

**JOINT LEGISLATIVE AUDIT AND REVIEW COMMISSION
OF THE VIRGINIA GENERAL ASSEMBLY**

SPECIAL REPORT:

**Review of the
ADAPT System at the
Department of
Social Services**

House Document No. 3 (1997 Session)

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Preface

House Bill 29 (1996) directed the Joint Legislative Audit and Review Commission to conduct an investigation of the initial procurement and subsequent implementation of the Application Benefit Delivery Automation Project (ADAPT) in the Department of Social Services (DSS). ADAPT is a computer systems project designed to automate the eligibility determination process for three major social service benefit programs — Aid to Families with Dependent Children (AFDC), Food Stamp, and Medicaid. Currently, only the Food Stamp component of the system is operational in ten local social service agencies.

The Secretary of Health and Human Resource directed the DSS commissioner to suspend the project in December 1995 due to perceived problems with the system design, life cycle costs, proposed budget reductions, and the need to redeploy staff to support welfare reform. While the decision to suspend the project may have been understandable given the information available at the time, DSS did not build the necessary support for the suspension by communicating perceived performance problems to local social service agencies, the General Assembly, and the federal government. Thus, the suspension appeared to be a sudden, unexplained shift in direction for a long-standing project.

The department is now considering alternatives to ADAPT which will require significant new development and additional funding; however, DSS has failed to fully assess the viability of the current system. Further, DSS has not involved its local partners in the decisionmaking process to determine the future of the ADAPT system. It is essential that the local agencies be involved in the decisions on the future of ADAPT. Moreover, successful completion of the ADAPT system will require a significant effort and a high degree of support from both the executive branch and the General Assembly.

On behalf of the Commission staff, I wish to thank employees at the Departments of Social Services, Medical Assistance Services, and Information Technology, and the Council on Information Management for their assistance during this review. I would also like to thank the directors and staff of the local social service agencies who provided candid and thoughtful responses to our interview questions and surveys. Finally, I would like to thank the Auditor of Public Accounts and the Department of State Police for their cooperation throughout this review.

Philip A. Leone
Director

June 24, 1996

JLARC Report Summary



The Application Benefit Delivery Automation Project (ADAPT) is a computer systems project designed to automate the eligibility determination process for three major social services benefit programs — Aid to Families with Dependent Children (AFDC), Food Stamp, and Medicaid. The Department of Social Services (DSS) initiated the project to help local social service agencies process client applications for benefit programs more efficiently and effectively.

The ADAPT project began in 1991, with completion originally scheduled for March 1993. However, in 1992 with the concurrence of the local social services agencies, DSS modified the scope of the project significantly to incorporate a rules-based design. A rules-based system takes client information provided by the eligibility worker and makes eligibility determinations and benefit calculations using a programmed set of rules.

In December 1995, the Secretary of Health and Human Resources directed the Commissioner of Social Services to freeze the development and further implementation of the ADAPT project. The commissioner recommended that the implementation and training for ADAPT be halted until completion of: (1) an assessment of ADAPT by a systems integrator, (2) a study of the capacity requirements to process the Food Stamp component of the system, and (3) an analysis of federal block grant changes and welfare reform as it applies to the ADAPT project.

Although the suspension seems understandable, the decision to suspend the project came almost one full year after DSS had received critical information about the implementation of ADAPT from its own consultant. In the meantime, the project team, which was not told of concerns about project performance, continued to move forward with implementation of the Food Stamp component of the ADAPT system, and DSS incurred about \$6.7 million in ADAPT-related expenses. The critical consultant report and subsequent information about problems with the project were not made available to the General Assembly, federal government agencies, and local social service agencies until after the project was suspended. Con-

sequently, in light of on-going development of the project and the significant expenditures during calendar year 1995, the decision to suspend the project was unexpected and surprising to most of those involved in the system's development.

Item 15 of House Bill 29 (1996) directed the Joint Legislative Audit and Review Commission (JLARC) to investigate the Department of Social Services' procurement and implementation of the ADAPT project. The 1996 General Assembly directed this review because of conflicting information about the functionality of the system from DSS and the 10 localities in the first phase of implementation using the system. The study mandate directed JLARC to report its findings by June 30, 1996, to the chairmen of the following committees: House Appropriations; House Health, Welfare and Institutions; Senate Finance; and Senate Rehabilitation and Social Services.

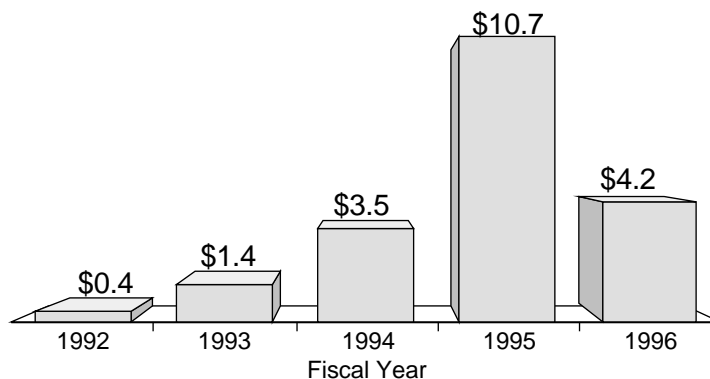
This review of the implementation of the ADAPT system and procurements for the project found that:

- though innovative, the inclusion of the rules-based design added greatly

to the complexity of the ADAPT project and resulted in significant delays in completing the project;

- DSS has spent about \$20.2 million for the ADAPT project, most of which was for the development of the rules-based system (see figure below); it appears that DSS may have very little money available to complete the development of the system without additional appropriations and federal government approval;
- successful project implementation has been impeded by fragmented authority and responsibility, poor financial management, and the lack of continuous high level management support of the project;
- despite the incomplete status of the ADAPT system, the Food Stamp portion of the project is currently operational in 10 localities; it provides these localities with needed automated tools to assist eligibility workers and is easy to use;

**ADAPT Project Expenditures by Year
(\$Millions)**



Source: Financial information provided by DSS Financial Management and Information Systems divisions.

- many of the technical concerns which led to the suspension of the project appear to have been at least partially addressed; and
- DSS is now considering alternatives to ADAPT which will require significant new development and additional funding; however, the department has failed to involve its local partners in the decisionmaking process to determine the future of the ADAPT system.

While the current system may not be the ideal system, it appears to be a workable solution and should be considered equally with other alternatives. Yet, it does not appear that DSS has fully assessed the viability of the current system to provide the functionality required by local social service agencies or its attendant costs. In making decisions about automation of the eligibility determination process, DSS needs to weigh the trade-offs between time, flexibility, and costs. A formalized methodology is needed to assess those trade-offs to ensure a non-biased, critical assessment of the alternatives. In particular, DSS needs to provide evidence that the alternatives being proposed provide tangible benefits that outweigh the time delays, complexity, and potentially higher cost of implementing other alternatives.

The department also needs to include others in the decisionmaking process for ADAPT. The DSS technical and program staff, local social service agencies, and several other State agencies should help to assess the future of the system. High level support and leadership is needed to rebuild the State/local partnership to complete the implementation of ADAPT. Without a partnership of State and local agencies, automation of local social service programs cannot succeed. As part of this effort, the Secretary of Health and Human Resources

and the DSS commissioner need to make completion of this project a high priority.

The Rules-Based Design of ADAPT Was Innovative

The inclusion of a rules-based system design in the ADAPT project was an innovative, bold initiative for DSS. It demonstrated a commitment from the State to respond to the needs of local social service agencies. Further, its development served as a model for building State and local partnerships for systems development projects.

Although it encountered many obstacles in the planning, development, and implementation of ADAPT, the department achieved several significant successes. Most notably, the ADAPT project team completed several of the initial goals established for the project, such as:

- building a “bridge” between the Medicaid Management Information System (MMIS) and the Virginia Client Information System (VACIS) for the purposes of enrolling Medicaid eligible individuals in the Medicaid program,
- installing enhancements to VACIS,
- enhancing parts of the benefit application process, including completing the Food Stamp component of the rules-based system and completing more than 90 percent of the AFDC component of the rules-based system, and
- completing a planning document for the long-term direction of social services information systems.

Further, the involvement of the local social service agencies in workgroups to plan for the implementation of the system, and to

help develop and test the rules base was, in the words of one local official, “. . . the most creative sharing with local governments that the State has ever tried to do.”

Implementation of the Rules-Based System Was Problematic

The biggest obstacle to the successful implementation of ADAPT has been the completion of the rules-based system for automating eligibility determination and benefit calculation, especially for the Medicaid program. The rules-based design added to the complexity of the ADAPT project, ultimately leading to several modifications to the project schedule when it became clear that DSS could not meet the aggressive schedules set for it. The implementation of the rules-based system was hampered by several factors, such as:

- the transfer of the Napa County system (NAPAS) for use in Virginia was more complicated than originally expected;
- DSS management had an unrealistic perception of the resource requirements needed for the project, leading to a constant struggle by the project team for adequate resources to complete the project requirements; and
- problems related to the development of the Medicaid program rules.

Problems with the implementation of the project resulted in changes to the project's schedule, which initially called for full implementation of the system in early 1993. Ultimately, the project was to begin statewide implementation in September 1995. Even this modified schedule could not be met, however.

The ADAPT Project Has Been Impeded by Poor Management from Its Beginning

Implementation of the ADAPT system was also impeded by problems related to project management. Authority and responsibility for the project was diffused and fragmented. This contributed to poor financial management, procurement practices, and inventory control of computer equipment purchases. For example, JLARC found that computer equipment valued as much as \$2 million was inaccurately inventoried. Until the department completes a full accounting of this equipment, it cannot ensure that this equipment has not been lost, stolen, or inappropriately assigned.

Furthermore, high level support for the project was lost with the change in administrations. Beginning in 1994, new DSS organizational priorities replaced the priority status of ADAPT. This made it even more difficult for the project to sustain a sense of urgency, maintain adequate resources, and obtain additional resources for its completion.

Suspension of the ADAPT Project Has Had Negative Consequences

Further development and implementation of ADAPT is currently on hold pending the results of a DSS-commissioned management and systems engineering review of the project. The decision to suspend the ADAPT project appears to have been made with insufficient consideration of the serious ramifications this would have for the Commonwealth, and was implemented without sufficient foresight and planning. Moreover, DSS did not build the necessary support for the suspension by involving local agencies in the decision process. Thus, to those not involved in the decision, the suspension seemed to be a sudden, unexplained shift in direction for a long-standing project.

It is not surprising then, that the suspension of the ADAPT project has had a

significant impact on the administration of social services programs at the local level. The local social services agencies re-engineered their eligibility processes at great cost and effort with the expectation that the State would provide the necessary automated tools to make the process work. Now, without the ADAPT project, the local agencies find themselves with significant workload, and little support or guidance from DSS on how to proceed. By suspending the project just as some local agencies were finally beginning to use the system and benefit from it, DSS has seriously eroded the confidence of the localities.

DSS' failure to adequately involve the local agencies in decisions related to the suspension of ADAPT has negatively affected the State and local agency partnerships created through the ADAPT project. The decision may also have jeopardized:

- federal financial participation in the funding provided to date on the ADAPT project and any future funding for re-engineering proposals,
- local agency efforts to improve application processing times for the Food Stamp program and to process benefits more accurately,
- General Assembly support for future agency automation projects, and
- public confidence in the agency's ability to deliver cost effective information technology solutions.

System Improvements Have Addressed Some Technical Concerns

Concerns were raised about the project's original design and its ability to meet its stated objectives by a DSS consultant in January 1995. The issues raised were perceived as grave enough to provide some

basis for the Secretary of Health and Human Resources to direct the DSS commissioner to suspend the project. For more than a year, DSS considered the advice of consultants who raised serious concerns about the usefulness and cost effectiveness of the system.

However, the actual viability of the current system has never been fully assessed, particularly since significant systems improvements have been made. Some of the concerns raised by DSS' consultants were, in fact, irrelevant to the project delays and concerns about costs. Other issues, especially those related to hardware capacity and systems design, have been partly addressed by several system improvements. In deciding to suspend the project, DSS did not consider useful information from the local social services agencies, its own technical staff, or other State agencies involved in the project.

The ADAPT system, as it is currently implemented, is a working system. Although the technology deployed has certain limitations, some of those limitations have been overcome. For example, the ADAPT project team has created indexes and keys to improve database implementation, designed utilities to ease maintenance of the system, and developed methods to extract data for *ad hoc* management reports.

Moreover, certain portions of the system are now operational. In November 1995, DSS began statewide implementation of the Food Stamp component of the ADAPT system. At that time, the AFDC component of the project was more than 90 percent complete, and the eligibility determination and benefit calculation portion of the rules-based system had been successfully tested. In addition, a portion of the Medicaid requirements had been written and were awaiting completion of statewide conversion for the Food Stamp and AFDC programs before coding would resume.

Future Implications for the Full Implementation of ADAPT

Completion of ADAPT will be a significant effort, requiring support from both the executive branch and the General Assembly. It will also require a substantial commitment of additional funds, estimated to be between \$3.5 million and \$16.5 million. The additional funding needed to complete ADAPT's development is problematic, however. The 1996-1998 biennial budget did not include any funds to support future development and implementation of ADAPT, though funding for processing in the 10 pilot and phase one localities is included. Therefore, it is unclear how the current re-engineering efforts conducted by DSS for ADAPT will be funded in the short term. Assuming that ADAPT funding will be revisited during the 1997 General Assembly Session, it is unlikely that additional funds will be available for project completion until at least July 1, 1997.

While the current implementation of ADAPT may not be the technically ideal solution, it does appear to be a workable solution and should be considered equally with other alternatives. The preliminary re-engineering analysis performed for DSS is not sufficiently detailed to determine whether it is either technically necessary or cost effective to seek an alternative to the current system. As a next step, DSS needs to more fully evaluate the current system. It needs to judge the appropriateness of a systems redesign for ADAPT only after it has carefully evaluated a full range of alternatives using established criteria. The evaluation process should involve all of the agencies — State, local, and federal — that were a part of the initial ADAPT partnership.

In assessing the current implementation of ADAPT against possible alternatives, decisionmakers need to consider the following questions:

- What are the total life-cycle costs associated with each alternative? If one of the alternatives proposed is more cost effective, does the reduction in costs outweigh the implications of delayed implementation of the system?
- Are end users willing to accept any shortcomings of the current implementation? Are the local social service agencies able to deal with further time delays that would be necessary to implement an alternative technology?
- What is gained by selecting an alternative implementation in terms of service quality? Does the potential improvement in service quality outweigh the implications of delayed implementation of the system?
- Will DSS limit itself in the future by implementing ADAPT as a MAPPER system? Will another technology also have this limiting effect?

In answering these questions, decisionmakers need to weigh the viability of the current system against proposed alternatives, using a systematic approach involving all the stakeholders. The problems experienced with the ADAPT project are not unusual ones for large system development projects. However, these problems have illustrated some significant weaknesses that will have to be addressed by DSS in order to successfully implement ADAPT. A high level of commitment from the executive and legislative branches, coupled with the involvement of local partners, is needed for the eventual successful completion of the project.

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I. Introduction

The Application Benefit Delivery Automation Project (ADAPT) is a computer systems project designed to automate application processing for three major social services benefit programs — Aid to Families with Dependent Children (AFDC), Food Stamp, and Medicaid. The Department of Social Services (DSS) developed the project to assist local social service agencies in the efficient and effective processing of applications for benefit programs. Original planning documents anticipated that the project would be completed with statewide implementation by March 1993. However, the project's scope was significantly altered in the fall of 1992 to incorporate a rules-based system to electronically determine eligibility and calculate benefits for the Aid to Families with Dependent Children (AFDC), Food Stamp, and Medicaid programs. The project schedule was then modified, with statewide implementation planned for the fall of 1993.

Problems with the implementation of the project resulted in additional changes to the project's schedule. Ultimately, the project was to begin statewide implementation in September 1995, and be completely implemented statewide by September 1996. In December 1995, the Secretary of Health and Human Resources directed the DSS commissioner to suspend the development of the ADAPT project due to: (1) the results of a 1994 consultant study which found problems with the project's ability to meet its original objectives as currently designed, (2) the need to redeploy staff to support Welfare Reform and related systems initiatives, (3) reductions in expected carryover funds for training and implementation in FY 1996 and proposed budget reductions for the 1996-1998 biennium, and (4) estimates of additional hardware costs to support ADAPT made by the Department of Information Technology (DIT).

At the time of the suspension, the ADAPT project was partially operational. The Food Stamp component of the ADAPT system was operating in four pilot localities and was being implemented in six additional localities in the first phase of its statewide implementation schedule. The AFDC component of the project was reportedly more than 90 percent complete, and the eligibility determination and benefit calculation portion of the rules-based system had been successfully tested. In addition, a portion of the Medicaid requirements had been written and were awaiting completion of statewide conversion for the Food Stamp and AFDC programs before coding would resume.

In February 1996, the Governor asked the Virginia State Police to undertake an investigation of the ADAPT project due to allegations of criminal activity. As a result of conflicting information on the functionality of the system, and the fact that the localities using the system were favorable toward it, the General Assembly directed that a review of the project also be undertaken.

Item 15 of House Bill 29 (Appendix A), approved by the 1996 General Assembly, directed the Joint Legislative Audit and Review Commission (JLARC) to investigate the Department of Social Services' procurement and implementation of the ADAPT project. The study mandate further directed JLARC to report its findings by June 30, 1996, to the chairmen of the following committees: House Appropriations; House Health,

Welfare and Institutions; Senate Finance; and Senate Rehabilitation and Social Services.

OVERVIEW OF THE ADAPT PROJECT

The ADAPT project was initiated in 1991 when DSS began planning for system enhancements to provide eligibility workers with needed automated tools. The project evolved from a number of events which occurred in the late 1980s and early 1990s which made it necessary for social service agencies to speed the processing of applications for benefit programs. For example:

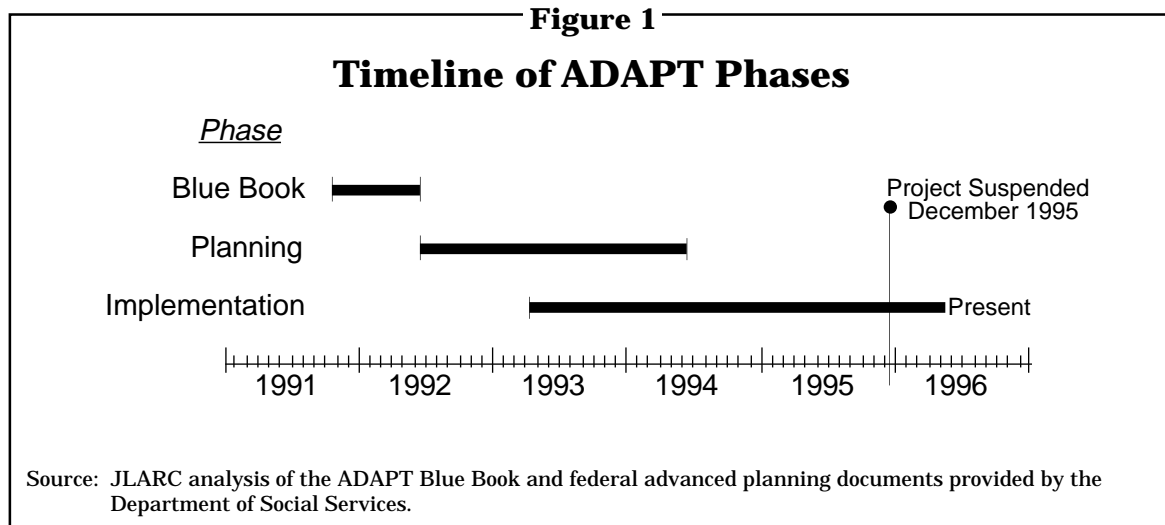
- A DSS 1990 strategic plan for social services identified needs for increased automated support in the local social service agencies.
- A 1990 U.S. District Court decision in *Robertson v. Jackson* found Virginia's Food Stamp benefit processing rates unacceptably slow and mandated that DSS and local social service agencies improve the timeliness of delivering Food Stamp benefits to clients.
- Application processing error rates for the Food Stamp program in Virginia were unacceptably high based on federal standards for the program.
- The federal government offered states increased financial support to enhance automated systems for the delivery of AFDC benefits. This was known as the Federal Family Assistance Management Information System (FAMIS project).

The scope and purpose of the ADAPT project was initially presented in what is referred to as the "ADAPT Blue Book" in October 1991. At that time, DSS presented the ADAPT project to a joint study committee of the House of Delegates and Senate (HJR 461), which was examining whether DSS and the Department of Medical Assistance Services (DMAS) could share needed data to streamline the processing of Medicaid applications. Subsequent phases of the project included planning and implementation (Figure 1).

At the time the ADAPT project was initiated, DSS, along with other State agencies, was facing budget reductions. On the other hand, DSS identified a potential need for 700 additional eligibility workers in order to comply with the court ruling in *Robertson v. Jackson*, and with federal requirements for the timely and accurate processing of Food Stamp benefit applications.

Initial Goals for the ADAPT Project

The first planning document prepared for ADAPT in 1991 described the initial goals for the project. This planning document is referred to as the "Blue Book." The Blue



Book defined ADAPT as “the acronym for the multiple projects required to automate application processing for benefit delivery.” As such, ADAPT included four projects to be undertaken to improve the delivery of social service benefits. These projects included the following:

- enhancements to the Virginia Client Information Systems (VACIS),
- an enhanced application process,
- automated interface between VACIS and the Medicaid Management Information System (MMIS), and
- long-term direction for a complete requirements analysis of the future system needs for social services.

It appears that these projects were not necessarily mutually exclusive and would be implemented concurrently. In fact, some of these projects were already under way at the time the Blue Book was distributed for the ADAPT project. The Blue Book projected that with the provision of proposed equipment and personnel, three of the four projects could be completed within 24 months. Anticipating implementation of the ADAPT project in early FY 1994, DSS estimated the total cost of this effort through fiscal year 1996 at \$16.2 million, with a total cost avoidance of \$22.8 million.

VACIS Enhancements. The need to enhance VACIS was identified during the development of the strategic plan for social services. During DSS site visits to local social service agencies, local agency staff made a number of recommendations to improve VACIS. Based on these recommendations, DSS program and technical staff planned a number of enhancements to the system, phasing in implementation of the changes beginning in the fourth quarter of 1991.

Many of these enhancements were implemented to obtain federal certification that the system met federal Family Assistance Management Information Systems (FAMIS) requirements. The VACIS system was Virginia's FAMIS system. The FAMIS project provided DSS with enhanced federal matching funds, which the federal government provided to help states upgrade their existing systems to achieve processing efficiencies. Funding was also provided to purchase personal computers for AFDC eligibility workers.

Enhanced Application Process. The Blue Book identified enhancements to the benefit application process as a major objective of ADAPT. An overarching goal of this enhancement was to provide local agency staff with "a single point of contact for interfacing with multiple systems." To accomplish this single point of contact, DSS identified 14 general requirements for the project (Exhibit 1). At this time, a rules-based system was not stated as a general requirement for enhancing the application process for DSS benefit programs.

Nevertheless, by October 1991, DSS had begun evaluating software applications that could meet the general requirements for the enhanced application and eligibility determination process. In fact, the Blue Book stated that DSS was in the process of developing prototypes of the software to further evaluate it for use in Virginia. The four software applications examined at that time were:

- the Client Entry Assistance Network (CLEAN), in Tulare County, California;
- the Automated Intake System (AIS) in San Diego County, California;
- the Program Eligibility Reasoning Technology (X-PERT) System in Iowa; and
- the NAPA System (NAPAS) in Napa County, California.

Department staff identified additional systems for possible transfer and visited several states to observe the functionality of the systems. By the spring of 1992, however, DSS appeared most interested in two systems in California. Staff from DSS and some local governments visited California to undertake further assessments of two rules-based systems — NAPAS and a system operated by Merced County (the MAGIC system).

Automated Interface Between VACIS and MMIS. According to ADAPT planning documents, developing a technical solution which would allow an automated interface between VACIS and MMIS would occur concurrently with the development of the enhanced application and eligibility determination process. The ADAPT Blue Book stated that efforts were already underway to allow for data entry directly into MMIS from VACIS. These efforts were largely driven by HJR 461, passed by the 1991 General Assembly, directing DSS and DMAS to work together to develop a method by which VACIS and MMIS could communicate. This solution was projected to save eligibility workers time by eliminating redundant data entry for the two systems.

Long-Term Direction. The final project proposed in the ADAPT Blue Book involved identifying "the need for a complete requirements analysis of the future systems needs for Social Services." This project was characterized as "long term direction." DSS

Exhibit 1**DSS General Requirements for the Enhanced Application Process**

- Provide easy worker access for inquiry and updating.
- Reduce paperwork dependency and redundancy.
- Provide the capability, through a single process, to search multiple computer systems/files for client information and to identify the source of the information.
- Provide the capability to enter information required for multiple computer systems/files through a single source.
- Provide the capability to generate update transactions for multiple computer systems/files without major changes to existing systems.
- Provide the capability to store additional data in a readily accessible data repository without making major changes to existing systems for the additional data.
- Provide the capability to enter raw data and have this data summarized as required and sent to existing systems, thus reducing worker time spent on manual calculations.
- Provide the capability to use interactive interviewing techniques or batch entry techniques for application data.
- Provide the capability to skip through application data not required; provide system default values.
- Provide the capability to produce on-line help windows which furnish specific code data and information, reducing the dependency on manuals for information.
- Provide the capability to allow worker control of special notices and correspondence at time of action, thus reducing worker time in processing case manual file folders.
- Provide the capability for data retrieval from multiple systems/worker files for agency manipulation.
- Provide the capability for independence from the mainframe computer for application data entry.
- Provide a solution that does not commit the Department to a single vendor for hardware and easily allows for future expansion of systems capabilities.

Source: Virginia Department of Social Services, "Application Benefit Delivery Automation Project, Project ADAPT," October 1991.

proposed that this would include considerations such as the use of new technologies and an integrated system to support DSS.

Evolving ADAPT Project Goals and Objectives

After DSS published the ADAPT Blue Book, a more intense planning effort was pursued to obtain federal financing for components of the project. DSS visited several states in early 1992 to evaluate their systems and began preparing an advanced planning document (APD) to obtain federal funding for the development of ADAPT. As this more structured planning process took shape, DSS began modifying the goals and objectives of ADAPT to incorporate a rules-based component as an integral part of the project. The rules-based component became part of the June 1992 APD prepared for the Food and Nutrition Services (FNS) within the U.S. Department of Agriculture, and the Administration for Children and Families (ACF) and the Health Care Financing Administration (HCFA) within the U.S. Department of Health and Human Services.

Modified Plans for the Enhanced Application and Benefit Process. The planning APD in June 1992 outlined three major items to be addressed during the planning period. These were: (1) VACIS enhancements, (2) VACIS interface with MMIS, and (3) enhanced application and benefit processes. The planning document indicated that many of the VACIS enhancements were being implemented to obtain federal certification that the system met FAMIS requirements. However, the planning APD stated that additional enhancements would be identified and documented to improve current operations for local agency clerical and eligibility staff.

Unlike the Blue Book, the planning APD stated that DSS would focus some planning efforts on a knowledge-based system support. The goal of this effort was to:

determine the decision-making capability to be included in the system for further streamlining and enhancing the application process . . . the requirements for systems intelligence and develop recommendations for incorporating a knowledge-based expert system into ADAPT. The focus will be on system supports that streamline work, are easily accessible and understandable and include complex decision making processes [ADAPT Planning APD, 1992].

A knowledge-based system is one that is programmed to use knowledge and inference procedures to solve difficult problems. The knowledge programmed for the eligibility determination system is essentially the complex set of eligibility rules for benefit programs. Thus, ADAPT is said to be a “rules-based” system.

DSS Presentations on ADAPT Continued to Reflect Original Blue Book Plans. In contrast to its June 1992 planning APD, DSS presentations to legislative committees during the summer of 1992 continued to reflect its plans as outlined in the original ADAPT Blue Book. Consequently, system enhancements to incorporate a rules-

based system in the short term were not included as part of the overall project scope, budget, or timeline.

Pursuit of Napa County System

In October 1992, DSS decided to model ADAPT after an eligibility system just developed for Napa County California called NAPAS. This model was selected for several reasons, including: (1) funding constraints, (2) familiarity of DSS staff with the mainframe system (Unisys) and software, (3) time constraints, and (4) compatibility with existing DSS systems. More importantly, according to DSS staff, federal funding guidelines at the time required that, in order to qualify for federal funding, DSS had to transfer an existing system that operated in a technical environment similar to that already in use. Because VACIS was currently operating on a Unisys mainframe, DSS interpreted the requirement of “a similar technical environment” to mean a Unisys mainframe environment. The NAPAS system seemed to meet all of these requirements.

At the time the decision to transfer the NAPAS system was made, State agencies were faced with mandatory budget cuts. Dwindling resources resulted in added pressure for DSS to develop ADAPT in-house using existing information systems staff and expertise. DSS already had individuals who were trained in using the programming language, MAPPER, which was used for the NAPAS system. The department was also pressured to develop a system quickly, because the State had just been sued for failing to determine eligibility for Food Stamp benefits within an acceptable time frame. Adding to this pressure, several Virginia localities were beginning to explore the feasibility of undertaking their own development of a rules-based system.

From the start, ADAPT had been envisioned as a front-end to the State’s current eligibility system — VACIS. DSS felt too much had been invested in VACIS to simply abandon the functionality that already existed in the system. New enhancements to VACIS had just been completed through the FAMIS funding. Thus, DSS felt ADAPT would need to interface with VACIS as it currently existed on the Unisys mainframe.

The NAPAS system is a centralized system which runs on a Unisys 2200/402 mainframe. NAPAS is written in a proprietary language called MAPPER. MAPPER is the equivalent of an integrated spreadsheet, database system, and programming language for the Unisys environment. The actual program code for NAPAS was transferred to DIT in June of 1992 for evaluation. DSS staff reviewed the code and five months later an official decision was made to proceed with the transfer of NAPAS for the ADAPT project. During development, much of the code was rewritten to meet Virginia’s needs. However, the overall configuration of the system remained the same. The ADAPT system, like NAPAS, operates on a Unisys mainframe and is written primarily in MAPPER.

Implementation of ADAPT in the Pilot Localities

To begin ADAPT implementation, DSS selected several pilot localities to test the Food Stamp portion of the system. Originally, there were four pilot localities for ADAPT: Charlottesville, Henrico, Newport News, and Alexandria. Charlottesville was the first to begin implementation, with conversion of Food Stamp cases to the system in November 1994. By July 1995, the three other pilots had also begun conversion of cases to ADAPT.

In addition to the four pilots, six localities were identified to be part of the first phase of the project's statewide implementation. These were: Chesapeake, Chesterfield/Colonial Heights, Hanover, Norfolk, Richmond City, and Suffolk. These local agencies completed training of eligibility workers and began conversion of Food Stamp cases in November 1995. Soon after the implementation of the Food Stamp component of the system began in these localities, the ADAPT project was suspended.

Currently, all ten agencies have converted some portion of their Food Stamp cases into the ADAPT system. Since the project's suspension, however, three of the agencies have stopped conversion activities while continuing to maintain and update the files already in the ADAPT system. The remaining seven agencies are currently converting Food Stamp cases to the system, but at a slower pace than before the suspension. According to these agencies, the reason for this is the uncertainty concerning the system's future.

Funding of the ADAPT Project

The ADAPT project is funded jointly by the federal, State, and local governments. The federal government funds the largest portion at 48 percent. The State funds much of the remaining amount, with the localities contributing about six percent, including 20 percent for the purchase of computer equipment and 20 percent of funds used to convert cases to the ADAPT system. For example, the localities provided approximately \$1.2 million in funding for the purchase of ADAPT computers for local eligibility workers. To date, total expenditures for the project amount to \$20.2 million.

Federal Participation in ADAPT Funding Is Significant. A significant portion of the funding for the ADAPT project is provided by the federal government. To obtain federal funding for large automation projects, DSS must plan and budget for the projects through advanced planning documents (APDs) submitted to the federal government for approval. These APDs establish the project scope, budget, project products, and schedules for completing project tasks. The APDs provide a general budget to guide DSS in monitoring and controlling project costs.

The ADAPT project team developed two primary APDs to obtain federal financial participation in the project: the planning APD and the implementation APD. These documents set forth the budget for the two phases of the project. During the course of the project, the APD-approved ADAPT budgets totaled about \$20 million.

The federal share of project costs is funded by three federal agencies: the Administration of Children and Families (ACF) which administers the AFDC program, Food and Nutrition Services (FNS) which administers the Food Stamp program, and the Health Care Financing Administration (HCFA) which administers the Medicaid program. Federal financial participation in the ADAPT project provides about 48 percent of the funding for the project. However, participation in the funding varies by federal agency. The ACF funds about 13 percent of the project's expenditures. The federal financial participation rate for FNS is about 24 percent, while the rate for HCFA is about 11 percent.

ADAPT Expenditures Total \$20.2 Million. To date, it appears that DSS has spent about \$20.2 million on the ADAPT project. This includes expenditures on ADAPT pre-planning activities conducted prior to the approval of the first ADAPT APD. Of this amount, about \$1.9 million has been spent on project planning, and about \$18.3 million has been spent on the development and implementation of ADAPT.

Most of the expenditures are related to three general categories: (1) computer equipment, (2) personnel costs, including salaries and fringe benefits, and (3) Department of Information Technology charges for telecommunications and mainframe operating costs. Together, these three expenditure categories account for about 72 percent of the project's costs. Figure 2 shows the major expenditures for the ADAPT project, from FY 1992 through February 1996. These costs include project pre-planning costs incurred prior to the approval of the first ADAPT planning document.

The project also expended about 14 percent of its total funds to date for contractual design services for the project. A number of contractual staff were used to help in the development of the ADAPT design and programming. Many of these staff were hired from State contracts administered by DIT for procuring services of computer services personnel. At one time, the ADAPT project employed as many as 14 contractual staff to assist in the development of the ADAPT system. If costs for these staff are included with the direct personnel costs for the project, then about 37 percent of the total project costs can be attributed to staffing costs for the system's development.

PRIOR REVIEWS OF THE ADAPT PROJECT

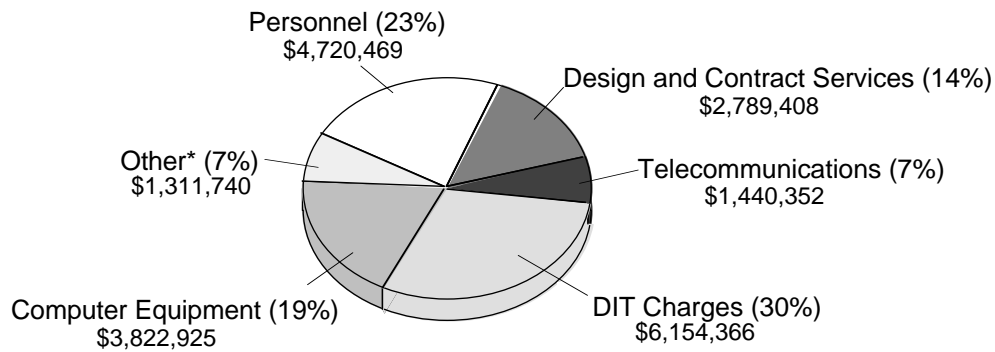
In addition to this JLARC study, seven studies of the ADAPT project have been undertaken. Four reviews of the ADAPT project were completed prior to its suspension, including (1) a review by DSS' Office of Internal Audit, (2) the Auditor of Public Account's 1994 and 1995 audit of the Department of Social Services, (3) a management audit completed by Broughton Systems Inc., and (4) an analysis of systems life cycle costs completed by the former DIS director. All four studies cited problems with the management of the project. The two latter studies also raised concerns about the technology that had been chosen for ADAPT, the manner in which the system was being implemented, and the accuracy of cost estimates.

Three other reviews of the project are ongoing. In February 1996, the Governor directed the Virginia State Police to investigate allegations of fraudulent activities in the project. Following ADAPT's suspension, DSS hired the consulting firm Booz-Allen and Hamilton, Inc. to evaluate the viability of the current system, and to examine the feasibility of alternative implementations. In addition, a request for proposals (RFP) has been issued by DSS for a fraud and transaction audit. This audit was requested by the

Figure 2

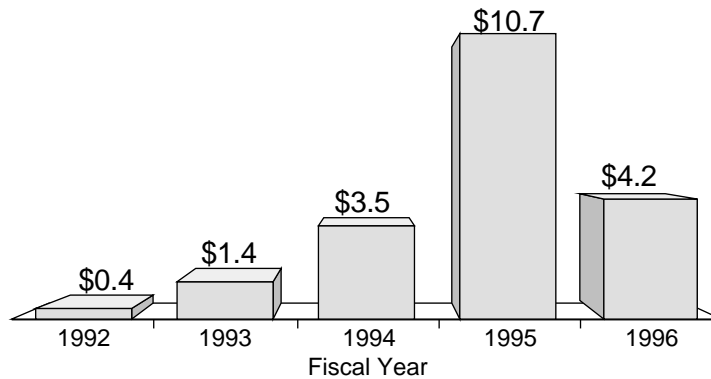
ADAPT Project Expenditures, FY 1992 - FY 1996

Expenditures by Type
Total: \$20,239,260



*Includes travel expenses, training, apartment leases, supplies, and other items.

Expenditures by Year (\$Millions)



Source: Department of Social Services Division of Financial Management and the Division of Information Systems financial information.

Office of the Attorney General and is currently being negotiated with a financial accounting firm.

DSS Internal Audit of ADAPT Project Completed in 1993

In December 1993, the DSS Office of Internal Audit informed the ADAPT project team of two major deficiencies in the management of the project. First, cost reporting was not being performed at a major task level. Rather, reporting was being conducted at the more general cost center level. As a result, it was not possible to compare actual expenditures to budgeted amounts for each task. Second, project reports to the steering committee did not compare actual start and end dates for project milestones with the planned dates. Thus, DSS management had no mechanism for monitoring the progress of project development. According to the internal auditor, the problems placed accountability for project costs, performance, and timelines in jeopardy.

APA Findings Were Communicated to DSS in 1994

The Auditor of Public Accounts (APA) reported findings related to the ADAPT project in its two most recent audits of DSS. These findings were critical of the financial management of the project as well as the overall project management. In its 1994 audit of the department, the APA reported the following:

- DSS developed a detailed proposal and project budget for ADAPT in June 1992; however, DSS did not begin comparing expenditures to the budget and monitoring the progress of the project until April 1994.
- DSS failed to track costs by activity or task.
- From the period beginning July 1992 through January 1994, the department did not have procedures to account for ADAPT costs by the Blue Book, planning, and implementation stages of the project.
- DSS has not properly recorded fixed assets since 1991.

The APA's 1995 financial audit of DSS also found that the Division of Information Systems has not displayed good project management for the development of the ADAPT system.

Outside Review of ADAPT Ordered in 1994

In response to perceived problems with the Division of Information Systems and delays experienced with the ADAPT project in 1994, the acting DSS commissioner hired Broughton Systems, Inc. (BSI) under a sole-source contract to conduct a management

audit and systems engineering study of the ADAPT project. BSI made the following assertions in its January 1995 report:

- The ADAPT project team did not adequately analyze DSS' business objectives or the needs of local social service departments.
- Project planning and controls for ADAPT were inadequate for a project of ADAPT's magnitude.
- Resource and capacity analyses were flawed. Inaccurate assumptions were made regarding the cost of Unisys mainframe computing resources.
- A standard systems development methodology was not used. DSS produced no documentation of selection criteria or analysis of the alternatives. Common methods for modeling work processes and data flows were not used.
- ADAPT did not use technologies typically associated with modern systems development. These include relational database management systems and personal computers.
- Rather than research the market for commercially available application development tools and expert system software, the ADAPT team developed such software in-house adding to the programming requirements for the project.

The Broughton report concluded that, "We believe that it is not reasonable to expect ADAPT to achieve stated benefits, nor is it reasonable to assume that ADAPT's stated benefits necessarily represent the benefits needed by project stakeholders."

DIS Director Assessment Questioned Life Cycle Cost Estimates

The Broughton report was followed by an internal memo in August 1995 by the acting director of DIS. This memo was based on an analysis completed by the director, and reportedly reviewed by Booz-Allen and Hamilton, Inc. The memo re-stated criticisms already raised by the BSI report and stated that recurring costs for ADAPT were inaccurate because Unisys processing charges had been omitted from the calculations. Consideration of recurring costs, led to a reassessment of the original life cycle cost for ADAPT from \$55 million to \$85 million. The memo concluded that rather than continuing to implement ADAPT in its current form, the system should be re-engineered to take advantage of current technology.

Ongoing Studies Are Inconclusive to Date

Of the remaining three studies, two are currently ongoing and the third, the fraud and transaction audit, has not yet begun. To date, the investigation by the Virginia

State Police has not found any indication of criminal violations. The consultants hired by DSS to further examine the ADAPT system and possible alternatives, as directed by the 1996 Appropriation Act, have completed two deliverables. The first of these documented the functionality of the current ADAPT system, and the second reported on technical alternatives for completing the system. The alternatives proposed have yet to be critically evaluated. A third deliverable will be a request for proposals for DSS to use in securing a systems integrator to complete the implementation of ADAPT.

Legislatively Mandated Intergovernmental Task Force

House Bill 29, passed by the 1996 General Assembly, provides DSS with an appropriation of \$150,000 in FY 1996 to hire a consultant to evaluate the ADAPT system's future viability and alternatives to implement the system statewide. Further, language associated with this appropriation directs that an ADAPT Task Force be formed, involving representatives of:

- the Council on Information Management (CIM),
- the Department of Information Technology (DIT),
- the Joint Legislative Audit and Review Commission, and
- at least four representatives from the ten local social service agencies that are currently implementing the Food Stamp component of the ADAPT system.

The consultant is required to report its findings to the ADAPT Task Force by June 30, 1996. The 1996-98 Appropriation Act requires the ADAPT Task Force to report to the Governor and the chairmen of the following committees: House Appropriations; House Health, Welfare and Institutions; Senate Finance; and Senate Rehabilitation and Social Services no later than July 15, 1996.

JLARC REVIEW AND REPORT ORGANIZATION

This JLARC staff review of the ADAPT project provides an assessment of the financial management, procurement, and implementation aspects of the project. This review discusses the current status of the project and implications for the future viability of the ADAPT system. As part of this study, a number of research activities were undertaken to obtain a comprehensive understanding of the ADAPT project, its implementation, and current status. The remainder of this chapter details the research activities performed by the JLARC staff and provides a description of the report's organization.

JLARC Staff Review

A number of research activities were carried out during this assessment of the ADAPT project. These activities were designed to provide an in-depth review of the ADAPT project's implementation. Some of these research activities included: (1) document reviews, (2) structured interviews, (3) site visits, (4) a telephone survey of selected local social services agencies, and (5) an equipment survey of ADAPT-related computer equipment held by local social service agencies in light of concerns related to the lack of inventory controls and the potential for equipment to be missing.

Document Reviews. This review involved the collection of hundreds of project documents from DSS, CIM, DMAS, and DIT. These documents were used to assess the project's overall implementation, problems that may have arisen, and how the project was managed. A number of DSS project documents were examined which addressed aspects of the project's technical implementation, finances, procurements, project management, and federal reporting requirements. Working papers of previous accounting and management audits of the ADAPT project were also reviewed.

JLARC staff also reviewed agency financial documents to better understand how the project was financially managed and controlled. As part of this financial review, staff reviewed aspects related to the DSS federal cost allocation process.

Structured Interviews. Structured interviews were conducted with more than 100 persons involved in the ADAPT project during this review. As part of these structured interviews, JLARC staff interviewed DSS staff as well as local ADAPT project coordinators and other local social services agency staff who had some involvement in the ADAPT project. In addition, structured interviews were conducted with representatives from the three federal agencies involved in ADAPT funding, and State agency staff in DMAS, DIT, CIM, and the Department of Planning and Budget.

Site Visits. JLARC staff visited the four pilot local social service agencies to observe the functionality of the system from the local perspective. In addition, visits were made to the six local agencies that were in the first phase of statewide implementation of the ADAPT project (Exhibit 2). In addition, two larger social service agencies were visited. All of these localities were asked a number of questions about the implementation of ADAPT, the system's functionality, and the local agencies' relationships with DSS during the implementation and suspension of the ADAPT project.

Telephone Survey. JLARC staff conducted a telephone survey of 12 randomly selected local social service agencies in order to obtain a more in-depth understanding of the effect of the ADAPT project on their offices (Exhibit 2). The local social service directors were asked to describe the changes made to their business processes and infrastructure in order to prepare for implementation of the ADAPT system. In addition, questions were asked about the status of system implementation in each agency.

Equipment Survey and Inventory Comparison. To determine whether the computers purchased for the ADAPT project were properly deployed to local social service

Exhibit 2

Local Social Service Agencies Interviewed by JLARC Staff

In-Person Interviews

ADAPT Pilots:

Alexandria
Charlottesville
Henrico
Newport News

Phase One of Statewide Implementation

Chesapeake
Chesterfield/Colonial Heights
Hanover
Norfolk
Richmond City
Suffolk

Other Local Agencies:

Fairfax
Virginia Beach

Telephone Interviews

Randomly Selected Agencies:

Accomack
Botetourt
Bristol
Clarke
Fluvanna
Henry
Louisa
Lynchburg
Northumberland
Pulaski
Roanoke City
Stafford

Source: JLARC interviews with local social service agencies.

agencies, JLARC staff implemented an equipment survey of the 124 local social service agencies. All 124 agencies responded, so a complete inventory of equipment deployed at the local level was developed. The inventory developed from the survey of localities was then compared to a list of ADAPT-related computer equipment provided by DSS. The purpose of the comparison was to determine the accuracy of the DSS equipment list and to assess the extent to which there were problems associated with the procurement or deployment of the equipment.

Report Organization

This chapter has provided a brief overview of the ADAPT project, prior studies of the system's development, and the JLARC study activities. Chapter II of this report provides information about implementation problems experienced during the project's development, including problems with financial management and procurement practices. Chapter III addresses the current status of the ADAPT project. The final chapter examines considerations for the future of the ADAPT project and possible alternatives for the department.

II. Implementation of the ADAPT Project

The Application Benefit Delivery Automation Project (ADAPT) was a bold initiative undertaken by the Department of Social Services (DSS) to be responsive to the needs of localities for more efficient and effective ways to administer benefit programs. The department achieved several successes and encountered many obstacles in the implementation of ADAPT.

Most notably, the ADAPT project team completed several of the goals established for the project such as:

- building a bridge between the Medicaid Management Information System (MMIS) and the Virginia Client Information System (VACIS) for the purposes of enrolling Medicaid eligible individuals in the Medicaid program,
- installing enhancements to VACIS,
- enhancing parts of the benefit application process, including completing the Food Stamp component of the rules-based system and completing more than 90 percent of the Aid to Families with Dependent Children (AFDC) component of the rules-based system, and
- completing a planning document for long-term direction of social services information systems.

Further, the involvement of the local social service agencies in workgroups to plan for the implementation of the system, and to help develop and test the rules base was, in the words of one local official, “. . . the most creative sharing with local governments that the State has ever tried to do.”

The biggest obstacle to the successful implementation of ADAPT has been the completion of the rules-based system for automating eligibility determination and benefit calculation, especially for the Medicaid program. The rules-based design added to the complexity of the ADAPT project, ultimately leading to several modifications to the project schedule when it became clear that DSS could not meet the aggressive schedules set for it. The implementation of the rules-based system was hampered by several factors. For example:

- the transfer of the Napa County system (NAPAS) for use in Virginia was more complicated than originally expected;
- DSS management had an unrealistic perception of the resource requirements needed for the project, leading to a constant struggle by the project team for adequate resources to complete the project requirements, as indicated by steering committee minutes as early as February 1992; and

- unanticipated problems related to the Medicaid eligibility policy slowed the development of the rules.

Implementation of the ADAPT system was also impeded by problems related to project management. Authority and responsibility for the project was diffused and fragmented. This contributed to poor financial management, procurement practices, and inventory control of computer equipment purchases. For example, JLARC found that computer equipment valued as much as \$2 million is inaccurately inventoried. Until all such equipment is properly accounted for, DSS cannot ensure that some of the equipment has not been lost, stolen, or inappropriately assigned.

Furthermore, high level support for the project was lost with the change in administrations. Beginning in 1994, new DSS organizational priorities made it even more difficult for the project to sustain a sense of urgency, maintain adequate resources, and obtain additional resources for its completion.

Concerns about the Division of Information Systems (DIS) operations and its staff's ability to successfully complete several large automation projects led to a 1994 decision by the new DSS commissioner to conduct a management audit and systems engineering study of ADAPT. This study raised questions about the original design of the ADAPT system, project management, and staff skill sets. The report was communicated to the Secretary of Health and Human Resources, but was not made available to the General Assembly, federal government agencies, the localities, or the ADAPT project team. Therefore, these key stakeholders were unaware of perceived problems with the project's design and implementation.

A new DIS director, hired in January 1995, reorganized the project and directed the project team to proceed with implementation throughout 1995, despite providing the Secretary of Health and Human Resources with unfavorable information concerning the project's implementation status during this time period. In December 1995, the Secretary directed suspension of the continued development of the project due to: (1) a memo received from the former DIS director restating problems identified by the 1994 DSS consultant and identifying increased project life cycle costs, (2) the removal of about \$6 million in one-time costs for the project for the 1996-1998 biennium, and (3) potential increases in the Department of Information Technology (DIT) charges for additional hardware and software for ADAPT.

THE ADAPT PROJECT WAS A BOLD INITIATIVE FOR DSS

The ADAPT project was initiated as a response to a number of external pressures affecting social service agency business processes. Rising caseloads for the AFDC and Food Stamp programs, coupled with the Food Stamp lawsuit and staffing restrictions, made it critical for DSS to develop automated solutions to streamline the application process for benefit programs. The original proposal for ADAPT represented

a bold initiative for the department to be responsive to the needs of local eligibility workers. The project did accomplish many of the original tasks proposed for it in 1991.

The project's ultimate design — a rules-based system — was an enterprising attempt by DSS to provide local eligibility workers with automation to facilitate their work. The ADAPT development process represented a significant attempt by a State agency to involve local governments in decisions concerning automated systems. DSS tried to develop solutions which were responsive to local needs given the constraints of its system architecture.

The development process also required DSS and the Department of Medical Assistance Services (DMAS) to work cooperatively on Medicaid issues. First, they had to develop a solution to allow both agencies' systems to exchange information. This would enable eligibility workers to work more efficiently, by allowing them to enroll eligible persons in the Medicaid program, without entering data redundantly in two systems. Second, in the process of developing the requirements for the rules-based system, the agencies discovered inconsistencies in how the State was implementing the eligibility rules for the Medicaid program. While this was an unexpected setback, it resulted in necessary revisions to the Medicaid manual to ensure that eligibility workers accurately determined Medicaid eligibility.

DSS Succeeded in Implementing Several Important ADAPT Tasks

DSS successfully implemented a number of ADAPT tasks which were proposed in 1991. These included the completion of VACIS enhancements to qualify for federal certification, creating a linkage between the Medicaid Management Information System (MMIS) and the Virginia Client Information System (VACIS), and enhancing the application and eligibility determination process. In addition, DSS completed a plan for long-term direction on automation of social services efforts.

VACIS Enhancements Were Completed. One of the original objectives of ADAPT was to make a number of enhancements to the VACIS system. By incorporating a number of these tasks into the ADAPT project, DSS was able to address eligibility workers' suggestions for making VACIS more compatible with processing requirements. In addition, during this time changes to VACIS allowed the agency to obtain federal certification for the Family Assistance Management Information System (FAMIS) used for the AFDC program.

In meeting federal requirements for FAMIS, DSS made needed improvements to VACIS. VACIS enhancements included:

- reducing the complexity of the system by consolidating, simplifying, and eliminating codes, elements, edits, and error messages;
- simplifying the case transfer process; and

- streamlining client information searches in VACIS, among others.

In addition, DSS received federal approval and enhanced funding (90 percent federal matching funds) to purchase more than 1,000 personal computers in 1993 for use by AFDC eligibility workers in local social service agencies.

DSS Successfully Developed the Link Between VACIS and the Medicaid MIS. Another equally important objective DSS achieved was the development of a mechanism for linking VACIS with the Medicaid MIS to reduce redundant data entry in the enrollment of clients in the Medicaid program. DSS successfully completed this task through the development of multiple systems inquiry (MSI) and update (MSU) applications. These applications function like a “bridge” which allows data to be passed from VACIS to MMIS maintained by the DMAS fiscal agent.

Some Enhanced Application Process Tasks Were Completed. A number of original work products related to the enhanced application process proposed for ADAPT were also successfully completed. A combined application for benefit programs was designed and implemented at local social service agencies. A model intake process for local social service agencies was developed to aid in achieving efficiencies. A client information brochure was developed which consolidated about 15 individual forms into one. A system for tracking pending applications for the Food Stamp and Medicaid programs was developed and implemented.

DSS Made Necessary Revisions To The Medicaid Manual. In addition, one unexpected task was also identified and completed as a result of the ADAPT project. In working on Medicaid program requirements for the rules-based system, DSS and DMAS staff discovered inconsistencies between the *State Plan for Medical Assistance Services* and the *State Medicaid Manual*. This resulted in significant changes to the Medicaid manual to ensure that Medicaid policy was implemented accurately in determining eligibility. While this task was not anticipated, DSS and DMAS staff were diligent in ensuring it was addressed.

Incorporating a Rules-Based Component for ADAPT Was Ambitious

The design of the ADAPT project was significantly changed in 1992 with the decision to incorporate a rules-based system into the application development. After meeting with local social service staff and exploring other states’ automated systems, a consensus was reached among DSS staff and management, and local social service agency staff to incorporate a rules-based system into the ADAPT design. This decision was an ambitious undertaking for DSS given the aggressive schedule to complete the ADAPT project by September 1993.

A number of factors drove the decision to incorporate rules-based system design into the many tasks associated with the ADAPT project. The department was experiencing budget and staffing reductions at a time when it was under increasing pressure to

improve the timely processing of Food Stamp applications (*Robertson v. Jackson*). At the same time, the department was experiencing pressure from several local social service agencies that were interested in developing their own rules-based systems to address the complex and time consuming tasks of determining eligibility and calculating benefits for large benefit programs. In addition, the ability to transfer a system from another state appeared to be a way to take advantage of the benefits of a rules-based system without having to undertake a large application development from scratch.

The decision to transfer the NAPAS system for use in Virginia appeared to be a conservative approach to incorporating a rules-based system into the project's scope. The NAPAS system was compatible with the DSS mainframe system, and staff within the DSS Division of Information Systems were familiar with the Unisys technology and MAPPER, the programming language used in NAPAS. Further, the State of California had selected NAPAS over another rules-based system for statewide application.

ADAPT's Development Represented a Significant Attempt by DSS to Involve Localities in Systems Decisions

The original 1991 ADAPT project proposal included a project organization and structure which included participation by local social services staff, local government data processing staff, and other State agency staff in the project. DSS staff had seen the value of local input on automated systems when it developed its strategic plan in 1990. The extensive involvement of local social services agencies' staff and other local government staff in the ADAPT project represented a significant effort to create a partnership between the State and localities in the development of a major social services systems project to benefit the localities.

In order to facilitate this State/local partnership, DSS set up a number of workgroups comprised of local and State government staff. The purpose of the workgroups was to solicit input from local government staff and develop solutions to various technical and programmatic issues associated with the development of ADAPT. The following workgroups were formed for the ADAPT project:

- Advisory Group,
- Combined Application Group,
- Enhanced Application Requirements Group,
- Future Direction Group,
- Knowledge Based Group,
- Local Interface Group,
- Model Intake Group, and
- VACIS/MMIS Interface Group.

In total, more than 100 local social services staff and local government data processing staff were involved in workgroups on the ADAPT project.

In addition to their involvement on ADAPT workgroups, several local social services agencies made program staff available to work full time on the project with ADAPT technical staff at the DSS central office. This commitment of local staff time ranged from several months to several years. These local social services agency staff aided DSS staff by writing program requirements and testing the logic of the programs written to implement eligibility rules for the Food Stamp, AFDC, and Medicaid programs.

A Significant Portion of the Rules-Based System Has Been Completed

The ADAPT project involved a number of complex and divergent systems development tasks. The addition of the rules-based design to the project significantly increased the scope of the project. And, while the development of the rules-based system encountered a number of obstacles, it is significant that the ADAPT project team has been able to complete critical portions of the system. In fact, one management audit and systems engineering study of the ADAPT project stated that:

ADAPT technical work has been consistently good As an example of application software design, the EDBC [Eligibility Determination and Benefit Calculation] driver is excellent.

Currently, the Food Stamp component of the system is operational and is being used by ten localities. Representatives of the federal Food Stamp program administrator — Food and Nutrition Services — tested the system and were very pleased with its functionality. In addition to the completion of the Food Stamp component of the system, a significant portion of the rules base has been completed for the AFDC program. The ADAPT project team estimated that the AFDC portion of the system is more than 90 percent complete. Further, most of the Medicaid program requirements have been written. Many of these eligibility requirements, related to the non-financial resources of applicants, have been programmed in ADAPT; however, a number of the eligibility requirements related to the financial resources of applicants still need to be programmed.

It is clear that portions of the ADAPT system have been successfully completed. Nevertheless, significant problems occurred during the project's development which have delayed full implementation of the system.

IMPLEMENTATION OF THE RULES-BASED SYSTEM WAS PROBLEMATIC

Several problems affected the successful completion of the rules-based system within the project's original, and modified schedules. Adapting the transferred NAPAS system to Virginia's environment was much more complicated than anticipated. By the time DSS staff realized the extent of the modifications needed to make the system work for Virginia, the project was already behind schedule in its development. Second, DSS

had an unrealistic perception of the resources needed to implement the rules-based system. Consequently, the ADAPT project manager constantly struggled to acquire additional resources to meet the project's schedule.

Further, significant problems were encountered with the implementation of Medicaid policy in Virginia. This required much unanticipated work to ensure the policy was correctly interpreted prior to developing the Medicaid rules base. At the same time, communication between DSS and DMAS was almost non-existent, according to a DSS Medicaid program staff member who was assigned to the ADAPT project. In attempting to facilitate the development of the Medicaid program's rules base, DSS management made a strategic error to use a more simplified Medicaid eligibility policy, which had not been finalized. The policy was subsequently withdrawn due to anticipated legal challenges to it. This error cost the project time and resources in revising Medicaid policy and re-coding eligibility rules.

An additional important factor also affected the ability of DSS to deliver on its promises for automated eligibility determination. The change in administrative leadership in early 1994 created uncertainties regarding DSS priorities. The high visibility of ADAPT faded as new DSS initiatives such as welfare reform were introduced. Complicating the situation, DSS has had three commissioners and four directors of the Division of Information Systems since 1994.

The Complexity of Adapting NAPAS for Virginia Was Underestimated

DSS management and DIS staff underestimated the level of effort required to address the functional and technical requirements to adapt NAPAS to meet Virginia eligibility requirements for the Food Stamp, AFDC, and Medicaid programs. In June of 1992, DSS obtained a copy of the NAPAS system in order to examine its rules base. After DSS transferred the entire NAPAS system to Virginia for evaluation and testing in the fall of 1992, a number of functional issues were identified by the ADAPT project team. Many of these issues required further evaluation to determine the extent of technical changes needed. This evaluation was not completed until March 1993, by which time the project was lagging behind schedule.

Exhibit 3 illustrates many of the issues related to NAPAS functionality that DSS identified would need to be addressed. These problems took extensive work by ADAPT project team to correct. These functional issues were also complicated by the fact that the California Medicaid program was vastly different from Virginia's Medicaid program. This meant extensive changes to the eligibility rules for Medicaid were required. Originally, the project management team had estimated that it would need about 10 functional program staff assigned to ADAPT to assist in developing the requirements for the rules for the three programs. Ultimately, DSS had more than twice this number of functional program staff working on the requirements and testing the code for these programs.

Exhibit 3**Functionality Issues Identified with the
NAPAS System Transfer**

- 500 plus screens required review/change for data gathered and edits
- All Help screens required review/change
- All Code tables required review/change
- All benefit calculations and tables required review/change
- VACIS, MMIS, combined application data required comparison to rule base for data consistency and data collection
- Integration of the MSI required evaluation
- Evaluation of NAPAS emergency needs component was necessary, resulting in restricting Food Stamp expedited services component
- Client identification and case number assignment, sizing, and evaluation was necessary
- Extension of the length of the FIPS code field was necessary
- NAPAS interfaces required examination
- NAPAS security components relative to VACIS/MAPPER, and other systems security needed examination
- All notices of action and other client correspondence needed review/change (more than 1,000 such notices and standard client correspondence)
- Level/amount of case/client data storage and history required evaluation
- Decision required on level of functionality required for pilot
- Hard coding of row and column locations verses use of field names was an issue
- Poor code design existed, lacking in modularity and poorly documented
- Records were included which were no longer applicable to a case or client
- NAPAS design could not accommodate number of Virginia cases

Source: ADAPT Steering Committee meeting minutes, October 8, 1992, and JLARC staff interviews with staff within the Department of Social Services Division of Information Systems, April, 1996.

DSS Management Had an Unrealistic Perception of Resource Requirements for the Rules-Based Design

It is clear that the inclusion of the rules-based component in ADAPT changed the scope of the project dramatically. Nevertheless, DSS management did not appropriately adjust the project's schedule and resource requirements to provide the General Assembly, the federal agencies involved in financing the project, and the localities with a realistic picture of what was needed to fully implement the system. The ADAPT project began to experience resource problems early in 1992, even prior to the decision to transfer a rules-based system. From this time onward, resource constraints were a regular topic of discussion in ADAPT steering committee meetings.

In November 1992, information provided to the ADAPT steering committee indicated that the ADAPT project would need 41 full-time staff working about 200 hours per month for the design phase of the project. This included eight management and support staff, 10 functional staff (staff with expertise in either the Food Stamp, AFDC, or Medicaid programs), and 23 technical staff. Yet, it appears that the project actually used about twice the number of functional and technical staff originally projected and the system is still not complete.

The ADAPT project was dependent on a large number of technical and functional program staff to successfully implement the system. Nevertheless, DSS had only about seven permanent technical staff that could work full time on ADAPT. DSS had to supplement the full-time staff with staff assigned part time, and with numerous contract personnel. It appears that DSS had more than 40 technical staff working on ADAPT for various lengths of time. During one six-month period, about 30 technical staff were working on the project. Even so, development of the project remained behind schedule.

The need for additional functional program staff on the project appears to have been an ongoing problem during the development and implementation of the rules-based system. The other divisions within DSS could not provide the functional staff needed for ADAPT and continue to carry out their daily responsibilities. In order to provide this level of commitment to the project, DSS had to rely on program staff from local social service agencies. In fact, DSS employed almost twice the number of functional staff originally projected during critical development periods.

Problems with Medicaid Policy Affected the Development of the Rules Base

The development of the Medicaid component of the rules-based system was also problematic. In developing the Medicaid requirements for the rules base, DSS and DMAS staff discovered that Medicaid policy as described in the *State Medicaid Manual* did not accurately reflect Medicaid eligibility policy for Virginia. At the same time, communication between the two agencies was poor, according to the ADAPT Medicaid program staff. In addition, DSS management made a strategic error to develop the Medicaid policy rules using draft federal regulations (termed "MB-1") which dramati-

cally revised the process for determining eligibility for children and families. When the federal regulations implementing the MB-1 policy were withdrawn, DSS had to discard the programming code developed using this policy. This, and other factors, further slowed the development of Medicaid rules for ADAPT.

Inconsistencies Between DSS Medicaid Manual and State Plan Delayed ADAPT Rules Development. When DSS began to define the requirements for the Medicaid rules for ADAPT, DSS began working closely with DMAS to ensure that the DSS *Medicaid Manual* was consistent with the *State Plan for Medical Assistance Services* (State Plan) which is promulgated by DMAS. As DSS began to compare the *Medicaid Manual* with the State Plan, it was discovered that the manual did not accurately reflect the State Plan. Consequently, DSS functional staff had to undertake a thorough review of the Medicaid manual to ensure that it complied with the State Plan. This effort created additional, but necessary work that was not anticipated for the ADAPT project.

Poor Communication Between DMAS and DSS Slowed Resolution of Medicaid Requirements Development. According to staff at DSS, one of the major difficulties affecting the defining of Medicaid requirements for the ADAPT system was the poor communication between the two agencies on Medicaid policy. This affected program staff's ability to obtain speedy resolution to inconsistent policy issues. While staff noted that the communication between the two agencies has improved since 1994, communication issues will continue to challenge the successful implementation of the Medicaid rules in ADAPT or any other alternative selected for the rules-based system.

DSS Management Erred in Deciding to Code MB-1 Policy in ADAPT. DSS management made a decision in June of 1993 to use the draft of final federal regulations to code certain aspects of the Medicaid rules for ADAPT. This decision was a strategic error on the part of DSS as it developed the Medicaid rules for ADAPT. The programming needed to implement this policy had to be completely revised one year later when it became evident that these regulations would not sustain legal challenges to the eligibility policy.

In January 1993, the Health Care Financing Administration (HCFA) published a draft of final regulations for comment which implemented changes to the method by which eligibility is determined for children and families, as well as changes in how individuals were defined in optionally covered groups. This regulation, termed MB-1, provided a more simplified method for determining eligibility than the policy already in effect in the State Plan. These regulations were opposed by the State Medicaid Directors' Association and a number of states. Further, the DMAS director and staff cautioned DSS on the early implementation of these regulations. Nevertheless, DSS staff and management felt the new regulations were easier to program than the current eligibility policy, and their implementation would be easier for eligibility workers to administer. Consequently, DSS management made a decision to use the MB-1 policy for the development of the ADAPT rules base.

By March of 1994, a DSS program staff member noted that the regulations still had been not been made final and no states had implemented the MB-1 policy, even as an option, because its legal standing was questionable. In addition, DMAS staff urged DSS to reconsider its decision to implement the MB-1 policy. However, DSS management wished to proceed with the MB-1 policy, so DMAS drafted and filed the necessary State regulations.

In September 1994, DMAS and DSS staff met with representatives of the Attorney General's office to discuss the feasibility of implementing the MB-1 policy after it had been successfully challenged in West Virginia. Staff determined that the policy would not withstand a legal challenge. A decision was then made to withdraw the MB-1 regulations and to discard the program code associated with that policy. As a result, DSS' development of the Medicaid program rules related to AFDC eligibility had to be substantially revised beginning in late 1994.

FRAGMENTED LEADERSHIP AND POOR FINANCIAL MANAGEMENT IMPACTED IMPLEMENTATION OF ADAPT

The successful implementation of ADAPT was also negatively impacted by problems affecting high level support and leadership for the project. The department experienced leadership turnover which diminished high-level support. Successful project management was impeded by fragmented authority and responsibility for the project. This fragmented responsibility, in turn, resulted in poor financial management of the project.

Throughout the development of the ADAPT system, DSS lacked a sound project budget process. Tracking of project expenditures was problematic and reporting of budget and expenditure information to the federal government was inadequate. DSS was cited by several audits for weak financial management of the ADAPT project. Despite taking several positive steps to address these problems, the ADAPT project is still affected by inaccurate financial accounting for project costs. Expenditures have not been reconciled to the project's budget and an update to the ADAPT advanced planning document required for federal reporting has not been completed.

The department has also been criticized in past audits for poor procurement practices affecting the ADAPT project. The department took significant steps to correct these practices in the past few years. However, two recent sole source procurements for ADAPT-related services raise some questions. This review of ADAPT procurements for computer equipment revealed significant weaknesses with the department's accounting of its fixed assets as noted previously by the Auditor of Public Accounts. Based on documentation provided by DSS, a JLARC staff comparison of State and local computer equipment listings found that 18 percent of the equipment is not listed on DSS' equipment list. Moreover, almost 15 percent of the computers purchased for ADAPT could not be located on local social service agencies' equipment listings.

Authority and Responsibility for ADAPT Project Direction Was Diffused and Fragmented

Overall authority and responsibility for the ADAPT project was fragmented and diffused, during most of its development. Two major factors contributed to these problems. First, project leadership was diluted by the complex organizational structure created for the project. Two DSS deputy directors provided high level leadership to two different project management teams. The DIS director involved several of his managers in project decision-making in addition to the project manager.

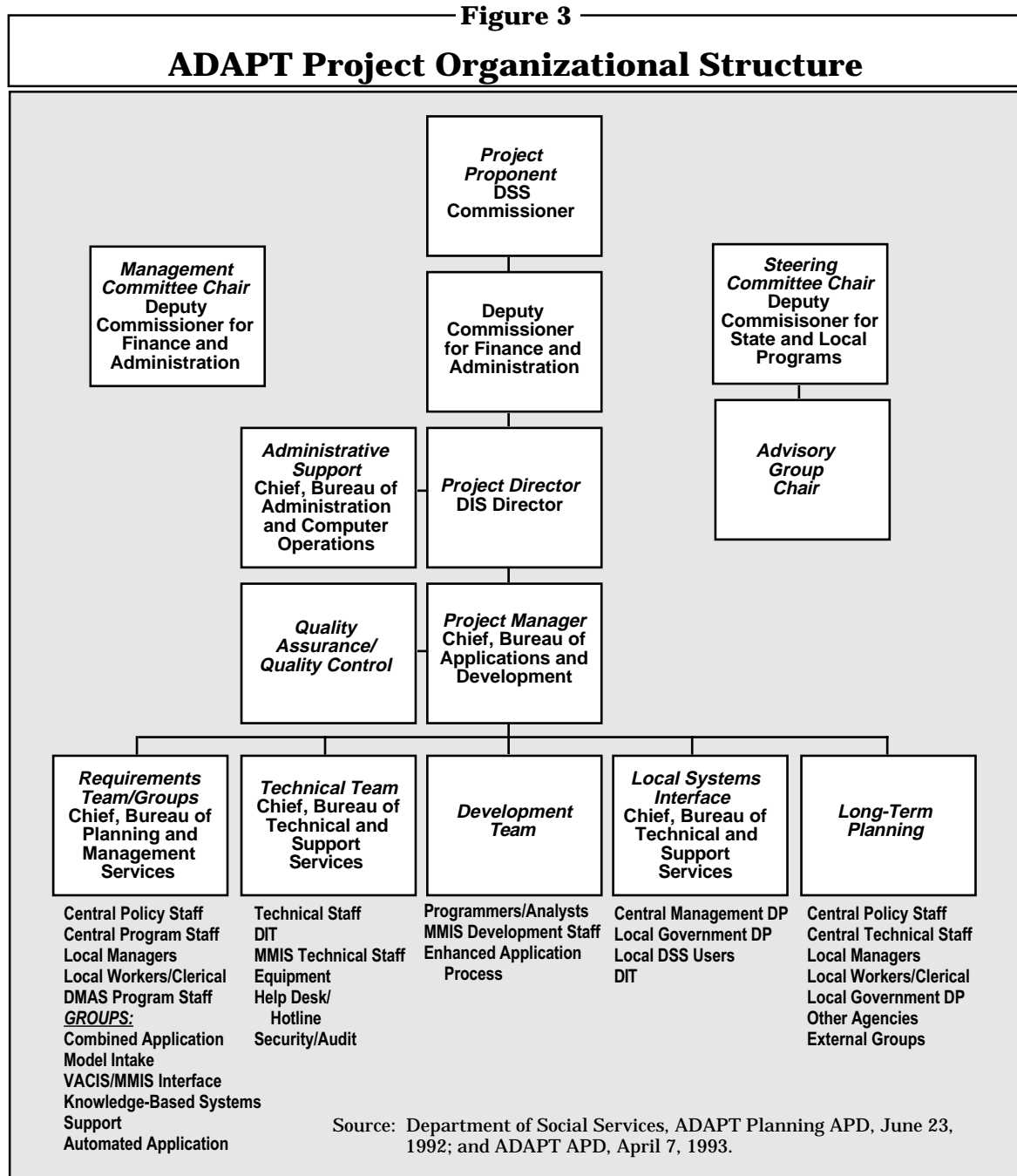
The second problem affecting project management involved turnover in agency leadership. DSS has experienced turnover in commissioners, deputy commissioners, chiefs of staff, DIS directors, and ADAPT project managers. Further, the position of Secretary of Health and Human Services has experienced turnover. These changes have affected continuous high level support for the ADAPT project over the course of its development and implementation.

Leadership Was Diluted by the Complex Project Structure. The ADAPT project involved a complex project management structure to provide overall leadership, direction, and oversight; and to respond to project resource needs. The complexity of the project's management structure served to fragment authority and responsibility for the project. This fragmentation undermined the ability of the project manager to control the overall direction and results of the project.

The project was located within DIS and assigned a project manager. Overall project direction was provided by the project manager, the DIS director, two deputy commissioners, and two management committees (Figure 3). Further, various levels of authority and responsibility for the project appears to have been spread throughout the management team within the Division of Information Systems.

The ADAPT steering committee was created in early 1992 and was comprised of:

- the two deputy commissioners;
- the directors of the Divisions of Benefit Programs, Management and Customer Services (MCS), and Information Systems;
- the ADAPT project manager;
- the chiefs of the Bureaus of Planning and Management Analysis within MCS, and Administration and Computer Operations within DIS;
- other members of the ADAPT team and workgroups, as necessary; and
- representatives of Unisys, as necessary.



The goal of the steering committee was “overseeing project ADAPT; providing leadership; responding to resource needs (staff and monetary) and monitoring the direction of the project through the subcommittees” (ADAPT steering committee minutes, February 14, 1992).

The ADAPT management team was chaired by the DSS deputy commissioner with responsibility over the administrative and financial divisions of the agency,

including DIS. This management team was set up in 1993. The ADAPT management team consisted of “ADAPT key players to ensure issues were dealt with properly and hopefully resolved quickly” (ADAPT Management Team Minutes, May 24, 1993). The team consisted of the DSS deputy director for financial management, the DIS director, the ADAPT project manager, and various DIS staff involved in the project.

In addition to the diffusion of overall project direction, the project manager’s responsibility for specific components of ADAPT was further diluted by the need to carry out daily managerial responsibilities, as well managing ADAPT. As a consequence, a number of crucial project tasks were assigned to other DIS bureau chiefs. For example, responsibility for preparing and submitting federal advanced planning documents and managing the project’s overall budget and expenditures was delegated to the chief of the bureau of administration and computer operations. Another bureau chief had responsibility for local systems interfaces and other technical tasks such as the MMIS interface, security, and related issues.

The shared responsibility for key project tasks meant that a number of managers within the Division of Information Systems shared responsibility for: (1) approving project expenditures, and (2) managing project staff. This type of environment increased the complexity of the project’s management. It also made it difficult, if not impossible, for the project manager to control costs and be accountable for the success of the project.

It was difficult to ascertain whether the project manager ever had full authority and responsibility for project procurements, the project budget and expenditures, and staff assigned to the project based on an assessment of extensive project documentation. As a result, it is difficult to hold the project manager fully accountable for the failure of the project to be successfully completed within major project milestones. This is further complicated by the fact that the project has had two managers and currently has none.

High Level Support for the ADAPT Project Was Affected by Leadership Turnover. In addition to this fragmented and diffused management structure, the project suffered from turnover in project leadership and management. During the development and implementation of ADAPT, the department has had:

- three commissioners,
- three chiefs of staff,
- one deputy commissioner resign,
- one deputy commissioner reassigned to other priorities,
- four DIS directors, and
- two ADAPT project managers.

During this period, there have been three Secretaries of Health and Human Resources. Currently, the project has no project manager assigned and responsibility for it continues to be diffused.

Fragmented Responsibility for Project Tasks Resulted in Poor Financial Management

The fragmentation and diffusion of project management responsibility contributed to poor financial management of the project. Poor financial management has resulted in poor accounting for project costs, problems in reconciling project costs to the project's budget, improperly accounted charges, and inadequate financial reporting to federal agencies. As a result, the total amount of funds spent on the ADAPT project remains questionable. While this review of the ADAPT project did not find any evidence of fraud or criminal activity, such allegations have been made and are the consequence of the poor attention that the department placed on reconciling the expenditures for the ADAPT project.

Accuracy of ADAPT Expenditures Is Questionable. During the implementation of ADAPT, DSS has had difficulty in determining an accurate accounting of project expenditures. Part of this problem can be attributed to the fragmented financial management responsibility for the project within the Division of Information Systems. Several DIS managers had authority to approve project expenditures. This made tracking of project expenditures by the project manager difficult. It resulted in inadequate tracking of expenditures back to the project budget by project tasks, and inaccurate tracking of the project costs to the planning and implementation phases of the project. It is also possible that the project has been accruing costs not associated with the ADAPT system's development. However, because certain cost categories were not monitored at a more discrete level, it will be difficult to determine whether some charges need to be modified.

The following examples illustrate the fragmentation of authority and responsibility for financial management of the ADAPT project.

A June 1992 memo from the DIS bureau chief of administration and computer operations stated that all charges to the ADAPT cost center must be approved by him or the director of DIS. In addition, the memo required that all ADAPT charges be co-signed by the project manager or the DIS systems development supervisor. However, review of agency purchasing requests (APRs) show that other DIS managers also approved expenditures for ADAPT-related purchases. For example, past ADAPT project APRs show that some were authorized by the DIS chief of the Bureau of Administration and Computer Operations, the ADAPT project manager, the DIS director, the chief of the Bureau of Telecommunications and Data Processing, the deputy commissioner of finance and administration, or the systems analyst who was in charge of DSS' delegated procurement authority.

* * *

In 1995, in an attempt to tighten controls on expenditures, the former DIS director changed the method of approving expenditures in the

division. As of January 1995, all expenditures over \$2,000 could be approved and signed only by the DIS director. However, purchases under \$2,000 could be approved by any one of five individuals, including the project manager, the DIS cost center manager, a member of the office of the Secretary of Health and Human Resources, the manager of end-user support, or a DIS analyst. A follow-up memorandum in February 1995 added that invoices would no longer be sent to the project manager for approval before processing. Furthermore, in June 1995, the administration, accounting, and budgeting functions were transferred to the DIS director.

Poorly detailed accounting of certain expenditures also may have led to inaccurate charges to the project. For example, although charges for DIT mainframe operations and telecommunications comprise a major category of expenditure for the ADAPT project, DSS failed to differentiate between production and non-production costs, which has resulted in uncertainty with respect to the actual development costs associated with the project.

Production activities are generally considered maintenance to an existing system. The approved APD covers testing charges, but does not include production. Therefore, maintenance costs should not have been charged to the APD for the development of the new system. However, since DIS did not differentiate between production and non-production, it failed to accurately track actual costs associated with the development of ADAPT. As a result, DIT charges may be inappropriately allocated to the development of the ADAPT project. Consequently, total project costs may be overstated.

In addition, DSS failed to adequately monitor telecommunication charges to ensure that the charges were allocated accurately. The assignment of telecommunication charges is accomplished through the use of the master table that matches projects to the various data and voice telecommunication lines. However, the master table that assigns telecommunication charges has not been updated for at least several years. According to the current DIS cost center manager, this may have resulted in some of the telecommunication costs being charged to ADAPT that were not attributable to the project.

At present, both data and voice telecommunication lines are assigned to specific projects when they are installed. However, if an individual moved to a different location, was reassigned, or was working on multiple projects, the table often was not updated to reflect such changes. As a result, charges were improperly assigned to projects, thus potentially leaving some projects with inappropriate over-allocations and some with under-allocations.

In addition, training expenditures for the ADAPT project do not appear to be properly charged to the project. JLARC staff estimate that DSS paid temporary firm employees at least \$486,000 to develop and deliver ADAPT training from 1992 to 1996. However, these charges are not contained in data provided by DIS for the ADAPT project

for the entire period. The data provided by DIS contain vouchers for this training for FY 1995 and FY 1996, but expenditures from prior years are currently missing.

DSS Has Not Kept Federal Agencies Fully Informed of Project Expenditures. According to federal regulations, DIS must submit information updating its ADAPT advanced planning document when the projected cost of the project increases by \$300,000 or by 10 percent, whichever is less; when there is a change in the project scope, or when the cost allocation methodology changes. This has not occurred for the ADAPT project. For example:

By the end of FY 1994, the project's training expenditures exceeded its budgeted amount by \$250,000. Moreover, the project was generating costs which had not been considered in the original APD such as pilot agency conversion expenses, and the costs of functional and local pilot staff for ADAPT development. These combined costs would have most likely placed the project's costs over its projected budget, thus requiring federal reporting.

In addition, DSS was not utilizing the same cost allocation procedure that was approved in the APD. However, no updates were submitted to the federal government regarding these conditions.

Interviews with DSS staff and a review of project documents indicate that the project manager began preparing a draft of an APD update in late 1994. In early 1995, a memo to the new DIS director set forth a schedule for completing the APD by April 1995. However, it was not completed, nor was it sent to the federal agencies.

The ADAPT Project's Implementation Has Been Affected by Poor Procurement Practices

Successful implementation of the ADAPT project was also affected by problems related to DIS procurement practices. These problems were cited by audits conducted by DIT, the Auditor of Public Accounts, and the DSS internal auditor. As with problems related to financial management, it appears that some of these practices may have been affected by the fragmented responsibility within DIS for ADAPT purchases. Negative audit findings involved some purchases which were not handled by the ADAPT project manager. These findings included:

- misuse of delegated procurement authority,
- improper procedures for ordering off State contracts for computer personnel and equipment,
- an unjustified and improperly executed sole source contract, and
- insufficient documentation of agency procurement.

The department took positive steps to address weaknesses in the division's purchasing practices as a result of these audit findings. Nevertheless, two more recent sole source contracts for consultant services related to the ADAPT project appear to lack sufficient justification supporting the sole source nature of the contract.

DSS Did Not Follow Statutory Requirements for Certain Sole Source Contracts Implemented for ADAPT. According to Section 11-41 of the Virginia Public Procurement Act, the Virginia Department of Social Services has authority to enter into contracts for services and/or goods without competitive sealed bidding or competitive negotiation when the Department has determined that only one source is practicably available for those goods or services:

- when the product is available only from a single source,
- in emergencies, or
- after solicitation of a number of sources, competition is found to be inadequate.

In July 1994, DSS contracted with a firm to conduct a one and one-half day management review of the ADAPT project. This firm recommended that a more in-depth review of the project be undertaken. Two months later, the same consulting firm was awarded a \$160,000 sole source contract to conduct a management audit and systems engineering study of the ADAPT project and the Social Services Accounting Management system.

This contract does not appear to comply with the spirit of the State's procurement laws regarding the issuance of contracts on a sole source basis. Section 11-35 of the *Code of Virginia* clearly states that "it is the intent of the General Assembly that competition be sought to the maximum feasible degree . . . [and] that specifications reflect the procurement needs of the purchasing body rather than being drawn to favor a particular vendor." The justification for the sole source contract as set forth by the former DSS commissioner appears inadequate given the intent of the Procurement Act.

The former DSS commissioner stated that the main reason for the sole source nature of the ADAPT management audit and systems engineering study was to "ensure extreme confidentiality prior to the start of the audit because of information security implications associated with this type of evaluation." According to the former commissioner, because of its prior work performed in DIS and its familiarity with State computer systems, the vendor was the only source possible due to the need for confidentiality, although there were other vendors qualified for the job.

Statute does not specify confidentiality as an appropriate reason for a sole source contract procurement. Moreover, it would seem that any DSS contractor could have been required to sign a confidentiality statement. Consequently, based on this rationale, this sole source procurement appears inappropriate.

In April 1996, the current DSS commissioner requested that an emergency contract be initiated to investigate whether any fraudulent transactions occurred on the

ADAPT project. The emergency status of this contract is questionable, given that the commissioner could provide no detail on the facts concerning possible fraud to the Auditor of Public Accounts. Further, the emergency nature of the contract does not appear to meet the definition as set forth by State and agency procurement documents. Section 3.5 of the *Agency Procurement and Surplus Property Manual* issued by the Department of General Services defines an emergency as “an occurrence of a serious and urgent nature that demands immediate action.” A 1995 DSS financial operations and compliance training document states that emergency procurements are allowed “in the case of a life or property-threatening emergency.”

The ADAPT project was suspended in December 1995 and funding for the project was put on hold. In February, the Governor initiated a State Police investigation of the project. To date, no charges have been made relative to any potential criminal activity associated with the project. Section 2.1-155.3 of the *Code of Virginia* mandates that the Auditor of Public Accounts and the State Police be informed of the need for a fraud audit within a State agency, and that the agency should cooperate to the fullest extent possible with any investigation or audit that may occur. While the DSS commissioner did notify the APA about the need for a fraud audit, the commissioner failed to provide the Auditor of Public Accounts with any facts concerning the possible fraud, its nature, and the extent or existence of any allegations concerning an individual or group. Thus, the Commissioner’s concern about fraudulent transactions appears more speculative than urgent.

Poor Project Inventory Practices Raise Questions About Computer Purchases

In the course of this review, JLARC staff found that DSS did not properly account for equipment purchased for the ADAPT project. Despite warnings from DSS’ internal audit division in June 1994, DIT in September 1994, the 1994 management audit by its consultant, and a 1995 APA financial audit, DSS made no attempt to accurately document and track this equipment. Consequently, according to a JLARC comparison of a DSS equipment list with local social service agency equipment surveys, as many as 2,800 pieces of equipment funded by the State, local, and federal governments are improperly inventoried. This involves approximately \$1.2 million to about \$1.8 million of computer hardware which DSS must locate and account for on its central inventory listing. In addition, approximately 105 personal computers originally intended for the ADAPT training centers cannot be accurately accounted for.

Inventory of FAMIS and ADAPT Equipment Was Not Properly Recorded by DSS. The department spent approximately \$4.5 million to purchase hardware for the implementation of ADAPT in its central office and in the local social service agencies. According to the DSS equipment list provided to JLARC staff, approximately 8,200 pieces of equipment were delivered to the local DSS agencies for the ADAPT project in FY 1994 and FY 1995. The local social service agencies received the hardware in two shipments. The first was funded under the federal Family Assistance Management Information System (FAMIS) and was paid for entirely by the State and federal government through

enhanced federal funding (Table 1). Federal approval for this equipment purchase mandated that it be used for the AFDC eligibility determination process.

Table 1

**FAMIS and ADAPT Equipment
Listed on DSS Inventory**

Program	Pieces of Equipment	<i>Funding Source</i>		
		Federal	State	Local
FAMIS	2,605	90%	10%	n/a
ADAPT	5,584	50%	30%	20%

Source: JLARC staff analysis of data provided by the Department of Social Services.

The second shipment was funded under the ADAPT project and required a 20 percent match by the localities. The ADAPT advanced planning document stated that this equipment would be utilized for eligibility determination and application processing. The federal government approved its funding for this specific purpose.

In June 1994, the ADAPT management team was informed by one of its members that the internal audit division of DSS had reviewed the equipment for ADAPT and had identified some concerns. He stated that “at this time a reconciliation of information is not being done to ensure the information received from [the computer vendor] is accurate to maintain the inventory.” He went on to say that the internal audit division recommended that:

. . . the ADAPT coordinator, if possible, or someone different from the person doing receipt, do a reconciliation of the information (tag #, serial #, etc.) and submit to Internal Audit centrally so information from [the vendor] can be reconciled. There has been a problem with information being incorrect [ADAPT Management Team Minutes, June 27, 1994].

In September 1994, DIT’s review of DSS information technology procurements stated that:

. . . [DIT] was informed [by DSS] that inventory tags were given to the vendor to install upon delivery in lieu of having each individual location verify the actual allocation of the PC’s [personal computers]. Acknowledgment of receipt of the PC’s by the individual DSS sites was not part of the file.

DIT reported that discussions with the DIS equipment manager at the time indicated that the original receiving reports may have been discarded after the equipment was inventoried on the system. Consequently, DIT recommended that “DSS should immediately begin to inventory all of its IT [information technology] hardware, software, and consulting contracts and agreements to document terms and conditions for payment, contract renewal and oversight duties.”

In addition, a report by the DSS consultant that conducted a 1994 management audit of the ADAPT project and the Auditor of Public Accounts financial audit for FY 1994 were critical of the accounting of DSS fixed assets. The DSS consultant recommended that the Division of Information Systems record all hardware purchases in the Fixed Asset Accounting and Control System (FAACS) as controlled assets and inventory them at least once a year. The APA also cited the need to schedule a complete inventory and record fixed assets into FAACS.

In April 1996, JLARC staff requested a complete computer equipment inventory from DSS to determine if ADAPT and FAMIS equipment could be fully accounted for. JLARC staff also conducted a written survey of each local DSS social service agency to obtain a full inventory of the ADAPT and FAMIS equipment they currently have. The 124 agencies were asked to provide the serial numbers of all of the personal computers, monitors, and printers they had received from the State through either FAMIS or ADAPT funding. The response rate was 100 percent. The majority of the local agencies completed the survey by inspecting each piece of computer equipment in their offices. Local social service agencies then provided a listing of the FAMIS and ADAPT computers they received from the DSS vendor. Equipment purchased with 100 percent local funds was excluded from this list. JLARC staff conducted follow-up telephone calls to clarify responses, verify serial numbers and funding sources, and ensure that all necessary equipment was listed.

Comparison of this local inventory with the DSS official equipment list revealed that several large discrepancies existed. The following discrepancies were noted.

- There are 278 pieces of equipment located physically in local social services agencies that differ from the location listed on the DSS inventory.
- There are 1,206 pieces of equipment listed on the DSS equipment list that are not on the local social service agency lists of equipment serial numbers.
- There are 1,555 pieces of equipment listed by the local social service agencies as FAMIS or ADAPT hardware which do not appear on the DSS equipment list.

Consequently, the DSS equipment list is inaccurate and incomplete. In total, 2,761 pieces of equipment purchased with public funds are not accurately listed on the DSS equipment listing.

A total number of 8,189 pieces of equipment were listed on the DSS inventory as having been distributed to the localities. This number appears to be questionable because the local agencies listed 1,555 pieces of equipment received with funds from either FAMIS or ADAPT which were not on the DSS equipment list (Figure 4). Using locally generated equipment surveys, it appears that about 28.3 percent of the inventoried equipment may be inaccurately accounted for by DSS. Until this equipment can be properly identified and located, DSS cannot be sure that some of the equipment has not been lost, stolen, or inappropriately assigned.

The cost of this inaccurately inventoried equipment could range from \$1.2 to \$1.8 million, depending on the configuration of the hard drive and printer type. Table 2 illustrates the estimated value of the personal computers involved in this analysis, and the approximate share of the costs for it by funding source. Approximately 74 percent of the improperly inventoried equipment was funded by the federal government. This means that approximately \$846,000 to \$1.3 million in computer equipment funded by the

Figure 4

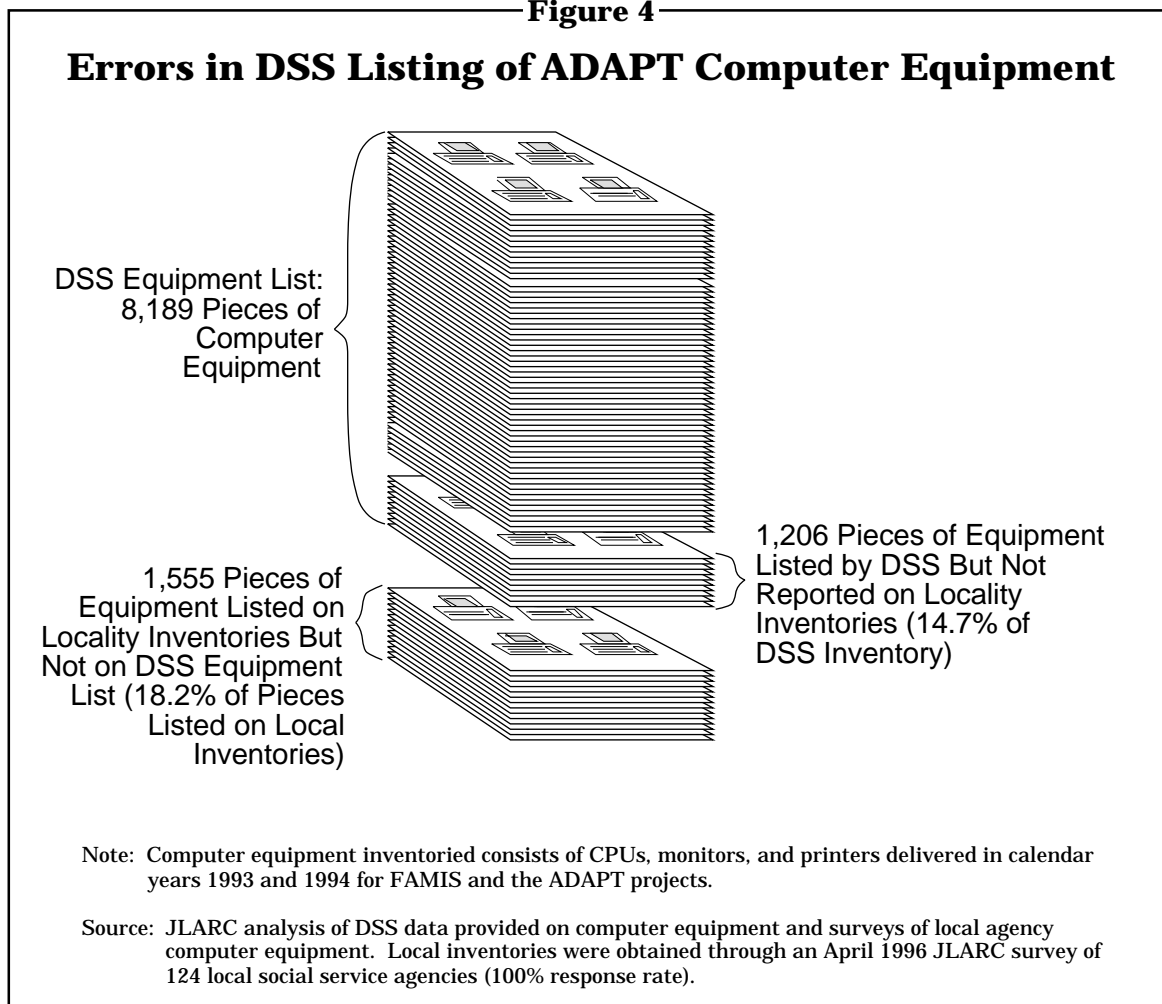


Table 2

Estimated Costs of Improperly Inventoried Computer Equipment for Eligibility Determination

	Funded by ADAPT	Funded by FAMIS	Total Range
Federal	\$238,208 to \$370,816	\$607,989 to \$ 946,450	\$ 846,197 to \$1,317,266
State	\$142,925 to \$222,490	\$ 67,554 to \$ 105,161	\$ 210,479 to \$ 327,651
Local	\$ 95,283 to \$148,326	n/a	\$ 95,283 to \$ 148,326
Total	\$476,416 to \$741,632	\$675,543 to \$1,051,611	\$1,151,959 to \$1,793,243

Source: JLARC staff estimate of the costs of missing or improperly inventoried computer equipment based on a comparison of the DSS equipment lists of FAMIS and ADAPT equipment to the computer equipment inventories provided by the local social service agencies, April 1996.

federal government is not properly accounted for. Eighteen percent was funded by the State and about eight percent was funded by the localities.

ADAPT Training Computers Are Not Accounted For. In addition to local agency hardware, computers were purchased for the five ADAPT training centers. Due to the suspension of the ADAPT project, these centers were never established. However, approximately 105 computers (21 per center) were already paid for and delivered to DSS. There appears to be no record of these computers on the DSS computer inventory.

An August 7, 1995 memo from a DIS staff member to the ADAPT project manager at the time raised concerns about the location of the training computers. The employee wrote:

I have been trying to track down the training room PC's that supposedly have previously been ordered. We are at a stand still . . . [The former DIS procurement manager] can't find the (purchase order) that clarifies:

1. When the full order was placed
2. What the purchase order number is
3. How many PC's we actually have
4. Who was responsible for the order

I am very concerned that the PC's have been given to other users and we are quite a few short of what we need.

This memo was written before the ADAPT project was suspended. These computers should have been identified and ready to place in the training centers. Instead, it appears that DSS mishandled the tracking as well as the documentation of the purchase. The location of this equipment is still unclear, and it is unknown how the

equipment is being used. The value of the training center equipment is estimated to be between \$195,000 to \$304,000, and if missing, brings the total estimated cost of missing or inaccurately inventoried equipment to between \$1.3 and \$2.1 million.

Computers Purchased for Eligibility Workers Are Possibly Being Used for Other Purposes. Another concern regarding the hardware involves whether it was distributed for the purpose for which it was procured, namely to aid eligibility workers in the eligibility determination process. According to a February 1994 letter DSS sent to all of the localities, “all ADAPT and FAMIS computers must be allocated to eligibility staff because of the federal funds used to finance their purchase. Any remaining computers may be used for staff supporting eligibility workers such as aides and clerks.” In addition, the local social service agency ADAPT “wizards” (ADAPT computer specialists) were allowed to have a computer.

However, it appears that several of the ADAPT computers are being used for purposes other than eligibility determination. For example, according to DSS staff, some of the training center computers are being stored at the central DSS office and are being deployed when any division in the central agency needs a replacement computer. It appears inappropriate for the agency to be using this hardware for non-eligibility purposes. These computers were meant for eligibility workers, yet it is quite possible that employees in non-eligibility sections of DSS are using the equipment. To date, DSS has not received approval from the federal government to use the computers in this manner.

The highly inaccurate record of ADAPT and FAMIS equipment raises questions regarding whether DIS has fully addressed weaknesses related to procurement and accountability within the division. The majority of this inaccurately inventoried equipment was financed by federal and State dollars. Further, some of this federal funding was received from enhanced federal funding participation. DSS cannot ensure that some of this equipment is not lost, stolen, or being used for other purposes than intended until a complete inventory of all equipment is conducted. This makes it essential that this issue be resolved.

Recommendation (1). The Department of Social Services should locate and reconcile any improperly inventoried equipment purchased for the purpose of supporting eligibility workers. A revised, accurate inventory should be completed and entered on the Commonwealth’s Fixed Asset Accounting and Control System.

Recommendation (2). The Department of Social Services should ensure that equipment purchased for the purpose of supporting eligibility workers through either Application Benefit Delivery Automation Project or Family Assistance Management Information System funds are being used for approved purposes. The Department should recover any equipment not being used for approved purposes and properly redeploy the equipment.

ADAPT Performance Problems Were Not Communicated

During 1994 and 1995, a number of concerns were raised by a DSS consultant about the performance of the ADAPT project. These concerns were communicated to the DSS commissioner and the former Secretary of Health and Human Resources. Yet, the major stakeholders in the project, the three federal government agencies who shared in the cost of the project's development, the General Assembly, the local social service agencies, and the ADAPT project team were not informed about these performance problems. The report was labeled confidential. No copies were released until one year later when the report was used to support the decision which had already been made to suspend the ADAPT project.

The consultant report criticized the selection of the systems architecture, software, project methodology, technical team skills, project management, and lack of adherence to project timelines and deliverables. At the time the report was completed, a new DIS director was hired and the project was reorganized to address some of the criticisms of the consultant's report. Nevertheless, project management problems continued to affect the implementation of ADAPT.

In early 1995, the new DIS director assigned a new project manager and directed the project to proceed with the system's development. The new project manager still did not have adequate authority and responsibility to fully implement the project. Budget and procurement responsibility continued to be controlled from the DIS director's office, although responsibility for procurement was elevated to the Secretary's office for purchases such as training. DSS high-level support was inconsistent because at the same time the project team was told to move forward, resources were pulled off the ADAPT project team. The project did not appear to have a high priority status.

In August 1995, the DIS director completed a memo to the commissioner which assessed the life cycle costs for the ADAPT system. This estimate raised the total life cycle costs to about \$84 million, almost \$30 million more than the original estimate. This information was also provided to the Secretary of Health and Human Services. On the other hand, the project team was directed to continue moving forward to implement the Food Stamp component of the system statewide beginning in November, while the DIS director communicated positive information to the localities about the current status of the system and statewide implementation.

Through November 1995, both the DSS commissioner and the acting chief of staff (the former DIS director) had been supportive of the implementation of the project. In fact, the former DSS commissioner participated in a kick-off party for the statewide implementation of the Food Stamp component of ADAPT during November 1995. Further, the acting chief of staff continued to tell the ADAPT project manager that the project was proceeding as planned. Consequently, suspension of the project was unexpected by the localities and the General Assembly. This surprise on the part of project stakeholders is illustrated by the ADAPT project team's memo to the current DSS commissioner responding to the number of reports on ADAPT.

The ADAPT Project Team was shocked to learn via the media, in mid-January, 1996, that the Department of Social Service' management considered the ADAPT system to be "broken". Prior to [the current DSS commissioner] appearance on Richmond's [local television station broadcast], this opinion had never been revealed to the project team. A briefing by Acting Division Director of Information Systems [name deleted], in early January, had indicated the project was temporarily suspended due to budget problems. No mention was made of any perceived system faults or failings. [Memo to the DSS commissioner from the ADAPT project team, March 26, 1996]

Yet, during this time period (calendar year 1995), DSS incurred approximately \$6.7 million in ADAPT-related expenses, nearly one-third of the project's \$20.2 million in expenditures to date.

CONCLUSION

The ADAPT project is a large and complex systems development project which was an important initiative for the State. It represented a significant effort to be responsive to the needs of local social service agencies which were committed to making the application process more efficient and effective for their clients. However, DSS underestimated the resources needed to implement a project of this size and complexity. In addition, successful project implementation was impeded by leadership and project management difficulties that occurred during its development. Nevertheless, the department has successfully completed significant portions of the ADAPT project, which a limited number of localities are able to use.

Concerns were raised about the project's original design and its ability to meet its stated objectives by a DSS consultant in late 1994. These concerns were communicated to the Secretary of Health and Human Resources, the DSS commissioner, two DIS directors, and the DSS internal auditor. These concerns were perceived as grave enough to provide the basis for the DIS director's August 1995 memo and additional analysis of project life cycle costs. This, in turn, was one of the primary factors considered by the Secretary of Health and Resources to direct the DSS commissioner to suspend the project. Yet, the Secretary of Health and Human Resources and the DSS commissioner neglected to provide timely information on the status of the project to the General Assembly, local governments, and federal agencies.

The next chapter provides more information about the current status of the ADAPT project and the impact of the project's suspension on local social service agencies. The chapter also explores technical concerns on which criticisms of the system have been based, and their applicability to the current system.

III. Current Status of the ADAPT Project

Development and further implementation of ADAPT is currently on hold pending the results of a DSS-commissioned management and systems engineering review of the project. Given the information available at the time, the Secretary and the DSS commissioner wanted to hold further project development pending an evaluation of the system. However, DSS did not build the necessary support for the suspension by involving local agencies in the decision process. Thus, to those not involved in the decision, the suspension appeared to be a sudden, unexplained shift in direction for a long-standing project.

The decision to suspend the ADAPT project appears to have been made with insufficient consideration of the serious ramifications this would have for the Commonwealth, and without adequate foresight and planning. Consequently, the decision to suspend the ADAPT project has negatively affected the State and local agency partnerships created through the ADAPT project. The decision may also have jeopardized:

- federal financial participation in the funding provided to date on the ADAPT project and any future funding for re-engineering proposals for ADAPT,
- local agency efforts to improve application processing times for the Food Stamp program and to process benefits more accurately,
- General Assembly support for future agency automation projects, and
- public confidence in the agency's ability to deliver cost effective information technology solutions.

In addition, the decision to suspend the project came almost one full year after DSS had received critical information about the implementation of ADAPT from its own consultant. In the meantime, the project team continued to move forward to implement the Food Stamp component of the ADAPT system, and DSS incurred about \$6.7 million in ADAPT-related expenses. Other stakeholders, including the General Assembly and the local social service agencies, were not made aware of the significant concerns about the viability of the system. Consequently, in light of the substantial expenditures during calendar year 1995, the decision to suspend the project was unexpected and surprising to most of those involved in the system's development.

To date, DSS has expended about \$20.2 million on ADAPT. Of this amount, about \$18.3 million has been spent on the development and implementation of the rules-based system. DSS originally budgeted almost \$18.6 million for this effort with funding from three federal agencies, the State, and local governments. Currently, it appears that DSS may have very little money available to complete the development of the system, without additional appropriations and federal government approval.

Completion of ADAPT will require a substantial additional commitment of funds, estimated to be between \$3.5 million and \$16.5 million. The additional funding needed to complete ADAPT's development is problematic, however. The 1996-1998 biennial budget does not contain funding for DSS to support the future development and implementation of ADAPT. Therefore, it is unclear how the current re-engineering efforts conducted by DSS for ADAPT will be funded in the short term. Assuming that ADAPT funding will be revisited during the 1997 General Assembly Session, it is unlikely that additional funds will be available for project completion until at least July 1, 1997. By that time, the cost to complete the project will have increased and its potential benefits will have declined substantially.

SUSPENSION OF ADAPT HAS NEGATIVE CONSEQUENCES

Suspension of ADAPT's development has had a number of negative consequences which could have been minimized, had it been thoughtfully planned and implemented. The decision to suspend the project has left the local social service agencies without automated support for their re-engineered eligibility processes. Except for the four pilot and six phase one localities, the local agencies are unable to take advantage of the current system's functionality for the Food Stamp program. Consequently, they are not receiving automated support to: (1) aid in meeting federal standards for timely and accurate processing of Food Stamp applications, and (2) assist in increasing the accuracy of benefit payments for the Food Stamp program.

Even more significant, the suspension of the project has jeopardized State and local relationships which had been fostered throughout the development and implementation of the ADAPT project. Communication about the suspension and the current status of the ADAPT project has been, and continues to be, generally poor. While the DSS commissioner believes he has adequately informed localities on the status of ADAPT, the localities have found such communication inadequate. In addition, functional and technical staff morale appears low, and trust in agency management is almost non-existent. These factors will continue to hamper the project in the future, regardless of the alternative chosen for ADAPT's re-engineering effort.

The Efficient Implementation of Local Agency Business Processes Has Been Compromised

Local agencies have spent the last four years re-engineering their business processes to prepare for automation. This has entailed extensive changes to how agency clients are handled and their applications for benefit programs are processed. As a result, most local social service agencies have adopted processes requiring eligibility workers to be familiar with all benefit programs. Additionally, they have implemented a single application for clients to use for all benefit programs, and the applicants deal with a single eligibility worker. However, the success of these efforts are largely dependent on the

implementation of an automated eligibility determination system. The use of automation was also to be the solution to increasing caseloads. Suspension of the project has now compromised the projected efficiencies to be realized through the implementation of these new business processes.

Locality Changes from Program Specialization to a Single Point of Client Contact Are Highly Dependent on Automation. Initial plans for the ADAPT system recognized the need for local social services agencies to streamline client intake, eligibility determination, and enrollment for the AFDC, Food Stamp, and Medicaid programs. At that time, a variety of intake systems existed in the 124 local agencies. While this variety addressed differences in local conditions, it was recognized that in order to realize efficiencies from automation, some uniform eligibility processes would need to be used by local agencies. As part of the ADAPT enhanced application process, local agencies and DSS staff worked together to model the intake process and use it as a guide for local agency business process changes.

One of the most significant changes which has resulted from the development of a model intake process has been the shift from specialized eligibility workers to generic eligibility workers. This means that eligibility workers must now be knowledgeable about eligibility policy for most benefit programs, particularly AFDC, Food Stamp, and Medicaid. This was implemented in order to facilitate the single point of contact approach to dealing with customers.

Automation was particularly important for the shift to generic eligibility workers because eligibility policy for all three programs is complex and often times inconsistent between programs. In the past, specialization was one method used to ensure that the eligibility worker had in-depth knowledge about one particular program and that eligibility determinations and benefit calculations for each program were accurate. With the shift to more generic eligibility workers, automation was to aid the workers in collecting needed data during interactive interviews and for the automated system to make the eligibility determination using computerized rule sets. Due to the complexities of the three programs, automated support is key to effectively implementing a one-worker one-client approach. The ADAPT project team built detailed help screens to aid the worker with particular program policy questions as the interactive interview progressed. To date, about 81 percent of the 124 local agencies have implemented a generic approach to the eligibility determination process. However, only 10 of those agencies can use the Food Stamp component of ADAPT to determine eligibility, and none of the agencies can use the AFDC or Medicaid components.

The ADAPT Project Prompted the Development of the Combined Application Form. As part of the ADAPT project, DSS staff worked closely with local social service agency staff to develop and implement a combined application form for customers. This action was seen as a necessary first step to successful automation of the application process for eligibility determination. Prior to the development of a uniform combined application, clients had to fill out multiple forms for each program for which they were applying. According to a 1993 report by the Joint Subcommittee Studying the Need for

Restructuring the Commonwealth's Local Social Service Delivery System, the eligibility worker and client completed 22 forms for the AFDC program and 19 forms for the Food Stamp program prior to the development of the combined uniform application.

The ADAPT project provided the necessary motivation to DSS and local social service agency staff to streamline this application process. Seventeen local social service agency staff and four DSS staff were involved in developing the application for ADAPT. Once this step was complete, DSS staff used the combined application to design the application screens to facilitate interactive interviewing for eligibility determinations. Currently, about 56 percent of the local social services agencies have incorporated use of the combined application form into their eligibility process. While it is a vast improvement over the many forms previously required, not all local agencies have fully incorporated the combined application into their eligibility process. Approximately 27 percent of the local agencies have taken some steps to begin using the form, while about 17 percent of the agencies have not yet implemented the application form. Many of these agencies may be waiting to incorporate this form once the future of the ADAPT system is clarified. Consequently, the efforts to streamline the application process may have been compromised.

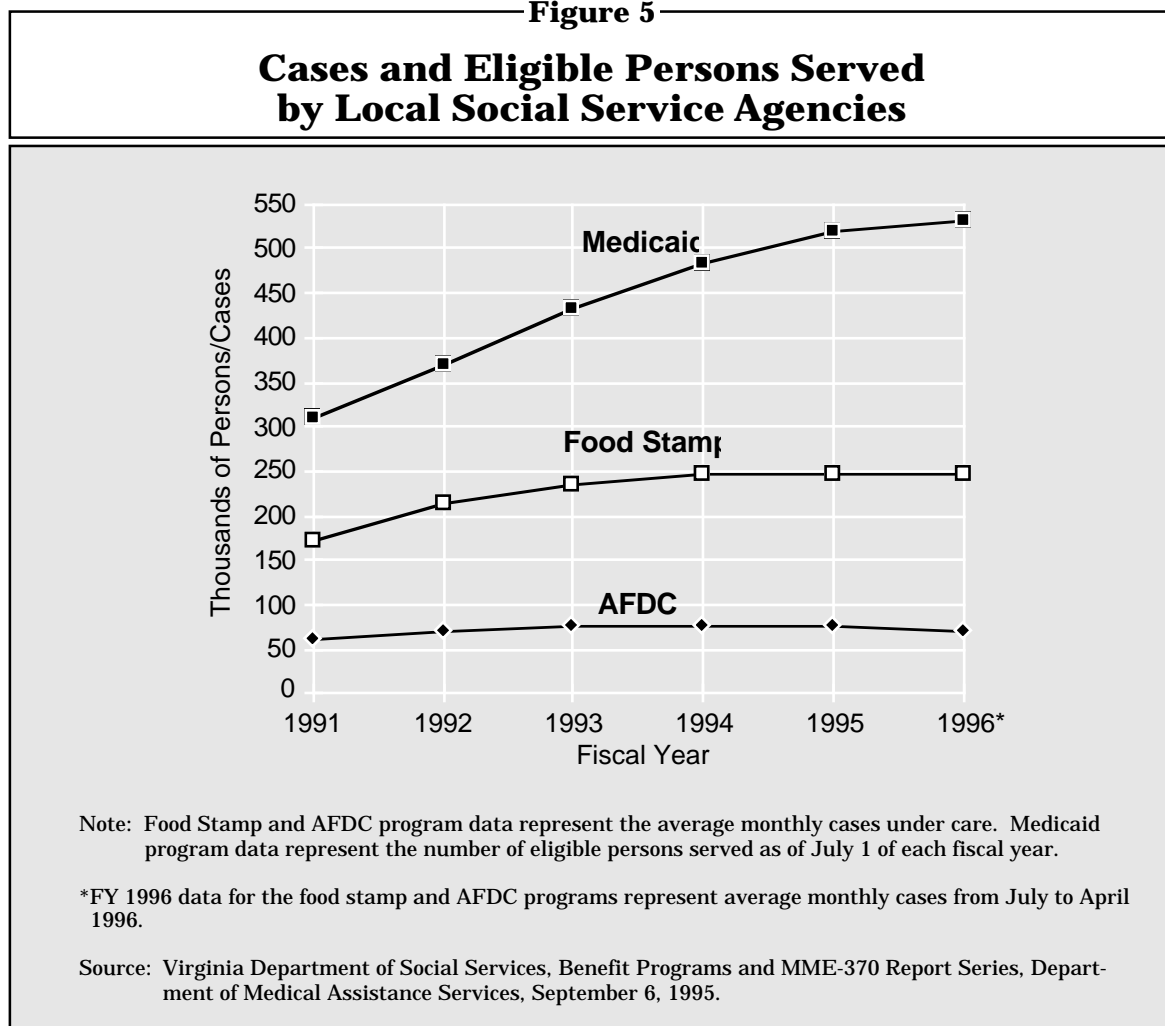
Local Agencies Continue to Face Rising Caseloads. The ADAPT project was to be an automated solution to assist local social service eligibility staff in handling projected increases in caseload without commensurate increases in staff. At the time ADAPT was introduced, DSS projected a need for 700 additional workers through the year 2000.

Since the project was first proposed, local social services agencies have experienced rising caseloads (Figure 5). During this period, staffing levels have increased slightly, but not commensurately with caseload. While some stabilizing of growth appears to be occurring for the AFDC and Food Stamp caseloads, the number of persons eligible for Medicaid still appears to be growing. This growth impacts eligibility workers who may now have less specialized knowledge of the Medicaid program. Yet, Medicaid is the most complicated program in terms of eligibility rules.

Suspension May Negatively Impact Eligibility Determination for the Food Stamp Program

The ADAPT system was considered an essential tool to help the department and local agencies address problems with the eligibility determination and benefit calculation for its benefit programs. Since the early 1990s, Virginia has experienced significant problems with the timely processing of Food Stamp applications and high error rates related to the issuance of benefits to persons who are no longer eligible to receive them. Suspension of the ADAPT project may negatively impact the State's ability to improve these outcomes. This is particularly troubling because:

- DSS is still subject to a U.S. District Court order to process Food Stamp applications within federally mandated time periods, and



- the Commonwealth is currently facing federal sanctions of potentially \$9.73 million for Food Stamp errors made during federal fiscal years 1994, 1995, and 1996.

Food Stamp Application Processing Must Meet Federal Requirements for Timely Processing. In 1991, the Virginia Department of Social Services was sued by an applicant for the Food Stamp program for failure to process a Food Stamp application within federally mandated time limits. The U.S. District Court found that DSS, as the agency responsible for the overall administration of the program, was in violation of federal law in the timely processing of regular and expedited Food Stamp applications. The Court determined that “these deadlines and guidelines have been regularly missed and grossly ignored in Virginia” (*Robertson v. Jackson*). DSS was ordered to begin processing Food Stamp applications in “full compliance with federal law” and continues to be subject to Court scrutiny.

The local agencies which have been able to use the Food Stamp component of the ADAPT system (the four pilots and six localities in phase one of the implementation schedule) have indicated that the system has much potential in terms of reducing local error rates and facilitating the timely determination of program eligibility. In fact, several of the 10 localities using ADAPT have stated that in converting cases to the system, they have identified cases in which the manual eligibility determination or the benefit calculation needed to be corrected. In some cases, the ADAPT system found the manual benefit calculation to be too high. Further, once the case has been entered in the system, alert notices are triggered for the worker to conduct redeterminations of eligibility as required by the program. These redeterminations are handled much more expeditiously since the original information has been automated and the worker need only update any information changes and run the eligibility redetermination electronically.

The suspension of the ADAPT project has meant that the working components of the system are currently not available to localities beyond the original 10 localities selected for pilot and phase one implementation. Nevertheless, the ADAPT system appears to have the potential to positively impact the timely processing of applications. Without close and constant monitoring by local supervisory staff and central DSS staff, delays in its implementation have the potential to negatively impact timely processing.

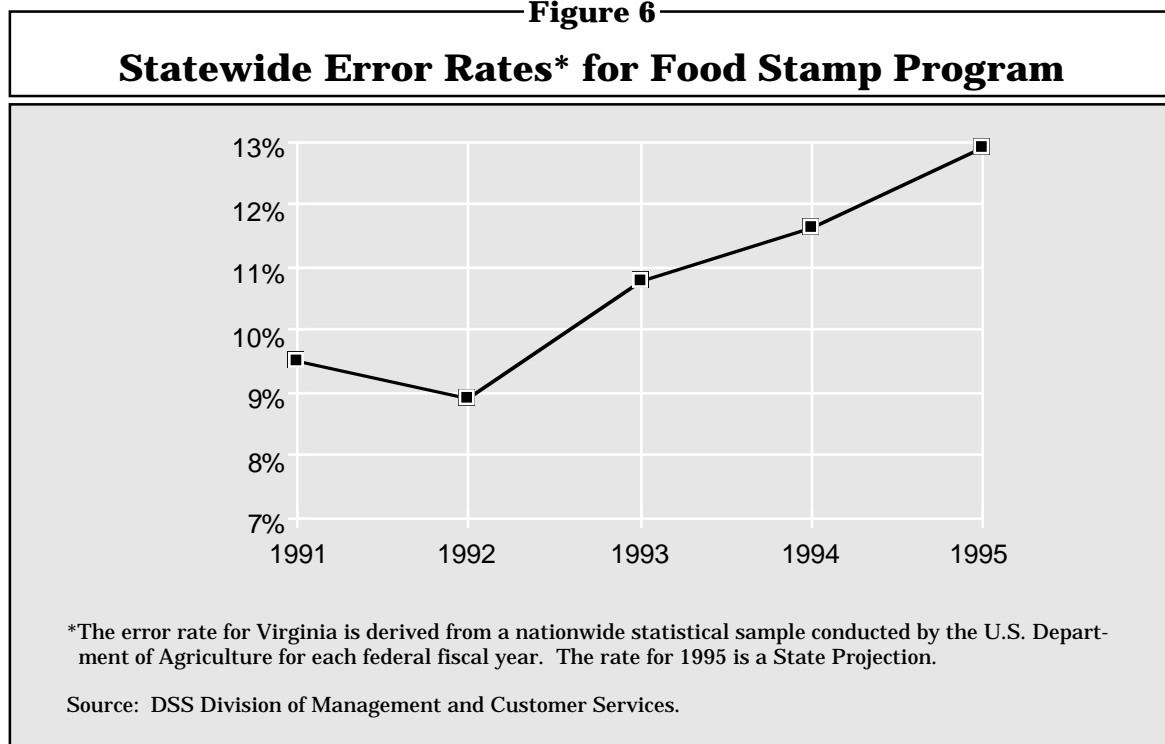
Payment Accuracy Continues to Be Problematic and Costly for Virginia.

States participating in federal benefit programs are required to reimburse the federal government for errors made in calculating program benefits. Error rates are detected through a quality control monitoring process. The department has experienced increases in Food Stamp error rates since 1992. Figure 6 illustrates DSS error rates for the Food Stamp program from 1991 through 1996. This growth has recently had negative consequences for Virginia due to federal penalties for exceeding the national average error rate during federal fiscal years 1994 and 1995. Further, DSS has been notified that preliminary quality control samples for federal fiscal year 1996 may also be high.

The U.S. Department of Agriculture (USDA) has notified DSS that it is facing a penalty of about \$4.73 million for Food Stamp error rates incurred during federal fiscal years 1994 and 1995. Further, DSS potentially faces a penalty of about \$5 million in federal fiscal year 1996 based on preliminary quality control figures. However, DSS is currently negotiating these penalties with the USDA. Preliminary negotiations suggest that Virginia may need to invest about \$750,000 in general funds over the 1996-1998 biennium to reduce its error rates and up to an additional \$875,000 through fiscal year 2000 if error rates for 1997 are not improved.

State and Local Partnership Has Been Jeopardized

Since its inception, ADAPT had been touted by DSS as a partnership with the local social service agencies to design and implement an automated system which would aid eligibility workers in managing their caseloads. During most of the project's planning and implementation stages, DSS and the local agencies maintained an open and



interactive relationship which allowed for local input in project decisions. The current Commissioner of DSS stated that since the ADAPT project was suspended, he has attempted to communicate fully with the local agencies about the status of the project through a teleconference, letters, and regional site visits. Yet, this communication does not appear to have alleviated local concern about the State's commitment to the system, its involvement of the local agencies in the decisionmaking process, and the need for more definitive information on how to proceed given the project's uncertain future. This has placed local social service directors in the position of having to make decisions without full information about ADAPT.

In order to prepare for ADAPT, local agencies followed DSS time frames, training schedules, and task lists. This involved a complete re-engineering of their agencies' business practices, retraining their eligibility staff in generic processes, dedicating local funds for the project, and becoming familiar with new computer systems. Local agencies spent between two and four years preparing their offices for ADAPT. Despite these efforts, the agencies have not been involved in decisions related to the ADAPT suspension. Moreover, local input has not been sought by DSS or its consultants in evaluating the future of ADAPT. For example, two of the three deliverables from the preliminary reengineering analysis are complete, yet input has not been solicited from localities. This has caused confusion in the agencies and has negatively affected employee morale, turnover rates, and trust in the Department of Social Services. Currently, local directors are faced with a difficult decision on whether to revert to old procedures or to continue to operate in a generic system which, without automation, is complicated, time-consuming, and potentially prone to errors.

Effective Communication Between DSS and Local Agencies Has Varied During the Implementation of the ADAPT Project. The main goal of the ADAPT project was to bring relief to the overwhelming workload of the eligibility workers in the local social service agencies. Early in the project, DSS realized that this venture needed to be made jointly by the State and the localities. Therefore, throughout the planning aspects of the project, local agencies provided substantial input in joint committees with central DSS staff. One local representative of this local interface group described DSS' early efforts with the ADAPT project as the "first opening of any State agency to work with local governments on systems issues."

Local agencies were given the opportunity to have representatives attend meetings in Richmond to discuss how ADAPT would be implemented and the types of features they most wanted in the automated system. Local agencies also had to provide implementation plans to DSS on how their agencies would prepare for the ADAPT system. A large number of memos and electronic mail broadcasts were sent by DSS to update the localities on new time frames and training issues. However, this type of communication ceased when DSS suspended the ADAPT project.

On December 28, 1995, the localities received a letter from the DSS commissioner announcing the suspension of ADAPT. Local agency officials interviewed by JLARC staff reported that they were surprised and disappointed because there had been no warning from the State that this might occur. In fact, several of them were scheduled for in-depth training on the ADAPT system the following month. Since the suspension, the current DSS commissioner believes that he has communicated his commitment to providing agencies with automated support and has attempted to provide the localities with full information on the status of the project. Yet, some of the localities perceive that this communication has not provided them with sufficient information on the future of the ADAPT system. For example, a May 7, 1996 letter to the current DSS commissioner on behalf of the ten localities using the ADAPT system indicated that:

the local agencies participating in the ADAPT project are receiving little support and are convinced now, more than ever, that this administration wants only to abandon this entire effort.

This perception on the part of these localities indicates that there has been some breakdown in communication between DSS and the localities regarding the ADAPT system.

Since 1994, DSS has hired a series of consultants to assess the ADAPT project. The most recent consulting contract request was submitted in April 1996. The RFP for the latest reengineering study provides for local input, yet it has not been sought to date. None of these consultants contacted the local agencies for input about the project. Since the local agencies are the intended end users of the system and have provided funding and staff to the project, their exclusion from the project's evaluations and re-engineering process appears to be a significant oversight on the part of DSS and its consultants.

Local Agencies Started Preparing Extensively for ADAPT in 1992.

JLARC staff interviews with 24 local agencies revealed that in order to be able to implement ADAPT in their offices, the agencies had to overhaul their entire operating practices. According to June 22, 1993, correspondence from DSS to the local offices, agencies could not send their workers for training on the ADAPT system unless they were generic:

ADAPT will require that the person conducting the interview of the customer have a working knowledge of the three major programs [Food Stamps, AFDC, and Medicaid] After receiving the cross-program training, by whatever option, the agency must involve their staff in that program so that the worker does not forget what has been learned.

Since the large majority of agencies did not have a generic system, the transition from specialized to generic workers took a substantial amount of time and effort. Most of the localities surveyed said they started preparing for ADAPT in their offices in early 1992. This preparation involved in-depth and difficult changes to their operating policies and procedures which amounted to almost a total re-engineering of their business practices. Three of the main revisions implemented were:

- *Training the eligibility staff for generic operations (one worker/one client).* This involved training staff who specialized in only one program (AFDC, Food Stamp, or Medicaid) in the policies and procedures of the other two programs.
- *Merging the three programs' files in an intelligible manner.* The directors also said that because of the generic system, all of the files from the AFDC, Food Stamp, and Medicaid programs had to be rearranged and put into new file folders.
- *Obtaining personal computer training.* Most of the local agencies interviewed indicated that their eligibility workers were not familiar with personal computers and had to receive training. In some cases, the agencies were able to attend the State training on personal computers. However, due to distance or time factors, many of the offices conducted in-house training or attended classes at nearby community colleges.

Other changes which the directors mentioned were adjusting to less space because of the new FAMIS and ADAPT computers, rearranging furniture, and reorganizing staff configurations. The directors emphasized that the transition to a generic system was a monumental and stressful task and changed the whole makeup of their agencies.

Non-Automated Generic Business Processes Have Created Problems with Worker Accuracy and Workloads. Although the transition from specialized to generic workers was difficult, the local agencies felt that it would be worth the effort when ADAPT arrived. An automated system was looked upon by many agencies as the solution to increasing workload. Consequently, local agencies proceeded with the conversion of

their workers in anticipation of the new system. This did not occur without a cost. Agency error rates and workloads rose as conversion to generic systems continued. However, this impact was viewed as temporary because ADAPT would serve to streamline workload and increase accuracy.

The suspension of ADAPT put the agencies in the position to either continue with the generic process so that when ADAPT was re-initiated they would be ready, or revert to their former structure in which workers specialized in one program. To do the latter would mean the worker's conversion training would be wasted. Because the generic system was better for the clients, the majority of the localities surveyed decided to retain the generic process.

Although most directors interviewed by JLARC said the generic system is better for clients, who only have to deal with one worker rather than three under a specialized system, they also emphasized that the eligibility workers, without an automated system, are worse off than before. The ten ADAPT pilot/conversion agencies wrote to the DSS commissioner that:

All of the caseload pressures and demands for services that made ADAPT necessary still exist. Eligibility workers are still facing the highest caseloads in history. Local departments are still under a federal court order to process food stamp applications within strict time limits. Yet, by suspending ADAPT, local workers in the pilot agencies have not only not received any productivity gain, they are now actually in a worse position than before the project started. [May 7, 1996]

Because the system is not complete, workers in most localities have little automation to help process a case. For the 10 pilot agencies using ADAPT, information must still be entered into VACIS for processing AFDC and Medicaid applications, and into the ADAPT system for Food Stamp applications.

Some local agencies have reported that workload levels have been so high, they have experienced high turnover rates among eligibility positions. This means that the agency must train new workers in complex eligibility rules and hope that the increased workload does not increase employee turnover. Without an automated system, local agencies contend that they will need additional staff in their already understaffed offices in order to handle the growing caseloads. ADAPT was supposed to enable the local agencies to function with their existing eligibility staff on a generic basis. Without ADAPT, local agencies contend their staffing needs will likely continue to grow.

Perceived Lack of Communication Has Caused Local Distrust of DSS. The combination of a perceived lack of communication from DSS and the perception that local agencies have had to make important decisions without full information has fostered a local feeling of distrust and cynicism toward DSS. Several directors said they doubt they will trust the department in any future projects. These local agencies told

JLARC staff that although they had invested a substantial amount of time, effort, and money for the ADAPT project, local agencies feel shut out of the decisionmaking process for ADAPT.

Many of the local agency directors have had to explain to their boards of supervisors the situation with ADAPT and try to assure them that the local money invested in the project has not been wasted. Due to the lack of direction from the State, one local director said she had to admit to her board that she did not know what was going on and that no one in the central office would give her an answer.

Local Input Is Needed to Decide ADAPT's Future. Throughout the ADAPT project, one goal was reiterated consistently: to make eligibility determination and processing easier, more efficient, and less time-consuming for the local social service agencies. This goal has not been met. Local agencies have been left with limited choices and no direction from the State on how to manage the eligibility process now that ADAPT has been suspended. During interviews with JLARC staff, local agencies repeatedly expressed a combination of frustration with the current situation, and hope that ADAPT, or a similar automated system will be resumed so that the effort expended to prepare for the system will not be wasted. One local social services director said it is as if the localities have been “led into the desert and then somebody shot the camel.”

Because the localities dedicated a large amount of time and effort to prepare for this project, their input would be valuable in any decisions made about the future of the ADAPT system. The fact that the localities also provided funding for this project and are accountable to their local governing bodies necessitates their inclusion in the decisionmaking process. Including local agencies in only some stages of the project but excluding them from any subsequent decisions is not a prudent way to conduct a project which was supposed to be a State-local partnership. In order for decisions to consider both State and local concerns, DSS and the local agencies should work jointly in planning the future of ADAPT.

Recommendation (3). The Department of Social Services should provide a knowledgeable contact person whom the local social service agencies can call for up-to-date information on the ADAPT project.

Recommendation (4). Representatives from local social service agencies should be included in the decisionmaking process for ADAPT or any replacement eligibility system.

Recommendation (5). The Department of Social Services should provide the local social service agencies with a specific plan of action for completion of the ADAPT project so that local agencies can properly plan for eligibility workload and staffing.

Suspension of ADAPT Has Resulted in Increased Costs to the Commonwealth

Suspension of ADAPT has already resulted in some increased costs to the Commonwealth and localities. The State has already absorbed costs associated with ADAPT training, case conversion, and systems development. In addition, the State will have to pay for two studies on ADAPT associated with the project's suspension: (1) a management and re-engineering study of the system, and (2) a fraud and transaction analysis of the project. Further, any decision to proceed with the ADAPT project will require the commitment of substantial additional resources to complete the coding and possibly re-design the system for a different computing environment. Additional funding will also be necessary to re-train localities on the ADAPT system, particularly those who have not even been able to implement the Food Stamp component.

The management and re-engineering study commissioned by DSS for the ADAPT project will cost about \$123,000 to complete. Had the project not been suspended, this additional cost would not have been incurred. If, as a result of this study, DSS decides to redesign the ADAPT system for a different computing environment, additional costs are projected to be between \$4.3 million to about \$16.5 million. This assumes DSS will be able to gain federal government approval to migrate the system. However, since the Food Stamp program component of the system is operational, it is not clear whether the USDA would be willing to invest additional funds to migrate ADAPT to another computing environment. The USDA's share of the funding for the development of the ADAPT system is about 24 percent. Loss of this share of the federal funding to migrate the system would mean that the suspension of the project will have cost the State an additional amount, between \$1 million and \$4 million, in systems development costs.

In addition to the expenditures for the systems re-engineering study, DSS will most likely incur significant costs for another contractual review of ADAPT. DSS is currently negotiating a contract to conduct a fraud and transaction analysis of all expenditures made on the project to date. It is not clear how much in additional costs this will be for the Commonwealth, but preliminary estimates indicate it could be as much as \$200,000 to \$300,000. Financial audits conducted by the Auditor of Public Accounts have not revealed any evidence of fraud regarding specific agency financial transactions during the period of the ADAPT project's development and implementation. Further, an investigation by the Virginia State Police this spring has not indicated any evidence of criminal activity regarding the project to-date.

Finally, suspension of the project may cost the State additional funds which have already been paid to 10 localities for: (1) training on the ADAPT system, and (2) to aid in converting Food Stamp cases to the current system. Training activities account for more than \$856,000. The cost for conversion activities is less clear, because DSS does not track this as a separate item.

Suspension of ADAPT Has Hampered Full Utilization of the Food Stamp Component

Currently, the Food Stamp component of the ADAPT system is being used in 10 local social services agencies, in varying degrees. Suspension of the project has hampered full utilization of the one component of the system which is currently operational. As a result, some of the pilot and first phase conversion localities which are able to use the system are hesitant to take advantage of its capabilities for fear that their efforts will be negated by future decisions regarding the direction of ADAPT. However, it appears that those localities that are actively converting a large number of cases are discovering that the system has a number of important benefits.

Local agencies that are actively using the system are finding that errors in determining eligibility for some Food Stamp cases are being detected. In some instances, local social service agencies are finding that the manual benefit calculations were incorrect. Further, redeterminations of eligibility can be processed very quickly on the ADAPT system. In addition, local eligibility workers can see exactly how complicated policy issues are resolved through the use of system prompts and help screens. One local agency has begun to conduct interactive interviews with clients and is using the reception log to track incoming customers. This agency believes these aspects of the system are of great benefit to the local eligibility workers and will aid them in reducing their Food Stamp error rates.

SYSTEM IMPROVEMENTS HAVE ADDRESSED SOME TECHNICAL CONCERNS GUIDING SYSTEM SUSPENSION

It appears that the December 1995 decision to suspend the ADAPT project stemmed from a January 1995 management audit and systems engineering study of the project by a DSS consultant as well as questions about future costs of the system. Given the information available at the time, it is understandable that the DSS commissioner and the secretary would want to pause the implementation and address these concerns. Now, however, some of the concerns driving the decision to remove project funding and suspend the project appear to have been partly addressed by several system improvements. Nevertheless, further analysis will be needed to assess the viability of the current system.

ADAPT's Capacity and System Performance Have Been Improved

Capacity issues related to both software and hardware have arisen throughout ADAPT's implementation. Concerns about the Unisys software's (MAPPER) ability to handle a database of ADAPT's magnitude were raised early in the project by DSS staff. In addition, the hardware capacity needed to fully implement ADAPT statewide is currently a concern. In January of 1993, DSS staff estimated that MAPPER "thresholds" would be exceeded based on current caseloads at that time. A new release of MAPPER

(level 38) has increased these thresholds and has allowed the software limitation with which the team was originally faced to be overcome. Where the hardware capacity issues stand is less clear. MAPPER level 38 enabled DSS programmers to redesign certain aspects of ADAPT to reduce processing requirements and the disk space needed. However, at this time, further capacity testing is needed to determine if more hardware upgrades would be necessary for statewide implementation of ADAPT.

Software Updates Have Reduced CPU Consumption and File Backup and Recovery Times. When the NAPAS system was transferred to Virginia for examination, the most current release of Unisys software (MAPPER level 36) was available through the Department of Information Technology (DIT) data center. Level 36 supported up to five million data tables (referred to as reports in MAPPER) and 4,000 concurrent users. However, DSS staff estimated that when fully implemented ADAPT would require eight to nine million data tables. Additionally, staff determined there could potentially be 5,000 concurrent users. Thus, initially there was a need to go to a multiple MAPPER system.

In a multiple MAPPER system, duplicate copies of the MAPPER software are used. Each instance of the software is referred to as a MAPPER. Initially for ADAPT, six Mappers were used. Five of these MAPPERS coincided with different regions in the State. A sixth umbrella MAPPER tied together the five regional MAPPERS. Code modules, called data transfer modules (DTM), allowed data to be passed back and forth between the regions. However, there were inherent problems with this implementation. Multiple MAPPERS added overhead to processing requirements and duplicate data had to be maintained.

In fall of 1995, level 38 of MAPPER (Turbo MAPPER) became available. Turbo MAPPER supports up to 10 million data tables and 8,000 concurrent users. Level 38 allowed ADAPT to be condensed into a single MAPPER, reducing the processing overhead associated with multiple MAPPERS and data storage requirements. MAPPER level 38 led to other efficiencies as well. Prior to the availability of level 38, the entire ADAPT database had to be backed up. The time needed to backup files and run a recovery in the event of disaster was a concern both from a cost and feasibility standpoint. However, with level 38, only those data tables which are new or have been changed need to be backed up. This feature has significantly reduced the file backup/recovery time and has reduced CPU consumption.

System Improvements Have Reduced Hardware Capacity Required. Throughout the project, DIT and DSS staff have worked together to determine the hardware capacity that will be required as ADAPT is implemented. Hardware upgrades have been made to the Unisys mainframe since the ADAPT project began. Some of these upgrades were made specifically for ADAPT; however, others were made to handle the overall volume of business, not just ADAPT processing.

Initially, the file size needed for ADAPT was estimated to be 33 million tracks. Two tape control units and 10 extra tape drives were added in 1994 to facilitate backup

and recovery of the ADAPT database. Additionally in 1994, DIT purchased Unisys DASD units to implement disk mirroring for critical MAPPERS. The drives purchased replaced some of DIT's older drives. After these improvements were made, MAPPER level 38 became available and ADAPT was condensed to one MAPPER, eliminating the need to maintain duplicate data. Additionally, "purge" routines were implemented to eliminate "dead" records which are no longer applicable to a client or case. These enhancements significantly reduced storage requirements. The database size for full implementation of ADAPT (around 450,000 cases) is now estimated to be between 5.5 and 6.6 million tracks instead of the 33 million tracks originally estimated.

Around October 1994, CPU utilization became an issue. Unisys CPU utilization increased significantly during the fall of 1994. A processor upgrade was made in 1995 from a Unisys 2200/9222 to a 2200/9444 mainframe. According to DIT staff, this upgrade was not made specifically to accommodate ADAPT.

In the fall of 1995, CPU utilization increased once again. Rumors began to circulate that ADAPT was using up to 90 percent of DIT's Unisys processing capacity. However, statistics from DIT show that ADAPT usage ranged from 4 to 20 percent of DIT's total Unisys processing capacity.

Confusion about processing capacity may be due, in part, to the fact that there are several ways in which CPU utilization can be monitored. For capacity planning, average hourly usage is monitored. For performance analysis, CPU utilization is monitored over a much shorter time interval, usually seconds. High utilization (90 or even 100 percent) over very short time intervals is not necessarily a concern provided the overall utilization does not exceed a certain level (75 to 80 percent as a rule of thumb). However, for an on-line transaction processing application such as ADAPT, if spikes in CPU usage become too frequent, end users will see increased response times.

In the fall of 1995, users experienced greatly increased response times. In November, DSS was in the process of conducting training classes for ADAPT at the regional sites. Eighty trainees were using the EDBC component for Food Stamp processing at approximately the same time. The EDBC component was taking as long as 15 minutes to execute. In addition, there was a significant amount of case conversion being done by the pilot localities. At the same time, the Multiple Systems Inquiry System and the Terminal Users Menu System were being used heavily statewide. There was also increased CPU activity related to use of the system by the Board of Elections for the fall elections. (The Board of Election's voter registration application also resides on DIT's Unisys mainframe.)

Because of the response times DSS was experiencing, there was significant concern about system capacity, and DIT believed that processor upgrades would be needed. However, further investigation revealed that not all of the response time problems were attributable to processing volume. During the first week of October, DIT discovered that certain software parameters were not optimally configured. Adjustments were made to memory and cache allocations for the production MAPPER.

Telecommunication quirks and severe problems with the data transfer module were also adversely affecting performance around this time. New telecommunications software had just been installed, and there were problems with phone lines. Eventually these problems were resolved. The capacity of the telecommunication lines from DSS to DIT was increased and telecommunications circuitry was "cleaned up." DIT also conducted more performance tuning in November, and the system became more stable. DIT staff no longer observed the CPU usage spikes experienced earlier.

Performance was further improved in the spring of 1996 when level 38 of MAPPER was installed for the production environment. Because of improvements in the amount of memory the MAPPER software can address, more data could be cached to memory, which decreased the amount of I/O activity required by about 70 percent (I/O stands for input/output and refers to reading and writing information to output devices such as disk drives or tape). Reducing I/O activity results in improved response times since, relative to other processes, I/O is slow.

File contentions were another problem affecting performance. The MAPPER software locks an entire data table when updating data in the table. Others cannot access the table until the update is complete and the table is unlocked. Since more than one client's data may be contained within a table, it is possible that one worker will have to wait for access to their case because another worker is currently updating data. To avoid this problem, DSS programming staff developed an algorithm for assigning cases and individuals to data tables, reducing the likelihood that two workers would need to access the same table at the same time. An access conflict is now very unlikely.

Test runs in the spring of 1996 indicated that the new version of MAPPER, the design changes made to ADAPT, and the elimination of telecommunication errors have positively impacted system performance. In the spring of 1996, DSS programming staff ran controlled experiments to determine if DIT's current hardware configuration could support 100 simultaneous users concurrently running EDBC. The system was able to handle the load. Eligibility processing times varied from three to five minutes. DSS staff estimate that the statewide maximum number of eligibility determinations being completed per day will be approximately 10,000, or 30 per minute. This is approximately one-third the magnitude of the runs tested by DSS.

Some Concerns About System Maintainability Have Been Addressed

Concerns have been raised that the ADAPT system as implemented is not maintainable or, at best, would be very costly to maintain. The NAPAS system transferred by DSS to Virginia had a number of limitations which presented potential problems regarding the maintainability of the system. However, the ADAPT project team has made a number of significant changes which have addressed many of these limitations and made the system easier to maintain. A great deal of thought and effort was put into redesigning the NAPAS code to improve its maintainability. Additionally, the project team developed effective tools and procedures for maintaining the eligibility rules.

Ease of Maintenance Is Dependent on a Number of Factors. The ease of maintaining an application such as the ADAPT system is dependent on a number of factors, including: how the code is designed, the quality of the documentation for the application, the type of the programming and database products used, and the quality of the utilities available for modifying and testing code.

With respect to application design, for code to be easily maintained it should be modularized. For instance, instead of having a few large programs each with many lines of code, the application should be broken up into many small programs or modules with fewer lines of code. Typically, each module will perform a single task. Adequate documentation of database fields, program flow, and program code also facilitates application maintenance. The programming language and database product selected determines the ease with which the database structure can be changed and how easily data can be accessed. Finally, the availability of tools such as debuggers and code generators reduce the time needed to modify code.

When the NAPAS system was received from California, the code was not sufficiently modularized, the system was poorly documented, and the NAPAS system did not employ a relational database management system. In addition, the software lacked some useful utilities which would facilitate systems development and maintenance.

Significant Modularity Problems Have Been Addressed by the ADAPT Project Team. The NAPAS system, as it was received, was not effectively modularized. In particular, the EDBC component was aggregated into three large programs which made maintaining the rule base very difficult. The project team recognized that the manner in which EDBC was implemented in NAPAS would impede its maintenance. Therefore, the project team obtained management approval to completely redesign this aspect of the system.

As a result, unlike NAPAS, the EDBC component of ADAPT is completely modularized. Instead of three large programs, there are now 300 subroutines, which average 40 lines of code each. Each subroutine has a one-to-one correspondence with a rule set, such as the decision rule for determining whether a client is a Virginia resident. This makes it easy to locate the code that needs to be modified and to make adjustments. A navigation table determines which subroutines should be run for a particular individual. Not all of the original NAPAS code has been modularized; however, the portions which will most likely need to be updated (the EDBC portion) have been effectively separated into meaningful subroutines.

Limitations Related to Documentation Have Been Partially Addressed. Very little documentation accompanied the NAPAS system when it was received. DSS staff spent several months after the system was transferred determining what the code did and documenting it. Through the use of data dictionaries and embedded comments within the code, the ADAPT programming staff have done an effective job of documenting the database structure and program code. However, with the exception of Warnier/Orr diagrams used to document the rule base, external documentation was less abundant. JLARC staff were able to locate screen flow diagrams and diagrams depicting the general

logic flow of ADAPT's EDBC component. Nevertheless, the overall quality and quantity of process flow charts and database diagrams could be improved.

The Programming Language and Database Product Has Some Limitations. The MAPPER language and native database format used to implement NAPAS, and ultimately ADAPT, have several limitations. Some of these limitations have been addressed through software updates; however, a number of these limitations continue to exist. Most importantly, the native MAPPER database structure is not based on relational model. There is no built-in mechanism for establishing relationships between data elements. For example, in ADAPT there are "one to many relationships." There is typically more than one individual associated with a case. Multiple cases are associated with a caseload unit. ADAPT must account for and keep track of these relationships. MAPPER also does not have a built-in mechanism for creating data indexes. Indexes allow data to be located more efficiently by a particular characteristic such as the last name.

Additionally, older versions of MAPPER required that the physical location of a data element be specified rather than reference a field name. "Hard coding" of columns and row locations makes it difficult to change the underlying database structure, since if the location or size of a data element changes, the program code must also change. Newer versions of MAPPER allow field names to be specified in lieu of the physical locations. While NAPAS code followed the earlier conventions of hard coding row and column numbers, ADAPT, for the most part, does not.

The Project Team Has Incorporated Indexing and Use of Field Names into ADAPT. Indexes have been incorporated into ADAPT to establish the necessary relationships between data elements and allow data records to be located more efficiently. Program code updates these indexes as individuals or cases are added to the system. While this solution still does not provide the flexibility of many relational databases, which can create indexes and associations on an as needed basis, the ADAPT project team has done a good job of anticipating what indexes are likely to be useful and have incorporated these into ADAPT. Hard coding of data locations has been eliminated from any of the original NAPAS code which required modification, including all of the EDBC component. However, the portions of the code that were not modified by the ADAPT project team still contain some row and column references.

The ADAPT Team Developed Effective Utilities for Systems Development and Maintenance of ADAPT. MAPPER provides very limited functionality for debugging program code and has no capabilities for automatic code generation. To compensate for a lack of such features, DSS staff have written several utilities to facilitate system development and maintenance. For instance, the use of comments and field names makes the code easier to maintain. However, doing so makes the code less efficient in term of processing requirements. Instead of reverting back to the use of "hard coding" data locations, DSS programmers developed an utility named SSComp. SSComp allows coding to be done with field names and comments. Then, a "run time" version of the code can be created by replacing field names with data locations and stripping out comments.

A number of other utilities were written specifically for maintenance of the rule base. One utility (EDDOC), translates MAPPER code corresponding to rules into English-like statements. This allows functional staff to validate the rule base. If changes need to be made, they can edit the English form. Technical staff will then know precisely what needs to be changed. The utility, EDCOMMENT, automates documentation of EDBC programs. Another utility, EDSETUP, is essentially a code generator for EDBC subroutines. Additional utilities such as, EDNFTEST, EDRSTEST, and EDINTEST, assist in debugging EDBC subroutines by providing a dump of the values of variables as the rule is executed.

Maintainability of Rule Base. During an ADAPT demonstration, JLARC staff asked that a rule be chosen at random and modified. DSS personnel were able to create a new subroutine, test it, and install it in approximately 15 minutes. The edit being made was minor and more complex edits may take longer. However, the demonstration clearly showed that the EDBC component is easy to maintain, well designed, and flexible.

The design accommodates changes in policy over time particularly well. For instance, an eligibility worker may need to determine benefits for a particular client over a four-month time frame. It is possible that an eligibility policy may change within that time period. Eligibility determination must be based on the rules in effect at the time. Therefore, ADAPT has been designed so that multiple policies can coexist corresponding to the time periods for which those policies are effective. The program automatically selects the correct policy for each individual time period by using a navigation table.

CONCLUSION

While the suspension of the ADAPT project is understandable given the information available at the time, the suspension by DSS has had a significant impact on the administration of social services programs at the local level. The local social services agencies re-engineered their eligibility processes at great cost and effort with the expectation that the State would provide the necessary automated tools to make the process work. Now, without the ADAPT project, the local agencies find themselves with significant workload, and feel that there is little support or guidance from DSS on how to proceed. By suspending the project without first building the necessary support for such a sudden change, DSS has seriously eroded the confidence of the localities. DSS' failure to adequately involve the local agencies in decisions related to the suspension of ADAPT was inconsistent with the working partnership which had been developed over the life of the project.

For more than a year, DSS has considered the advice of consultants who raised serious concerns about the usefulness and cost effectiveness of the system. Yet, the actual viability of the current system has not been fully assessed since changes to the system have been made. Some of the concerns raised by DSS' consultants were, in fact, irrelevant to the project delays and concerns about costs. Other issues, especially those related to hardware capacity and systems design, appear to have been partly addressed. In

deciding to suspend the project, DSS did not consider useful information from the local social service agencies or other State agencies involved in the project. Given the recent changes made to the system, DSS should consider such information in proceeding with reengineering efforts.

As a next step, DSS needs to more fully evaluate the current system. It needs to judge the appropriateness of a systems redesign only after it has carefully evaluated a full range of alternatives using established criteria. The evaluation process should involve all of the agencies — State, local, and federal — that were a part of the initial ADAPT partnership. The next chapter examines these necessary steps in more detail.

IV. Future Implications for the Full Implementation of ADAPT

The Application Benefit Delivery System (ADAPT) as it is implemented is a working system, although the technology deployed has certain limitations. To date, many of these limitations have been overcome. For example, MAPPER's native database format is not based on a relational model. However, the ADAPT project team programmed in features such as keys and indexes so that the database can be implemented in a relational manner. The MAPPER programming environment does not provide extensive utilities for systems development and maintenance, but utilities have been developed by the ADAPT project team to facilitate these tasks. While a commercially available expert system package was not used, the ADAPT system programmers effectively designed the eligibility determination and benefit calculation (EDBC) component so that it is maintainable. Although the current database design cannot easily accommodate *ad hoc* reporting, staff within the Division of Information Systems (DIS) have already demonstrated that they can perform data extracts that localities can query to meet local reporting needs.

While the current implementation of ADAPT may not be the technically ideal solution, it does appear to be a workable solution and should be considered equally with other alternatives. The preliminary re-engineering analysis performed for the Department of Social Services (DSS) is not sufficiently detailed to determine whether it is either technically necessary or cost effective to seek an alternative to the current ADAPT system. In assessing the current implementation against possible alternatives, decisionmakers need to consider the following questions:

- Are end users willing to accept any shortcomings of the current implementation? Are the local social service agencies able to deal with further time delays that would be necessary to implement an alternative technology?
- What is gained by selecting an alternative implementation in terms of service quality? Does the potential improvement in service quality outweigh the implications of delayed implementation of the system?
- What are the total life cycle costs associated with each alternative? If one of the alternatives proposed is more cost effective, does the reduction in costs outweigh the implications of delayed implementation of the system?
- Will DSS limit itself in the future by implementing ADAPT as a MAPPER system? Will another technology also have this limiting effect?

In answering these questions, decisionmakers need to weigh the viability of the current system against proposed alternatives, using a systematic approach involving all the stakeholders. The problems experienced with the ADAPT project are not unusual

ones for large system development projects. However, these problems have illustrated some significant weaknesses that will have to be addressed by DSS in order to successfully implement ADAPT. A high level of commitment from the executive and legislative branches is needed for the eventual successful completion of the project.

RE-ENGINEERING OF ADAPT SHOULD EXAMINE THE FULL RANGE OF ALTERNATIVES

In pursuing the full implementation of ADAPT it is important that decisions be based on an accurate portrayal of the current system and a realistic understanding of the implications of adopting alternative technologies, given DSS' current operating environment. There is insufficient evidence at this time that the current system will not work, or that it will not be cost effective. Despite this, the current implementation of ADAPT does not appear to have been given serious consideration. Instead, it now appears that alternatives are being pursued without critically assessing the impact of adopting other technologies.

Viability and Life Cycle Costs of the Current System Have Not Been Fully Assessed

House Bill 29 directs the department to hire a consultant to evaluate the future viability of the ADAPT system, and/or to recommend other systems that will achieve the General Assembly's goal of having an efficient, effective, automated rule-based system for use by local social service departments. While alternatives to the current system have been given serious consideration by the department, to date, the viability of the ADAPT system as it is currently implemented has not been fully assessed.

At the time of ADAPT's suspension, several questions were raised about the viability of the current system. These questions involved the hardware capacity that would be required for statewide implementation, performance issues related to the response time for executing the EDBC component of the system, and life cycle costs. However, as discussed earlier in this report, the installation of MAPPER level 38 and significant redesign work completed by the ADAPT project team have improved the efficiency of the system. Given these improvements, there is no clear evidence at the present time that the system as it is implemented will not work, or that life cycle costs would exceed those of other alternatives. Additional capacity testing is needed to accurately project hardware requirements, performance, and life cycle costs.

Hardware Capacity Requirements Have Been Reduced. Disk storage, tape storage, and processing requirements for ADAPT have been reduced. Returning to one MAPPER and purging dead records reduced the disk storage requirements for statewide implementation from approximately 33 million tracks to 5.5 million tracks. In addition, central processing unit (CPU) requirements have declined because there is less

processing overhead associated with a one MAPPER system and MAPPER level 38 reduces backup requirements.

System Performance Has Been Improved. Improvements in the amount of memory MAPPER can address has resulted in improved performance for the EDBC component of ADAPT as well as other transactions. During ADAPT demonstrations at the Richmond City Social Services Department and DSS, the EDBC component took about 10 seconds to execute. Under a worst case scenario (100 simultaneous executions) eligibility determination for Food Stamps will take from 3 to 5 minutes. In contrast, in the fall of 1995 when training classes were being conducted, about 80 users were submitting requests for EDBC processing at approximately the same time, and processing was taking as long as 15 minutes. Additionally, file contentions and telecommunications problems, which were adversely affecting performance, have been eliminated.

Life Cycle Costs Based on Past Resource Use Are Not Accurate. Cost estimates based on past resource consumption will be inaccurate for several reasons. First, the system improvements described earlier have resulted in reduced disk and tape storage requirements and reduced CPU consumption. Second, the user activity levels which have occurred so far are not representative of the type or level of activity that will occur once ADAPT is fully implemented. Case conversions and system training which must occur at the onset are not representative of actual activity levels once the system is fully implemented. Because mainframe charges are based on disk storage, tape storage, number of transactions, and CPU seconds, life cycle costs based on past resource consumption are not accurate.

Previous Estimates of Hardware Costs May Be Inaccurate. Previous costs to upgrade the Unisys mainframe processors may be inaccurate or misleading. For example, some earlier reports on ADAPT cited that four processors would be needed at a cost of \$5 million per processor. These estimates appear questionable with regard to both the number of processors and the cost per processor. Further capacity analysis will enable Department of Information Technology (DIT) staff to more accurately determine whether additional upgrades will be needed. If additional upgrades are needed, DIT staff have indicated that a processor can be purchased on the used equipment market at considerably lower costs. The hardware cost for upgrading two processors in January of 1995 was \$3.5 million.

Further, processor upgrades do not benefit just the ADAPT project. DSS would not be directly charged for the upgrades. Upgrade costs incurred by DIT are recovered through processing charges to user agencies. While DSS is the largest customer of the Unisys mainframe, it is not the only one. Moreover, rates may not necessarily increase to recover those costs depending on the level of customer usage. Traditionally, DIT has not had to raise rates to recover the cost of upgrades due to factors such as depreciation of equipment and increased utilization. DIT currently has enough capacity so that, of the four processors currently installed, only three are needed for production.

Further Analysis Is Needed. The ADAPT system is a working system as indicated by the following comments:

The Application Benefit Delivery Automated Project (ADAPT) systems food stamp module is working extremely well as assessed by the ten pilot localities. Measuring on the output of the systems implemented to date they have been well managed and effective for the end users. [DSS Response to the Auditor of Public Accounts, *Department of Social Services, Richmond, Virginia, Report on Audit For the Year Ended June 30, 1995*]

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Initial experiences with ADAPT in its current status (Food Stamps only) have shown participating localities that the process indeed works as designed, with significant time savings for both initial applications and follow-up action. [*Report on ADAPT Status and Options, Council on Information Management, February 12, 1996*]

To determine if ADAPT can be successfully implemented statewide for all three benefit programs further analysis is needed.

To adequately assess the impact of the changes which have been made on ADAPT production costs and hardware requirements, further capacity analysis needs to be completed. For those estimates to be accurate, capacity testing needs to be based on "typical workloads." ADAPT is now sufficiently developed that such an analysis could be successfully done. The majority of programming has been completed and initial problems have been resolved. Software is available for capacity testing that will allow simulation of the expected statewide workload. Such testing would allow DSS to approximate hardware requirements and more accurately project life cycle costs.

Recommendation (6). The Department of Social Services and the Department of Information Technology should complete a capacity analysis for the ADAPT system based on an estimated typical statewide activity level. DSS should use this analysis as the basis for estimating hardware requirements, acceptability of performance, and life cycle costs of the current ADAPT system.

A Methodology Is Needed for Identifying and Critically Assessing Alternatives

One criticism voiced, in the early planning stages of ADAPT, was that there appeared to be no systematic enumeration and evaluation of all possible alternatives for implementing a rules-based system. The department lacks documentation illustrating the development and use of measurable criteria to evaluate the various options that were identified. Thus, there was no "yard stick" against which to measure how well each alternative would be able to meet ADAPT's requirements. The current DIS director stated during an initial interview with JLARC staff that DSS did not use an industry

norm for evaluating information systems, and that it still does not have a structured means for evaluating technology.

This continues to be a significant problem facing systems development at DSS. Preliminary working papers from DSS' consultants do not reference any specific criteria for evaluating system alternatives other than cost. Additionally, a number of significant viable alternatives have not been assessed. A methodology is needed for systematically identifying and evaluating possible alternatives. Without such a methodology, good solutions may be overlooked, and the alternative selected may fail to adequately meet ADAPT's requirements and the department's long-term business goals. This methodology should include:

- the definition of criteria to measure each alternative's capability to meet ADAPT's requirements and DSS' long-term business goals,
- agreement on the relative importance of each criterion by the project's stakeholders,
- an explicit statement of assumptions and constraints,
- generation of alternatives by the major stakeholders,
- measurement of the alternatives against each criteria,
- ranking of the alternatives by major stakeholders, based on the measurement of alternatives against the criteria, and
- third party review of the alternative selected and its cost estimates.

Criteria for Evaluation of Alternatives. Criteria provide an objective means to determine how well an alternative can meet defined goals. To be useful, the criteria should be measurable, specific, and objective. Criteria should be defined before alternatives are determined to avoid bias such as fitting criteria to a favored alternative. Specifying criteria can help avoid technology selections based on personal perceptions or biases. Long-range planning documents for ADAPT recognized the need for criteria in evaluating alternatives. The long-range plan developed as part of the ADAPT project states, "The methodology employed should utilize pre-defined selection criteria which allow for an impartial comparison, based on the needs of the department and local agencies." However, to date there is no indication that criteria for evaluating the future viability of the ADAPT system and proposed alternatives have been fully defined and assessed.

To some extent, the criteria will be unique to an organization and a project; however, certain criteria should be considered for any public or business information systems project of ADAPT's magnitude. These criteria are:

- the ability to meet functional requirements;
- the overall organizational impact from a State, DSS, and local perspective;
- personnel requirements (functional and technical staff);
- cost;
- time needed to implement;
- maintainability;
- ease of use;
- reliability;
- data integrity;
- market share of products and company stability;
- capacity;
- scalability;
- portability;
- conformance to standards/open systems environment;
- performance; and
- security

Of these criteria, those that are most important to the implementation of ADAPT are discussed below in more detail.

First and foremost, DSS and identified stakeholders need to determine if each alternative under consideration will be able to meet the functional requirements for ADAPT, such as case management, reporting, eligibility determination, and benefits calculation. Another important consideration is the organizational impact of implementing an alternative. Considerations should include:

- What will be the fiscal impact to the localities?
- Will the alternative have any negative impacts on local operations?
- What kind of training staff will local social service agencies and DSS need?
- What will the affect be on morale?
- Will DSS and local agencies be able to support the alternative?

An evaluation of the alternatives must also take into consideration the personnel requirements for implementing an alternative, both technical and functional. Because of the complexity of the system, past work has required approximately 40 technical staff at various stages of development and approximately 20 functional staff. An analysis of staffing requirements, given the technology deployed, should be completed. The analysis should be based on tasks to be completed instead of past overall staffing levels. Even if the implementation is outsourced, functional staff will still be needed to work with contractors. The EDBC component of ADAPT system will require expertise on the part of functional staff to develop. A working relationship will need to be formed between a contractor and DSS, the Department of Medical Assistance Services (DMAS), and local eligibility staff to ensure the EDBC component is accurate in its calculation of eligibility.

Conformance to standards, openness, and the market share of the products being deployed are important criteria because they will impact the flexibility and long-

term viability of the system. There are a number of different types of standards that have emerged in the information technology arena. "Open" standards are vendor independent specifications that ensure compatibility among different equipment manufacturers. In contrast to open standards, many vendors have their own standards referred to as proprietary standards. Often these propriety standards, such as IBM's Systems Network Architecture (SNA), in practice become de facto open standards once they are published in a form that allows other vendors to incorporate them into their products. Adherence to open standards and/or de facto open standards helps to ensure that dissimilar systems can communicate with each other. A vendor's willingness to follow standards and to make their own product specifications available determines the "openness" of its products. Purchasing open products which conform to standards helps to ensure that a system will be flexible enough to incorporate new software or hardware components which may be needed in the future.

Consideration of market share is important for several reasons. The greater the market share a product has, the more widely available training is for the product and the easier it is to find a labor pool with expertise in the product. Market share also gives some indication of whether the company will exist in the future and continue to support its products.

Two criteria which will be critical to the successful implementation of ADAPT are capacity and scalability. Capacity is a measure of the amount of information that can be stored and processed effectively by an information system. The capabilities of the hardware and software which comprise a system determine its capacity. As described earlier in this report, the capacity limits of MAPPER have been an issue in the past, but have now been partly resolved.

However, should ADAPT be implemented in another language, DSS will need to ensure that whatever language is used can accommodate the number of variables and data records required by ADAPT. Additionally, DSS will need to ensure the hardware capacity of the system can handle an application of ADAPT's magnitude from the standpoint of processing power, memory, I/O throughput, and disk storage. Scalability indicates the extent to which a system's capacity can be expanded. For instance, if the current disk drive becomes full can another drive be added? Historically, mainframes have had better scalability than other computer architectures since multiple processors, I/O channels, and storage devices can be readily added.

Portability means that an application can be run on multiple types of computers (i.e. personal computers, super servers, minicomputers, or mainframes) and/or multiple operating systems. Portability is indirectly related to scalability, in that if an application is portable it can be moved to a larger platform, if the capacity of the current platform is exceeded. Or conversely, if the capacity of a larger platform is not needed, the application can be downsized to a smaller platform. MAPPER is, for the most part, a portable application. Some of the MAPPER functions which are available on the mainframe are not available in other platforms. MAPPER can run on Unisys mainframes, personal computers, or UNIX servers. Overall, there is about 90 percent compatibility between versions. If an application programmer avoids the use of functions which are not

available on all platforms, then applications written in MAPPER are 100 percent portable.

Cost obviously will be an important criterion and therefore must be determined as accurately as possible. Preliminary cost estimations completed by DSS's consultant for the proposed alternatives are too general in nature. Cost categories are not disaggregated or documented in enough detail to assess their accuracy. Estimates for the cost of completing coding should be based on tasks to be completed instead of past overall staffing levels. The Council of Information Management's Information Technology Resource Management (ITRM) Guideline "Estimating Alternative Technology Systems Costs" (COV ITRM Guideline 92-3) enumerates specific items which should be incorporated into cost calculations and provides several criteria for evaluating total life cycle costs to determine the economic viability of an alternative.

Costs which should be determined are acquisition costs, implementation costs, annual operations costs, and annual maintenance costs. Each one of these four broad categories should be further subdivided into personnel, facilities, equipment, communications, and software costs. Additionally, the costs of the impact on existing operations should be included such as the cost for training of staff, change in the staff requirements, change in physical space, facilities improvement, removal of surplus equipment, and conversion to new software, hardware, and operating systems.

DSS should follow the guidelines outlined by the Council on Information Management (CIM) when preparing cost estimates. These cost estimates should be submitted to CIM for review prior to releasing a request for proposals for the ADAPT project.

Relative Importance of Criteria. The relative importance of each criterion is specific to the information system being developed and the environment in which it is being deployed. Stakeholders are apt to place a different degree of importance on specific criteria as well; therefore, the weight given to each criterion should be agreed upon in advance by the major stakeholders. From a locality perspective, for example, the time required to fully implement the ADAPT system might be critical. Localities have reorganized their business practices from a program specific orientation to a generic intake model with the understanding that they were soon to have an automated tool for determining eligibility. So, for the localities, timing will likely be a critical consideration. For the State, however, cost may be a more important criterion.

Assumptions and Constraints. Assumptions and constraints should be well documented and considered in conjunction with the criteria selected. They should be stated explicitly before the alternatives are analyzed or cost and time estimates might be understated. For instance, DSS is currently considering alternatives which will require a TCP/IP wide area network; however, DIT has not yet fully committed to the implementation of this network. The tentative completion date to have TCP/IP at all local social service agencies is July of 1997. This means that any alternative which relies on TCP/IP cannot be fully implemented until after July of 1997.

As another example, a client/server configuration with a distributed database may require localities or regional offices to maintain local area networks. Assumptions about who is responsible for installing and maintaining this equipment should be stated, since costs will be incurred by those charged with the task. Just because the central office is not responsible for maintaining the equipment does not mean there are no costs incurred.

Finally, several of the preliminary alternatives under consideration by DSS require conversion of the ADAPT code to another computer language. A 1992 MITRE Corporation consulting report commissioned by California examined the possibility of converting the Napa County system to an alternative computer system and language. MITRE concluded that:

Conversion of the NAPAS applications to run under other operating systems, appears attractive on the surface since it eliminates some royalties and license fees There are no calibrated tools or metrics to estimate the costs of such a conversion. Such a code conversion, where NAPAS logic is recast in another language and environment is highly risky in that exact functional duplication would be very difficult to achieve. Therefore extensive testing and benchmarking would be required to ensure that functional and performance characteristics of the converted NAPAS were equivalent or better than the current NAPAS.”

Explicitly stating these types of constraints and assumptions will help to ensure that all relevant facts are considered and that decisionmakers understand the implications of selecting a particular technology.

Identification of Alternatives. Once criteria have been defined and assumptions and constraints have been stated, alternatives should then be enumerated. All stakeholders should contribute to this process. By involving all parties in the process, viable alternatives are less likely to be overlooked. Interviews with the localities and the ADAPT project team revealed that neither has had input into this process to date. Thus, it is not surprising that, based on preliminary documentation received from the department, all feasible alternatives have not been considered at this point in time.

One viable option which DSS' preliminary re-engineering analysis has not considered is off-loading the EDBC component of ADAPT to a non-mainframe technology and keeping the database and other functions on the mainframe. As discussed earlier, MAPPER is portable. The eligibility determination and benefit calculations could be run on a relatively inexpensive UNIX server, or on personal computers at the localities without significant recoding. A former DSS staff member had already experimented with downloading the rules for the Food Stamp program and was able to get that portion of EDBC running in MAPPER System for Windows within several days. Moving the EDBC component from the mainframe would reduce processing costs and could potentially eliminate the need for further Unisys processor upgrades. Unlike other alternatives

proposed, this option would not require complete revalidation of the entire system, a process which could result in additional significant delays.

After all alternatives have been defined, they should be evaluated and ranked using the criteria that have been established. This process provides a non-biased comprehensive means of evaluating alternatives. Additionally, adhering to the methodology described will provide a more formalized means of incorporating input from all stakeholders. Most importantly, the process ensures that the alternative selected will meet ADAPT's requirements and DSS' long-term business needs, provided that the criteria have been adequately defined.

Finally, for large projects such as ADAPT, a third party review should be completed of the proposed alternative and its cost estimate. To ensure a completely impartial evaluation, the third party evaluator:

- should not have a personal stake in the outcome,
- should not be a systems developer or integrator,
- should be vendor independent, and
- should have a proficient knowledge of information technology.

If the evaluation is contracted out, the contract should be managed by an agency other than the agency deploying the system.

***Recommendation (7).* DSS should follow the Council on Information Management's Information Technology Resource Management Guideline 92-3 when preparing cost estimates. Cost estimates should be submitted to the Council on Information Management for review prior to releasing a request for proposals to re-engineer the ADAPT project.**

DSS NEEDS TO IMPROVE THE PROCESS FOR DECIDING THE FUTURE OF ADAPT

The remainder of this chapter discusses the changes to the process DSS should make to ensure the successful implementation of ADAPT. Currently, too few of the organizations which are a part of the ADAPT partnership are involved in deciding its fate. DSS needs to expand the scope of decisionmaking to include DSS technical and functional staff, local social service agencies, other State agencies, and the federal government. Involvement of the federal agencies is especially important, since federal approval will be needed for further development of the system. In addition, DSS needs to begin now to develop a consensus on the resources necessary to complete ADAPT. To implement the system fully, a high level of support from the executive branch, the General Assembly, and the federal government will be needed.

DSS Management Needs to Involve Stakeholders in the Re-engineering Effort

DSS management has adopted a “closed door” policy with regard to its effort to evaluate the future of the ADAPT system. There is little indication that major stakeholders have been significantly involved in the re-engineering effort. There are many organizations which will either directly or indirectly be affected by the eventual outcome of the ADAPT project. These include local social service agencies, agencies that must coordinate with DSS to share data, DSS technical staff, DSS policy analysts, DSS technical and functional staff, and the Department of Information Technology. Further, DSS has not convened an ADAPT task force required by House Bill 29, although it has hired and paid a consultant to evaluate alternatives to the ADAPT system, as provided for in the Act.

All requirements for the re-engineered system are not likely to be identified if these individuals are not included in the redesign process. Furthermore, if DSS continues to proceed with the re-engineering of ADAPT in a vacuum, it risks making some of the same mistakes its 1994 consultants criticized the ADAPT project team for making: “group think” and not involving local social service agencies.

The ADAPT Project Team Has Been Excluded from Participating in the Re-engineering Effort. A collaborative working relationship has not been established between the ADAPT project team, DIS management, and the consultants, despite the fact the ADAPT project team is the only group with a detailed knowledge of the system. Exclusion of the ADAPT project team from this effort is problematic. ADAPT is a very complex system, and a lack of understanding of its design and program logic may lead to inaccurate projections of the cost and feasibility of implementing alternative technologies.

DSS Has Failed to Involve Local Social Service Agencies in the Re-engineering Effort. The local departments of social services, which will be affected most by the outcome of the re-engineering effort, have not been included in the re-engineering process. This exclusion has occurred even though they have explicitly asked to be involved. In April, the 10 local agencies currently using the ADAPT system forwarded a letter to the DSS commissioner stating, “We would like to meet with you and the Secretary [of Health and Human Resources] to mutually explore these difficult issues and to work together toward equitable resolution.” As of the completion of this report, the Commissioner and Secretary of Health and Human Resources have yet to meet with the localities on these issues. In addition, the Council on Information Management’s Local Government Advisory Group, which was formed in 1993 to address issues regarding integration of State and local information systems, has been excluded from the re-engineering effort as well.

DSS Has Not Convened the ADAPT Task Force. DSS has not yet convened the ADAPT task force called for by House Bill 29 and the 1996-98 Appropriation Act. However, it has spent \$17,650 as of March 18, 1996 for consultant services associated

with its re-engineering study, and the consultant has completed two major deliverables. The first deliverable documented the functionality of the current system and the second deliverable reported on technical alternatives for completing the system. Failure to convene the task force and provide it with copies of the consultant's reports leaves little opportunity for it to evaluate the alternatives proposed.

This is especially unfortunate because the next deliverable to be provided by the consultant is a request for proposals for DSS to use in securing a systems integrator to complete the implementation of ADAPT. Once the request for proposals has been issued by DSS, the course of action has already been decided. Unless the consultant's analysis is presented to the task force well in advance of the issuance of the request for proposals, the task force will have no opportunity to carry out its designated responsibilities (the recommendation of an appropriate course of action to the Governor and legislative committees).

DSS Has Not Included Other State Agencies in Its Re-engineering Effort. To be successfully implemented, ADAPT must be able to access information systems operated by other State agencies including the Department of Medical Assistance Services, the Department of Motor Vehicles, the Department of Taxation, and the Virginia Employment Commission. The Department needs to work with these agencies to ensure that appropriate linkages can be made between these agencies' systems and the ADAPT system and that security requirements can be met. For example, it is particularly important that DSS communicate with DMAS on how potential changes to the current implementation of ADAPT may affect interconnectivity to the Medicaid Management Information System (MMIS). Internal DSS documentation indicates that the installation of DMAS' new MMIS system, currently under development, will increase the dependency of local social service agencies on the Multiple Systems Inquiry and Multiple Systems Update components of ADAPT. This has significant implications for the current ADAPT re-engineering effort.

DSS and its consultant have also not included the Department of Information Technology in the re-engineering study. As a result, some of the information in the consultant's preliminary report appears inaccurate. For example, the consultants appear to have included DIT equipment costs as a directly billable item to ADAPT; however, equipment costs are recovered through operations charges to all customers, not just DSS or the ADAPT project. Because operations charges are also included in another cost category in the consultant's estimates, equipment costs appear to have, at a minimum, been double counted. Hence, this particular alternative is overstated by at least \$16 million. By including DIT in the effort to evaluate the costs of alternatives, DSS could have avoided such errors. Now, however, the usefulness of the consultant's report is questionable because the comparison of alternative costs appears invalid.

Recommendation (8). **The Department of Social Services should immediately convene the ADAPT task force called for in House Bill 29 and the 1996-1998 Appropriation Act. All working papers, preliminary and final, should be provided to the task force. Further, implementation of alternatives by DSS and**

its consultant should be suspended until the task force can make the report required by the Appropriation Act.

Federal Approval Will Be Needed on Any Further Systems Development

In order for DSS to undertake any further systems development for the ADAPT project, federal approval will be required. This means that the department must update the project's implementation advanced planning document, which is the basis for the current \$18.6 million budget for the development of the rules-based system of the ADAPT project. To date, the department has been remiss in providing adequate and timely information about the progress on the ADAPT project to the federal government agencies involved in the project's funding. Further, any change in the scope, schedule, and budget for the project must be approved by these federal agencies in order to obtain federal government funding.

DSS should be prepared to encounter some difficulties in obtaining full federal approval. At least one federal agency may not be willing to invest additional funding in a system which is currently operational for the program it administers. Further, officials of another federal agency stated that they would need to examine closely any re-engineering efforts to move the current system to a client/server environment due to concerns about the cost/benefit trade-offs of this type of system.

Advanced Planning Document Should Be Updated. Funding for the ADAPT project was obtained by submitting two advanced planning documents to the Food and Nutrition Services (FNS) of the U.S. Department of Agriculture, and the Administration for Families and Children and the Health Care Financing Administration within the U.S. Department of Health and Human Services (DHHS). These agencies require such documentation for federal financial participation for the acquisition of automated data processing equipment or services used to administer public assistance programs.

The ADAPT implementation advanced planning document was submitted in April 1993 and updated in July 1993. Since that time, DSS has not submitted an update to the federal government, despite delays in achieving major project milestones, project cost increases, project scope changes, and the identification of performance problems by DSS consultants. The department is required to submit advance planning document (APD) updates under the following conditions:

- The projected cost of the project increases by \$300,000 or 10 percent of the project cost, whichever is less.
- The schedule is extended by more than 60 days for major project milestones.
- There is a significant change in the procurement approach, and/or scope of procurement activities beyond that approved in the APD.

- There is a change in the system concept or a change to the scope of the project.
- There is a change to the approved cost allocation methodology.

Clearly, the agency has not complied with federal requirements for federal financial participation on automated data processing projects.

ADAPT Project Re-engineering Efforts Should Be Reported. Any activities to re-engineer the ADAPT project should be reported in an update to the ADAPT implementation advanced planning document. Any changes to the system would represent a change to the scope of the project. Re-engineering efforts may also result in a significant change to the procurement approach, or scope of procurement, beyond that which was approved in the 1993 planning document.

Re-engineering Efforts Need to Weigh the Likelihood of Federal Approval. Finally, any re-engineering efforts for the ADAPT project need to carefully weigh the fact that one or more of the federal agencies may not approve re-engineering efforts proposed by DSS. Discussions with federal officials indicated that FNS may be unwilling to invest additional funds to develop a system for determining Food Stamp eligibility, particularly since the Food Stamp component of ADAPT is operational. In addition, federal officials within DHHS have stated that they have some reservations about the benefits of using client/server technology for a rules-based eligibility determination system. These concerns will need to be addressed in the re-engineering effort for ADAPT.

Recommendation (9). The Department of Social Services should ensure that an updated implementation advanced planning document is submitted to the federal agencies involved in funding the ADAPT project as soon as possible. This update should reflect changes to the scope of the project, project schedule, project costs, and any additional procurements that may be necessary due to system re-engineering efforts.

Recommendation (10). The Department of Social Services should communicate with the federal agencies involved in funding the ADAPT project prior to making any final decisions about the re-engineering of the ADAPT system. The department should solicit information about any federal agency concerns regarding the re-engineering effort. These concerns should be communicated to the ADAPT task force and considered by DSS in deciding the future direction of the ADAPT project.

Necessary Resources and High Level Support Are Needed if ADAPT Is to Be Successfully Implemented

One of the factors which negatively influenced the department's ability to successfully complete the ADAPT project was that it lacked the necessary high level of

support it needed to sustain a large systems development project through changes in State administration. The successful completion of the project will depend on obtaining necessary resources and garnering the support of the Governor, the General Assembly, the Secretary of Health and Human Resources, the DSS commissioner, and local social services department directors. Without this level of support, the project will not be successfully completed.

Adequate Staffing Will Be Required. Concerns about the adequacy of staffing have been a continuing problem for the ADAPT project. For the system to be successfully implemented, a commitment must be made for funding the required staffing, whether in-house or by contract. It is essential that the executive branch, the General Assembly, the local governments, and the federal government join in the commitment to providing adequate resources. If staffing levels are not maintained at the required level, the outcome is likely to be an extension of the development time needed to complete the project. Further excessive delays in system implementation will likely be unacceptable to the local social services agencies.

Lack of High Level Support Will Result in Further Project Delays. If high level support is not provided for the ADAPT project, it will take too long to obtain the necessary resources required to complete the project. One report on state government information technology practices indicated that one of the greatest failures of state government information technology development projects is that the project cycle takes too long. While this factor may be affected by project management, it appears that it is often related to the lack of dedicated resources to complete the project in a more timely manner.

High level involvement is also important because the ADAPT project still needs to complete the Medicaid component of the eligibility determination and benefit calculation component of ADAPT. Completion of this component will require additional commitment from the Department of Medical Assistance Services and DSS program staff to ensure that the requirements already completed are correct, that additional requirements are properly written, and that the Medicaid rules are appropriately tested.

ADAPT Decisionmakers Need to Articulate Support for Selected Technologies. A critical component to high level support for the ADAPT project is the need for consensus on what technologies will continued to be supported by DSS and DIT. Throughout the development of the ADAPT project, conflicting information was received by DIS staff regarding the future direction of the State in supporting and sustaining the Unisys mainframe for State applications. DIS staff considered the use of a Unisys relational database product (RDMS) which would have reduced programming requirements for ADAPT. However, this option was not pursued further because there appeared to be reservations by DSS and DIT staff to procure new software for the Unisys mainframe, given the ambiguity that existed regarding future executive branch support of this computing environment.

CONCLUSION

Development of the ADAPT system by DSS was an important step toward automation of the process for determining eligibility for major statewide benefit programs. DSS created a strong partnership with the local social services agencies, and used the partnership to design a system which, according to the pilot and phase one agencies, provides the required functionality. In short, the current ADAPT system does what local agencies expected it to do, and they have found it easy to use. Moreover, many of the concerns which led to the suspension of the project appear now to have been addressed. While the current system may not be the ideal system, it is a workable solution which should be considered along with other alternatives.

DSS is now considering alternatives to ADAPT which will require significant new development and additional significant costs. In making decisions about the future of automation for the eligibility determination process, DSS needs to weigh the trade-offs between time, flexibility, and costs. A formalized methodology is needed to assess those trade-offs to ensure non-biased, critical assessment of the alternatives. In particular, DSS needs to provide evidence that the alternatives being proposed provide tangible benefits that outweigh the time delays, complexity, and potentially higher cost of implementing these alternatives.

Finally, DSS needs to include others in the decisionmaking process for ADAPT. The DSS technical and program staff, local social services agencies, and several other State agencies should help to assess the future of the system. DSS needs to rebuild the partnership it created in developing the system to assist it in completing the implementation of ADAPT. Without a partnership of State and local agencies, automation of local social services programs cannot succeed.

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