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State Automation Systems Study

Final Report

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TABLE OF CONTENTS

I.	EXECUTIVE SUMMARY	I-1
A.	Purpose of the Study	I-1
B.	Conduct of the Study	I-1
C.	Findings	I-3
C.1	State Food Stamp Systems	I-3
C.2	APD Process	I-4
C.3	System Functionality Summary	I-5
D.	Welfare Reform Considerations	I-7
D.1	Client-Server Technology and Distributed Processing	I-7
D.2	On-line Eligibility Determination/Computer Matching	I-7
D.3	Imaging	I-8
D.4	Joint Development Consortia	I-8
D.5	Customer Service	I-9
D.6	User Satisfaction	I-10
II.	BACKGROUND	II-1
A.	Food Stamp Program Automation Requirements	II-1
B.	Basis for the State Automation Systems Study	II-1
III.	METHODOLOGY	III-1
A.	Study Objectives	III-1
B.	Methods	III-2
C.	Areas of Study	III-2
C.1	Food Stamp Operations	III-2
C.2	Cost and Cost Allocation	III-3
C.3	Systems	III-3
C.4	Special Circumstances Encountered	III-3
D.	Study Limitations	III-4

IV.	INDUSTRY TECHNOLOGICAL STANDARDS APPROPRIATE TO THE FOOD STAMP PROGRAM	IV-1
A.	Hardware	IV-1
A.1	Vendors	IV-1
A.2	Application Growth	IV-2
A.3	Software Support	IV-3
A.4	Vendor Maintenance	IV-3
A.5	Performance	IV-3
A.6	Telecommunications Networks	IV-4
A.7	Use of Intelligent Workstations	IV-5
B.	Software	IV-6
B.1	Software Tool Standards	IV-6
B.2	Development Standards	IV-7
C.	Contractors	IV-9
D.	Project Management Standards	IV-10
E.	Balance Between FSP Needs and State-of-the-Art Data Processing Systems	IV-11
V.	IMPACT OF CURRENT AND FUTURE SERVICE DEMANDS ON FOOD STAMP PROGRAM AUTOMATION REQUIREMENTS	V-1
A.	Current Service Demands	V-1
B.	Future Service Demands	V-2
C.	Impact of Demands on Food Stamp Program Systems	V-3
D.	Developmental Directions to Meet Changes	V-5
VI.	RECOMMENDED GUIDELINES FOR FCS	VI-1
A.	Proposed Standards for State Systems	VI-1
B.	Approving APD Requests	VI-3
C.	Technology Transfer Analyses	VI-6

I. EXECUTIVE SUMMARY

A. PURPOSE OF THE STUDY

In the 1990 Farm Bill, Congress requested that the U.S. Department of Agriculture (USDA) Food and Consumer Service (FCS) conduct operational reviews of State public assistance systems to determine:

- The extent to which State agencies have developed and are operating effective systems to support Food Stamp Program (FSP) delivery.
- State compliance with conditions of initial funding approval.
- Whether the States are providing adequate support for FSP delivery, as required.

In response to this legislative requirement, FCS implemented the State Automation Systems Study. The primary purpose of this study is to determine whether systems being developed are effective, efficient, and meet the needs of the Food Stamp Program. During the course of this effort, the study also built an inventory of the status of systems development and operations in the States and examined the current process through which States request Federal funds to develop and operate automated food stamp processing systems.

B. CONDUCT OF THE STUDY

The tasks performed in conducting this project involved:

- Reviewing State systems supporting food stamp operations; evaluating the planning, implementation, and transfer processes used; identifying the hardware and software platforms in place to process the application and their adherence to "industry standards"; and evaluating cost accounting and cost allocation procedures and making recommendations for enhanced FCS guidelines in these areas.
- Evaluating the current Federal Advanced Planning Document (APD) oversight and approval process and recommending improvements in the process.

The study was conducted in two separate steps:

1. Visits to every State and the District of Columbia to review the planning and implementation of public assistance systems.
2. A review of the FCS APD review and approval process.

The State visit portion of the study addressed a wide variety of activities that impact the development and operation of a food stamp system. Aspects of the States' project management approach, staff commitments, use of contractors, and strengths and weaknesses of the APD process were discussed. State staff demonstrated the functionality of the current operational food

stamp system, and the project team reviewed planned and actual systems costs and cost allocation methodologies. A series of questionnaires and interview guides were used to capture data from State staff. These data were used to develop the technical conclusions discussed in Volume II of this report. In addition to the questionnaires and interview guides, a User Satisfaction Survey (USS) was developed and mailed directly to randomly-selected eligibility workers and supervisors in each State to better determine their level of satisfaction with the current operational system. A combination of data obtained using these methods was analyzed to gauge the effectiveness and efficiency of a State's system.

The evaluation of FCS oversight consisted of a review of the current APD process, which is addressed in the FCS Handbook 901, Advanced Planning Document Handbook. The handbook outlines an effective and thorough process for the States to follow when requesting Federal financial participation from FCS. This part of the study involved meetings with all seven FCS regional offices (RO) and FCS headquarters (HQ) staff to discuss their approaches to APD reviews and determine their abilities to review State APDs within stated time guidelines.

This report is organized into two volumes:

- Volume I addresses the Executive Summary, project background, objectives, and the methodology used in conducting the study. In addition, Volume I discusses automation industry standards applicable to food stamp processing, the impact of service demand on the FSP, and recommended guidelines that could be adopted by FCS to improve the APD oversight process.
- Volume II contains an analysis of the data collected during the State visits and our findings based on the information gathered. Areas addressed are: degree of automation, the system development process, the impact of system transfers, project costs and cost allocation methodologies, implementation of regulatory changes, and the level of automation and FSP automation needs.

Conclusions, observations and findings are included in both volumes since they are tied to the location of the item discussed.

C. FINDINGS

The findings detailed in this section relate to the two major areas described above.

C.1 State Food Stamp Systems

The study findings concerning the automated systems that support the Food Stamp Program are as follows:

- Virtually all States have centralized, mainframe-based systems with terminal workstations and a centralized database. New technologies, such as client-server, distributed processors, and intelligent workstations, are not widely used.
- IBM and IBM-compatible platforms, which are considered to be "industry standard" for hardware, are used by over 80 percent of the States.
- Use of System Life Cycle Development (SDLC) methodologies for system development and maintenance is becoming the norm, and its use should be encouraged in those States where it has not been implemented. Recognized, established SDLC methodologies are proven procedures that create a formal process requiring all software development and maintenance personnel to follow the same procedures and processes for all projects. Its use promotes uniformity and helps ensure adherence to establish standards. In the long term, maintenance activity can become more effective when all software projects have followed the prescribed design and documentation procedures and personnel can better understand and support the software logic flow .
- With respect to implementing regulatory changes, States experience more difficulty with issues related to adequate notification and clarity of the changes than with the technological impact of making the change. There does appear to be a need, however, for some central authority to determine, in general terms, the potential impact of a regulatory change on the automated systems into which the change will be incorporated. This determination would not require a detailed knowledge of State and Federal regulations, but would more logically assess the technical steps necessary to incorporate the type of regulation proposed in light of the type and configuration of "average" systems used by States at that point in time. The outcome of this review could be used as a form of "feedback" to regulators that could be factored into the regulatory deliberation process, either as a method of establishing the implementation timeframe, or for a more accurate evaluation of the costs likely to be incurred to implement the desired change.
- Successful project planning should involve user departments and field staff to ensure a functionally improved design during the planning, development, and testing phases of the project.
- Cost accounting and cost allocation plans are being performed and developed according to industry standards and acceptable practices; however, there are so many variations that it is virtually impossible to accurately compare State costs.

- A number of findings related to the State's level of automation and the needs of the Food Stamp Program, as discussed in detail in Volume II, Chapter VII of this report, can be summarized as follows:
 - no statistical relationship was found between the number of food stamp cases and the average Federal administrative cost per household, nor was any relationship established between a State's degree of automation and the Federal administrative cost per household.
 - the analysis indicated that there is no statistical relationship between error rates and the degree of automation. While we feel that error rates remain an important measure of overall program effectiveness, too many factors associated with error rates make them a poor measure of system effectiveness.
 - no relationship was discovered that confirmed that higher levels of automation resulted in higher levels of claims collected.
 - users tend to be more satisfied with less complicated systems and newer systems if they have recent experience (within the past 6-18 months) with an older system that was less effective in supporting their efforts to service the client.

C.2 APD Process

Another area of interest during this study was the ability of RO and HQ staffs to evaluate APDs submitted by the States to obtain approval for Federal funding. Our findings in this area are:

- The cost of developing and operating these Federally-subsidized systems justifies increases in both headquarters and regional office staff to oversee these projects.
- RO staff should conduct regular (no less than quarterly) visits to States that are actively developing systems. RO staff should visit States running operational systems at least twice a year to observe and evaluate the ongoing operation and learn of any problems first-hand. This visitation schedule will allow FCS staff to more fully understand the development processes and the strengths and weaknesses of particular systems.
- Technical training or technology updates for FCS staff should be conducted once or twice a year to enable staff to remain current with respect to technological developments. This is especially important since many FCS staff do not have the opportunity to maintain technical currency through "hands-on" exposure to new technology and cannot effectively evaluate the strengths and weaknesses of State development alternatives without this knowledge.
- Since new system development projects in the 1990s are averaging over \$29 million, the limit for regional office approval should be raised. This will allow reasonable

enhancements and system upgrades to be reviewed at the regional level and reduce the Executive Oversight Committee's workload of routine APD updates and funding requests.

- Improvements are necessary in the coordination of reviews for integrated systems that require both FCS and Department of Health and Human Services (DHHS) approvals. Extraordinary delays can be experienced in gaining dual approvals since conflicting changes may be requested by the agencies.
- A more clearly defined cost allocation requirements document must be created to avoid delays and confusion that exist in current documentation. Virtually every State has suggested that dramatic improvements are needed in this area. A new, joint DHHS/FCS cost allocation procedure should be developed to allow the States to create acceptable cost allocation documentation for both agencies and help eliminate costly delays in the review and approval of the State submissions.

C.3 Summary of System Functionality

During the State visits, a demonstration and discussion of the food stamp system functionality were conducted to identify those functional areas and automation techniques that were most common and appeared to be most efficient and effective in supporting the program.

Appendix A in Volume II of this report contains a detailed listing, by State, of the automated system functions created to support the Food Stamp Program and the level of integration and automation that States achieved in their systems. As a way to visualize the types and numbers of these functional activities, Table 1.1 summarizes the number of States performing some of the key functions.

Table 1.1 System Functionality Summary

System Function	Total Number of States
Check for duplicate participation - home state only	38
- adjoining States	6
Duplicate participation searches - by name	42
- by social security no.	39
- by race	13
- by sex	28
- all household members	40
- on-line, real-time response	10
System assigns caseworkers	10
System schedules appointments	12
System indicates expedited service qualification	15

Applicant data entry - clerical after interview	14
- Eligibility worker (EW) after interview	28
- EW at time of interview (interactive)	21
System determines eligibility	37
System calculates benefits	41
System tracks outstanding verification requests	29
System automatically alerts EWs of missing verifications	28
System forces resolution of all verification requests	26
Computer matching performed - at registration	46
- at certification	31
- at re-certification	31
Matching is reported against all databases	16
System reports matching resolutions to EWs	16
System sets priority for all matching hits for the EW/Supervisor	6
System automatically generates notices	44
EW input capability to customize notices	26
System reporting capabilities - ad hoc	15
- daily standard reports	18
System has an E-Mail function	33
System has an on-line problem reporting function	15
Claims collection - integrated into food stamp system	31
- separate system that provides data to food stamp system	8
System tracks claim status	40
System generates payment notice	33
System determines - benefit claim amount	14
- calculates recoupment amount	46
- determines collection method	11
- maintains files/tracks claims status	44

D. WELFARE REFORM CONSIDERATIONS

In today's era of re-engineering government and finding new ways to reform the welfare process, automation can play a leading role in assisting the Federal government in providing more effective services for its clients. Some steps are already being taken to create new paths towards improved service levels, more controlled and accurate eligibility and benefit calculations and benefit distribution, and improved performance and reliability for all system users.

In this section, we provide insights regarding technology areas into which FCS may want to direct some of its new efforts.

D.1 Client-Server Technology and Distributed Processing

The demise of centralized mainframe-based data centers, forecasted by many as inevitable, has not yet occurred. It is unlikely that it will ever occur, but it is clear that newer platforms are providing more cost-effective solutions to current automation requirements.

The vast majority of States are still developing large, mainframe-based systems to support public assistance systems, just as they did 15 to 20 years ago. Newer technologies, such as client-server and/or distributed processing platforms, might enable States to achieve significant benefits. By viewing the current environment as a wheel -- with the data center at the hub and the field units at the end of the spokes -- one can visualize how these new platforms could provide more efficient and, hopefully, more cost-effective systems. One promising scenario involves using the data center as the central repository for the State's master file. At the end of the nightly update cycle, the mainframe would download each region's new client files to the regional server or distributed processor. Processing would be handled between the regional server or processor and its connected workstations. If a client applies for benefits outside the region where he or she currently receives or previously has received benefits, the information would be retrieved from the central mainframe and downloaded to the processor. This level of support would enable the regions to be more self-sufficient, make them less vulnerable to Statewide system outages, and reduce the cost and size of the central processor complex. With the processing capacity more closely aligned with the user locations, specialized processing requirements could be customized more easily to meet the needs of the local users.

FCS should acquire the technical expertise through adequately trained staff or external contractor support to provide technical guidance to the States that will help identify those projects which have the greatest potential for benefitting from client-server or distributed processing technology. Those candidate projects could be useful in gaining valuable practical experience in these newer technologies.

D.2 On-line, Real-time Eligibility Determination and Computer Matching

In today's communication-intensive environment, access to information can be performed quickly and efficiently. Credit checks, account balance information, and inventory status can be determined with a touch-tone telephone. In the world of Federal assistance, the ability to determine applicants' eligibility for specific programs relies on data that may be several months

old and only can be verified through comparisons performed during nightly batch update runs. While it is understood that there are data security and sensitivity issues associated with this type of data verification, it would be much more effective if the processing organization had direct, real-time access to databases that could be used to verify an applicant's information. In turn, this would enable eligibility determination to be completed quickly and allow benefits to be disbursed sooner. Through cooperative efforts with those agencies where the most useful matches typically occur, FCS should be able to facilitate a standard access and query process that could be incorporated into any State's system to enable on-line access to these files.

D.3 Imaging

Any organization that creates and retains paper files could benefit from the use of imaging technology. The technology would allow States to create electronic client files that could be used to verify eligibility from different counties or even different States without having a clerk or eligibility worker dig through paper files. Client applications, signatures, and birth/death records could be stored, tracked, and merged with other electronic information from a variety of sources to create a complete and consolidated history file on the client. Older files could be archived to tape or other long-term storage media that could be electronically retrieved when required. Benefits that could be realized include: savings in storage space, more accurate client files, and longer-term storage and retrieval.

D.4 Joint Development Consortiums

Historically, State development processes have fallen into one of two categories: unique, custom development efforts and packaged (transfer) software acquisitions. Recently, a number of States have worked together to attempt a joint development venture for electronic benefits transfer (EBT). A similar approach might be useful for developing new tools and technologies to meet the changing needs related to State systems for processing food stamp activity. With the capability to understand each State's automation priorities and plans from the APD process, FCS is in a position to link States with similar plans and priorities together. By combining the talent and insights of multiple States into a common project, it is possible that a more effective planning and development process could result. The joint development process could shorten development time for each State and reduce development costs. Unique system requirements would be handled by the individual States as enhancements to the basic system.

Taking this approach further, FCS could fund the development of a national food stamp system design that would encompass all Federal processing and calculation requirements and be easily incorporated into other Federally-supported development projects. It is also possible that an integrated system design could be created jointly by all pertinent Federal agencies that would address all assistance-processing requirements from each program and provide the States with a fully-supported, consistent and maintained processing system into which they could incorporate their individual, unique State requirements. The cost of developing and maintaining the national system would be generated from the savings of not having to share in Federal financial participation with States in the development of individual systems for each new system. State modifications would be funded by the States without Federal participation. While this approach would appear to be cost prohibitive, an examination of the current development costs would

indicate that there are tens of millions of dollars that could be reallocated annually to a national, centralized approach.

D.5 Customer Service

The major focus of this study is to determine the methods and results used by the States to develop and implement sound and effective automated systems to support the Food Stamp Program. While conducting the State visits, it became clear that the vast majority of States are delivering the correct benefits to the customer within the prescribed timeframes. Delivery of these services does not appear to be an issue.

At the same time, a number of States have implemented attractive features to their systems that make the process of applying and receiving public assistance benefits easier on all parties involved, both customers and State workers.

The ability to capture customer information only once is an ideal situation. The process of filling out long, tedious forms, having a State data entry clerk key the entire form into the system, and then having an eligibility worker review and refine the data during the client interview is too cumbersome, aggravating and error-prone. Systems are being developed (21 States have or are developing such applicant data capture systems) to allow the customer to fill out and sign a single-page form that can be used to perform duplicate participation searches, and provide all the additional information to the State worker during the interview which can then be captured and validated by the system during the interview. This approach shortens the amount of time clients spend in the State's offices and enables the State worker to develop eligibility and benefit calculations interactively, dealing with only those issues pertinent to the specific client. A number of States have implemented this approach, and while it takes more time and money to develop, the returns in the form of improved customer service, reduced transcription errors, and use of computers to perform many of the clerical checks and verifications greatly improves the overall system efficiency.

Many of the out-of-State data verifications are still being performed with older data transmitted from the supplying agencies weekly or monthly and checked overnight during batch update runs. Today's telecommunications networks and software should be used to provide on-line access to these databases to validate customer information while the eligibility determination process is being conducted. At present only 10 States are using this technology. If this process is performed during an interactive customer interview, data discrepancies can be more quickly identified and resolved with the customer's help. If it is an innocent error, it can be quickly corrected. If it is an attempt to commit fraud, the attempt can be quickly stopped and appropriate corrective actions can be taken.

The ability to deliver benefits to the client (issuance) is still being handled as a separate function by most States, with only 16 States having full or partial on-line access to the issuance function. While the current process does not appear to create an undue burden on States, improvements in the issuance arena can produce tremendous returns in the areas of customer satisfaction and, potentially, fraud control. With the advent of electronics benefit transfer (EBT) capabilities, the customer may be able to receive their benefits more quickly and conveniently.

D.6 User Satisfaction

The purpose of the State User Satisfaction Survey (USS) was to gain an overall view of eligibility workers' and their supervisors' perceptions of the system supporting the Food Stamp Program. It was not designed to elicit specific likes and dislikes of the particular system. In some cases, the limited responses did not provide enough of a cross-section to reach any meaningful conclusions. Specific results of each State's responses are addressed in detail in the individual State reports provided as part of this study.

There are some general conclusions that can be drawn, based on the overall review of worker comments.

Virtually every State's programmatic and systems management teams and public assistance workers felt that without access to the automated systems the tremendous increase in customer demand for food stamp assistance, as well as other federal assistance programs, would have crippled their ability to provide timely and accurate benefits. This was true regardless of whether the systems were viewed as productive and helpful or archaic and disruptive. This universal acknowledgement presents a strong message that automated systems are a requirement in today's public assistance work environment. Staffing levels have been consistently reduced since the 1980s; caseloads per worker have been increasing as the number of people on public assistance grows at the same time that staffing levels are shrinking; and, the implementation of more effective automated systems takes years to design, develop, and implement.

Overall, systems that were viewed as useful were those that provided a logical view to the worker that enabled them to easily navigate through the various components to meet the needs of a specific customer. Highly-sophisticated, complex solutions added more stress and confusion to the process and are not well-received by the workers.

Timely and effective training is another area that can have a major impact on the ability of the workers to assimilate knowledge of the system's capabilities. Use of a "Train the Trainer" method where each office sent one or more representative to a comprehensive training class and then had them return to train the remaining office workers appears to be very effective, especially when implemented at nearly the same time as the office's implementation of the new system so they can use their training immediately and reinforce what they have learned.

On-line regulatory documentation and function-specific HELP capabilities are also high on the list of desired features. The HELP function appears to be a fairly common feature, although some are much more productive than others. Use of eligibility workers in the design phase of the HELP function could greatly enhance the usefulness of the feature. Accurate and complete information for on-line regulatory documentation is not nearly as well developed. In many cases, the capability is not used by the workers because the information is incorrect or too old to be useful.

II. BACKGROUND

A. FOOD STAMP PROGRAM AUTOMATION REQUIREMENTS

The Food Stamp Program (FSP) is designed to supplement the food buying power of eligible low-income households. The program is administered nationally by the U.S. Department of

welfare agencies, through their local offices, are given the mission of establishing recipient eligibility and issuing benefits, reconciling the two, and reporting to Federal FSP officials.

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In the 1990 Farm Bill (Section 1763), Congress requested that FCS conduct operational reviews of State systems to determine:

- The extent to which State agencies have developed and are operating effective systems to support Food Stamp Program delivery.
- State compliance with conditions of initial funding approvals.
- Whether these State systems adequately support Food Stamp Program delivery, as required.

In response to this legislative requirement, FCS implemented the State Automation Systems Study to determine whether new regulations and procedures should be developed for State system development and implementation and FCS oversight of these activities.

III. METHODOLOGY

A. STUDY OBJECTIVES

The State Automation Systems Study has several related objectives. A major goal of this study is to develop guidelines for FCS review of State system development efforts in the areas of FCS oversight and monitoring and in determining the reasonableness of State funding requests. Another objective of the study is to review standards for State automation (e.g., standards for the development of automated systems and standards for cost accounting and cost allocation). Findings of this study also will be used by FCS to reevaluate the current standards and procedures for State automation efforts.

To evaluate the current environment, information has been collected from every State to identify those factors that affect the following areas:

- Success of system transfers
- Success of system development efforts
- Development costs
- Operational costs
- System Functionality
- Degree of automation
- Level of integration
- FCS monitoring and oversight

The objectives of this study are as follows:

- Describe and assess the current degree and state of development of State automated data processing and information retrieval systems.
- Assess and evaluate FCS' ability to provide oversight and to determine appropriate funding levels for the development of State automated systems through the Advanced Planning Document approval process.
- Compare State system development and maintenance processes with industry standards for technological development.
- Determine the level of automation that is necessary, technically sound, efficient, and effective for handling Food Stamp caseloads and the needs of the Food Stamp Program.
- Provide guidelines for assessing the reasonableness of State funding requests for ADP development activity.
- Examine operational cost accounting and cost control measures and practices which are or should be built into the project planning process.

- Identify factors influencing a State's ability to implement regulatory changes in a timely manner.

B. METHODS

For the purpose of this study, data were collected from five data sources -- FCS headquarters monthly and quarterly reports, questionnaires sent to State personnel, State personnel interviews conducted in all 50 States and the District of Columbia, State Advanced Planning Document (APD) documentation, and survey forms completed by randomly selected eligibility workers and eligibility worker supervisors within each State. The data collection period for the study was June 1992 through December 1993. Historical information was obtained from FCS data sources, APDs, and correspondence provided by State staff. State personnel working in the Food Stamp Program, ADP groups, and State data centers were interviewed during the visit to each State. Data gathered during the State visits included State responses to questions from various structured interview guides and additional information requested by FCS for inclusion in the individual State reports.

Another component of the study was the creation of a detailed report about each State and the District of Columbia. Individual State reports provided data regarding State public assistance participation, system functionality, cost justification for developing the public assistance system, hardware and software platforms supporting the FSP system, performance characteristics of the system at the time of the State visit, future changes anticipated in the configuration supporting the program, and cost allocation procedures and practices used by the State to track and report system development and operational costs. In addition, the project team reviewed the project management staffing levels, participation in system planning and development, reasons for project cost overruns and development schedule slippages, and benefits and drawbacks of the current APD approval process during State visits and incorporated this information into State reports.

C. AREAS OF STUDY

The study has three main areas of concentration: Food Stamp Program operations; cost and cost allocation; and systems planning, management, development, and ongoing support of the automated system supporting FSP.

C.1 Food Stamp Operations

The focus of our review of FSP operations was to determine the impact of the automated system on the overall operations of FSP and the extent to which FSP staff participated in planning, developing, and implementing the system as well as reviewing the ongoing performance of the system.

This area was reviewed in several ways. A questionnaire sent to the State several weeks in advance of the visit requested information about the State environment, historical caseloads and error rates, impact of implementing specific regulatory changes, APD history, caseworker counts, job descriptions and responsibilities, system transfer process, system performance issues, and system functionality. Once at the State site, interviews were conducted with FSP operations staff

to review their roles and participation levels in planning and implementing the automated system, relationship with Federal agencies, and training and conversion approaches used to implement the new system. State staff provided a demonstration of the system to enable the project team to view system functionality and capability that would be experienced in a production environment. Additional information was gathered regarding the State's claims collection data, administrative costs, automation plans, cost/benefit reviews and results, strengths and weaknesses of the APD process, and relationships with Federal agencies.

C.2 Cost and Cost Allocation

The cost area was addressed through the use of two vehicles. A cost survey was sent to the State several weeks before the scheduled site visit and requested information about the State's cost allocation methodologies and FCS-approved cost allocation plans, cost pool descriptions, and APD submission and approval history. During the site visit, actual APDs and correspondence files were reviewed and interviews were conducted with State cost accounting staff to review operational and development costs, as reported on SF-269s, and clarify any discrepancies that were identified in reviewing documentation. The majority of the data reported in the individual State reports was compiled based on the on-site documentation reviews and discussions with State staff.

C.3 Systems

The State Automation Systems Study data collection effort focused on the activity of the internal State systems staff and their roles and level of involvement in supporting the food stamp system. The information was gathered through several vehicles. Two pre-visit questionnaires addressed hardware and software configurations, staffing levels, technical capabilities of the State staff, performance data, managerial insights into performance monitoring, planning techniques, and future changes planned. The on-site interview addressed change control, roles played by contractors, relationships with Federal agencies, and innovations and efficiencies built into the automated system. A separate discussion with the State's project manager for the development effort and/or the project management staff was conducted to review the approaches used to plan, staff, develop, and implement the automated system. This included examining the roles and responsibilities of user and field staff, presence of disaster recovery and security plans, and the opinions of project management staff regarding the APD preparation and Federal review processes.

C.4 Special Circumstances Encountered

Since the purpose of the study was to capture information regarding State automation processes and the results of their endeavors, no effort was made to conduct an audit or verify that the information provided was correct. Cost and performance information was accepted as accurate and questioned only if conflicting information was found in other documentation. The availability of documentation and correspondence files was very important in gathering useful information, especially historical and cost data. Its absence directly impacted our ability to prepare detailed State Reports. Some documents, for States in the initial stages of vendor or contractor selections, were not available for review; however, these occurrences were infrequent.

D. STUDY LIMITATIONS

In-depth reviews of the effectiveness and efficiency of each State's automated system were not attempted as part of this study. The evaluation of the integrated components of a multi-agency integrated public assistance system (i.e., a system supporting the FCS-administered FSP, the DHHS Agency for Children and Families (ACF)-administered AFDC Program, and the DHHS Health Care Financing Administration (HCFA)-administered Medicaid Program) was not included in this study due to the decision of the Department of Health and Human Services not to participate in this effort.

Accuracy of the information captured was not audited or verified by the site visit teams. Answers to the questionnaires and interviews were recorded as given and not questioned unless the response was unclear or directly contradicted information gathered from other sources. When two sources conflicted, we attempted to ascertain which information was more accurate and reported it as our finding.

Despite our best efforts to capture all pertinent information, in every State, some portion of the data to be collected was not available for a variety of reasons. For example, many States did not perform post-implementation benefit reviews to determine what actual savings or improvements had been achieved. In some situations where data was unavailable, projected analyses using this data had to be altered or eliminated from the evaluation.

IV. INDUSTRY TECHNOLOGICAL STANDARDS APPROPRIATE TO FOOD STAMP PROGRAM REQUIREMENTS

Overall industry hardware, software, and development standards are basically the same across all types of industry classifications. The standards are not written policies or procedures. They consist of hardware configurations and software versions that are supported by the vendor community as "current" and provide the newest capabilities and performance levels for hardware and software systems.

FSP automation needs are not unique from other government agencies or private industry. FSP requires a hardware environment that can be expanded to meet the needs of its growing application base without major redesign of its programs and databases. Software must be capable of providing improved functionality and supporting hardware capability enhancements. Communication networks and protocols must follow the needs and design constraints of interconnected agencies or organizations to facilitate the exchange of data in a timely and effective fashion.

Software development within food stamp systems has been accomplished, primarily, through the transfer of Family Assistance Management Information System (FAMIS)-certified systems from other States. The primary benefit of transferring these systems would appear to be faster and less expensive project implementations. The only comparable industry standard would be the use of commercial-off-the-shelf (COTS) software packages to provide "standard" processing functions. Since most States felt that the transfer process was preferable to "home-grown" internal system development, this approach is somewhat different from industry standards of either COTS or internally-developed software solutions.

Discussion of industry technological standards can be divided into five categories: hardware, software, use of contractors, development standards, and the FSP need for hardware/software currency. Each of these areas is described below.

A. HARDWARE

Hardware standards focus on several areas including: vendors, application growth, software support, vendor support or maintenance, performance, telecommunications networks, and intelligent workstations. Issues related to each area are presented below.

A.1 Vendors

Current Environment

The vast majority of States are using mainframe-based systems with centralized files and processing. Of the 51 entities (50 States and the District of Columbia), 41 are using IBM or IBM-compatible (Amdahl and Hitachi) systems, five are using Unisys equipment, and four are using Honeywell systems. California is not counted since it has no Statewide system in place.

Findings

Each of the vendors provides a family of hardware configurations to enable a State to migrate to more powerful systems as the workload increases. None of the States are using equipment more than one generation removed from the current vendor product lines; this enables States to take advantage of many of the most current technological features available. The use of hardware provided by a vendor that provides a family of compatible hardware configurations with the ability to support growth requirements characterizes the typical environment preferred by the majority of centralized processing facilities in any industry.

Recommendations

No specific areas of concern were noted in the State's use of hardware platforms. The introduction of cost-effective distributed solutions discussed later in this chapter is another hardware issue that should be thoroughly reviewed.

A.2 Application Growth

Current Environment

All of the vendors discussed in the hardware section provide system software and hardware processing functions that enable the system supporting food stamps to migrate into more powerful processing mainframes and peripherals (such as tapes, disks, printers and telecommunications processors) equipment as the transaction volume increases.

Findings

Expansion capability is crucial in providing adequate processing capacity to meet unanticipated caseload growth, as experienced in the FSP between 1989 and 1994. The only limitation on growth occurs with applications that are using the most powerful processor in a given product line, as is the case in Pennsylvania. This type of situation could result in the redesign of the application to fit the processor limitation or decision to distribute some functionality to other processors, such as minicomputers, file servers or desktop workstations.

Recommendations

Special attention should be given to those States whose hardware or software platforms are beginning to reach the limits of the platforms ability to meet the workload requirements. In most cases, the larger States, such as Pennsylvania and New York, with non-IBM platforms and older systems are at risk of overrunning the system's ability to process the workload. The most logical solution is to undertake a multi-year developmental effort to correct the problem. These situations should be identified as quickly as possible and efforts should be undertaken to solidify an action plan before the problems begin to appear.

A.3 Software Support

Current Environment

All mainframe vendors provide full support for hardware and software systems, including operating systems, language processors, system utilities, and functional software programs such as IMS, DB2, ADABAS, CICS, and IDMS.

Findings

The operating systems being used are either the current version or the previous version of the software and will be fully supported for years to come. For State systems, normal migrations to current software versions or release levels usually are accomplished within three years of availability and are not a concern.

Recommendations

No specific recommendations or concerns are noted in this area.

A.4 Vendor Maintenance

Current Environment

Since State food stamp systems are run from large-scale centralized data centers with vendor support for telecommunications and local office equipment, there are no major deviations in vendor maintenance support from accepted industry standards.

Findings

There appears to be adequate response time to resolve problems and sufficient technical knowledge and corporate technical support staffs to help to create and maintain a stable automation environment. No obvious issues or concerns were noted by the States.

Recommendations

No specific recommendations or concerns are noted in this area.

A.5 Performance

Current Environment

Normal expectations for system response times, batch turnaround times, and system functionality apply to users of FSP systems. Those systems that process many functions in an on-line, real-time environment are much more sensitive to overall response time, but do not require different performance criteria than other on-line, client-oriented systems. Most of the food stamp systems

share a processing environment with other State systems, but tend to receive higher processing priority than almost every other application except for the law enforcement systems.

Findings

Areas of difficulty and user concern center on the length of time required to perform the eligibility determination/benefit calculation on those systems that perform the function while the client is seated at the eligibility worker's desk. Problems were also found in typical bottlenecks areas: telecommunications networks are overloaded, certain functions use a high percentage of central processing computation time and require an inordinate amount of time and resources to function, and channel and disk file contention can occur if care is not taken in data-set placement.

All systems reviewed provided for a method to determine eligibility and deliver coupons for expedited food stamps within the regulatory guideline timeframes.

Recommendations

During acceptance testing, performance tests should be done to validate the system's ability to provide reasonable response time for all functions under heavy volume simulations. These tests will help determine how well the system can be expected to perform under heavy volumes.

Another solution would be to provide a secondary platform for processing system-intensive functions, such as client servers or distributed processing capabilities at the worker's intelligent workstation to free the mainframe for more file access/data manipulation activities.

A.6 Telecommunications Networks

Current Environment

All States are using standard protocols to tie local offices to the central computing site. Twenty-nine States have Statewide backbone networks that have shared access by all State agencies. Several States have implemented networks supporting voice, data, and video transmissions through the backbone network and are continuing to expand their capabilities to include more users. A number of States, including Alaska, Michigan, Arizona, and Missouri, are still using 4.8 KB circuits, especially in rural areas. Several States still use microwave transmissions to augment land lines.

Findings

Telecommunications networks are one of the primary causes of poor systems performance across industries. In support of the Food Stamp Program, most States are sharing the telecommunications network with other State systems. Ten States indicated having response-time problems that State staff considered to be of major significance.

Virtually no States are tracking response time to food stamp transactions at the local office workstation. This type of monitoring has been replaced by more sophisticated network and

central processor software and hardware monitors. It is difficult to determine how problematic response-time performance is since no records are being kept at the local office. If a performance problem is being caused by the network, mainframe and telecommunications processor timings will not tell the technicians where the problem lies.

Recommendations

As part of systems design and planning, and again as part of the acceptance testing, telecommunications network analyses should be performed. The analyses should cover how well the network will perform at peak load conditions, but also to attempt to quantify at what volume the network begins to degrade below acceptable performance levels. Knowing the transaction volume level where performance will become unacceptable will help in network monitoring and network upgrade planning.

Efforts should be undertaken to provide for workstation response monitoring. Without this data, performance planning data is incomplete.

A.7 Use of Intelligent Workstations

Current Environment

Many States that implement personal computer (PC) workstations are still using the equipment primarily as a terminal, not as a desktop computer. While a great deal of planning revolves around decentralized processing, much of the development activity still occurs on a centralized processor. Downsizing from central-site mainframes to minicomputers and/or microcomputers has been a strong trend for the past several years. Expected benefits include faster and less costly application development, less expensive hardware platforms, and more functionality and performance for the end user. Whether these goals will be achieved remains open for review.

Findings

The use of distributed intelligence in either regional file servers or at the individual workstations has not been used to any great extent within the States. Some use has been made of regional data entry on minicomputers that can function even when the mainframe computer is not available, *but the only significant attempt to use distributed intelligence extensively is occurring in Merced County, California.* California's current development effort involves migrating a mainframe-based system, NAPAS, rather than the Merced County system, into a Statewide system over the next 8 to 10 years.

Recommendations

Distributed processing technology has progressed to the point where it should be given equal consideration with mainframe-based systems when alternatives are reviewed. Reliability, performance, and software support has reached a point where the approach should no longer be considered high risk. Several States expressed interest in examining distributed intelligence solutions. Several States who wanted to use PCs as their workstations encountered resistance

because of the cost differential between PCs and terminals. Until recently, DHHS would only reimburse the State for the terminal cost. Other States became discouraged enough to drop the idea altogether and stay with the traditional dumb-terminal approach.

B. SOFTWARE

Software standards focus on two areas: software tool standards and development standards.

B.1 Software Tool Standards

Current Environment

Only one State was found to be using an outdated operating system to support the food stamp application. Of the 51 entities (only 50 of which have Statewide systems), 40 are using IBM's MVS/ESA (32) or MVS/XA (8). Rhode Island is using DOS/VSE under VM. The other nine States are using either EXEC 1100 (Unisys) or GCOS8 (Honeywell) operating system software to drive their hardware. With the exception of the DOS/VSE software, all States are using mainstream vendor software and relatively current releases of the operating systems to place them well within accepted industry standards.

The majority of States also used vendor-supplied transaction processing packages such as IBM's CICS, Honeywell's TP8, and Unisys' CMS 1100. CICS and CMS 1100 are the vendors most current products to handle transaction processing; TP8, although still supported by the vendor, eventually will be replaced by DMIVTP, which is being used in New Jersey.

Database support has a wider assortment of products with several of the more popular products being more than 20 years old. IBM's IMS and Software AG's ADABAS, which are used in 34 of the 50 States' database management systems (DBMS), have been available since the late 1960s and early 1970s. Comparable offerings from Unisys and Honeywell are also dated systems. Database software technology does not change as quickly as its hardware counterparts, and these database products still are considered to be part of the industry standard for database systems. Newer products such as IBM's DB2 are beginning to make small inroads, but most changes will come very slowly and be tied to a State's desire to migrate all of its database applications to a new platform over an extended period of time as major revisions or rewrites of applications become necessary.

Findings

States using systems with common mainframes and transaction processing, operating system, and database software are most likely to be compatible with each other. Tables B-8, B-9, and B-10 in Appendix B of Volume II indicate the type of mainframe, software, and communications network supporting each State's system. This finding applies to IBM, Unisys, and Honeywell systems. Rhode Island's system is not compatible with other State systems because it alone uses the DOS/VSE operating system. The Honeywell and Unisys systems are not compatible with IBM platforms or each other. For purposes of backup/disaster recovery discussions, these differences are of little consequence since those States with workable plans are not using a

neighboring or compatible State, but more likely another agency data center within the State or a commercial disaster-recovery vendor.

The process of establishing a process to manage changes or modifications to the production environment has been labeled change control. Of the 50 States and the District of Columbia, only 27 had any form of coordinated process to review and plan for implementation of modifications to the software environment. Since production systems are most vulnerable when changes are made, it is prudent to ensure that all concerned parties be apprised of and review the potential impact of any and all changes to the environment. Of the 27 that have some form of change process, several States do not include all types of changes such as hardware, system software, application software, facilities, network, or environment in the review process.

Recommendations

The use of current and standard system software products positions the States to be able to migrate their systems to new platforms or backup processing centers without undue effort. While any major redesign is a massive undertaking, beginning from a standard platform makes it much more conducive to a controlled and well-executed effort.

The change control area is an important aspect of maintaining application stability which should be strongly encouraged by FCS as an integral part of the ongoing operational support of the food stamp system and be a factor in the review of APD funding requests.

B.2 Development Standards

Current Environment

The process of engineering automated applications still depends on performing a comprehensive

and accurate requirements analysis and creating reliable and efficient program code to instruct the hardware and manage the data. The use of Standard Development Life Cycle (SDLC) methodologies has provided a blueprint from which any organization can develop efficient application code by following specific steps and procedures. In addition, new development tools and techniques such as Joint Application Development (JAD), CASE, and Data Dictionaries have been developed to assist in the design and development of new applications.

These processes have been developed to enable an organization to approach the project process with consistency and to help ensure a timely and cost-effective project. In reality, most major projects now span a number of years from initial conception to full implementation. During this time, a variety of factors impact the original design and scope of the project, resulting in major changes and added cost to the initial estimates. Virtually all food stamp system projects have been affected by these types of internal and external influences and have exceeded initial projected cost estimates. The use or lack of an SDLC to plan and implement a food stamp system cannot be measured in the overall project performance because of the myriad of overlapping factors that impact these types of complicated, lengthy projects. Most States can be considered to be within the industry norms for planning and implementing systems.

Findings

Only 14 States were found to be using a standard, accepted methodology for the development of the food stamp systems. More than half of the States (30) are using some form of SDLC methodology to design and develop systems. Even among those States that did not claim to be using a formal SDLC process, most used a standardized form of application design and development to implement new projects. Eight States did not provide any information concerning their use of SDLC.

Nearly every State was using some form of programming aid in the development or support of the application. Data dictionaries, software library management tools, and CASE tools are the most frequently referenced products. The enhanced productivity that can be achieved through the use of these types of tools makes their acquisition and use much more prevalent and useful to the application developers.

Virtually no State system can be considered to have been designed to meet the Federal standards for interoperability or transportability. Systems are still being designed for a vendor's hardware product, coding, and protocols rather than for mobility among other vendors' products. There is some portability built into those State systems that have developed workable disaster recovery procedures so that the system can be moved to a backup data center if a serious interruption of service is encountered; however, many States have only a sketchy outline of disaster recovery plans and would be unable to move their systems to an alternate site without a major undertaking and extensive amounts of time and technical resources.

Recommendations

Very little emphasis is placed on the technical age and developmental basis of State systems reviewed as potential transfer candidates for a new food stamp system. Most of the criteria used reflects hardware platforms (vendors), software products (DBMS), caseloads, and other State characteristics. The vast majority of States are still looking at mainframe-based systems even though distributed and workstation-based intelligence has become more accepted and more cost-effective in recent years. This results in technically old architectures being the foundation for new systems that will reach production status in the mid-to-late 1990s, when newer technologies could be functionally superior and tremendously more cost efficient. More emphasis should be given to exploring the newer products and approaches and using some of the more promising solutions to gain valuable insights and experience with the technologies.

C. CONTRACTORS

Current Environment

Approximately half the States transferred existing systems as the basis for the development of their food stamp system, and the vast majority used an external contractor to provide some level of support during the planning, design, testing, conversion, and implementation of the system. Reasons for using contractors ranged from lack of internal staff resources or expertise to expectations that experienced contractors would help ensure a successful project. States that have developed their own systems do not use contractors to any great extent and tend to fall into one of two categories: 1) they possess a strong internal management information system (MIS) department with the resources and expertise to design and develop a large, complex system; or, 2) States with older systems (more than 10 years old) who developed smaller, less complicated projects before there were many comparable systems to evaluate for possible transfer. Many of these States are beginning to evaluate the benefits of new systems and almost all are expected to use a contractor.

Findings

Contractor involvement usually is at the highest level during the general and detail design stages and begins to drop off during the training and conversion phases of a project. State staff play a more active role during the planning and APD approval stages, final conversion, and full Statewide implementation.

Once full implementation is achieved, contractor staff frequently remain to provide warranty support for the system and work with State staff as they begin to assume responsibility for system support. Many States do not have adequate staff to assume support of the full system due to hiring freezes and reductions in force that have occurred during recent years. It is expected that contractor support will be necessary for the foreseeable future to provide adequate system support in the face of the current staffing restrictions. The difficulty that States face with using ongoing contractor support is that over time it will become increasingly more difficult to maintain any level of expertise among State staff in developing state-of-the-art systems since the presence of contractors will severely limit the opportunities for State staff to gain any experience with newer techniques and technologies. It would be more practical to hire contractors to support older systems and release the internal State MIS staff to learn and support the newer applications by working directly with the development team during design and implementation. This approach would enable the State to maintain the desired level of staff and keep its own staff technically current and motivated to remain in State service.

The majority of States are retaining the responsibility for preparing APDs. A few of the smaller States have delegated the preparation process to contractors with APD experience because they do not have the time, expertise, or motivation to undertake what is perceived to be a complex, lengthy, and frustrating process. This is somewhat consistent with the experience in many industries, where the function of supporting the data-processing environment is totally controlled within the organization with little, if any, contractor support for planning or acquisition activities.

Many States are using contractors to monitor the performance of contractors responsible for creating new food stamp systems and perform quality control tasks on the products and processes being delivered. This is not a standard data-processing practice within other industries or organizations. Most projects are evaluated on their time and cost performance against plan, the functionality and performance delivered to the ultimate user, and the efficiency of the system's utilization of computer resources. In the case of food stamp systems, contractors are used to monitor the progress of the project during development, but not to measure the ultimate result, the system itself.

Recommendations

State use of contractors should continue to be determined by the needs of the individual State. States should be encouraged to use their own staff to work on the new development project with contractor staff to gain valuable insights into the design and development strategy of the system. With this knowledge, the State will be in a better position to direct the support and enhancements of the new system without having to rely on the external contractor for this type of support.

D. PROJECT MANAGEMENT STANDARDS

Current Environment

The project management standard in any organization requires that the management team have three major components if it is to be successful:

- Strong, experienced project manager
- Representation from all pertinent departments within the organization
- Active support from senior management

The majority of States appear to be following accepted staffing and management principles in conducting food stamp system development projects.

Findings

The projects currently underway or recently completed have had active user participation in all phases, and in many cases have had user leadership in many of the non-technical tasks, such as testing, screen layout design, and conversion planning. Executive oversight committees are now an integral part of the project process and take an active role in helping resolve conflicts that arise, which can subvert technical progress by placing political or administrative roadblocks in the project's path, and in formulating new policy to meet the needs of today's integrated systems. User project involvement has led, in many cases, to the formation of liaison groups between the user and MIS areas to facilitate the implementation of regulatory and functional enhancements to the system as change occurs after full implementation. These approaches (i.e., active user involvement, executive oversight group, and liaison groups) not only improve the MIS/user interaction, but are positioned to improve the requirements definition phase of future projects.

Recommendations

FCS should continue to encourage States to involve all pertinent areas in the planning, design, development, implementation, training, and conversion aspects of system development projects. Total user involvement, along with State systems staff and external contractor support, can help ensure a thoroughly planned, designed and executed system, one that will be fully supported by management and staff when implemented.

E. BALANCE BETWEEN FSP NEEDS AND STATE-OF-THE-ART DATA PROCESSING SYSTEMS

Current Environment

FSP has standard functional needs from its automated systems; these include:

- On-line processing of high volume transaction systems
- Management of customer files
- Inquiry capability into internal and external files
- Reliable, efficient processing platforms

Findings

Hardware and software platforms are changing with increasing frequency, but the basic processing and storage/retrieval of data remains fairly constant. FSP is not required to implement new, leading edge technology to meet its functional requirements, so States can take advantage of proven, cost-effective hardware products and established software to meet all FSP functional needs. Even new directions, such as electronic benefits transfer (EBT), use technology that has been available for more than 10 years; nevertheless, EBT provides exceptional improvements in the ability to deliver FSP benefits to clients.

Recommendations

Distributed intelligence technology is becoming more cost-effective and easier to implement with each passing year and holds tremendous potential for use in the food stamp operation. Its potential future uses may provide greater local office capability and faster client service. Since all the logic and functional capabilities will reside at the local office, all client services, including applicant registration, eligibility determination, benefit calculation, and benefit issuance, could be performed while the client is being processed and approved. This could eliminate return trips for the client and improve the overall delivery of benefits.

FCS may want to use more demonstration projects to determine the possible benefits of newer technologies. Experience with products such as imaging or distributed food stamp systems sooner in the product's life cycle may provide valuable insights into how a specific technology might be used to control or reduce costs, or improve service to public assistance clients.

V. IMPACT OF CURRENT AND FUTURE SERVICE DEMANDS ON FOOD STAMP AUTOMATION REQUIREMENTS

The goal for automated support of FSP is to provide accurate eligibility determination and timely benefit issuance to clients receiving food stamp assistance. Automation provides an effective vehicle to process the myriad of requests for information pertaining to the eligibility, issuance, and reconciliation of food stamp benefits. By designing systems that utilize the most cost-effective and useful automation functionality for their requirements, a State could provide an efficient and beneficial automated solution for food stamp processing requirements. To keep current with improvements in techniques and technologies, an organization must review present and future demands to ensure that the public assistance application is providing the best possible support.

A. CURRENT SERVICE DEMANDS

Current Environment

During the past four years, virtually every State experienced unexpected growth in the number of clients applying for and receiving Federal assistance. During the same period, resources available to support this increasing demand were being reduced as a result of a strong recessionary trend. States were forced to meet the demand with their existing automated systems, a shrinking work force, and, in some cases, additional problems and confusion related to difficult conversions to new systems.

The current level of new system design and implementation continues to be significant. States still face high levels of demand for public assistance benefits, error rates have not always been reduced as anticipated with the implementation of new systems, and there is increasing pressure from Federal agencies to find additional ways to reduce costs and improve the effectiveness and efficiency of benefit authorization, issuance, and reconciliation.

Findings

States still are attempting to create automated tools that will enable them to treat public assistance clients with dignity while providing fast and accurate eligibility determination and benefit calculation functions. To achieve these goals, States continue to need capabilities to capture client information quickly by eliminating multiple-processing steps, such as manually entering data from client-prepared paper applications. States also must be able to interface with every available information file to confirm the accuracy of client information, especially income and asset data, and issue the proper benefits as soon as possible.

State workforce staffing levels are not keeping pace with the growth in demand for benefits. Caseloads per worker are increasing in virtually every State. For example, West Virginia averages more than 500 cases per worker, with one county having workers handle over 800 cases each.

Regulatory changes issued by both Federal and State governments continue to place heavy burdens on the States to keep their systems current. In many States, support for multiple public assistance programs has been integrated into a common system. Changes to any program will have a potential impact on every assistance program supported by the system and tax the capability of limited State MIS staff to support all application maintenance and enhancement requirements. In addition, the more changes introduced into a production environment, the higher the level of unscheduled service interruptions. Systems with integrated Medicaid support appear to have experienced a high level of regulatory changes over the past five years; these changes had a direct impact on States' abilities to meet all of their regulatory change implementation timeframes.

Recommendations

State systems should continue to eliminate duplicate steps and enable the automated system to perform as many validation and edit checks as possible. Interactive interviewing will reduce duplicate data capture steps; on-line verification will reduce the time and effort to perform batch or manual lookups. These and other automated solutions can help reduce non-productive administrative burdens of the eligibility worker and allow more time for client interaction to facilitate the determination and issuance of benefits and allow the worker to deal with more cases.

B. FUTURE SERVICE DEMANDS

Current Environment

Increasing pressure is being applied to reform the current welfare system. The emphasis continues to be on providing cost-conscious and effective support for public assistance recipients, but renewed attention is focused on welfare reforms that will require tracking more timely and pertinent information about recipients. As the dynamics of the economic health of the country and the impact of changes in Federal administrations continue to interact, change -- sometimes dramatic change -- will continue to be required of today's public assistance systems.

Findings

In the future, States will face the need to gain faster access to more information to determine client eligibility. Today's systems still rely on batch data updates that are processed during overnight batch processing to validate client-supplied application information.

As more functionality is provided by the automated system and fewer functions are performed manually by caseworkers, the need for high levels of system reliability and working disaster-recovery plans becomes more critical. In today's environment, many States have the ability to manually process client assistance requests without the automated system. They simply capture the information manually and update the system when it becomes available. If an extended outage is experienced, manual issuance processes can be implemented without too much difficulty. In the future, capabilities, such as EBT, will result in the elimination of the need for staff to perform manual issuance, and it will become much more difficult for a State to revert to manual methods. Similarly, as workers become more dependent on the system to perform

analysis and calculations, their ability to perform any of the necessary steps without the system will be reduced.

Most State systems have been able to achieve and maintain high levels of reliability due primarily to very reliable hardware, software, and telecommunications environments; however, any environment that experiences regular and extensive changes is much more vulnerable to an outage. Since the level of system change is expected to remain constant or increase, risk to the reliability of the processing environment will be high. Dependence on sound policy and procedures to manage change will become more important as the degree of automation and integration of compatible systems increases. Many States have begun to implement change control processes; however, other States should be encouraged to create and staff the process.

Although disaster-recovery processes are mandatory, very few States have any semblance of a well-planned and tested process. Reviewing some of the events of the past two years reinforces the criticality of having a workable disaster-recovery plan. The Los Angeles earthquake, extensive flooding in the Midwest, and Hurricane Andrew in Florida are clear examples of how quickly a State's processing resource can be put at risk. At the same time, the need for public assistance support increases dramatically under disaster conditions.

Recommendations

To support future requirements, more real-time, on-line interfaces to Federal, State, and private-sector files will need to be developed. These interfaces will be needed to access and review client financial data to make more timely and accurate calculations of a client's eligibility and benefit allotment amounts. To support this requirement, States will need more sophisticated interface programming, improved access and file security, and larger, more expensive telecommunications networks.

There are pending recommendations that the amount of time a person can receive benefits be limited to two years. If such a requirement is added to the current regulations, much more extensive client tracking procedures and processes will need to be incorporated into many of the current State systems.

Future systems must have the ability to be transported to an alternate processing facility in the case of elongated emergency shutdown of the processing complex. Development of reasonably transportable systems is necessary to be able to achieve the type of backup support the future systems functions.

C. IMPACT OF DEMANDS ON FOOD STAMP PROGRAM SYSTEMS

Current Environment

Hardware and software components that can support the future levels of performance and functional capabilities for FSP are not a significant concern since there are not any foreseeable, unique requirements.

Findings

In larger States, it might be necessary to segment the system into several subsystems to provide acceptable levels of hardware and/or software performance. For example, California may choose to create several regional centers for Los Angeles and other high-population centers to support high-transaction volumes and lower telecommunications costs to a single central-processing complex.

Telecommunications networks are moving towards a common, Statewide network supporting all transmission requirements of State agencies.

Recommendations

Regional client files could be maintained locally and all local processing could be performed without involving a central State facility. A centralized facility could be used to consolidate all regional-processing files, handle client transactions for those who are applying for services outside of their normal regional area, and provide updated regional files to each processing center after the consolidated nightly processing is completed at the central site.

The same concept could be used to create distributed processing nodes throughout a State. Each node could have the capability of storing and processing data from clients within their jurisdiction. Full functional capability would be provided at each node for applicant registration, eligibility determination, benefit calculation, notices, alerts, and issuance. Interconnection among nodes would be required to support clients who require assistance when they are away from their normal processing area. Depending on how the system was designed, a centralized processing site may or may not be needed to enable every processing node to communicate and access information from the other nodes.

Elimination of stand-alone, dedicated networks should help reduce the overall telecommunications costs for FSP and provide enhanced levels of performance and capability. Transfers of large client files will make the use of distributed intelligence more feasible and connections to external agencies, such as the Internal Revenue Service (IRS) and Social Security Administration (SSA), for inquiries and confirmation of client information, more effective.

Intelligent workstations, in conjunction with distributed processing nodes and/or client servers, could be used to provide enhanced processing capability at the local office, reduce telecommunication costs, and improve functionality. Interactive client registration, eligibility determination, benefit calculations, notices and alerts could be generated and supported locally. Control and maintenance of policies and regulations could be performed centrally and downloaded to the workstations to provide current and accurate State and Federal regulations. Programming changes also could be developed and tested centrally and downloaded to each workstation as necessary. Bypass processing could be provided at another node or at a central site to support those local areas impacted by an interruption of service.

D. DEVELOPMENTAL DIRECTIONS TO MEET CHANGES

Current Environment

States are using standard development processes for planning, designing, and implementing large, complex centralized systems. The use of proven system development life cycle methodologies has been established for many years, and all States should be strongly encouraged to use the accepted industry standards as a regular part of all development projects.

Findings

Today's systems development solutions for public assistance processing are still geared to centralized, mainframe-based, unintelligent terminal systems. Their creation is costly and time consuming; by the time the effort has been completed, the original needs of the programmatic area have changed. As new technologies emerge and become more cost effective, States should begin to assess how the new technology may be able to support the needs of the Food Stamp Program. For the most part, those types of assessments are not being undertaken today.

Recommendations

Architectures incorporating distributed system intelligence, including client-server, regionalized/stand-alone processing sites, or decentralized processing nodes as part of a centralized system approach, are potential alternatives to centralized mainframe-based solutions and should be considered by a State examining its options for meeting public assistance automation requirements. With distributed approaches, the capability of the hardware and software is comparable to mainframe solutions. Tele-communications networks can be configured to handle transmission of large data files without crippling the throughput for extended periods of time, and price/performance capabilities of distributed intelligence solutions are becoming more competitive with large mainframe alternatives.

There are several features that, if included in new systems, will enable the caseworker to handle more cases with improved efficiency. These features include the use of system-generated alerts and notices, follow-up notification to caseworkers and supervisors, electronic issuance and reconciliation, on-line policy manuals, and client data validation and verification by means of on-line, real-time inquiries to pertinent databases throughout the country.

Creation of technical and financial checkpoints will help to assess the progress being made against the project plan. By being able to track the project status, slippages in the project schedule or deliverables, and cost overruns, the impact of any necessary adjustments can be evaluated more quickly. Problem areas can be identified and corrective actions implemented sooner.

The use of developmental and planning tools also has been an important asset in improving overall project and staff efficiency. Standardized use of these types of tools should be part of a project's documentation to enable other States to realize the same benefits achieved by the originator during the implementation cycle. FCS should encourage the use of standard products

to ensure the continuity of such endeavors. The use of customized software tools only increases the development costs and inhibits the transfer of experience to other States.

For each new State system, development staff should evaluate the strengths and weaknesses of all possible technical alternatives and determine which approach best meets the needs of that particular State. The process of transferring existing systems as the basis for a State's new food stamp/assistance system may continue to be the preferred solution for many States; however, other alternatives also exist.

A system transfer provides a starting point from which modifications can be made, even if the vast majority of the application is changed. Another alternative may be to subsidize the creation of an application framework that supports the core functionality needed by every Federal system. The core product would be used as the basis for supporting all Federal processing requirements and the State could then customize the system, at its cost, to meet its specific requirements. The need for each State to investigate and evaluate transfer candidates would be eliminated, and regulatory updates and core enhancements could be provided as regular new releases of the core system, which would greatly reduce the time and effort required for each State to plan and implement every change. Other potential benefits would include faster development and implementation time, lower development costs, less dependence on external contractors to provide technical and manpower resources, and more effective review of the technical and monetary impact of making regulatory changes to systems.

VI. RECOMMENDED GUIDELINES FOR FCS

Volume II of this report addresses the objectives of the State Automation Systems Study. One of the study requirements was to recommend guidelines to FCS for use in evaluating State systems, APDs, and technology transfer analyses. The following sections present a summary view of the findings of Volume II regarding these three areas.

A. PROPOSED STANDARDS FOR STATE SYSTEMS

Current Environment

Public assistance systems exist in the same form as they did 20 years ago. The vast majority of systems use a mainframe-based, centralized approach with terminal access to database files that are updated through overnight batch runs. Functionally, the systems allow for some form of basic activity that can be made more sophisticated based on the specific needs of the State. Basic functions supported include: client registration, eligibility determination, benefit calculation, and notice generation. Additional features that may or may not be included in the same system are issuance, reconciliation, and claims collections.

The majority of the installed or planned systems are run on IBM or IBM-compatible mainframes under the MVS/XA or ESA operating systems and use one of several industry standard databases (i.e., ADABAS, IMS, or NATURAL). The remaining systems are on either Unisys or Honeywell platforms.

Problems Identified

During State visits, the project team did not observe any specific problems with the functionality of the systems. Some of the older systems no longer meet all FCS requirements, but most States are in the process of replacing these systems. Every State had its own specific method and

reasonable safeguards to the eligibility determination process. Since data matched may be several weeks or months old, based on the method and frequency of acquisition of data from other agencies' files, delays and inaccuracies are a constant problem in the current computer-matching process.

- **Issuance** - In many States, the food stamp issuance function is separate from the eligibility determination/benefit calculation process and is handled outside of the main public assistance system. Information from the benefit calculation process is fed to the issuance process, and issuance data is returned to the public assistance system for reconciliation.
- **System Platforms** - The majority of the current and planned systems are designed for the historical high-volume, database-driven configuration on a large, centralized mainframe. Very little consideration appears to have been given to other platforms that provide excellent and cost-effective solutions to other applications today -- client-server and personal computer/local area network (LAN) configurations. While a number of States have distributed nodes to enhance data entry or provide some semblance of ongoing service during mainframe outages, only a few States have done any work on using distributed databases tied to a centralized State network to handle food stamp processing.

Alternative Solutions

While it is impractical to impose strict functional requirements on every State system, there are practical guidelines that FCS can propose and support that will enable the States to more effectively design and support these types of systems.

Data handling should be minimized in any system design. If possible, data should be handled or entered only once. Information that has been electronically captured should never be re-keyed.

Use key client information (e.g., name, Social Security number, address, data of birth, etc.) to build a registration form electronically and perform duplicate participation checks and begin eligibility determination at the same time. By using on-line inquires and look-ups, much of the current manual processing can be performed more quickly and accurately by the computer. Review and clarification can be performed during the client interview.

Computer matching only should be performed on those data elements where it can be cost-justified. The savings can be compared against the cost of performing the matching procedure to determine if the process saves more than it costs. If a cost comparison cannot be made and it does not appear that a specific match process is finding a reasonable number of discrepancies, the process should be eliminated.

More emphasis needs to be placed on evaluating new technological approaches that may be beneficial to both FCS and the States. The use of client-server technology, intelligent workstations, and distributed processors have been ignored, for the most part, when evaluating new system solutions during the past few years.

Recommended Guidelines

This section provides FCS with functional and platform-related guidelines for State systems.

Functional

FCS should create a Federal/State committee to review the standard features to be included in every public assistance system. This group will review recommendations from subgroups formed in each FCS region to better represent the specific needs of every State in the particular region. The information supplied by the subgroups will include recommendations about which aspects of client registration, eligibility determination, benefit calculation, notice generation, issuance, reconciliation, and collections should be automated and to what extent the automation level should reach (i.e., on-line capture of client registration information versus interactive interviewing).

The Federal/State committee will develop more specific guidelines addressing the minimal and reimbursable aspects of automated systems for future systems. States that wish to include capabilities and features that exceed the Federal guidelines should be required to exclude their costs from APD requests for Federal financial participation and include those expenses in the State's portion of the development costs. This would remove the need for FCS to review and negotiate each State's requirements definition to determine the hows and whys of each design, and reduce the Federal financial participation costs.

Platforms

FCS should encourage the States to evaluate all types of system platforms for future systems. Using existing FCS Information Resources Management (IRM) resources, FCS should provide an overview of what capabilities and limitations exist in the distributed environment as a basis for new State analyses. Since distributed solutions available today are limited, extraordinary efforts may be needed to document the potential and risks associated with this type of alternative solution. FCS should be prepared to assist States in making this evaluation until there are alternative models from which to choose, as is the case in the system transfer process.

B. APPROVING APD REQUESTS

Current Environment

Based on the FCS 901 Handbook issued in April 1992, the process to request approval and funding for an automated system supporting the Food Stamp Program entails:

- The State creates a Planning APD (PAPD), a reimbursable cost based on a Federally-approved PAPD and cost allocation plan, that addresses the justification for the system, a general functional design, estimated planning cost, development cost, and operational cost of the final system as well as the cost allocation methodology and cost allocation plan for the project and a preliminary cost/benefit analysis.

- FCS reviews the plan and requests clarification and/or changes.
- Once FCS approves the PAPD, the State is allowed to begin the planning process and is eligible for Federal financial participation based on the approved cost allocation plan for the project. Any request for proposal (RFP) to be used to obtain contractor assistance also must be submitted to FCS for approval before being let for competitive bids.
- An Implementation APD (IAPD) is one result of the planning effort. The IAPD addresses the specifics of the system's functionality, hardware/software platforms considerations, development timeframe estimates, cost and cost allocation plans, overall development and operational costs, and cost/benefit analysis.
- The appropriate FCS regional office reviews the IAPD, requests clarifications or changes, and responds to the State within 60 days. If the requested amount is less than \$1 million for the entire project, the RO can make the decision to approve and notify the State of its findings. If the request exceeds \$1 million, the RO summarizes the IAPD and sends the summary to FCS headquarters for the Executive Oversight Committee's review and concurrence. Headquarters staff have 30 additional days to respond to the request.
- Once the IAPD is approved, the State can begin implementation. FCS oversees the development process and deals with any issues that arise during the development cycle. Each year the State produces an APD Update (APDU) to address what has been accomplished and present any changes to the original plan. Any significant design changes and requests for additional funding are requested through an APDU.
- When the system is completed, FCS conducts a formal system review to ensure that all functions planned are present and performing properly. [Note: Due to limited personnel, FCS no longer conducts post-implementation reviews. Upon receipt of notification that the system has been fully implemented, FCS closes the project as completed.]

Problems Identified

For the most part, both the States and we feel that the APD process is necessary and beneficial. The structure requires States to plan and document their activities and report on their progress. Specific aspects of the process, however, generate some concerns among States:

- **RFP reviews** - Nearly every State has a Purchasing Department where contracts are negotiated. The need to have FCS also review the contract for content is redundant for those States and creates delays in the review and approval process. If the only FCS issue is to ensure that the RFP allows open and free competition, review could be limited to the section that contains the work specifications (Statement of Work) to ensure that no specific product or vendor has an unfair advantage. Approval of this limited scope should facilitate quicker approval of State RFPs. Those States without an adequate internal RFP creation and review process could still send the full RFP to FCS for review and comments. It would add some time to the approval process, but would help ensure the development of a thorough and acceptable RFP.

- **Cost allocation plans** - Guidelines for the creation of cost allocation plans do not enable the States to adequately address FCS' allocation concerns. The content and format, although generally well-documented, usually do not meet with FCS approval on the first submission. Part of the problem can be tied to having multiple federal agencies review a single cost allocation plan. Each agency appears to have unique matching rates, different acceptable cost allocation methodologies, and separate ways of calculating the agencies' appropriate portion of the development cost. The States' biggest concern with the process is lack of understanding and guidance from FCS regarding its view of cost allocation. Approval of cost allocation plans appears to create the most disagreement and the longest delays in the APD approval process.
- **Lack of consistency and contradictory requests from FCS and DHHS in their respective reviews of APD requests** - The States view their role as having to act as intermediaries between the two Federal agencies to reconcile the differences in the APD to obtain Federal funding approval from both groups. In some cases, delays exceeding one year have occurred in attempting to resolve differences, which usually related to CAP issues, between the agencies.
- **Delays in gaining APD approvals** - Nearly every State felt the process took a great deal longer than the 60 to 90 days specified in the APD Handbook. In several States, staff thought that the 60-day window pertained to the amount of time within which the RO was required to send a letter to the State claiming receipt of the APD and indicating it was under review. In most cases, the APD approval process appears to take from four to eight months for review, clarifications, and approval.

Alternative Solutions

The current process is well conceived and effective. Its difficulties are tied to the lack of adequate staff to thoroughly absorb and understand a detailed and voluminous document (APD) within the 60-day timeframe.

With an integrated system, FCS and DHHS review the same document concurrently and arrive at their separate conclusions, usually without consulting each other. This creates a dual environment in which the State must operate. The logical solution is to have both FCS and DHHS jointly review the APD and prepare a consolidated list of items for clarification or modification instead of two separate processes. While this addresses a difficult coordination issue between two distinct Federal agencies, the agencies are given the same APD and have similar review processes. Although a coordinated review process would require a much closer working relationship between the agencies, it could pave the way for additional improvements in the oversight process that would benefit both agencies.

Recommended Guidelines

To improve the APD approval process, the following guidelines should be adopted.

- **Develop a series of RFP clauses to protect the Federal agency's participation in the project** - FCS review and approval of the RFP would be done to ensure that the required

text was included. FCS would review the entire RFP document only for those States that specifically request it.

- **Allow for more RO trips to States during the planning and creation of the APD** - This would allow the RO staff to be more familiar with the logic and plans for the development effort and more effective in their review of the formal document.
- **Create a workable cost allocation process among FCS, DHHS and the States** - This could eliminate the confusion and delays that have occurred in with most APD submissions during the past few years and resolve States' biggest complaint, the lack of consistency and guidance from the Federal agencies regarding cost allocation plans.
- **Institute a requirement for all States and FCS ROs to maintain cost records of all project activities for up to 10 years after the completion of the project** - If historical cost information is of any importance in the review of project performance and future Federal assistance requests, formal requirements for retention of cost data is necessary. For many States with older systems, and even some of the systems under development, very little cost information was maintained by the States and the ROs since there are no requirements to maintain the documentation. At a minimum, the original cost estimates, supporting documentation, all revisions, and all actual costs incurred should be maintained, along with pertinent documentation and correspondence. The RO should be responsible for ensuring that the documentation is complete and accurate.
- **Conduct post-implementation and cost/benefit reviews for completed systems** - Currently, there is no requirement for FCS to conduct a post-implementation review. We recommend the practice be re-instituted and expanded to require a formal cost/benefit review to document actual cost savings/losses experienced. If each system must be justified at its inception, there must be a requirement to document the results achieved or the process is worthless. In addition, a post-implementation review should enable FCS to gain valuable information regarding the positive and negative aspects of a State's plan for use by future development efforts.

C. TECHNOLOGY TRANSFER ANALYSES

State/Contractor Views of Technology Transfers

As discussed in Chapter IV of Volume II, most States felt the transfer process was a more practical solution than beginning the development process from its inception each time. More than half the States did transfer a system, and many States that did not execute a transfer had developed a system before there were candidate systems from other States to transfer. Many States do not have large system staffs to undertake major development projects and depend on external contractors to augment their in-house personnel. While this encourages future system transfers, it does not address some of the shortcomings of the transfer process.

From our perspective, transfers provide a proven foundation from which a new system can be created; however, system transfers do not appear to provide any tangible cost or time advantages

compared to new development. This does not mean, however, that transfers are not cost-effective.

The major benefits of transferring are:

- States begin with a process and set functionality instead of having to develop and design from scratch.
- The learning curve is shortened if contractors with knowledge of the system are used.

Problems Identified

States are required to perform their own investigations of all transfer alternatives since there is no consistent vehicle for getting information about all State systems. This process can be streamlined to provide a clearinghouse of information to States and shorten the time they need to identify and investigate alternatives.

The quality and accuracy of State documentation for their systems varies widely. In some cases, States transferred a version of another State's test system rather than version being used in production. In other cases, transfer system documentation is so poor that the receiving State must take time to determine the program functionality for itself. In both cases, some measure of consistency should be established to enable a system to be a transfer candidate. Establishing some minimum performance and documentation criteria may help eliminate these problems in the future.

Recommended Guidelines

To ensure that future system transfers are reasonable, the following guidelines are suggested:

- **Establish a national clearinghouse at FCS to capture, analyze, store and distribute information to States** - Information in the clearinghouse should relate to the capabilities and liabilities of installed and developmental State systems supporting the Food Stamp Program. The data would be acquired through proactive contacts with each State. Specific information maintained should include: hardware/software platforms, performance statistics, planned and actual costs, planned and actual timeframes, project management team, project management approach, conversion and pilot plans, conversion and pilot results achieved, current operational status, and any future considerations.

- **Have each receiving State rate the transferring State** - Criteria on which the transfer State is rated should include:
 - **Timeliness of transfer** - How much time required for the transfer State to provide all necessary information and source media?
 - **Completeness of transfer** - Was all source code and documentation received?
 - **Performance** - Were there any aspects of the system that did not perform as they were represented?
 - **Degree of customization to be performed** - How much of the system had to be changed?
 - **Overall satisfaction level with the transfer system** - How well did the system meet users' needs?

- **Encourage the development of new technology platforms** - This would enable FCS and the States to determine their usefulness and effectiveness in the food stamp environment.