provided us expenditure information related specifically to IT professional consulting services from private vendors, and we asked them to exclude expenditures for other IT services such as non-professional services, including data entry or tape mounting; standardized services, such as access to telecommunications lines; or computer equipment or off-the-shelf commercial software.

IT managers and purchasing staff in each of these agencies provided us with information about these expenditures in FY 1998-99 so that the expenditure data would be compatible with purchase order data from the Purchasing Data Processing System, for which FY 1998-99 is the last available year. For most agencies, we reviewed each manager's response against purchase-order information and against expenditure information from the agency's accounting records. Because of the varying ways in which commodities are identified in expenditure records, some small IT consulting expenditures may have been overlooked.

Expenditures for IT consulting services were almost \$93.6 million in FY 1998-99.

Of the 50 departments or agencies we contacted, 30 had expenditures for the use of IT consultants in FY 1998-99. As shown in Table 6, we have estimated that expenditures for IT consulting services reached almost \$93.6 million. This figure is lower than the \$150.1 million reported for FY 1998-99 purchase orders for similar services primarily because it excludes expenditures of UW System, the Legislature, and the judicial branch agencies that are, however, included in the purchase order total.

The largest expenditures for IT services include:

- \$14.1 million by the Department of Workforce Development for the maintenance and modification of the information system that supports administration of economic support programs;
- \$9.1 million by the Department of Workforce Development for the maintenance and modification of the information system that supports administration of the State's child support payments program; and
- \$8.9 million by the Department of Health and Family services for the IT staff of the firm that provides administrative services for the State's Medical Assistance program.

Table 6

IT Services Consulting Expenditures*
FY 1998-99

<u>Executive Branch Department, Agency, or Office</u>	<u>Expenditures</u>
Workforce Development	\$31,332,283
Health and Family Services	19,255,887
Administration	12,691,161
Transportation	7,951,272
Natural Resources	5,995,999
Corrections	5,566,776
Revenue	3,511,610
Investment Board	1,867,422
Justice	1,093,056
Office of the Commissioner of Insurance	1,016,288
Commerce	574,666
Financial Institutions	501,786
Public Defender	402,829
Agriculture, Trade, and Consumer Protection	346,103
Employee Trust Funds	294,978
Office of Justice Assistance	191,779
Public Instruction	175,504
Elections Board	165,996
Veterans Affairs	119,961
Board of Commissioners of Public Lands	100,856
Office of the State Treasurer	96,715
Regulation and Licensing	89,692
Employment Relations (Department)	73,575
Educational Communications Board	57,489
Military Affairs	43,736
Employment Relations Commission	20,903
Division of Hearings and Appeals	15,000
Educational Approval Board	10,350
Historical Society	600
Child Abuse and Neglect Prevention Board/Children's Trust Fund	75
Total	\$93,564,347

* Includes expenditures related to contracts and purchase orders for professional IT services that required specialized technical skills, were customized for the agencies' unique needs, and were provided by private vendors. Does not include expenditures related to contracts or purchase orders that were solely for services of a non-technical nature, hardware or pre-packaged goods, or services provided by one state agency to another.

However, some IT consulting purchases were very limited, including:

- \$75 by the Child Abuse and Neglect Prevention Board to fix a software error;
- \$191 by the Department of Financial Institutions for consultation with a previous vendor after a contract was completed; and
- \$600 by the State Historical Society for assistance in configuring a server.

It should be noted that IT services consulting expenditures include payments for contracts that cover a mixture of IT and non-IT services. For these contracts, it was not always possible to separate the vendors' expenses for professional IT services from other costs they incur. Therefore, we included all expenditures for these contracts, with the exception of the Department of Health and Family Services' contract with EDS. Total expenditures for this contract in FY 1998-99 were \$36.2 million; the Department of Health and Family Services estimates that \$8.9 million of that amount represented payment for the salaries of IT professionals employed by EDS and assigned to this project.

Rates paid to contractors for hourly IT services ranged from \$18 to \$195 an hour.

State agencies also contracted with IT vendors for temporary IT professionals who worked under the supervision of state managers for hourly rates. The range of hourly rates paid by state agencies from which we requested these data are shown in Table 7.

Table 7

Hourly Rates Paid for IT Contractors
FY 1998-99

	<u>Lowest Hourly Rate Reported</u>	<u>Highest Hourly Rate Reported</u>
DOA	\$25	\$195
Justice	33	185
Natural Resources	28	174
Educational Communications Board	30	166
Public Defender	63	150
Workforce Development	25	140
Transportation	25	140
Revenue	33	139
Financial Institutions	35	125
Veterans Affairs	42	125
Commerce	50	120
Office of the Commissioner of Insurance	40	100
Historical Society*	100	100
Health and Family Services	30	95
Agriculture, Trade and Consumer Protection	45	88
Office of Justice Assistance	75	85
Division of Hearings and Appeals*	81	81
Military Affairs*	77	77
Educational Approval Board	75	75
Employment Relations (Department)*	75	75
Employee Trust Funds	54	73
Board of Commissioners of Public Lands	65	68
Corrections	18	67
Public Instruction	44	60
Elections Board*	58	58
Investment Board	26	55
Child Abuse and Neglect Prevention Board/Children's Trust Fund*	50	50
Office of the State Treasurer*	46	46
Regulation and Licensing*	44	44
Employment Relations Commission*	41	41

* These agencies employed contractors at only one hourly rate during FY 1998-99.

The highest-cost hourly contractors were typically engaged for special purposes or short periods of time.

Hourly rates typically ranged from \$35 to \$65 for temporary IT professional staff. While the highest rate identified in our review was \$195 per hour in FY 1998-99, such high rates typically represented contractors who brought more specialized skills and whose working hours were more limited. For example:

- DOA engaged a contractor at a rate of \$195 an hour, at a total FY 1998-99 cost of \$20,880, to provide Y2K support to an e-mail and document-management system. Managers indicated that there were only a few individuals in the country with the skills to update the software.
- The Department of Justice engaged a contractor at a rate of \$185 an hour, at a total FY 1998-99 cost of \$258,825, to implement a document imaging project. The IT manager indicated that there were only a few vendors that had prior experience with the systems in use.
- The Department of Natural Resources engaged a contractor at a rate of \$174 an hour for Web design, at a total FY 1998-99 cost of \$23,381. The IT manager indicated that the contractor had specialized knowledge of Internet security techniques needed to provide a secure design and implementation.

Use of Hourly IT Contractors for Routine Responsibilities

The practice of engaging hourly contractors, while expensive, has benefits and drawbacks.

Although the use of IT consultants for outsourcing the development of large new IT systems is widely accepted, questions have been raised regarding the costs of using hourly IT contractors as temporary staff for routine, ongoing functions that are managed and operated in-house rather than outsourced. While IT managers reported that using hourly contractors to augment existing staff can reduce the costs of recruitment and training and can bring ideas and innovations from other workplaces, they also reported that hourly contractors are, in general, more expensive than comparable state employees. In some cases, state agencies have done analyses to determine whether hiring additional staff or engaging hourly contractors is the more economical and efficient method of augmenting their existing professional IT staff. In other cases, no cost comparisons have been made.

Advantages and Disadvantages of Purchasing Professional IT Services

Statutes permit the purchase of professional services when purchasing is economical and efficient.

Because state agencies can obtain professional IT services either by hiring employees or by contracting with private vendors, questions arise about the circumstances under which each option is preferable. The purchase of professional services is governed by s. 16.705, Wis. Stats., which permits agencies to purchase professional services when those services “can be performed more economically or efficiently by such contract.” This statute also requires that agencies properly use the services of state employees before they enter into contracts for professional services.

We found a consensus among state IT managers that the use of consultants is economical and efficient when:

- agencies seek to outsource the development of complex information systems. Managers in most state agencies agreed that the development of large IT applications usually requires the services of IT consulting firms, which may, for example, possess detailed knowledge of similar systems already developed in other states.

- agencies need to augment their existing staffing levels during peak-workload periods. State IT managers indicated that when agencies are in need of additional workers for a limited time period, hourly contractors—whose services may be engaged or terminated with little notice—are generally a more effective choice than state employees. Hourly contractors may also be used temporarily to fill key positions while state agencies recruit and hire replacements for employees who have left state employment.
- agencies occasionally need special skills. In these instances, state IT managers agreed that it is more efficient to retain a contractor to provide skills as needed than it is to hire or train a full-time state employee for skills that are not needed full-time, year-round.

In other circumstances—most notably when an agency is seeking to obtain hourly IT professionals to carry out routine, ongoing responsibilities that are also being performed by existing state employees—calculations are needed to determine whether hiring employees or contracting for temporary help is the economical and efficient alternative. We noted several examples of contractors having been retained by an agency for several years, performing work similar to that of state employees. In one case, a contractor had been retained by an agency for more than nine years. Cost analyses have altered agencies’ use of hourly contractors. For example, DOA had engaged more than five FTE hourly contractors in 1997 to operate WiSMART, the State’s accounting system. After performing a cost analysis in 1998, DOA retained two of the five contractors but replaced the other three after determining that assigning state employees could reduce costs by 33.6 percent.

Several state agencies have reduced hourly costs by hiring employees to replace hourly contractors.

Cost comparisons for other recent instances in which hourly contractors have been replaced with state employees are shown in Table 8. The Department of Corrections obtained new position authority for 23.0 FTE IT professionals in the 1999-2001 biennial budget, which enabled that department to reduce costs by reducing its reliance on contractors. In another case, the Department of Transportation determined that employees would cost less than hourly contractors. As a result, in the 1997-99 biennial budget that department was provided 22.50 FTE positions to replace contractors. The final set of examples in Table 8 shows the results of staffing changes made in DOA’s Bureau of Justice Information Systems, which replaced hourly contractors with state employees.

Table 8

**Costs of Hourly Contractors Compared to
Hourly Cost of State Employees Hired for Same Responsibilities***

	<u>Hourly Costs of Contractor</u>	<u>Hourly Costs of Employee</u>	<u>Difference</u>
Department of Corrections			
A	\$48.00	\$36.79	\$11.21
B	29.00	27.00	2.00
C	30.00	28.81	1.19
D	26.00	27.00	1.00
E	25.50	27.00	(1.50)
Department of Transportation			
A	65.00	35.10	29.90
B	44.95	28.88	16.07
C	52.00	36.45	15.55
DOA–Bureau of Justice Information Systems			
A	150.00	38.79	111.21
B	125.00	41.54	83.46
C	85.00	37.64	47.36
D	65.00	31.15	33.85
E	38.00	29.21	8.79

* Hourly costs of contractors are actual billed hourly rates; hourly costs of state employees reflect actual salary inflated by 35 percent to represent the cost of fringe benefits.

It should be noted that in several of these cases, the individual hired as the new state employee was the individual who had served as contractor. However, because the individuals had been employed by consulting firms, which retained some of the state agencies' payments, employment with the state agency may have increased the individual's personal income while decreasing costs to the state agency.

To determine whether cost differences between hourly contractors and state IT employees were consistent or significant enough to indicate that cost comparisons in other cases might have been worthwhile, we asked IT managers in five of the larger departments (Health and Family Services, Justice, Transportation, Workforce Development, and three divisions within DOA) to assist us in identifying, from the lists

of hourly contractors their offices retained in FY 1998-99, several who were working with tasks and responsibilities similar to those of full-time, permanent state IT professionals. That is, we asked IT managers to identify hourly contractors who:

- worked hours similar to those that would have been worked by a full-time state employee;
- did not provide highly specialized expertise that was unavailable in the state workforce;
- possessed skills needed by the state agency on a full-time, ongoing basis; and
- did not work on large, time-limited projects but instead handled the type of work that was within their agencies' normal, ongoing workloads.

IT managers selected a sample of 32 hourly contractors who met these criteria. We compared the hourly rates paid for the contractors with the average statewide hourly wage for comparable state IT classifications, which we increased by 35 percent for the estimated cost of state employee fringe benefits such as health insurance, retirement, and workers' compensation.

Among 32 contractors, 3 cost less on an hourly basis than comparable state employees, and 29 cost more.

While most of the contractors in our sample cost more on an hourly basis than their state employee counterparts, we found a range of results, as shown in Table 9. The hourly costs for 3 of the 32 contractors were less than the average hourly wages and benefits for state employees who performed similar work. These three contractors all worked for the Department of Transportation. All of the remaining 29 contractors cost more on an hourly basis than comparable state employees. In four cases, the contractors were paid more than twice the hourly rate for comparable state employees.

Table 9

**Hourly Costs of Selected Contractors
Compared to the Average Cost of Comparable State Employees*
(FY 1998-99)**

<u>Hourly Cost of Contractor</u>	<u>Hourly Cost of Comparable State Employee</u>	<u>Difference</u>	
\$72.69	\$26.55	\$46.14	
60.88	22.33	38.55	
75.00	39.20	35.80	
63.00	27.58	35.42	
67.00	33.49	33.51	
65.00	33.49	31.51	(2 cases)
71.00	40.11	30.89	
63.00	33.49	29.51	
61.00	33.49	27.51	
55.00	27.58	27.42	
59.61	33.49	26.12	
55.00	33.49	21.51	
48.00	27.13	20.87	
43.00	22.65	20.35	
47.00	27.58	19.42	
52.00	33.49	18.51	
45.00	26.55	18.45	
50.00	33.49	16.51	(3 cases)
45.50	29.47	16.03	
47.00	33.49	13.51	
52.00	39.20	12.80	
50.00	39.20	10.80	
38.45	29.47	8.98	
48.00	40.11	7.89	
33.95	27.58	6.37	
32.00	29.47	2.53	
27.00	27.58	(0.58)	(2 cases)
32.00	33.49	(1.49)	

* Hourly costs of contractors are actual billed hourly rates; hourly costs of state employees are the average hourly wage for state employees performing work at a comparable level and include an additional 35 percent to represent estimated costs of fringe benefits.

While this comparison demonstrates significant differences in most cases, the results cannot be used to estimate possible statewide savings if all hourly IT contractors were replaced by state employees. First, this review does not include all contractors, even in the five agencies from

which the sample was taken, that were performing work comparable to that routinely performed by state employees. A case-by-case evaluation of all hourly contractors would be needed to determine which could, in fact, be replaced by state employees.

Replacing IT contractors with state employees may result in savings in some instances.

In addition, the case-by-case reviews would need to include other costs and productivity considerations. For example, the addition of state employees entails costs related to recruitment and hiring, wage and benefit administration, and ongoing training that typically are not incurred when hourly contractors are engaged. In addition, adjustments would also have to be made to take into account vacation, holiday, and sick days, as well as supervisory costs. Nevertheless, because the wage differences are generally so large, and the assumed overhead costs of recruitment, training, and accounting are relatively small compared to annual salaries, the differences indicated in the sample, as well as the analyses performed by some agencies, suggest the potential for significant cost savings from hiring rather than contracting in certain situations.

IT managers also consider non-fiscal factors when deciding whether to use hourly contractors or state employees. For example, the need for state staff to maintain close familiarity with agency computer programs must be weighed against the benefits of private contractors' skills and broad experience. In addition, IT managers in state agencies indicate two other factors shape their decisions on whether to hire new employees or to engage contractors: labor market availability, and the availability of position authority for additional state positions.

IT Labor Market

State agencies had difficulty hiring and retaining IT professionals during the late 1990s.

Labor market pressures of the late 1990s limited the ability of employers in both the public and the private sector to hire IT professionals. The need to revise computer programs for Y2K compliance and the need to support the rapid increase in Internet participation contributed to the high demand for skilled computer professionals. IT managers reported that some specialties, such as data base management and programming experience in some of the older computer languages, were in particular demand during the late 1990s. Individuals with these skills could command high levels of compensation if they took their skills to the open market, and state IT managers reported difficulty in recruiting skilled individuals for many IT positions.

Vacant IT positions, like all vacant positions, are frequently reallocated for other purposes within state agencies if they cannot be filled. As a result, we could not quantify a vacancy rate for IT positions. However, IT managers unanimously reported that the IT labor market conditions in recent years have limited their ability to hire appropriately skilled staff.

The successful passage of most computer systems into the new millennium has eased the demand for some types of IT professionals. The U.S. Department of Labor's April 2000 *Occupational Outlook Handbook* advises those seeking work as computer programmers that completion of Y2K work has slowed demand for programmers and that "a number of factors will continue to moderate employment growth." Recent graduates are warned that competition for entry-level programming jobs will be strong. However, the Department of Labor also projects continued heavy demand for programmers in some technical specialties, especially those relating to computer networks and use of the Internet, and for other IT professionals with certain skills, such as those relating to systems design and security.

The Department of Employee Relations has taken steps to improve the State's ability to hire IT professionals.

The Department of Employment Relations, acting in concert with state agency IT managers, has taken steps to increase the State's ability to hire and retain IT professionals. In 1997, the Department began a concerted effort to work with IT managers and others, including the state employees' union representing IT professionals, to make several changes:

- In 1997, in conjunction with the IT Directors' Council, it created the Information Technology Advisory Board to address the recruitment and retention of IT professionals.
- A pay system known as "broadbanding" was introduced for senior and advanced IT classes in June 1998. This system had the effect of expanding pay ranges and providing agencies more flexibility to set starting salaries for new employees. Employees in these classes also became eligible for additional discretionary compensation awards.
- An Internet site was developed for IT job announcements, and an on-line application system was established in October 1998 for entry- and intermediate-level IT positions.
- An IT recruiter was hired in December 1998.

These and other changes have reportedly improved the ability of IT managers to hire and retain professional IT staff. Although most managers with whom we spoke reported continuing challenges in recruiting new IT employees, particularly in a few specialties, they also reported less difficulty retaining qualified staff. Some reported anecdotal evidence of a buyer's market in some skill areas. For example, two IT managers reported having received inquiries or job

applications from former state IT professionals seeking to return to state employment after working in the private sector.

Position Authority and Use of Contractors

Limits on the number of state employees also reduced state agencies' ability to hire IT professionals.

The second reason cited by IT managers for failing to perform cost comparisons before hiring contractors for tasks that could be performed by state employees was constraints on the number of staff they are permitted to employ. Whenever departments receive new responsibilities or additional funding, they must also receive separate authorization for the creation of new positions before they can increase the number of staff they employ.

Under ss. 16.50(3) and 16.505, Wis. Stats., executive branch positions outside the UW System and the UW Hospital and Clinics Authority can be authorized only by legislation, including the budget bill; by the Joint Committee on Finance; or by the Governor when positions are funded with federal revenue. In recent years, both the Governor and the Legislature have been, in general, reluctant to increase overall state position authority. This long-standing reluctance was made explicit in the most recent budget instructions, issued by DOA in May 2000, which directed state agencies to "anticipate they may need to take a 5 percent reduction in authorized positions" and that "any areas needing additional staff must be met through base reallocations."

It is easier for IT managers to purchase services from private vendors than to seek additional staff.

In most agencies, IT managers reported that the number of professionals needed to carry out the responsibilities assigned to the IT unit has exceeded the number of positions allocated to the unit. However, they also explained that even when they were seeking skills they believed to be available in the labor market, it has been easier and quicker to engage contractors when additional staff are needed. A documented example of the reluctance to request new positions appeared in the narrative that accompanied the 1999-2001 budget request of the Office of the Commissioner of Insurance. The agency conducted an analysis that identified the addition of permanent staff positions as the most cost-effective alternative but explained that "due to the concern that state government generally has in increasing permanent position authority, contractor funds are shown in the budget request even though it is the highest-cost alternative." When IT managers were asked why they did not perform similar cost comparisons before purchasing contractors' services, they explained that they were acting on their understanding that they were not to request additional positions, and so did not see a purpose in evaluating that alternative.

Individual state agencies are responsible for ensuring the economical and efficient use of purchased services.

Under procurement practices as currently administered by DOA, each state agency has the responsibility for determining whether contracting is an economical and efficient alternative to hiring state employees. DOA maintains a list of vendors of IT services who have agreed to abide by certain state requirements, such as to provide ten working days' notice if contract staff are to be substituted and to replace personnel with performance problems within ten working days of a request by the state agency. In October 2000, 248 vendors were authorized to provide IT services. They are listed in Appendix 2.

The hiring agency is responsible for ensuring that:

- contracting is more economical and efficient than hiring or reassigning state employees;
- the vendor has the appropriate skills and capacity needed for the intended job;
- the service or product expected from the vendor is adequately specified in the contract;
- the terms under which the vendor will perform the work are reasonable and in the State's best interest; and
- the price offered by the vendor is competitive.

As noted, DOA exercises no routine oversight or monitoring of circumstances in which agencies engage contractors or the terms under which the contractors perform.

The Legislature could direct that state agencies determine whether contracting or hiring is more economical.

Recent changes in industry-wide demand for certain IT professionals and increased flexibility in the recruitment and compensation of state IT employees may have created conditions under which it is again advisable to compare costs when determining whether to engage contractors or add state IT employees through either reallocation of existing positions or increased position authority. Such comparisons would be especially useful for ongoing agency responsibilities.

To promote the performance of such cost comparisons, the Legislature could require additional information to be submitted in the biennial strategic IT plans that are currently required by s. 16.971, Wis. Stats. In these plans, agencies could be required to reassess all existing uses of purchased professional IT services to determine compliance with the provisions of s. 16.705, Wis. Stats., which permits agencies to purchase professional services when those services "can be performed more economically or efficiently by such contract." For large-scale systems-development projects in which private contracting is essential, agencies

could assess whether existing state staff involvement is adequate to allow for effective project management and ongoing understanding and maintenance of the system. For other uses of contractors, agencies could assess the relative costs of private contractors and state employees and determine whether any additional cost of contracting is justified by other considerations, such as current labor market conditions, unique skills, or temporary peak-workload periods.

Former Employees Returning as Contractors

Legislators and others have also expressed concern that state IT employees have been resigning their positions only to return immediately to the same job, but as a contractor at higher pay. Evidence of this practice cannot be found by comparing payroll and purchasing records because most hourly contractors work for temporary-staff agencies and would not appear on purchasing records under the same name as would have appeared on state payroll records when they were state employees. As a result, we relied on interviews with IT managers in executive branch agencies, excluding UW System, to identify contractors who were former state employees.

Some state IT employees returned to state agencies as contractors at higher costs.

Managers in the 50 state agencies in which we conducted interviews reported that state IT employees do resign to accept positions in the private sector, and that it has been difficult to prevent these departures in the tight labor market. In our interviews, managers identified seven instances of state IT employees returning to the same or different state agencies as hourly contractors. The state salaries in the following cases do not include the cost of fringe benefits, and the contractor rate is the amount paid the private firm. Presumably, the employee received a lesser salary.

- An individual left a \$45.98 per hour IT position with a state agency in July 1998, started work as a contractor for another agency in August 1998 at an hourly rate of \$125.00, and continued as a contractor for that agency for approximately two years.
- An individual left a \$20.19 per hour position with an agency in January 1998, began work the same month as a contractor for another agency at an hourly rate of \$68.00, and continued as a contractor for that agency for two years and nine months.

- An individual left an \$18.52 per hour IT position with an agency in November 1997, began work the same month as a contractor for a different agency at an hourly rate of \$50.00, and continued as a contractor for that agency for three months before returning to state employment.
- An individual left a \$19.12 per hour IT position with an agency in September 1997, returned to the same agency and the same project in February 1998 as a contractor at an hourly rate of \$101.00, but worked for only 125 hours over the next 15 months.
- An individual left a \$17.11 per hour IT position with an agency in January 1998, returned as a contractor to the same agency, but in a different job, in June 1998 for at an hourly rate of \$73.00, and continued as a contractor for that agency for two months.
- An individual left a \$23.12 per hour IT position with an agency in March 1999, returned in the same month to the same agency at an hourly rate of \$48.00, and continued as a contractor for three months while he trained his successor.
- An individual left a \$22.40 per hour position with an agency in August 1997, began work the same month for the same agency in the same job at an hourly rate of \$67.00, and continued as a contractor for more than nine months.

In only the last case did a contractor work in exactly the same job he had held as a state employee for a significant amount of time. The IT manager described this as an isolated instance in which managers determined that an exception to agency policy of refusing to hire former employees as contractors was justified because the individual's skills and knowledge were necessary to the timely completion of the project on which he had been working, and because the engagement was expected to last a short time.

Although IT managers with whom we spoke noted their inability to prevent IT employees from leaving state employment to work in the private sector, they expressed a strong consensus on the potential problems associated with contracting with such individuals to perform their former jobs. IT managers stated that contracting with former employees encourages remaining employees to leave state employment in order to seek consulting contracts. In addition, they cited concerns

about morale among the remaining employees if some individuals resign and return as higher-paid contractors. As a result of these concerns, several IT managers reported enforcing strict, explicit policies of refusing to hire former employees as contractors.

It is not uncommon for large IT projects to exceed their budgets or take more time than planned.

State agencies must periodically create, develop, and implement large IT systems that can cost millions of dollars and take years to develop. It is not uncommon for large IT development projects to exceed their original cost or time budgets. We reviewed seven large IT projects with original budgets of between \$345,400 and \$59.4 million, which were completed or undertaken by state agencies in recent years, to determine whether they were completed on time, within budget, and delivered all the features the agency requested. Given the complex nature of large IT development projects and the number of participants involved in them, including program staff, agency IT staff, and contractors, it is often difficult for the participants in a project to agree fully on the causes of problems. Consequently, we did not attempt to definitively determine the causes of problems that occurred in each project, but rather we identified the range and scope of those problems.

Evaluations we reviewed of IT development projects conducted in seven other states suggest that the larger the project, the higher the probability it will fail to meet one or more of the three critical criteria of originally planned cost, time, and functionality. These evaluations found shortcomings in one or more of six general areas:

- planning by the agency and the vendor;
- organizational issues relating to the manner in which tasks were assigned and carried out;
- whether and how the scope of projects was controlled;
- executive-level commitment, competence, and communication;
- coordination and turnover among staff; and
- monitoring and measuring project status.

For our review, we chose projects based on their size, complexity, and legislative interest. Four of the seven projects are, in effect, completed, and two are still in the development phase. Design of the remaining project has not yet been started. For each project, when possible we compared an original budget to actual expenditures, an original timetable to an actual timetable, and requested features to actual features. The only project that appears to have met all three critical

criteria was the Client Assistance for Reemployment and Economic Support (CARES) system, a system that supports the State's economic support programs and the Food Stamp Program.

State of Wisconsin Elections Board Information System (SWEBIS)

One recent systems-development project, managed by the Elections Board, was abandoned in December 2000 after the project cost more than planned, took longer than intended, and failed to produce an operational system.

In 1997, the State of Wisconsin Elections Board undertook a project to upgrade the information system that supports its responsibilities in administering elections and overseeing campaign finance reporting, and to expand its capabilities for electronic filing of campaign finance reports. Although the project was originally funded at \$283,200 in the 1997-99 biennial budget, additional funds were later provided so that, by April 1999, total project funding was \$345,400. In December 1997, the Elections Board expected the project would be complete and ready for testing by May 1, 1998; later, the Legislature imposed a statutory deadline of June 30, 1999, for implementation of electronic filing of campaign finance reports. The Board contracted with a software development firm, Enterprise Solutions Technology Group, to design, produce, test, and implement the system.

An Elections Board project has been abandoned, but plans for another are ongoing.

In July 2000, the Board requested an additional \$769,200 that, together with an additional \$50,000 from its FY 1999-2000 appropriation, would have brought total project funding to \$1.2 million. At that time, the Board was unable to provide assurance that the additional funding would be sufficient or to propose a timetable for the project's completion. In response to the Board's request, the Joint Committee on Finance declined to provide the requested funding but instead provided \$35,000 for an independent evaluation by a management consultant. In November 2000, this consultant recommended against continuation of the current project, contending the project remained substantially incomplete and that it was plagued with critical problems. The management consultant recommended that the Elections Board evaluate several new options, including the option of contracting with a vendor to provide ongoing system analysis, database administration, programming, maintenance, and help desk support for a monthly fee, rather than seek to obtain software for a system that it would operate itself.

The consultant identified several serious problems that contributed to the failure of the project, including "inadequate project management, the absence of system specifications to guide development, obsolete and unsupported development tools," and "an electronic filing design that is not viable."

Shared Human Resource System (SHRS)

A statewide human resources system was not developed on time or within budget.

A human resources systems-development project initiated in 1994 by DOA and the Department of Employment Relations was not completed within its original budget or time line and has not been used to the extent originally planned. This project was intended to produce a centralized statewide information system to support various administrative functions related to classified state positions, such as classification, recruitment, affirmative action, selection, and compensation.

In June 1996, the two departments established a project budget of \$964,950 and a completion date of March 1998. Actual development costs for the system were almost \$5.0 million, as shown in Table 10. Development work began in January 1997, six months later than initial projections, and the project was completed and released statewide in October 1999, one-and-one-half years after its original intended completion date.

The completed system is reported to provide all the functions that were planned when the original budget was adopted, but staff have indicated use of the system by state agencies is less than originally anticipated because of higher-than-estimated operating costs for computer time.

Table 10

SHRS Development Budget and Expenditures

<u>Category</u>	<u>Budget</u>	<u>Actual</u>	<u>Difference</u>
Contractual Services	\$464,950	\$2,908,144	\$2,443,194
Services from Other State Agencies	300,000	179,305	(120,695)
Other*	<u>200,000</u>	<u>1,874,662</u>	<u>1,674,662</u>
Total	\$964,950	\$4,962,111	\$3,997,161

* Includes purchased software, office space, indirect costs, mainframe charges, and other development expenditures.

DOA and Department of Employment Relations staff have indicated that several factors contributed to the cost overruns, including significantly higher than estimated mainframe computer costs. Further, because the programming tool used to develop the system was not

widely used, contractors were able to command a higher hourly rate than originally budgeted.

Kids Information Data System (KIDS)

Development of the KIDS system, which receives, tracks, and sends child support payments, was managed by the Department of Health and Family Services in the mid-1990s. This project, which we evaluated in 1997 and discussed in report 97-21, exceeded its budget, took longer than expected, and did not provide all the functions that were expected.

The KIDS computer system exceeded its development budget by \$28.5 million.

In September 1991, the Department obtained federal approval for a budget of \$23.0 million for the development of the system. At that time, the system was expected to be fully operational by October 1995. As shown in Table 11, the Department had spent \$51.4 million, or \$28.5 million more than the original budget, when the project was officially completed in October 1997.

Table 11

KIDS Development Budget and Expenditures

<u>Category</u>	<u>Estimate</u>	<u>Actual</u>	<u>Difference</u>
System Development	\$ 8,669,640	\$24,964,113	\$16,294,473
Data Processing	849,000	9,728,766	8,879,766
State Staff Costs	5,736,591	7,811,439	2,074,848
Computer Hardware	2,837,610	3,643,556	805,946
Supplies and Services	1,850,450	2,792,810	942,360
County Data Conversion	<u>3,036,136</u>	<u>2,510,771</u>	<u>(525,365)</u>
Total	\$22,979,427	\$51,451,455	\$28,472,028

When the Department completed the development of KIDS, the system excluded several features the counties and the Department had requested in the original design. The Department created a list of 91 features needed to achieve the originally intended functionality. The Department reported in April 2000 that 37 of the 91 features had been completed, and 8 had been withdrawn.

As we reported in our previous evaluation, the difference between initially budgeted development costs and actual expenditures can be

attributed largely to faulty estimating assumptions. A large number of changes from the original plan also contributed to the additional costs and delay. Between January 1993 and September 1997, there were 108 change orders to the provisions of the contract, the most expensive of which cost \$961,119. Many of the change orders were a result of new legislation such as the W-2 program, which took effect while the Department and the contractor were still building the system.

Wisconsin Statewide Automated Child Welfare Information System (WiSACWIS)

In 1995, the Department of Health and Family Services began planning for a statewide child welfare information system for use by state and local officials with responsibilities related to adoption, foster care, and child protection. The Department estimated in 1997 that development and implementation of such a system would cost \$53.8 million and would be completed by 2001.

However, several factors have contributed to delays in completion of the project and increases in its costs. The Department's contract with its first vendor was terminated for breach of contract in December 1997, with a negotiated settlement of \$1.9 million. In addition, in January 1998, the Department assumed responsibility for child welfare services in Milwaukee County and so redesigned the system's requirements before contracting again for software development.

Development of a child welfare system has taken longer than originally expected.

A system became operational in Milwaukee County in January 2001, and the Department plans to expand the system to nine pilot counties by July 2002 and to 20 other counties by the July 2003. The Department expects the system to be implemented statewide by December 2004, at an estimated total cost of \$78.9 million.

Integrated Tax System (ITS)

The Department of Revenue has undertaken a \$59.4 million project to replace its existing tax administration systems.

The Department of Revenue has begun a systems-development project to integrate its existing 30 state and local tax administration information systems. Integration is expected to provide several benefits, including increased revenue collection, 24-hour on-line customer service, enhanced Internet tax filing, and faster refunds. When the budget for the development of ITS was approved during the 1997-99 biennium, the system was expected to cost \$59.4 million, as shown in Table 12.

Through FY 1999-2000, the Department has spent \$10.3 million. Work on the development of ITS began in May 1998. Completion of the system was originally scheduled for FY 2004-05; the Department subsequently revised its estimated completion to FY 2006-07, or two years behind schedule.

Table 12

ITS Budget

<u>Year</u>	<u>Budget</u>
FY 1997-98	\$ 45,000*
FY 1998-99	2,531,400*
FY 1999-2000	7,739,300*
FY 2000-01	7,335,500
FY 2001-02	13,672,200
FY 2002-03	15,810,700
FY 2003-04	10,206,000
FY 2004-05	740,200
FY 2005-06	<u>1,337,000</u>
Total	\$59,417,300

* Actual expenditures

Integrated Justice Information System (IJIS)

A specific plan for integrating or sharing justice information has not been developed.

One project anticipated in 1995 has never fully gotten underway. The 1995-97 biennial budget established the Bureau of Justice Information Systems within DOA, with a goal of integrating on a statewide basis the various existing justice information systems. A system that would allow rapid sharing of case-file information among justice agencies is widely recognized as having the potential to improve accuracy and efficiency among all the agencies, from law enforcement through prosecutors, public defenders, and the courts. Currently, for example, basic information such as an arrested person's name, date of birth, and charge, is repeatedly entered by each justice agency. While the Bureau of Justice Information has been instrumental to improvements in the information system of the district attorneys, final project development plans, proposed budgets, and proposed implementation dates to allow integration or sharing among systems have yet to be developed.

To obtain outside advice on its efforts to move forward with integration, the Bureau of Justice Information obtained consulting help from the National Consortium for Justice Information and Statistics, a nonprofit membership organization created by and for the states and dedicated to improving information management in the criminal justice system. Consulting staff visited Wisconsin in April 2000 and issued their report and recommendations in May 2000.

The consultants concluded that the Wisconsin agencies did not have a clear, common vision or definition of an integrated justice system. Justice agencies were found to lack a commitment to the project and to perceive that their internal operational needs outweighed the benefits of integration. The report provided a series of recommendations that described the steps needed for progress toward integrating Wisconsin's justice information systems, including that the leaders of the agencies would need to work together to create goals for the system; that a strategic plan with a time line, budget, milestones, and objectives would need to be created; and that a realistic assessment of the staff time and funding would be needed. DOA staff indicated justice agency representatives have reviewed the report but declined to take action on its recommendations.

Client Assistance for Reemployment and Economic Support (CARES)

The development plan for the CARES system appears to have been successfully completed.

In the early 1990s, the Department of Health and Family Services began development of the CARES system, used in the administration of and to determine eligibility for W-2, the Food Stamp Program, and subsidized child care. The project was completed in 1994 within budget, on time, and with all intended features.

In May 1991, the federal government, which shared in the cost of developing CARES, approved a total project budget of \$37.8 million and an implementation date of October 1995. Expenditures for some items exceeded the amount budgeted, as shown in Table 13. However, expenditures for several other items did not reach the amount budgeted, so that total reported expenditures for the project were \$35.7 million, or \$2.1 million less than budgeted. The system became operational statewide in July 1994, although the Department extended the contract with the systems-development consulting firm for two more years to fund additional refinements.

When the Department finished development, CARES incorporated all features specified in the November 1991 contract. Nevertheless, some state and local staff note dissatisfaction with some aspects of CARES, reporting that it is cumbersome, complex, and difficult to learn. Staff of the Department of Workforce Development, which is now responsible for the system, report that work continues to introduce functionality and features that users believe should have been included in the original design.

Table 13

CARES Budget and Expenditures
FY 1991-92 through FY 1995-96

<u>Cost Category</u>	<u>Budget*</u>	<u>Actual</u>	<u>Difference</u>
Contractual Services	\$20,752,377	\$28,556,093	\$7,803,716
Data Processing	10,303,100	3,059,979	(7,243,121)
State Staff	4,597,067	1,921,899	(2,675,168)
Hardware	1,798,400	1,056,296	(742,104)
Training, Indirect Costs, and Other	<u>359,297</u>	<u>1,091,881</u>	<u>732,584</u>
Total	\$37,810,241	\$35,686,148	(\$2,124,093)

* As approved in May 1991

CARES project staff attribute their success to rigorous project management.

State staff who worked on the development of CARES attribute the project's success to both strong management and selecting a vendor with a record of delivering a good product. In addition, project staff cited certain policies and practices as helpful in keeping the project on schedule and within budget:

- the Department retained the services of an independent consulting firm with relevant experience to assist in the evaluation of bids and the selection of a vendor;
- the contract was written to include carefully developed project specifications that enabled the Department to insist on contract performance within cost limits;
- the Department conducted a national recruitment to hire a project manager with experience in managing large IT development projects;
- project staff were provided direct, immediate access to the Secretary's office to expedite critical decisions; and
- project staff were given authority to redirect other agency staff from their normal duties to assist with the CARES development project at critical points.

None of the other projects we reviewed contained all of these project management elements. These management practices used by the CARES team are consistent with best management practices identified in the professional literature concerning IT project development.

Best Practices in Managing IT Projects

IT management literature describes several best practices to increase the likelihood of success.

Professional project management literature, and especially IT management literature, highlights best practices for IT project development. While such best practices cannot guarantee success, their use could at least reduce the extent of cost overruns and time delays. These best practices include guidance in areas such as selecting between fixed-price and hourly contracts, communicating system requirements to the contractor, using modular contracting to minimize problems caused by program changes, and managing contractors.

Best practice for contract type: For development projects, a fixed price for specific deliverables, rather than an hourly contract, should be used whenever possible. Fixed-price contracts can help to prevent costs from exceeding budgets and give vendors incentive for efficiency.

Contracts for hourly services should specify an upper limit on the amount of time the contractors will work.

Hourly contracts typically pose risks for development projects because the vendor may be less directly concerned with deadlines and cost overruns, and the State ultimately may pay more for a product than if a fixed-price contract would have been used. If used, hourly contracts should include not-to-exceed language. Experts indicate that because of the inherent risks of hourly contracts, they should be used for development projects only when:

- the contractor can be closely monitored by a state manager who is capable of evaluating contractor progress;
- the agency is relatively certain of how much time the project will take; and
- safeguards are in place to prevent additional work from being assigned to the consultant outside the purpose for which he or she was engaged.

Best practice for communication of desired functionality: Plan and specify carefully what the system is to do, so that the system developer can be provided with a very clear and specific description of what is to be accomplished.

- Involve the end users and customers in defining the expectations for the process and describing the business practices or the tasks that are to be automated.

- Agencies without staff capabilities for developing these functional requirements should contract with a systems designer, who can assist in creating a thorough and specific description of the desired functionality.

Careful specification of the desired product reduces the need for costly change orders.

Typically, fewer change orders are necessary if the desired functionality is well-documented for the vendor. Vendors who bid on the contract will be able to specify reliable prices and therefore may be willing to bid lower and more able to stay within the project budget. Adequate documentation of system requirements increases planning time before a development project gets underway, but reduces the risk of time and cost overruns later as a result of overlooked problems.

Developing large projects through several smaller contracts increases state managers' control.

Best practice for contract length: Large IT projects that might take several years to develop are best managed by modular contracting, or dividing the project into several smaller sections, components, or phases and contracting separately for the development of each.

- Smaller contracts decrease the risk of relying upon one vendor for the entire project, because if one vendor fails, other parts of the project may still be able to progress.
- The purchasing agency has more leverage to enforce interim accountability because deadlines are closer together and vendors are likely to desire awards of later contracts.
- Changing technology and changing program requirements can be built into later contracts instead of having to be anticipated several years in advance, reducing the need for expensive change orders.
- Project managers may need additional management skills to monitor the progress of several vendors rather than just one.
- Knowledge transfer from an earlier vendor to a later one may pose problems of logistics or trade secrets.

Certain contract specifications can reduce the likelihood of expensive problems and disputes.

Best practice for developing contract language: Be sure the terms of agreement are in writing and that the written contract has attributes that promote project success.

- The contract should specify performance and results rather than inputs.

- Contracts and requests for proposals written to specify inputs tell the vendor how to do the job, which can limit the vendor's ability to innovate with new or more efficient solutions or take advantage of technological advances that occur while project is underway.
- The contract should include performance incentives, such as payment based on receipt of an acceptable deliverable or other milestone, rather than at intervals such as monthly.
- The contract should include some type of warranty and language regarding liability to hold the State harmless for vendor errors.
- The contract should include performance incentives and could include penalties for late performance or bonuses for early or on-time delivery.
- The State should retain ownership of the product whenever possible.
- The vendor should be required to provide written documentation of the system to the State at completion to allow the State to use, maintain, and modify the software.
- The contract should include a written agreement on a process that will be followed to resolve any disputes that may arise.

Specialized project management skills can increase the likelihood of success.

Best practices for project management: Managing projects—one-time efforts that produce a unique product—requires specialized management skills to ensure that projects stay on time, on budget, and focused on their intended goals.

- Project management includes the skills necessary to make sure that project goals and interim objectives are clearly identified, communicated, agreed upon, and maintained.
- Project managers need the skill to identify needed resources and ensure they are brought to bear on project goals.

- Good project management requires aggressive monitoring of the contractors' performance against agreed-upon objectives.
- Good project managers identify and promptly resolve developing problems.
- Project managers facilitate and require communication continually among participants, including those who will ultimately use the new system, to enable timely, useful input from all sources that can provide useful guidance.
- Good project managers ensure that any changes to project plans are carefully evaluated, understood by all upon whom the success of the project depends, and incorporated into the overall budget and schedule.

To supplement internal project management skills, agencies may contract for project management consultation; in effect, contract with one vendor to assist in the oversight of another. Nevertheless, for fiscal accountability, agencies need to maintain, among their own staff, the capability to manage contractors. Project managers must also be provided with the support and cooperation of top agency management in order for top-level decisions to be made or resources redeployed to maintain a project's progress. In addition, there may be a need for more project management training to be provided to staff assigned to manage IT development projects. Such project management courses could be developed internally or purchased.

Governance of IT Activities

Currently, there is no assurance that state agencies contracting for the development of large IT systems follow recognized standards of project management or any widely recognized best practices. Each agency has developed its own response and approach to managing IT, resulting in a variety of agency governance structures. Some agencies, especially the larger ones, have established IT divisions or bureaus, and the administrators of these units function as IT managers. In some agencies these IT managers are responsible for all agency IT work and contracting, whereas in other agencies operating divisions may use their central IT units in some cases, but may also independently contract for IT services with private vendors.

DOA currently has no responsibility for managing or monitoring the development of IT applications for individual state agencies or

establishing management practices. However, the Governor has included in his 2001-03 Biennial Budget Proposal a proposal to create a Department of Electronic Government, to be headed by a Chief Information Officer. The Governor is proposing a staff of 227.3 FTE positions and an annual operating budget of \$132.4 million, which would be reallocated from DOA to the new department. Four new positions outside the classified service would be created—the CIO, a deputy, an executive assistant, and a division administrator.

In reviewing the Governor’s proposal, the Legislature will need to consider a number of issues, including the need for a state CIO, the potential scope of authority for the agency, and its organizational structure. CIOs in some states and municipalities have been perceived to contribute to the efficient functioning of IT activities throughout the government. However, the position and function of a CIO have not been universally accepted because of concerns about increased cost and perceived over-centralization of IT project authority. The Government Performance Project, a recent review of public management in 50 states and 35 major cities that was conducted as a joint venture by Syracuse University and *Governing* magazine, found that “the IT management efforts that most clearly benefited from the existence of a CIO were strategic planning; efforts toward building a coherent standardized architecture; and the capacity to evaluate the extent to which benefits of an information technology system justified investment.”

A central question concerning the creation of a CIO position will be the potential scope of authority. The Governor has proposed that the new CIO and department have all the existing authority DOA currently has concerning IT and purchasing of IT products. In addition, the Governor’s proposal provides the CIO:

- authority to review and approve agency IT plans;
- authority to assume direct responsibility to plan and develop any system in the executive branch that the CIO deems necessary, with or without the consent of the affected agency; and
- authority to transfer any IT position, and the funding support for that position, from any executive branch agency to the Department of Electronic Government or any other executive branch agency, unless such transfer would be inconsistent with existing state or federal law.

The Legislature will also need to consider issues involving the composition and governance of the proposed agency. Under the proposal, the Governor would appoint the CIO, who would serve at

his pleasure. In turn, the CIO would be advised by an Information Technology Management Board attached to the Department of Electronic Government and composed of the Governor, the CIO, two agency heads appointed by the Governor to serve at his pleasure, and two other persons appointed to four-year terms.

The Government Performance Project report indicates that, as in determining the scope of authority of a CIO, states vary considerably in how they have structured their IT offices and functions. While some have chosen to maintain the CIO within an existing agency, others have created separate agencies or commissions to house the functions. Retaining statewide IT coordination within DOA would be consistent with existing practices in Wisconsin and may have the lowest administrative costs. Alternatively, creating a separate agency, as the Governor has proposed, would likely necessitate some additional administrative expenses but could also highlight the importance of the CIO function by giving the agency cabinet ranking within state government. Finally, as part of consideration of potential organization structure, the Legislature will need to consider to whom the CIO would report. Depending on where the CIO function is housed, the CIO could report directly to the Secretary of DOA; to a newly created board or commission; or, under the Governor's proposal, directly to the Governor.

Appendix 1

Top 100 IT Vendors
by Total Amount of Purchase Orders
FY 1998-99

<u>Vendor Name</u>	<u>Amount</u>	<u>Agencies</u>
1. EDS	\$38,358,585	DHFS, DNR
2. IBM	19,701,442	DWD, DOA, Corrections, and others
3. GTECH	11,560,000	DOR
4. Deloitte and Touche	9,925,644	DWD
5. Allegis (Aerotek/Maxim/TEKsystems)	4,802,613	Corrections, DHFS, DOA, and others
6. Omni Resources, Inc.	4,771,789	DHFS, DOA, DWD, and others
7. Interim Services	3,258,045	DOA, DNR, DOT, and others
8. Endeavor Information Systems	2,796,535	UW
9. Greenbrier & Russel	2,421,620	DWD, UW, Commerce, and others
10. Cap Gemini America	2,406,065	DOA, Corrections, DHFS, and others
11. TransTech	2,354,980	UW, DNR, OCI
12. Smart Solutions	2,280,196	DHFS, DWD, DNR, and others
13. Compuware	2,009,333	DOA, DWD, DOT, and others
14. Andersen Consulting	1,656,003	Legislature, DOA
15. Cambridge Technology Partners	1,625,366	UW
16. Systems and Programming Resource	1,504,530	DWD, DHFS, Supreme Court, and others
17. Constellation Integration Services	1,190,065	Corrections, DFI, DOA
18. Seventh Generation Information Systems	1,166,158	DOT, DFI
19. Triad Data	1,136,127	DOT, DOR, DHFS, and others
20. Comprehensive Computer Consulting	1,023,954	DOA, DHFS, DOR, and others
21. Central Trust Bank, The	988,413	DNR
22. American Management Systems	976,858	DOA, DHFS, UW, and others
23. Computer Associates	914,145	DOA, DWD, UW
24. Anstec Technologies	838,185	DWD, DOA, DOR, and others
25. Goliath Networks	823,480	Public Defender, DOA, DHFS, and others
26. SAS Institute	806,605	DOA, DNR, DWD, and others
27. AE Business Solutions	804,121	DOA, DWD, Corrections, and others
28. Entré Computer Center	797,089	DHFS, DNR, DOA, and others
29. Sterling Software	791,904	DOA, DOT, UW, and others
30. PeopleSoft	761,534	UW, DOA, DOR, and others
31. Arbor Consulting Engineers	722,065	DNR, DHFS, DOA, and others
32. CompuPros	711,684	DOT, DOA, DHFS, and others
33. Bankcard Services	659,000	DOT

<u>Vendor Name</u>	<u>Amount</u>	<u>Agencies</u>
34. Datatel	\$640,792	UW
35. OAS Software	619,560	DOA
36. Enterprise Solutions	516,703	UW, DOJ, DWD
37. Field Consultants	478,280	DOA
38. Texas Instruments	476,915	DOA, DOT
39. Strategem	456,976	DHFS, UW, DOA, and others
40. AAMVAnet	450,000	DOT
41. Unisys	424,580	DOJ, DER, UW, and others
42. Humansoft	407,440	DHFS
43. Visual Solutions	397,070	DOT, DPI
44. Software Services International	380,240	DHFS, ETF
45. Hitachi Data Systems	374,819	DOA
46. Comark Government and Education Sales	374,034	DOT, DFI, DOR, and others
47. Hewlett Packard	367,432	DOT, DOJ, UW, and others
48. Athena Group	346,000	OCI
49. Windsor Technologies	339,628	DNR
50. Scan Optics	338,359	DWD
51. Entersolv Consulting	320,555	DOA, DNR, Military Affairs
52. ABC Solutions	315,000	Corrections
53. Environmental Systems Research	308,772	DOT, UW, DATCP
54. AASHTO	299,039	DOT
55. Ramos and Associates	295,737	UW
56. Softgear	289,306	UW, DOR, DOT, and others
57. The Polk Company	287,381	DOT
58. Microsoft	268,803	DWD, DOA, Corrections, and others
59. Capital Computer	267,030	DHFS, DOA, DWD
60. Information Builders	256,035	DOA, UW, DATCP
61. Orion Network Services	254,000	Corrections
62. Ameritech Library Services	246,117	UW
63. SQware1 Technologies	239,787	DOJ, Commerce, SWIB
64. Oracle	232,736	UW, DOA, ECB, and others
65. R Systems	212,794	DNR
66. Grant Thornton LLP	212,600	ETF, DOT
67. Sybase	211,034	Supreme Court, DOA, DHFS, and others
68. Digital Equipment	208,356	UW, DOA, Corrections
69. Sun Microsystem	198,353	UW, DPI, DHFS, and others
70. Howick Associates	191,350	DNR, DOA, DOT
71. Complete Business Solutions	187,008	DHFS, DOT, DOR
72. Paul B. Ervin	186,168	DOA, DOT, SWIB

<u>Vendor Name</u>	<u>Amount</u>	<u>Agencies</u>
73. Phoenix Planning Evaluation	\$185,553	DWD
74. Advanced Business Consultants	181,914	Corrections, DWD, DOT
75. Data Processing Experts	179,957	DHFS, DWD, DNR, and others
76. Geoanalytics	178,450	DOT, DNR
77. Formsoft Group Ltd.	169,736	DOA, DPI, DNR
78. Compumasters	168,379	OCI, DOT, DOA, and others
79. Epic Systems	165,428	UW, DHFS
80. Keystone Consulting	158,762	DOJ, Commerce, DWD
81. Caddtech Productivity	158,037	DOA, DOT, DWD, and others
82. Sandhill Technologies LLC	157,112	DOA, DHFS, ETF
83. Applicon	155,682	DOA, UW
84. Intellimark	151,022	DNR, DOR, DOT, and others
85. Info Tech	150,000	DOT
86. Kevin Grittner	146,400	Supreme Court
87. SS & C Technologies	140,000	SWIB
88. HTE	130,380	DOT
89. Consultis	129,581	DOR, Supreme Court, DOJ
90. Information Management	128,955	DOT
91. AGA Computer Service	126,500	DOT
92. Ameritech	125,952	UW, PSC
93. Platinum Technology	124,409	DOA, DOJ, DWD, and others
94. Jewell Quality Services	123,000	DOT
95. Brady and Company	121,828	DHFS, ETF
96. Blueline Software	120,952	SWIB
97. Renaissance Worldwide	118,868	DOT, DOR, DWD
98. Compuserve	114,290	Corrections, DWD, DOT, and others
99. ACS Government Solutions	112,000	DWD, Commerce
100. Bentley Systems	111,220	DOT

Appendix 2

Vendors of IT Services and Types of Services Offered as Listed on IT Services Statewide Procurement Bulletin as of October 4, 2000

Five categories of services are offered on State Procurement Bulletin 15-93275-901, known as the IT Services Contract. Vendors are not required to provide services in all five categories. The categories are:

1. Applications Development and Support Services—includes analysts, designers, programmers, project leaders, and project managers with an understanding and experience in applications development and/or maintenance of new and existing systems.
2. Data Services—includes specialists in planning, modeling, designing, administering, training, and implementing databases and data warehouses.
3. Network Services—includes the planning, design, configuration, and management of network communication hardware and software components.
4. Systems Engineering/Administration Services—includes technical support at the level of planning and designing, configuration, and management of mainframe or server level hardware and software components, including backup, capacity management, and security.
5. Technical Support Services—includes mainframe, server, and workstation technical and operational support specialists, help desk support functions, tape library operations, operating and system software, systems and network management, and storage management.

Absolute Solutions, Inc.
Abundant Technologies, LLC
Administrative and Technical Services, Inc.
(Adtec Computer Consulting)
Advance Technical Professionals, LLC
Advanced Business Consultants, Inc.
Advanced Data Concepts, LLC
AE Business Solutions
Ahuja Technologies
Allied Computer Group
Alpha Technology Group
Alternative Resources Corp.
Amdahl Corp.
American Information Technology Corp.
American Management Systems, Inc.
AMS Technology Group Corp
Anexsys
APAR Infotech Corp.
Applied Tech Solutions, Inc.
Arbor Consulting Engineers, Inc.

Attachmate Corporation
AverStar, Inc.
Axiom Systems, Inc.
Beacon Technologies, Inc.
Berbee Information Networks Corp.
Bessert Business Systems
Bill Gulley Consulting
BitWise, Inc.
Blackboard, Inc.
Blackwell Consulting Services, LLC
Brodart Co., Nubro, Inc.
Business Systems Concepts, Inc.
Canam Software Labs, Inc.
Capital Computer Supply, Inc.
Catalyst Consulting, LLC
CDI Information Services
Chaney Systems, Inc.
Christopher Shubak
CIBER, Inc.
Coan and Co., Inc.

Coleman and Williams, Ltd.
 COLLEGIS, Inc.
 Comark Government and Education Sales
 Compel Consulting, Inc.
 Complete Business Solutions, Inc.
 Comprehensive Computer Consulting, Inc.
 Compubahn, Inc.
 CompuMasters Corporation
 CompuPros, Inc.
 Computech Resources, Inc
 Computer Generated Solutions, Inc.
 Computer Sciences Corp.
 Computer Technologies Int'l., Inc.
 Compuware Corporation
 Connections Consulting Corp.
 Constellation Integration Services
 Consultants-on-Demand.com, LLC
 Consultis
 CornerPiece Solutions
 Crestone International, LLC
 CyberTech Systems, Inc.
 Data Processing Experts
 DataBase Solutions, Inc.
 Datamax, Inc.
 David A. Baxter
 DecisionOne Corporation
 Deloitte and Touche, LLP
 Diamond Business Consultants, Inc.
 Earth Information Technologies Corp.
 eCom Resources, Inc.
 EER Systems, Inc.
 Elabel Enterprises, LLC
 Emerald Systems, Inc.
 Emplifi
 Employer Management Solutions, Inc.
 Engineers and Designers, SC
 Enterprise Solutions Technology Group, Inc.
 EnterSolV Consulting
 Environmental Systems Research Institute, Inc.
 E-People
 e-Prosoftgroup, LLC
 Essential Solutions, LLC
 Eue-Rachie and Associates
 Evans Associates
 Everware, Inc.
 e-Volved Solutions, LLC
 Exacta Corporation
 Fairview Industries, Inc.
 Field Consultants
 Financial Data Management, Inc.
 First Step Government Technology Consulting
 FormSoft Group, Ltd.
 Genome International Corp.
 GeoAnalytics, Inc.
 GlobalSource IT
 GlyThor, Inc.
 Goliath Networks, Inc.
 Govolution, Inc.
 Great Northern Services, Inc.
 Greenbrier and Russel, Inc.
 Grolier Publishing Co., Inc.
 GS Metzler Consulting, Inc.
 Guentherman Consulting Group, Inc.
 I/T Resource Group, Inc.
 IBM
 IDL Solutions, Inc.
 Iguana Industries, Inc.
 Inacom Information Systems
 Indecon, Inc.
 Information Power Group, LLC
 Information Systems and Networks Corp.
 Information Systems Professionals
 Infospectrum Consulting, Inc.
 Innovative Communication Concepts
 IntelliMark
 Intergraph Corp.
 International Software Products, Inc.
 intuIT, Inc.
 Isthmus Group, Inc.
 Isthmus Technology Solutions, Inc.
 IT Advantage
 ITX, LLC
 J Brown Communications
 Jane M. Tanner
 Judith Gosse
 Keane, Inc.
 Keith Squires and Company, Inc.
 Keystone Consulting, Inc.
 Kind Consulting, LLC
 Kinsey and Kinsey, Inc.
 KP TechSolutions, LLC
 KPMG Consulting
 Leapnet, Inc.
 Learning Technologies, Inc.
 Lockheed Martin MandDS, ITS
 Logical Network Services
 Lorenz Consulting
 Lydia Consulting, Inc.

M and M Technical Resources, Inc.
Management Communication Services, Inc.
marchFIRST
Matrix Development
Maxim Group
MegaForce, LLC
Metamor Industry Solutions
MetaVue Corporation
MFT Enterprise, Inc.
Michael J. Oostdik
Michael J. Waugh
Millennium Consulting Corporation
Millennium Partners, LLC
Milwaukee Webworks, Inc.
Minnesota Midrange Solutions
Miron InfoTec, Inc.
MODE Computer Services, Inc.
Modern Business Technology
Monona Technology Group
MSI Data Systems
MTW Corp
Nemeth-Martin Consulting
Network Engineering Technologies (NET)
New Resources Corporation
Nims Associates, Inc.
Norstan Consulting
Nubacom, Inc.
OAS Software, Inc.
OASYS, LLC
Official Payments Corp.
Omni Resources, Inc.
Omni Tech Corp.
OnIT Consulting
Original Software
Paragon Development Systems, Inc.
Patricia Myers
Paul B. Ervin
PDS Technical Services
People Unlimited Consulting, Inc.
PeopleSoft USA, Inc.
Performance Development Corp.
Peter Noll
Peters Consulting
Pixel Information Technical Corp.
Policy Studies Inc./PSI Technologies
Powernet Consulting Group Ltd.
Prescient Consulting, LLC
Programming Plus
Project Solutions

QA Technologies, Inc.
Quick Solutions of Chicago, LLC
Radiant Systems, Inc.
Rehm Technology
Renaissance Worldwide, Inc.
Right Mind Enterprises, Inc.
Riverwise, Inc.
Robert Half International
Rome Systems, Inc.
Ross Computational Resources, LLC
Sandhill Technologies, LLC
SBC DataComm / Ameritech
SCB Computer Technology, Inc.
Sentinel Technologies, Inc.
Seritis Services Group, LLC
Small Business Computer Services, Inc.
Smart Solutions, Inc.
Smith and Rogers Consulting, LLC
Soft Link, Inc.
SoftGear Corporation
Software Services International
Solutech e-Business Solutions
Source Advantage, Inc.
Spatial System Designs
Spectrum Solutions, Inc.
Spherion Technology
Stonehenge Partners, LLC
Strategem, Inc.
Sundial Software Corporation
Symphony Corporation
Systems Seminar Consultants, Inc.
Tara Software, Inc.
Tata Infotech Limited
TDS Telecom, Inc.
TeamSoft, Inc.
Tech Trak Consulting
Technisource, Inc.
Technology Consulting Corp.
TEKsystems
Tetra Tech EM, Inc.
The Kendrick Group
The Revere Group, Inc.
Thomas Glover Associates, Inc.
Thomas J. Mueller
TranSmart Technologies, Inc.
TransTech, Inc.
TRW
TUSC - The Ultimate Software Consultants
Tushaus Computer Services, Inc.

UBICS, Inc.
UltraServ Corporation
UniServ Solutions, Inc.
Universal Solutions, Inc.
UPP Business Systems, LLC
ValCom
Vanguard Computers, Inc.

Velocient Technologies, Inc.
Velocity Computing Corp.
Visual Solutions, Inc.
Viva USA, Inc.
Whitewerks, Inc.
ZyQuest, Inc.



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March 13, 2001

Ms. Janice Mueller
State Auditor
Legislative Audit Bureau
22 E. Mifflin Street, Suite 500
Madison, WI 53703

Dear Ms. Mueller,

Thank you for the recent report on your audit of the use of computer consultants by executive branch agencies. I think this was a very important audit, one that performs a critical service for the Governor and the Executive branch. I know that it took considerable time and staff resources over many months, an effort that commands our respectful attention. The findings, based on a complex series of major and minor projects, need to be thoughtfully considered. We all face the combined challenge of creating or replacing technology applications to help us do our work both faster and more efficiently for the Wisconsin taxpayer. At the same time we must manage these projects and costs more effectively than we have shown. Your report gives us vital perspective and in fact a high-level report card on our effort.

We need to improve. This means within DOA and our fellow agencies. Our track record is mixed. We are concerned when projects are not completed on schedule and within the budgeted amount.

How do we improve? I envision multiple approaches. First, we must strive to improve our project design and project management skills in this and other departments. Within DOA, for example, we are making a very conscious effort to provide Project Management training--providing a specific curriculum to raise the overall credentials and experience of staff across all divisions to learn and practice effective project management. More often than not this means technology projects--projects where we are quick to seek external consulting resources to accomplish a task. While external contracting is often necessary to supplement department resources, we need to take full advantage of our internal talent pool. But we also need to improve our skills in managing external consultants when we do need to retain their expertise. We need to

manage the consultants wisely, which can mean terminating projects when it becomes obvious that they will not deliver the product--or when the delivery is too little and too late.

Secondly, we need to continue our efforts to build specific technology skills sets within our own staff. This means "growing our own" so we are less dependent on external consulting skill sets. As a specific example, the department has initiated training opportunities for our technology staff where they literally sit side-by-side with external software consultants in the development of department applications. The Department of Administration continues to work with state agencies to develop and provide an enterprise core curriculum for IT technical staff. Core training is offered to attract and retain quality IT professionals and provide adequate skills to efficiently keep up with the fast-paced technology. The core targets 1,400 statewide IT staff. We conduct enterprise needs assessments to supplement agency needs and customize the curriculum to incorporate customer feedback.

What more should be done to add to effective containment and management of external technology consultant contracts both within DOA and across the agencies? I suggest the following key changes.

- As agency managers, we must be more aggressive in re-allocating internal position resources to where they will provide the greatest return to management. This means flexibility for agencies, supported by DOA and the legislature, in moving positions to where they will enhance program delivery by improving internal application of technology. Sound proposals deserve fair consideration. I will pledge to work with the agencies to accomplish this. Agencies for their part must be willing to consider that staffing may need to shift to skill areas where added staffing can have a broader impact. Agencies may need to consider decreasing some levels and numbers of general management, rededicating these position resources to high-skill technology uses.
- In order to successfully manage this flexibility, it is time for a new Department of Electronic Government. With ever shrinking dollars for state positions and operations, we need to re-focus how we invest \$90 million in staff across the agencies, along with another \$90 million (in your report) for external consultants. In total we are investing over \$400 million a year. A new statewide Chief Information Officer, working with agencies to manage the state's technology portfolio, reporting directly to the Governor and reporting sound measurement of activity to the Legislature, is the structure we should consider. The CIO must be in a position to direct resource investments across agencies. We can no longer simply engage these decisions within our respective agency walls. Solutions are cross-cutting and statewide. While this thinking has sometimes occurred in the past, the degree of agency interaction, reflecting our interdependency, needs to increase profoundly in this new century.

March 14, 2001

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Thank you for this opportunity to respond. I look forward to working with the agencies and with the Legislature within this context. I hope we can accomplish great things and move management of technology resources to a higher level of effectiveness.

Sincerely,

George Lightbourn
Secretary

cc: Linda Seemeyer
Brian Hayes
Don Bezruki