
Background

CHAPTER 1

Executives in the Department of Finance had been interested in replacing the state's accounting system since the early 1980s. In this chapter we review the rationale for the project and present a brief history of its development. We asked:

- **What were the key executive and legislative actions and decisions regarding the statewide systems project?**
- **How much did the project cost to develop and how much does it cost to operate? Are there ways to reduce operating costs?**

In order to answer these questions we interviewed steering committee members and other project participants, reviewed the tapes of legislative appropriation hearings, and reviewed the project's work papers.

The Statewide Systems Project was originally intended to replace aging accounting and payroll systems.

RATIONALE FOR THE PROJECT

The rationale for the project as presented to the Legislature in 1991 and 1992 had several facets.

- The Statewide Accounting System (SWA) was over 20 years old and its inability to accommodate the state's business processes had led to the development of duplicative stand-alone systems in many state agencies.
- The state's automated procurement system processed less than 25 percent of the state's purchases.
- The state had no computerized system for managing and tracking human resources information.
- The state's payroll system was nearing capacity and had become costly to maintain.
- The state had no decision support system to provide for the information needs of managers and the Legislature.

- Project sponsors thought that as the new systems were developed, the state could take advantage of the opportunity to re-engineer many of its business processes to be more cost effective.

PROJECT DEVELOPMENT

The scope of the Statewide Systems Project expanded to include new procurement and human resources systems.

In 1991, the executive branch brought forth a proposal to replace the accounting and payroll systems. The 1991 Legislature reviewed the proposal and appropriated \$300,000 to plan for the systems' replacement. The project became known as the Statewide Systems Project (SSP) and was directed by the commissioners of the three sponsoring agencies (Administration, Employee Relations, and Finance), and deputy or assistant commissioners from four other large agencies.¹ The project steering committee, assisted by a consultant and five work groups, developed a plan to present to the 1992 Legislature.²

During the 1991-92 planning process, the scope of the project increased. Among other things, new systems for procurement and human resources were added to the project. During the planning phase the consultant and the state work groups also considered whether the state should develop its own programs or buy software already available on the market. The consultant recommended buying existing software packages as the lowest risk alternative. The person then serving as Commissioner of Finance told us that he had a strong preference for buying and modifying existing software, as opposed to custom development, because he felt that the state would be more likely to stay current with technology changes as the result of vendor upgrades.

The 1992 Legislature approved an additional \$1.8 million to continue planning. Planning continued into 1992, with the development of a Request for Proposals (RFP) in the fall of 1992, and an evaluation of various software products and vendors that responded to the RFP from September 1992 to January 1993.

The state decided to purchase and modify existing software packages.

In January 1993, the project's steering committee decided to purchase three commercially available software packages and hired Andersen Consulting, one of the world's largest software consulting firms, to customize the packages to meet the specific needs of state agencies.³ The state signed the contract with Andersen Consulting in March 1993 and also hired a new state project director and began to assemble the state staff for the development phase of the project.

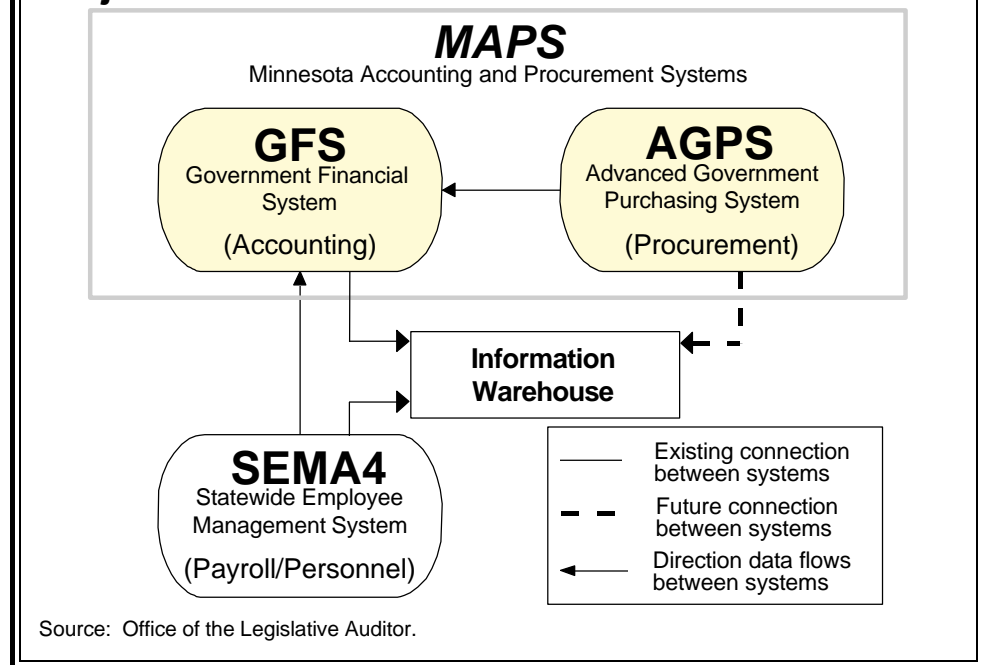
The Statewide Systems Project consists of three major components (see Figure 1.1):

¹ The deputy commissioners from the departments of Revenue, Transportation, and Human Services, as well as the assistant commissioner for administration from the Department of Natural Resources participated on the steering committee.

² KPMG Peat Marwick was the state's consultant for the planning phase.

³ Arthur Andersen Consulting is the world's largest system integrator. System integrators specialize in customizing commercial software for particular clients and industries.

Figure 1.1: Components of the Statewide Systems Project



- The new accounting system is known as the Government Financial System (GFS).⁴
- The new procurement system is called the Advanced Government Purchasing System (AGPS).⁵
- The new human resources/payroll system is known as the Statewide Employee Management System (SEMA4).⁶

The first two systems are inter-related and are frequently referred to as the Minnesota Accounting and Procurement System (MAPS). In addition, the project developed an “information warehouse” which brings together data from the new systems and enables users to generate reports for decision support.

In September 1993 the project reached a critical point.

REALIGNMENT

The consultant, the project work team, and work groups of state employees developed detailed specifications for the actual computer coding until September 1993. In the fall of 1993, the project reached a critical point triggered by the inability of the accounting work group to specify a detailed design for the accounting system that would do what was needed without significant modifications to the software

⁴ American Management Systems (AMS) is the vendor for the accounting software.

⁵ INFORMS is the vendor of the procurement software.

⁶ PeopleSoft is the vendor for the payroll and human resources software.

During realignment, the project focused on redesigning state business processes and further defining an information access component.

that was estimated to add \$4 to 5 million to the original cost. Project management was unwilling to continue the project without increased appropriations. The sponsoring agencies also had concerns about agency implementation costs and the viability of the proposed solution for the decision support component of the project.

As a result, SSP entered a “project realignment” phase. The project suspended further development work in the accounting and procurement components until the 1994 legislative session began and focused additional efforts on “re-engineering,” or redesigning the business processes that were to be computerized.⁷ In addition to exploring re-engineering ideas, the project examined what would be necessary to retire duplicate stand-alone accounting systems, and it formed a work group to further define the decision support or information access component of the project.

As the result of the “re-engineering” work phase, the schedule for accounting implementation was moved back one year to July 1995. The schedule for procurement implementation was moved from November 1994 to July 1995, and the decision support component was moved ahead to be implemented in July 1995 instead of July 1996.

The 1993 Statewide Systems Project appropriation required a recommendation from the Legislative Commission on Policy and Fiscal Planning on the release of funds for the second year of the project’s biennial funding depending on whether legislative information needs were being met.⁸ Project managers consulted with the commission in September 1993 and January 1994. At the January meeting, the commission voted to recommend that the Commissioner of Finance release the second half of the 1993 appropriation to the project. At both meetings, legislators were told about the projected cost increases for the project.

State agencies began using the accounting and procurement systems in July 1995, but payroll and human resources were implemented in stages.

The project leadership presented in a more formal way the revised schedule and costs to the 1994 Legislature and received an increased appropriation of \$15 million for the biennium, including \$1.6 million for user and agency support. Development continued in high gear for the next year through March 1995. In the fall of 1994 there was a real risk that the payroll component might not be finished by July 1995. As a result, the project management made finishing the payroll system its highest priority, deferred development of several parts of SEMA4, and decided to implement SEMA4 in several stages.⁹

In April 1995, the systems became available for budget, encumbrance, and procurement processing by state agencies. Training and preparation continued until the July 1 conversion date, when all state agencies started to use the accounting and procurement components (MAPS) and the Department of Transportation began to pilot the use of the new human resources and payroll (SEMA4) systems.

⁷ The project defined “re-engineering” as “the process of fundamentally rethinking and radically redesigning business processes to achieve dramatic improvements in quality, service, speed and cost. It is the process of rethinking and redesigning processes before they are automated.” (Statewide Systems Project newsletter, November 1993.)

⁸ *Minn. Laws* (1993), Ch. 192, Sec. 2, Subd. 4.

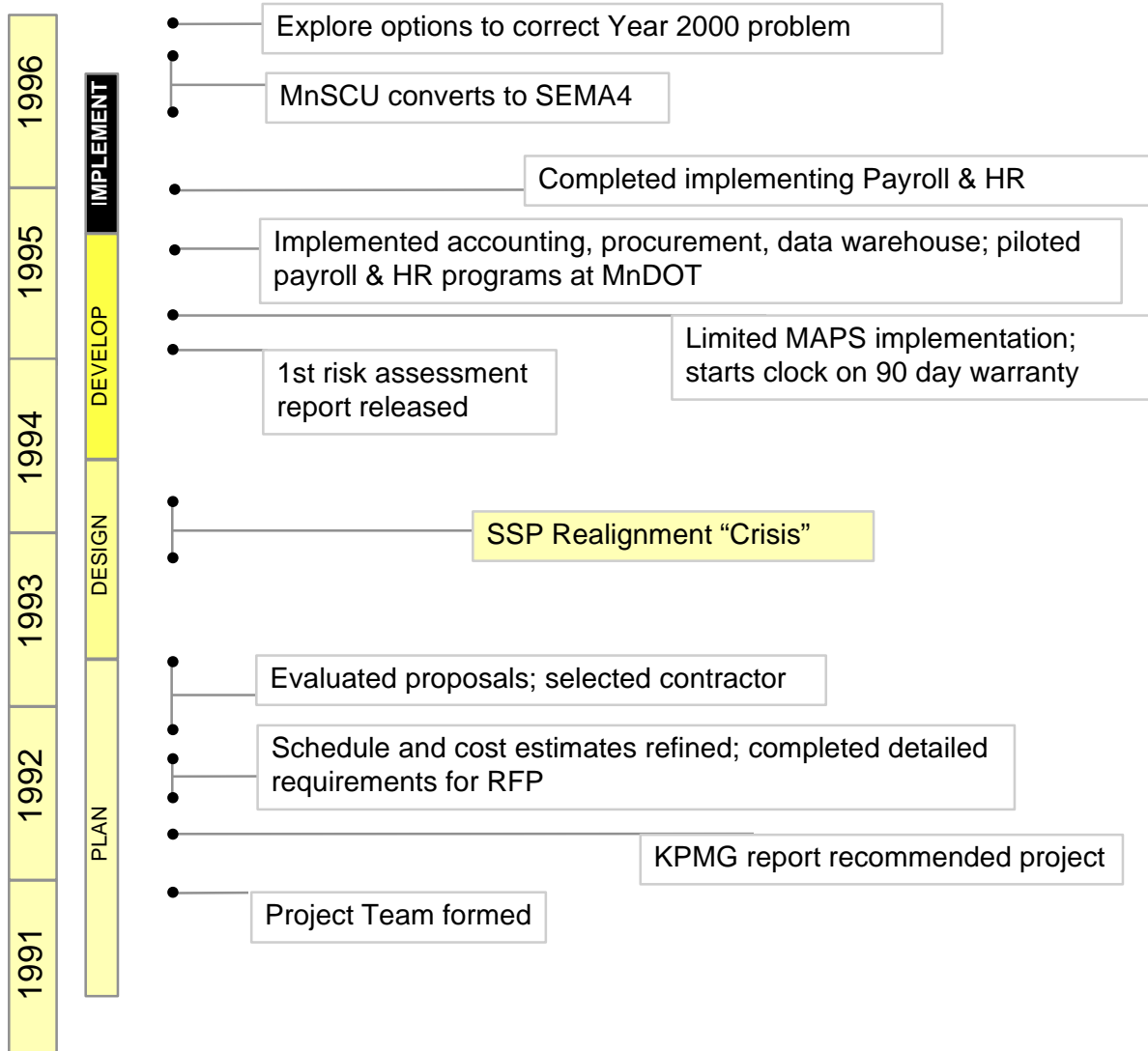
⁹ The implementation was deferred for the training, workers compensation, recruitment, and work schedules components of SEMA4.

Project phases overlapped and varied somewhat by component, but Figure 1.2 highlights the various phases of the project in a general way. A more detailed chronology of the project’s history is provided in Appendix A.

COSTS OF DEVELOPMENT

In this section we examine how much the project cost and why the costs increased over initial projections. Table 1.1 summarizes all the appropriations and transfers of funds between agencies made for development. As the table shows, the sys-

Figure 1.2: Timeline for the Statewide Systems Project



Source: Office of the Legislative Auditor.

Table 1.1: Appropriations for Statewide Systems Project Development

	Amount of Appropriation in:						
	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	Total
Minnesota Laws							
1991	\$300,000	\$2,500,000 ^a					\$300,000
1992		1,800,000					1,800,000
1993			\$10,300,000 ^b	\$4,700,000			15,000,000
1994				14,600,000 ^c			14,600,000
1995					\$2,727,000	\$73,000	2,800,000
Subtotal	300,000	1,800,000	10,300,000	19,300,000	2,727,000	73,000	34,500,000
Inter Agency Transfers		837,633		807,318			1,644,951
Total SSP Development	300,000	2,637,633	10,300,000	20,107,318	2,727,000	73,000	36,144,951
Minus transfer to LCPFP							<u>285,000</u>
Total Development Costs							\$35,859,951

Source: *Laws of Minnesota*, Department of Finance.

^aVetoed by Governor.

^bIncluded \$285,000 transfer to the Legislative Commission on Planning and Fiscal Policy (LC PFP).

^cIncluded \$100,000 for IPO evaluation.

Development cost estimates for the project nearly doubled from the first estimate in 1991.

tems created by SSP cost over \$35.8 million to develop when considering all sources of funding. That figure, however, does not count the training or equipment costs agencies incurred to implement the systems, which we conservatively estimate at more than \$10 million.

Development cost estimates for the systems grew as SSP progressed. The earliest rough estimates in 1991 called for a \$15-20 million project. A more refined estimate of \$19.5 million was made in the project's 1992 *Report to the Legislature*. When the project received bids from vendors, a project budget could be established. At that time, in March 1993, the project budget was \$26.1 million (\$23.2 million plus the \$2.1 million spent already on planning and \$800,000 in agency contributions). By December 1994, when a modified contract with the consultant was signed, the project's cost had grown to approximately \$35.6 million. Since December 1994, there has been an additional \$125,857 added to the budget. In total, therefore:

- **The development costs for the Statewide Systems Project have been about \$35.8 million.**

According to our study,

- **The costs rose from what was originally anticipated largely because of the addition of several components and changes in the specifications for the original components.**

Changes were needed in part because functions performed by several separate agency accounting systems that were to be replaced were not identified until late 1993. In addition, it took much more effort than originally anticipated by either

While change orders helped reduce overall costs, they also sacrificed system functions.

the state or the consultant to modify the human resources, payroll, procurement, and accounting components to meet the state's requirements.

Between March 1993 and mid-1996, the project's total cost rose almost \$10 million. Approximately \$5 million of this amount went to Andersen Consulting for the additional work required by the changes in the systems' original specifications. In addition, about \$1.6 million was spent on additional support for agencies, about \$2 million went to pay state employees for work that was originally unanticipated, and the rest was spent on computer usage charges to test the new systems.

Ten change orders decreased the scope of the project and saved \$1.4 million. The savings were applied against other change orders to balance the project's budget. Each of these changes represent functions or components that users thought the new systems would provide, but which had to be sacrificed because of budget or other concerns.

YEAR 2000

The accounting software that Minnesota chose does not accommodate transactions with four-digit dates, nor did any of the accounting packages offered for the state to purchase in 1992. This issue -- often referred to as the "Year 2000" problem -- was discussed when the vendor was chosen, and although the steering committee realized it would have to be fixed later, they decided to continue with the software acquisition. According to project managers, there was no attempt to keep this information from the Legislature, but the next time the issue received consideration was during a risk assessment by an external consultant during late 1994. We found that:

- **The steering committee's action effectively committed the state to additional expenditures, but the Legislature was not informed of the problem until January 1995.**

The Legislature did not have all the facts when appropriating funds for SSP in 1993 and 1994.

Therefore, the Legislature did not have all of the relevant facts when deliberating on the 1993 and 1994 appropriation requests. The accounting and procurement software now in use will have to be upgraded at a cost estimated to be about \$4.5 million.¹⁰

OPERATING COSTS

The most significant part of most computer systems' life cycle costs are operating costs. We were asked to look at whether operating costs could be reduced for the Statewide Systems Project. We found that:

¹⁰ The procurement software technically does accommodate the year 2000, but it does not accommodate 4-digit dates, and because it works in concert with the accounting system, it needs to be upgraded.

- **Statewide Systems Project operating costs are much higher than anticipated, but the sponsoring agencies are working to reduce them.**

Operating costs have increased nine-fold, partly due to the addition of the new systems.

The earliest estimates showed that the systems developed by SSP would have higher operating costs than the old systems. This was anticipated because the new systems would perform more functions and process more transactions. KPMG Peat Marwick, the state's consultant for the planning phase of the project, estimated operational costs might be as much as 250 percent more than the \$1.7 million it took to run the old statewide accounting and personnel/payroll systems. The 1992 Legislature was told operating costs would be less than \$5 million per year. Mn-ASSIST, the Department of Finance division that provides operating support for the new systems, has a budget for fiscal year 1997 of \$17.2 million, and all but about \$1 million is related to SSP. The Department of Finance had 16 staff supporting the previous systems while Mn-ASSIST has approximately 60 staff. This is not to say that the Mn-ASSIST staff are not needed to support the systems. In our interviews, Mn-ASSIST staff were given high marks by user agencies, but they were regarded as overworked. The staffing increase should come as no surprise, considering that the systems do considerably more than the previous ones and that the state also added two systems that did not exist before.

One of the primary reasons for increased operating costs is that the computer processing costs from InterTech, the division of the Department of Administration that operates the state's large mainframe computers, have been higher than anticipated. Computer usage costs have been higher than anticipated primarily because there have been more transactions and each transaction has consumed more computer resources than originally estimated based on the experience of other states. This has occurred even though the unit computer usage costs have declined in the last three years.

The project's original plan in 1993 called for the first year of operation to cost \$1.1 million in InterTech computer usage fees. Later in 1993 this was revised to \$1.6 million. As Table 1.2 shows, in April 1994, SSP project staff completed the first of several more formal estimates of operating costs, which showed estimated computer usage costs of \$3.9 million. Operating costs for InterTech's computer time have increased from an estimated \$1.6 million per year in 1993 to approximately \$9 million per year in fiscal year 1997. Costs to support the systems have also increased, in part because of difficulties in recruiting and retaining technical staff, resulting in greater dependence on consultant resources than desired.

The sponsoring agencies decided to move the information warehouse to a smaller computer, at estimated savings of almost \$1 million a year.

As the table shows, the cost of running the information warehouse increased significantly, from \$58,000 in the first cost estimate to an estimated \$1.4 million in fiscal year 1997. The Department of Finance issued a Request for Proposals (RFP) in the summer of 1996 to consider alternatives to running the information warehouse on the mainframe computer. As a result of the responses to the RFP, the sponsoring agencies have decided to move the information warehouse from the mainframe to a smaller computer that they will manage. The expected savings after initial implementation are over \$85,000 per month.

Table 1.2: Actual and Estimated Computer Operating Costs by Component (in Millions of Dollars)

<u>Estimate Date</u>	<u>Human Resources/ Payroll</u>	<u>Accounting (GFS)</u>	<u>Procurement (AGPS)</u>	<u>Information Warehouse</u>	<u>Total</u>
April 1994--1st Year	\$1.686	\$1.478	\$0.715	\$0.058	\$3.938
2nd Year Total	--	--	--	--	5.829
5th Year Total	--	--	--	--	7.174
August 1994--1st Year	1.547	2.044	0.926	0.079	4.596
2nd Year Total	--	--	--	--	6.526
5th Year Total	--	--	--	--	7.969
April 1995--1st Year	1.802	2.225	0.929	0.328	5.283
2nd Year Total	--	--	--	--	7.550
5th Year Total	--	--	--	--	8.622
December 1995--1st Year	3.454	1.695	1.217	0.826	7.826
2nd Year Total	--	--	--	--	11.618
5th Year Total	--	--	--	--	NA
Actual FY 1996--1st Year	2.905	2.047	1.254	0.920	7.126
Projected FY 1997	4.062	2.101	1.288	1.426	8.877

Source: Department of Finance.

The sponsoring agencies should continue to explore ways to reduce operating costs.

The state has made a number of other efforts to reduce operating costs. Sponsoring agency staff have continually optimized the underlying computer code and data to make the system consume fewer mainframe resources. In addition, the department expects that running the information warehouse on a smaller computer will ultimately save over \$1 million per year in operating costs. We think that the sponsoring agencies should continue to explore using smaller non-mainframe solutions for the other components of the Statewide Systems Project.

Smaller computers can sometimes be run more cost effectively than large mainframe systems and they offer the possibility of saving money on operating costs. Smaller computer solutions are currently available for the procurement and human resources components of SSP and they will soon be available for the accounting component. These smaller computer solutions also offer the possibility of improving system response time.

Taking software applications off the mainframe computers operated by InterTech raises other issues. For example, if some applications are removed from the mainframe computer environment, the costs necessary to retain that environment for remaining applications are spread over fewer users, thereby increasing the unit costs. However, we believe that the arguments for distributing the processing for SSP applications are worth exploring. The merit of smaller computer solutions is illustrated by the projected savings in the information warehouse application.

SUMMARY

The Statewide Systems Project is a very complex, unprecedented, software development project. We found that it took longer to develop and, because there were major scope changes, it cost more than originally anticipated. We also found that operating costs are much higher than originally anticipated and that additional opportunities exist to reduce them.