State Aging Information Systems Management Study

Final Report

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Executive Summary

Under the provisions of the Older Americans Act (OAA), the Administration on Aging (AoA), State Units on Aging (SUAs), and Area Agencies on Aging (AAAs), with their service providers, operate a network of programs for senior citizens, including transportation, nutrition, information and assistance, case management, in-home services, and family caregiver support, among other services. Increasingly, these agencies need timely and accurate information about their clients and services, given the advent of federal accountability initiatives, such as the Government Performance and Results Act, and similar requirements at the state and local level. An agency's internal management needs for information are equally important, including quality-assurance efforts, assessing needs and linking clients with services, fiscal control, planning, and research. The availability of technology innovations, such as computer software applications, has given SUAs and AAAs valuable tools for addressing their information needs.

AoA allows SUAs considerable flexibility to develop programs and services that address local needs and concerns. While an important strength of the OAA network, this flexibility has also led to various, sometimes fragmented, approaches to the development and management of data and information reporting systems. For this reason, NASUA sponsored a study of information management practices in state programs on aging to identify ways for AoA, SUAs, and AAAs to improve the efficiency and effectiveness of reporting and to reduce the burden of information collection across the OAA network. To this end, the study analyzed state information systems practices and developed recommendations for cost-effective ways for the OAA network to address four primary objectives:

1. Define the common data requirements necessary for policy and management decision making, covering state and local initiatives (including advocacy) so as to limit federal requirements to a sub-set of state and local needs and uses;
2. Eliminate the need for elderly individuals and caregivers to provide identifying information repeatedly to various service providers;
3. Improve data collection methods and systems to insure the ability to compute unduplicated counts of individuals across services, providers, and geographic locations; and
4. Reduce the level and expense of information systems fragmentation by taking advantage of network economies of scale for information systems development and management, without compromising competition in the marketplace.

The study found many replicable examples of commercial and custom-developed software that support a wide range of SUA, AAA, and service provider functions, including assessing the need for care and tracking individual clients across the many services they receive. These computer applications also enhance many operational aspects of programs, such as maintaining data bases of community services for client referral purposes, dispatching transportation resources in response to calls, and scheduling volunteers supporting home-delivered meals programs.

At the same time, the study found that SUAs encountered a reluctance by many other state and local agencies to share information, resulting in redundant data collection systems and other barriers to coordinating the multiple funding streams that SUAs and AAAs use for services.

Highlights of Study Findings and Recommendations

Objective 1
Define the common data requirements necessary for policy and management decision making, covering state and local initiatives (including advocacy) so as to limit federal requirements to a sub-set of state and local needs and uses.

Findings:

- The majority of states collect more data than is required by the National Aging Program Information System (NAPIS). [1] SUAs reported that the NAPIS requirements, while instrumental in initiating their MIS applications, no longer constitute an adequate nationwide minimum data set for policy and management decision making, covering state and local initiatives (including advocacy). States expressed a need for a new nationwide minimum data set with a focus on their common, internal information needs.

- While AoA reporting requirements under NAPIS may have encouraged SUAs to initiate their MIS development work, the states and AAAs quickly identified their own uses for the information as a basis for the computer system design.

- SUA, AAA, and provider agency staff indicated that the benefits of having a comprehensive client data base, both for Registered and Non-Registered clients, outweighed the costs of doing so.

- While external reporting requirements may not call for client termination (reason for exit) data, having this information available, longitudinally, provides important opportunities to analyze the relationship between services and outcomes, such as delays in nursing home placement.

- Only 20 percent of SUA information systems collect data on client formal education levels, despite a recent National Institute on Aging/Census Bureau publication on the older adult population, which cited this variable as highly correlated with overall well being.

- Few states include client satisfaction and other program quality indicators within their information systems

- Quality-of-life measures, such as the social functioning and emotional well-being indicators from such surveys as the Behavioral Risk Factor Surveillance system (BRFSS) survey, which occurs annually in every state, do not appear except infrequently among SUA MIS data. These outcome measures have appeared with increasing frequency in studies of the elderly population and constitute potential additions to what SUAs, AAAs, and providers collect about their clients.

[1] http://www.aoa.gov/prof/agingnet/NAPIS/docs/SPR-Modified-Form-11.08.04.pdf

- While service systems development and advocacy are important AAA functions, SUA information systems collect very little data about the level and scope of these activities.

Recommendations:

1. When resources become available, NASUA should convene a workgroup to develop, through consensus, recommendations for a new minimum data set for home and community based services.

2. These recommendations should encourage the inclusion of data on reasons for client terminations, such as nursing home placement, in the minimum data set.

3. Given the interest expressed by SUAs, AAAs, and providers for this approach, NASUA (and the National Association of Area Agencies on Aging) should convene, if resources are available, such a group at least every five years to maintain an on-going consensus on state data needs.

4. In future revisions of NAPIS, AoA should select the data elements for reporting that can be derived from the minimum data set.

5. NASUA should assess the utility for use of the proposed CMS National Provider Identification Number in SUA MIS applications.

Objective 2
Eliminate the need for elderly individuals and caregivers to provide identifying information repeatedly to various service providers.

Findings:

- Despite the existence of detailed client files, there is infrequent sharing of this information among multiple providers, which would avoid the redundant collection of personal data, when clients receive more than one service.

- The technology exists to eliminate the need for consumers to provide identifying information multiple times. However, there are state and federal policy barriers to fully implementing the technology.

- There is considerable confusion within the SUA and the state Medicaid agency, among others, about the specific requirements of HIPAA and any limitations this law imposes on sharing data among the SUA, AAAs, and service providers. The SUA, AAA, and

provider staff interviewed in this study said that the next step is receive guidance on how these covered entities, such as home health agencies receiving AAA funds, might share client information as part of an integrated information system.

Recommendations

1. NASUA should engage the Centers for Medicare and Medicaid Services and the Administration on Aging in discussions to facilitate the development of shared databases across funding streams and agencies.

2. If resources are available, NASUA should work with SUAs to identify and implement solutions to state policy related barriers to sharing information across agency and program lines.

3. NASUA should convene, if resources are available, a workgroup to examine efforts in the health care industry, such as "Connecting for Health,"[2] to share consumer information across multiple agencies in a HIPAA compliant environment for applicability in the aging and disability network.

4. AoA and NASUA should encourage the incorporation of bar code and other technology as enhancements to existing information systems, which reduce staff and client data collection burdens.

Objective 3
Improve data collection methods and systems to insure the ability to compute unduplicated counts of individuals across services, providers, and geographic locations.

Findings:

- Vertical integration of the MIS among the SUA, AAAs, and providers is one way of guaranteeing consistency of data.

- Half the states choose to collect unduplicated counts and unit-of-service information for at least some clients receiving Non-Registered Services. This suggests, without an AoA requirement to do so, SUAs feel the time and effort are worth the cost.

- Eighty percent of SUA information systems capture a unique service provider agency identifier for tracking purposes. Virtually all of these information systems use an identifier that the MIS automatically generates, rather than the government issued Employer Identification Number (EIN). Compliance with the AoA reporting requirement of a statewide unduplicated count of service providers is not possible using an identifier automatically generated by the MIS.

[2] http://www.connectingforhealth.org/

- The inconsistency with which states construct (estimate) their total unduplicated client counts for SPR purposes may be a source of error in the figures that AoA receives from the SUAs. For this reason, some SUAs recommended that AoA set standards or other guidance to help ensure consistency in the total unduplicated counts across all services, both Registered and Non-Registered.

Recommendations

1. The migration of local networks or stand-alone client tracking systems to a Web-hosted environment should be encouraged by the Administration on Aging and NASUA.

2. AoA and SUAs should encourage incorporation of bar code and other technologies into existing information systems.

3. AoA should convene a workgroup to develop additional guidance or standards for constructing unduplicated client counts.

4. AoA should convene a workgroup to develop guidance on provider identification numbers for the creation of unduplicated counts of providers across services and planning and service areas.

Objective 4
Reduce the level and expense of information systems fragmentation by taking advantage of network economies of scale for information systems development and management, without compromising competition in the marketplace.

Findings:

- At the time of the initial survey, several SUAs were in the process of considering the procurement of commercial software to replace their existing applications.

- Successful implementation of a statewide information management system requires:
    1. leadership of a key individual, who
    2. secured funds or received tangible commitments of funding, and where
    3. the SUA, AAAs and providers cooperated in a joint effort to design, select and implement the system.

- The initial software acquisition and development costs ranged from under $16,000 to $2,000,000.

- Annual software maintenance costs ranged from under $11,000 to $700,000.

- These cost figures show that there is a dramatic variation in the investments that SUAs have made (and perhaps are willing to make) in MIS applications.

- There is a need for extensive SUA staffing with technical expertise, even when using software from a commercial vendor**.**

- Data import and export capabilities must be a component of any MIS that states use.

- Integrating the data requirements of multiple funding streams and programs within a single information system also may help state and community programs on aging avoid fragmentation in the management and delivery of services, through single entry point systems and the Aging and Disability Resource Centers.

- Separate case management software applications are frequently used in conjunction with an SUA's core MIS.

- Computer applications that address many of the specialized (intake, tracking the delivery of services, I&A, case management) functions within the scope of the MIS have considerable advantages over single-use software programs. This integration enhances the coordination of programs and reduces the burden of data collection on staff and clients.

- Still, the use of special-purpose software for individual functions, such as case management and I&R/A, is sometimes warranted when the capabilities of these individual applications far exceeds what is available from an agency's core MIS.

- When there are multiple software applications in place, the need for standard data export and import formats and procedures is essential; such file transfer capabilities also help address the reality of multiple record keeping and reporting requirements that SUAs often must accommodate, despite their best efforts to develop a single, integrated MIS.

- This integration of many agencies, funding streams, programs, and functions is a positive attribute of a state's information system, which provides for coordination and economies of scale.

- Approximately 28 percent of SUA information systems allowed linking OAA and Medicaid data to show which clients were common to both programs. Only 2 states reported they were able to do so fully, while the remaining 11 states were able to do so partially.

- The economies of scale and benefits of coordination that come from an integrated approach, which combines OAA data with Medicaid information for all client groups, are balanced somewhat by the need to pay for aging-related enhancements that the core, integrated system (which is Medicaid oriented) does not address.

Recommendations

1. NASUA should engage the Centers for Medicare and Medicaid Services and the Administration on Aging in discussions to facilitate the development of shared databases across funding streams and agencies.

2. NASUA should convene, when resources are available, a workgroup to initiate an effort to integrate health and long term care data bases as a part of an overall effort to coordinate MIS applications, as well as the underlying service delivery systems they represent.

3. NASUA should encourage efforts to eliminate perceived and actual barriers to integrating or coordinating multiple data-collection requirements (e.g., HIPAA, Waivers, etc.).

4. AoA and NASUA should encourage the migration of local networks or stand-alone client tracking systems to a Web-hosted environment.

5. When a state aging network is purchasing new software or renewing annual licenses, the SUA should negotiate on behalf of the multiple AAAs and providers using the MIS in order to minimize the initial costs and the annual fees.

6. NASUA should investigate if there is a need for the association to develop group purchasing program or serve as an order consolidator for multiple agencies.

7. Each SUA should develop a cross-functional team to facilitate program coordination and information sharing, from the local level (e.g., AAAs and providers) to the state level (e.g., SUA, state Medicaid agency, and others administering programs on aging).

NASUA Information Systems Management Study
State Unit on Aging Survey Report

A. Introduction

This document presents the findings from a study of information management practices in State Units and Area Agencies on Aging (SUAs and AAAs), conducted by Westat for the National Association of State Units on Aging (NASUA). A central focus of this survey is the Administration on Aging's (AoA's) National Aging Program Information System and the accompanying State Program Report (NAPIS/SPR), and it shows the manner in which SUAs and AAAs, with their service providers, collect, tabulate, and transmit information about Older Americans Act (OAA) programs.[3] The SPR represents a consensus among members of a task force that AoA convened, representing SUAs, AAAs, and service providers, who made specific federal reporting recommendations.[4] While AoA does not require that SUAs collect and maintain a minimum data set, these SPR reporting requirements represent agreement on a common core of information for states to collect and report.

This study documents the flow of information, from the providers, through the AAA and SUA, to AoA via the SPR. States may be addressing these NAPIS/SPR requirements as part of integrated information management systems, which support a range of programs and funding streams. However, to provide a common focus across the states, the study emphasizes how such information systems address the NAPIS/SPR requirements, incidental to these other applications. In addition, the study identifies what features states consider to be the major strengths and weaknesses of their current information management systems, as well as the enhancements they would like to make and the types of documentation and technical assistance on MIS development they would like to receive.

[3] http://www.aoa.gov/prof/agingnet/NAPIS/docs/SPR-Modified-Form-11.08.04.pdf
[4] http://www.aoa.gov/prof/agingnet/NAPIS/SPR/2001SPR/SPRrev-update.asp

Background

Since its inception in 1965, Title III of the OAA has had the dual focus of funding an array of supportive services and promoting state and local efforts to develop a comprehensive and coordinated system of care for an aging population. The OAA provides financial support for a range of home and community-based services, including transportation, information and assistance, homemaker, legal services, congregate and home-delivered meals, elder rights protection, caregiver support, and case management, among many other programs. These services facilitate access to care and provide support to help older persons live independently in the community.

The OAA legislation, both initially and through its successive reauthorization, has recognized that direct funding for services is only part of an effective strategy to promote independence and dignity for elderly persons in need of care. Given the host of other public and private programs for the aging at the national, state, and local level, there is also a need for leadership to bring together the many individuals, agencies, and organizations with resources and responsibilities for the well being of the elderly.

The OAA established AoA, SUAs, and AAAs to administer state and community programs on aging and carry out leadership responsibilities for coordinating a wide array of programs. About half of the 56 state and territorial agencies on aging have cabinet rank, and all are influential in setting policy, legislative, and program agenda for the governor and state legislature. At the local level, there are approximately 655 city, county, or multi-county AAAs which may be part of general purpose local government, councils of government, or private non-profit entities. These agencies help set policy, legislative, and program agenda in their Planning and Service Areas (PSAs), and they bring together a host of programs, most notably through single entry points as one-stop locations for access to a range of care. Through the approximately 29,000 service providers, the AAAs offer many different services funded by the OAA and many other sources of financial support. AoA also provides direct financial support for 237 tribal organizations, covering nutrition programs, supportive services, and caregiver support.

Over the past several years, AoA has developed a range of information resources to support both its own internal planning and management responsibilities, and its external reporting to many others, including Congress, OMB, and the Secretary of the U.S. Department of Health and Human Services (HHS).

The OAA calls for AoA to perform a dual role of administering the network of state and community programs on aging and serving as a viable source of information for the many public and private agencies with responsibilities for an elderly constituency. In addition to its support for the SUAs and AAAs, AoA has built partnerships with the Centers for Medicare & Medicaid Services (CMS), the U.S. Department of Transportation (DOT), and many others, to help ensure the availability of a comprehensive and coordinated system of services for an expanding elderly population in need of care.

An essential resource for supporting AoA, SUA, AAA, and provider roles and responsibilities is access to timely, accurate, and integrated data on a wide range of aging-related issues and programs. In this regard, AoA has taken several important steps to ensure the availability of this essential information. First, it has developed the National Aging Program Information System and the State Program Report, through which states collect data on clients, services, agencies, and costs for annual reporting to AoA. This report addresses Title III of the OAA, covering social/nutrition services and the National Family Caregiver Support Program (NFCSP). In addition, AoA has provided software support to facilitate state submission of the SPR, as well as computer programming and table generating capabilities to ensure timely and wide-spread availability of the SPR information via the Web.

The SPR provides information on the characteristics of clients including: demographic and disability data; the types and levels of service, such as the numbers of persons serviced and the units of service provided by the network on aging; expenditures of OAA funds and from other sources; and administrative information about SUAs and AAAs, including staff levels and responsibilities, as well as the number of volunteers providing support. For the NFCSP, the SPR provides AoA with information on the number of caregivers and the range of support they received from the program. The addition and expansion of this program as part of the OAA is a

recognition of the important role that family caregivers play in the well being of the elderly, in conjunction with the range of formal care that older persons may receive.
In addition to the SPR, NAPIS includes the National Ombudsman Reporting System (NORS), which summarizes the activities and accomplishments of the state's Long Term Care Ombudsman Program. Protecting elder rights is an important mandate under the OAA, including documenting and resolving complaints on behalf of participants in long-term care programs, such as nursing homes, other care facilities, home care, and related services for a vulnerable elderly clientele. Given its separate reporting requirements, NORS-related data collection is beyond the scope of the NASUA study.

While the SPR and NORS data provide essential information for AoA, the summary nature of these reports limits their ability to capture clients' assessments of services and other outcome-related information required by the Government Performance and Results Act (GPRA) and the Performance Assessment Rating Tool (PART).

To address these requirements, AoA has sponsored an annual sample survey of clients, covering a range of services, including transportation, congregate and home delivered meals, information and assistance, the NFCSP, and surveys of other caregivers associated with clients receiving formal services. In addition, these surveys include cross-cutting data, such as demographic characteristics, disability, social isolation, emotional well-being, and other quality of life measures.

Beyond AoA's annual reports and surveys, there are important data sets that can complement and help interpret the OAA program information. Of particular importance are the 2000 Census data files which AoA has arranged with the Census Bureau to be available by PSA to support AAA-level analysis, including the individual counties and cities. These Special Tabulations consist of detailed tables, allowing for the analysis of specific subgroups of interest, such as the 60+ population below the poverty level, without the need to use the actual Summary Files or employ skilled programmers who might not be available to many AAAs or other users.

AoA has taken steps to integrate these state and AAA-level Census files with SPR, NORS, and AoA survey data, thereby providing considerable analytical potential.

Each year, OAA services reach 8 million elders, 3 million of whom receive intensive services, such as personal care and home delivered meals. On an annual basis, the OAA network provides: 145 million home delivered meals, 115 million congregate meals, 40 million transportation rides, 30 million hours of combined personal care, homemaker and adult day services, 3.8 million hours of case management, over 13 million information and assistance contacts, and other supportive services provided to elders and their caregivers.

AoA provides considerable flexibility to develop programs and services to address local needs and concerns. While an important strength of the OAA network, this flexibility has also led to various, sometimes fragmented, approaches to the development and management of data and information reporting systems.

In order to implement the SPR requirements, as well support many program management and advocacy responsibilities, SUAs, AAAs, and service providers have implemented their own data collection systems. In addition, almost all SUAs and AAAs collect additional data needed for program administration at each level, as well as for tracking programs financed by sources other than the Older Americans Act, which constitute well over half the funds administered by SUAs and AAAs.

SUAs and AAAs have developed or acquired many different software applications to compile, report, and transmit data. This software may be provided by a variety of sources, including in-house information technology (IT) staff, outside consultants, and commercial vendors. There are also software applications operating at the sub-state levels in support of AAAs and service providers, which may vary substantially within a particular state. Many of these software application include individual client tracking capabilities and cover both OAA and other funding streams that SUAs and AAAs administer.

Study Objectives

The purpose of the study is to identify ways for AoA, SUAs, and AAAs to improve the efficiency and effectiveness of reporting and to reduce the burden of information collection across the OAA network. To this end, the study focused on cost-effective ways to:

1. **Define the common data requirements necessary for policy and management decision making, covering both state and local initiatives (including advocacy) so as to limit federal requirements to a sub-set of state and local requirements**

While this study will focus its attention on how states address the external reporting requirements of NAPIS/SPR, the statement of work also calls for identifying the extent to which this reporting to AoA is, or could be, incidental to what the network collects and uses for its own internal purposes.

2. **Eliminate the need for elderly individuals and caregivers to provide identifying information repeatedly to various service providers**

In an effort to make the services user friendly, new technologies can eliminate the need for clients to provide the same information for multiple programs and providers. These technologies also help the programs provide unduplicated counts clients by service and for programs overall.

3. **Improve data collection methods and systems to insure the ability to obtain unduplicated counts of individuals across service providers and geographic locations**

An important NAPIS/SPR requirement is reporting unduplicated counts of persons, by service, and for OAA Title III B, C, and E programs overall. While states are allowed to use estimates for this purpose, only a client tracking system, at least at the AAA level, will permit SUAs to produce credible figures. Such tracking systems maintain a common client data base, which accommodates the multiple providers that may be serving a single client.

4. **Reduce the expense of reporting system fragmentation by taking advantage of network economies of scale for information systems development and management without compromising competition in the marketplace**

Some states use a single information management system across all AAAs and providers to address their AoA NAPIS/SPR requirements. These systems may have been developed by the

SUA, by an umbrella state agency, or by an outside consultant. Or states may be using a commercial software package that they purchased and configured for their own requirements. The study identified which one(s) of these options a state employed, the standards that the state specified for the system(s) to address, the development and operation costs, staffing and training, and the other initial and on-going requirements. Combinations of these scenarios may be the case, especially when considering both the state and the AAA/provider systems for collecting and tabulating the requisite data for NAPIS/SPR purposes.

Study Methods

The state information systems management study had three major operational components: 1) a telephone survey of all SUAs (49 of 51 responded), 2) follow-up telephone interviews with 10 SUAs for additional insights, and 3) five case study site visits, including interviews with AAA and provider staff. This report presents the findings, conclusions, and recommendations from all three components of the study. A summary of the state-by-state findings is attached as Appendix A. The individual case study reports are attached as Appendix B. In addition, the study was guided by an advisory committee representing AoA, SUAs, AAAs, NASUA, and n4a.

1. Telephone survey of all SUAs

The purpose of this telephone survey was to identify how SUAs collect, tabulate, and report information about their clients, services, costs, and other aspects of the programs they support under the Older Americans Act (OAA). Findings from the initial survey provided an overall description of the way information flows through all levels of the state's network on aging, including the role played by local service providers, AAAs, and any other community, county, or city administrative intermediaries that are part of the service delivery system. This survey also identified how the SUAs, AAAs, and service providers use this information for their own purposes, including program operations, quality assurance, advocacy, and accountability to funding sources. The telephone survey occurred between April and September 2005.

Of particular interest to NASUA is the identification of technology innovations and best practices which might reduce the administrative burdens of record keeping and reporting. Processes or tools that simplify the collection of data or support the management of unduplicated

client counts can reduce or eliminate the need for clients and caregivers to provide the same information multiple times when applying for multiple services. The survey also identified instances where OAA record keeping and reporting systems have been used to manage information requirements for non-OAA funding streams and programs in an integrated environment.

The SUA survey, attached as Appendix D, was generally organized into three areas:

- The overall size and structure of the State's service delivery system;
- The methods for moving information from the local (client-level) to the state and the federal (AoA) level, including the types of client and service data that providers, AAAs and SUAs collect and maintain; and
- Questions about the State's information management environment including the software, hardware, processes, costs, users, and user satisfaction.

A listing of all the states included in the initial survey, with a summary of the findings for each, appears in Appendix A.

2. Follow-up SUA Survey

Ten states received a follow-up survey using an open-ended interview guide. A copy of this interview guide is shown in Appendix E. The criteria for selecting the SUAs that received the follow-up interviews included:

- Automated reporting systems used by the SUA, which are NAPIS/SPR compliant, effective, efficient, and represent a range of both commercial and internally-developed systems;
- State-wide reporting systems that include the SUA, AAAs, and providers (this may have included various software packages in use at different levels, which working well together);
- SUAs that represent small, through large, states in different geographic areas of the country;
- SUAs with complex service delivery systems that cover more than OAA funds (e.g., Medicaid Waivers, state-funded home and community based services, etc.);
- Systems that provide unduplicated counts of clients, including technology innovations such as computer readable identification cards; and
- Systems that are potentially replicable in other states and localities.

Westat asked detailed questions in these interviews about how SUAs incorporate existing AoA data reporting requirements into their information systems. The 10 states having follow-up surveys were: Alabama, Georgia, Kansas, Montana, New Mexico, Ohio, Oregon, Pennsylvania, South Carolina, and Vermont. These surveys occurred between September and December 2005.

3. Conduct Five Site Visits

From among the 10 SUAs that completed the follow-up survey, NASUA, AoA, and the study's advisory committee used the following criteria to select the case study states:

The selection criteria for the five site visits included:

- Data systems that are replicable in other states;
- SUAs with an accurate system for determining unduplicated counts of clients;
- SUAs that were representative of various regions of the country, rural and urban areas, different types of technologies, etc.;
- Different SUA structures (e.g. part of a human services agency, separate cabinet-level agency); and
- Different commercial and internally-developed software systems.

A copy of the site visit protocol is attached as Appendix E. The five case study sites were Georgia, Ohio, Oregon, Pennsylvania, and South Carolina. The full site visit reports are attached as Appendix B. These case studies occurred between October 2005 and January 2006.

Several states said they are planning to conduct their own MIS reviews and will be using the NASUA study data collection instruments for this purpose. Copies of these are attached to allow other states the opportunity to do the same.

B. Study Findings

State Unit on Aging Administration

This section presents the organization of the SUA within state government, the size and scope of the budget, and the number of AAAs in the state. This provides important contextual information about the settings in which state information management systems operate, which often influences the MIS design.

Of the 51 SUAs, covering the 50 states and the District of Columbia:

- 12 are departments and part of the Governor's cabinet;
- 4 are departments but not a member of the Governor's cabinet ;
- 6 are independent agencies without department status; and
- 29 are independent entities within another state agency.

The SUA budget size and sources vary considerably. Of the 45 SUAs reporting total budgets,

- Approximately one-quarter (11) of the SUAs have total budgets of $4.2 million but less than $30 million, including OAA and other funding sources;
- Another approximately 25 percent (11) have total budgets of $30 million but less than $53 million;
- The next quartile (11) have total budgets between approximately $53 million and $103 million; and
- The top 25 percent (12) of the SUAs have total budgets over $100 million, with a high of $604 million.

All SUAs receive an allocation of Older Americans Act funds from the Administration on Aging, primarily based on the size of the state's 60+ population. However, most SUAs derive a large percent of their budgets from other federal and non-federal sources, averaging 70 percent. Of the 42 SUAs reporting their budget breakdowns, by source of funds,

- For about one-quarter (10) of the SUAs, OAA funding constitutes less than 15 percent of the total budget;
- The budgets of another approximately one-quarter (11) of the SUAs consist of between 15 percent and 25 percent OAA funds;
- For the third quarter (11) of the SUAs, OAA funds comprise between 26 percent and 40 percent of total budgets; and
- All but one of the remaining one-quarter (10) of the SUAs have between 40 percent and 61 percent of their funds coming from the OAA (one SUA reported 92 percent).

These non-OAA funding streams come from many sources, including:

- Medicaid Home and Community-based Waivers (32 SUAs, or about two-thirds);
- Social Services Block Grants (15 SUAs, or about one-third);
- Aging and Disability Resource Center funding (17 SUAs, or about three-fifths); and
- State funds, including general appropriations, lottery proceeds, and other sources (virtually all SUAs).

SUAs also vary in the number of AAAs that comprise the state's service-delivery network.

- Approximately half of the SUAs (24) have 10 or fewer AAAs, including 9 Single-State Planning and Service Areas;
- Another approximately one-quarter (11) have between 10 and 15 AAAs; and
- The remaining approximately 25 percent (14) have between 16 and 59 AAAs.

This variation in the size and scope of a state's service delivery system is important to consider when describing the information systems management approaches that SUAs use to support their programs on aging. The assumption is that despite the similarities in reporting requirements under AoA's SPR, it is likely that other factors, such as the size and diversity of non-OAA funding streams administered by the SUA, are very influential in determining what systems states use to collect data on clients and services. In particular, the very detailed client record keeping and reporting requirements for the Medicaid Waivers are often instrumental in determining what data the SUAs collect for all their programs, including OAA services.

Computing Unduplicated Client Counts

This section of the report provides an overview of the information flow from providers, through AAAs and SUAs, to AoA and describes how SUAs collect and report unduplicated counts of clients receiving OAA services. For reporting purposes under the SPR, AoA distinguishes between *Registered* and *Non-Registered Services*. Registered Services are those that involve a close interaction between program staff and clients, which facilitates the collection of detailed information for reporting purposes.

These services consist of:

- Personal Care;
- Homemaker;

- Chore;
- Home Delivered Meals;
- Adult Day Care/Health;
- Case Management;
- Assisted Transportation;
- Congregate Meals; and
- Nutrition Counseling.

Non-Registered Services consist of programs that occur in a group setting or where there may not be a one-on-one association between staff and clients (or, in the case of legal services, where there are confidentiality restrictions), which increase the logistical demands for tracking persons, individually. For this reason, AoA requires only aggregate reports, with summary information about these clients and services. Nonetheless, many states collect individual client data for at least some Non-Registered Services, such as transportation. Non-Registered Services consist of:

- Legal Services;
- Transportation (other than Assisted Transportation);
- Information and Assistance;
- Outreach;
- Nutrition Education; and
- Other OAA services.

Notwithstanding the summary reporting requirements for Non-Registered Services, SUAs must compute a total unduplicated client count across all services, albeit using estimates when actual counts are unavailable. The SUA survey and follow-up interviews identified how states compute these unduplicated client counts, including a description of the data sets and methods for constructing these figures.

For Registered Services, two-thirds (67 percent) of the SUAs collect individual client data at the state level as a basis for computing unduplicated counts. By having a separate record for each client, the state is able to construct unduplicated counts by, and across, each service. The remaining states collect these unduplicated client counts for Registered Services as aggregate

figures from the AAAs, which rely on separate, local information systems at the Area Agency and providers to produce these counts.

For at least some of the Non-Registered Services, 37 percent of the SUAs also collect individual client data at the state level. This is primarily a function of SUAs collecting individual client data for transportation services. This percentage is telling, for it shows that over one-third of SUAs elect to collect individual client data for Non-Registered Services at the state level, even though AoA's SPR provisions do not require unduplicated counts for these. The remaining states collect only aggregate data on the unduplicated number of clients for Non-Registered Services.

Concerning the overall unduplicated count of OAA clients, across both Registered and Non-Registered Services, only about one-fifth of the states (18%) indicated that they use estimates for constructing this figure. The vast majority of SUAs use actual figures for this purpose, either from individual client data or aggregate counts from each AAA.

However, the study found that all states had to employ some level of estimation for the unduplicated total number of persons served for SPR reporting purposes, across both Registered and Non-Registered Services. In the absence of individual client data for every service, which was logistically impossible to collect in all cases, some level of overlap between Registered and Non-Registered Services is likely to occur, which is difficult to discern.

Demonstrating the high reliance on computer information systems technology to produce unduplicated counts, 71 percent (35) of the SUAs reported that they had made available a standard client tracking software application to AAAs as a basis for consistent record keeping and reporting to the state. These applications include both commercial packages and internally-developed software, and they may cover Registered Services, alone, or a combination of Registered and Non-Registered Services. It is important to note that state-wide client tracking information systems may not cover every OAA service (for example, Information & Assistance, Legal Services, and, sometimes Transportation, often involve only aggregate counts, even in the most sophisticated client tracking applications). The remaining 29 percent (14) of the SUAs

standardize the collection and reporting of unduplicated client counts by setting specifications, which AAAs and providers apply in the development and operation of their own data collection protocols, either automated or manual.

As with many aspects of information systems management, not all of the approaches to the computation of unduplicated counts are mutually exclusive. For example, the SUA may set standards for AAAs to follow in the collection and reporting on certain services (e.g., Legal Services and Information & Assistance), while providing a standard client tracking software for others.

Technical Aspects of SUA Information Management Systems

Regardless of the content of the data or the particular software application that agencies use to collect this information, SUAs reported that they receive reports from AAAs or providers using several types of transmission techniques, not all of them mutually exclusive. Because SUAs may report using more than one type of transmission method, the percentages add to more than 100.

- One-third (33%) (16 SUAs) receive data via Web-based electronic transmissions;
- Almost two-thirds (63%) (30 SUAs) receive data via other, non-Web-based electronic transmissions (e.g., file transfer protocols or e-mail);
- About one-fifth (22%) (11) of the states receive data via computer-readable media (e.g., CDs or optical scanning forms); and
- One-third (33%) (16 SUAs) receive some information via paper reports, usually associated with fiscal data or in conjunction with other computer files from the AAAs.

The fact that only one-third of SUAs use Web-based electronic transmissions to receive data, and a similar number still receive paper forms for at least some of their reports from the field, suggest that, despite the extensive use of automation by states, there are many opportunities to enhance the flow of information from the providers and AAAs to the SUA and AoA, via the SPR.

Concerning the computer architecture for SUA information systems:

- Only two states (4%) use mainframe systems and programming languages;
- Nearly three-quarters (36 SUAs or 74%) use PC network/client-server systems with relational data base software; and

- Nineteen percent (9 SUAs) employ Web hosting of data bases.

While many SUAs appear to have considerable autonomy in their approach to information systems management, most adhere to some state-level requirements.

- Four SUAs (8%) are part of an enterprise-level system, where they must use the same computer application as other state agencies;
- Eight SUAs (16%) indicated that they must advertise existing information systems contracts for periodic re-competition;
- Nearly one-quarter (11 SUAs or 23%) must adhere to an existing minimum data set applicable to multiple state agencies;
- For 19 SUAs (38%), another state agency has oversight and decision-making responsibility for their information systems development; and
- There are 10 SUAs (21%) that are subject to other requirements with an impact on information systems development.

Only 15 SUAs (31%) are free of any of these requirements regarding the development and operation of their information systems. This suggests that recommendations for the enhancement of OAA information systems, which may come from the NASUA study, must consider overall state requirements. This is consistent with the study's findings that cross-cutting state requirements, such as Medicaid Waiver reporting systems and procedures that affect multiple services, often complicate the SUA's ability to coordinate and integrate information systems functions across multiple programs and funding streams.

Commercial, Versus In-House Information Systems Development

SUA computer applications fall into two major categories, with many states employing both:

- Commercial software available from private vendors, including a range of optional modules, and
- Internally-developed applications, including non-SUA information technology (IT) staff or consultants, who developed and support the maintenance of software.

However, we found that many states were in the process of changing their information systems, often from in-house applications to commercial software products and services. As Table 1 shows, at the time of the state survey, SUAs with automated OAA Title III reporting applications

were fairly evenly divided between internally developed information systems and the use of commercial software packages available from private vendors (24, versus 21, SUAs, respectively). Another three SUAs were using manual procedures and ad-hoc spreadsheet software for tabulating their SPR figures for AoA reporting, and one contracted with a local university to design and operate MIS.

Table 1: SUA Information Management Systems that Support OAA Reporting		
System Name	**At the Time of the Survey**	**Post-Survey Expectations**
In-house custom-developed systems	24	18*
SAMS/Synergy	15	23
AIM/Saber Corporation	5	5
NAPIS Care/RTZ Associates	0	2
NAPIS Track/Mid-Iowa	1	1
Contracted with a university	1	0
Manual/Excel spreadsheets	3	0
TOTAL	49	49
* 1 in RFP process; 2 more SUAs are considering changing		

Concerning the vendor software applications, 15 SUAs were using the Social Assistance Management System (SAMS) from Synergy Software Technologies, Inc.[5], five were using the Advanced Information Manager (AIM) software developed by Saber Corporation[6], and one was using another vendor. Table 1a shows this breakdown by the individual states.

[5] http://www.synergysw.com/products/
[6] http://www.sabersite.com/index.cfm?fuseaction=home

Table 1a: SUA Information Management Systems that Support OAA Reporting											
	Initial Survey Results						Post-Survey				
		Commercial						Commercial			
State	Inhouse/ Custom-developed	AIM	SAMS	Other	Contract with a university	Manual or Excel	In-house/ Custom-developed	AIM	NAPIS-Care (RTZ)	SAMS	Other
AL	✓						✓				
AR						✓			new		
AZ	✓						pre-rfp				
CA	✓						rfp				
CO			✓							✓	
CT	✓									new	
DC					✓					new	
DE	✓						pre-rfp				
FL	✓						✓				
GA	✓						✓				
HI			✓							✓	
IA	✓						✓				
ID			✓							✓	
IL				✓							✓
IN	✓						✓				
KS	✓						✓				
KY						✓				new	
LA			✓							✓	
MA	✓									new	
MD		✓						✓			
ME	✓									new	
MI	✓						✓				
MN		✓						✓			
MO	✓						✓				
MT	✓						✓				
NC	✓						✓				
ND			✓							✓	
NE	✓						✓				
NH	✓						✓				
NJ	✓									new	
NM			✓							✓	
NV	✓									new	
NY	✓						✓				
OH			✓							✓	
OK		✓						✓			
OR	✓						✓				
PA			✓							✓	
RI			✓							✓	
SC		✓						✓			
SD			✓							✓	
TN			✓							✓	
TX						✓				new	
UT	✓								new		
VA		✓						✓			
VT			✓							✓	
WA			✓							✓	
WI			✓							✓	
WV	✓						✓				
WY			✓							✓	
#	24	5	15	1	1	3	18	5	2	23	1

However, many states indicated that they are in the process of transition from their current, in-house systems to other, commercial applications. States in various stages of changing their information systems were not in an informed position to report on operation of such new applications, responding, instead, to their current software or manual processes. The tables show both the current and future types of computer applications that states reported they had selected. This reflects the use of software for collecting and reporting Older Americans Act data for the purposes of completing the AoA SPR, either alone, or as part of integrated systems across multiple funding streams. States also employ vendor and in-house systems, separately, for other Older Americans Act information-related purposes, such as the National Ombudsman Reporting Systems (NORS), and these are not reflected in the table, unless they integrated with OAA applications.

As the tables show, once states have implemented their new systems development plans, 18 SUAs (about one-third of the 49 states responding to the survey) will be using internally-developed software for OAA Title III reporting purposes, while the remaining approximately two-thirds (31 SUAs) will be using commercial applications. Concerning the latter, 23 of the 31 states will be using the SAMS product, five will continue using AIM, two will be using NAPIS Care from RTZ Associates[7], and one will continue using NAPIS Track, which a commercial vendor, Innovative Data Systems, is re-configuring as a software product for the states of Missouri and Illinois.[8] It is telling that virtually all of the changes that are occurring consist of using commercial software applications to replace existing in-house systems. Also, the two states that were initially using manual or spreadsheet applications will be purchasing commercial software, rather than developing their own in-house systems.

Facilitators for Information Systems Development

The motivation for MIS development, and the reasons for selecting a particular computer systems configuration, involved a wide range of factors. The survey asked for the major facilitators that encouraged the development of information systems. Some of these were positive incentives, such as the availability of funding, cooperation from the state's network on

[7] http://www.rtzassociates.com/
[8] http://www.indatsys.com/

aging, and the leadership of key individuals. Other facilitators included the need to reduce the high costs and other difficulties associated with current information systems, which often failed to address the state's information requirements.

Using a five-point scale, where 1 was the least and 5 was the most important, the SUAs rated each of several facilitators or sources of support for MIS development. Table 2 shows the mean score for six facilitators, each of which the State Unit on Aging rated from 1 to 5.

Table 2: SUA Reports of Facilitators for Information Systems Development (Mean scores on a Scale of 1-5, from least to most helpful)

Facilitator	Mean Score (1-5)
Available funding	4.4
Cooperation from AAAs and providers	4.1
Leadership from a key individual	3.8
High costs and problems of previously fragmented information systems	3.6
State information systems development mandate	2.7
Recommendations from other agencies with effective information systems	2.3

The availability of funding topped the list of facilitators, receiving a mean score of 4.4 on a 1-5 point scale, followed by AAA and provider agency cooperation (4.1) and the leadership of a key individual (3.8). While states were encouraged by these positive factors in the development of information systems, they were also motivated by the problems and high costs of their existing MIS applications, which did not meet their needs in an efficient, effective manner (3.6). External forces, such as the mandates of parent agencies (2.7) or the encouragement of peers (2.3), were less important than internal forces in facilitating MIS development (the availability of funding notwithstanding)

During the case study site visits to states with high-performing information systems, we documented the MIS development process and the factors associated with its success. In virtually all cases, this MIS development work occurred: 1) under the leadership of a key

individual, who 2) secured or received tangible commitments of funding, and 3) where the SUA, AAAs, and providers cooperated in a joint effort to design, select, and implement a state-wide information management system. Successful replication of this MIS development process in other states would appear to require the convergence of these three critical factors as well.

Concerning the decision to select a particular approach to computer systems development, including an in-house or commercial application, the study found considerable consistency among the states. During the surveys and site visits, many SUA staff said that, while internal data needs now drive MIS decision making, the genesis for their current systems were the AoA reporting requirements that came from the 1992 OAA Amendments. In particular, the SPR unduplicated client counts and the need for such information for Registered Services encouraged the states we visited to develop computer systems capabilities at the state and local level.

Unfortunately, most of these states indicated that their initial MIS development work in response to the AoA requirements was inadequate and resulted in very time-consuming and expensive record keeping and reporting burdens for the providers, AAAs, and the SUA. For example, in all of the five states we visited, the current MIS was a replacement for an existing client tracking system that the state had developed and abandoned.

While these initial computer systems were inadequate, they did contain a delineation of the data needs in the state, which provided a good starting point for new MIS development. For this reason, not all of the case-study states conducted a formal requirements analysis or prepared a design document. Instead, they used the existing system as a summary of the data requirements.

Barriers to Information Systems Development

Using the same five-point scale, the survey also asked what barriers the SUAs encountered, internally, and from the AAAs and providers, when developing their information management systems (see Table 3, below).

Some of the barriers were very tangible, including limitations in funding (Budgetary), staffing (Administrative), and the absence of information technology (Technical) for implementing an

information management system. These were the top three barriers to MIS development for all three groups, from the perspective of the SUA.

Table 3: SUA Reports of Barriers to State Information Systems Development (Mean scores on a Scale of 1-5, from least to most problematic)

Types of Barriers/Resistance	Total	SUA	AAA	Provider
Budgetary (e.g., high costs/limited funding)	3.9	3.5	3.8	3.9
Administrative (e.g., limited staff, other priorities, difficulty securing approvals)	3.7	3.5	3.8	3.8
Technical (e.g., limited agency information technology availability and capability)	3.1	2.7	3.2	3.8
User (e.g., limited computer skills)	2.8	1.7	2.7	3.8
Political (e.g., staff unwillingness to cooperate, change, share data, or use information systems)	2.4	1.9	2.5	3.1
Procedural (e.g., commitment to existing, long-term (legacy) information systems)	2.4	2.0	2.7	2.8
Philosophical (e.g., beliefs in the limited value of information systems)	2.2	1.8	2.3	3.0

Another pattern was the increasing level of severity of these barriers (from the SUA's perspective) when moving from the SUA to the AAAs and the Providers. Issues of attitude, such as a belief in the value of information systems (Philosophical), willingness to cooperate in a state-wide MIS development project (Political), and a commitment to (i.e., a reluctance to change from) existing approaches (Procedural), were less important than the first three, but they did increase in severity when moving from the SUA to the AAAs and providers. Finally, the SUAs considered limited computer skills of the MIS end user to be least problematic for their own staff but a very substantial barrier to systems development at the service provider level.

Most SUAs, even those with exemplary information systems, were in the process of refining their approaches to MIS development, suggesting that virtually all may continue to experience the kinds of problems that appear in the table. For example, the high level of difficulty associated with end users at the service provider level may explain the on-going need for SUA technical staff to offer intensive systems training and support.

Reasons for Automation and MIS Selection

Using the descriptions of their existing information systems or new specifications, the states we visited solicited invitations to bid from software vendors or consulting firms to build computer applications. Two of these states, Ohio and Pennsylvania, solicited and received bids from software vendors, and a committee consisting of SUA and AAA representatives evaluated the proposals and made recommendations for selection. At the time, in 1998 for Pennsylvania and 2000 for Ohio, the states concluded that there was only one vendor, Synergy, which had already developed a system that addressed AoA's SPR requirements. Other vendors provided what these states referred to as a capability to develop such systems, but they did not have a final product, per se. In these two states, the overwhelming consensus was to select the SAMS product. For example, the states indicated that AIM, from Saber Corporation, and Q Continuum, from CH Mack, did not have an SPR module for automatically producing the tables that AoA required, which they now have.

In Ohio, the SUA had previously developed an MIS in response to AoA's SPR requirements; however, the system was burdensome to operate by the state, AAAs, and service providers. The difficulties with this system constituted the primary motivation to develop a new one. When assessing the options, the SUA and AAAs also considered modifying and using the client tracking system that the state had developed, in house, to address the requirements of all its Medicaid Waiver programs (called PASSPORT), covering elderly clients and other groups. As a state Medicaid requirement, this software application is used by the AAAs and service providers, all of which administer home and community-based Waiver services, as well as OAA programs. The SUA and AAAs determined that the Medicaid Waiver software application, entitled PIMS (for PASSPORT Information Management System) did not have the full range of capabilities that the programs needed to address the SPR and other SUA requirements. For this reason, the state selected SAMS to track OAA clients, while continuing to use PIMS for the Waiver programs. While some providers have been able to integrate the reporting requirements (one using SAMS for both OAA and Medicaid Waiver data and the other using PIMS to do so), the vast majority of agencies in the state use separate software applications for OAA and the Waiver services (which creates substantial redundancy and burdens, according to the SUA, AAA, and

provider staff interviews. Perhaps most influential in Ohio's selection of SAMS was the Cleveland AAA's current use and endorsement of this software.

The SUA in South Carolina selected the Advanced Information Manager (AIM) developed by Saber Corporation. The SUA and AAAs considered several approaches, but AIM was already being used successfully by several AAAs in the state, which essentially explains South Carolina's selection of this product. The SUA and AAAs do not administer Medicaid Waiver programs, and these agencies use AIM for OAA client tracking and SPR reporting purposes. However, some of the same providers that deliver OAA services also operate Waiver programs under separate contracts with the state Medicaid agency, using a separate, state-mandated computer information system. Some of these providers use AIM to track clients under both programs and then export the Waiver data for entry (manually) into the state's Web-based Medicaid reporting system. However, a more functional integration of these two applications was of interest to these providers in order to eliminate redundancy.

Oregon developed a state-wide Medicaid software application, in house, which included the Waiver programs that the SUA and AAAs administered. The timing of this Oregon Medicaid MIS work coincided with AoA's SPR initiative and the corresponding efforts by the SUA and AAAs to address these reporting requirements. The SUA and AAAs asked the state to incorporate the OAA requirements within the Medicaid software, resulting in a single application that addressed the information needs of both programs. The 90/10 percent federal/non-federal funding from CMS for this software development was an important reason for integrating Medicaid and OAA computer applications, which other states may want to consider.

The fifth state we visited, Georgia, selected a software development consulting firm as part of an effort to build an enterprise-level application that would address the information needs of many state agencies, including the SUA. The economies of scale and benefits of coordination warranted such an approach, including the availability of state IT staff, who would maintain this system after the vendor completed the initial work. According to SUA staff, this enterprise-level application did not address all SUA requirements, and as a result the state IT staff then re-configured the vendor-developed system to meet the specific needs of the SUA, AAAs, and

service providers. This resulted in an essentially in-house application tailored to Georgia's network on aging requirements. This new system consolidated many existing applications and data bases, reducing fragmentation.

Again, while the AoA reporting requirements may have encouraged all these states to initiate their MIS development work, the SUAs and AAAs quickly identified their own uses for the information as the primary for the computer systems design.

Integration among SUAs, AAAs, and Providers (Vertical Integration)

While the primary focus of the NASUA study is information management systems that SUAs use, internally, for OAA reporting to AoA, the timeliness and accuracy of these federal reports depend on the integrity of data that AAAs and service providers collect, tabulate, and make available to the state. One way SUAs have ensured an empirical basis for the SPR counts is to include AAAs and services providers as users of the state's computer information system. This vertical integration among the SUA, AAAs, and providers is one way of guaranteeing consistency of data, from the point of client intake and service delivery, through reporting to the AAA and the state. While this is not the only method for capturing credible data at the SUA level (especially if AAAs and providers already have their own information systems), it is a very effective means for doing so.

According to the survey, two-thirds of the states reported that their AAAs use the SUA's information system for collecting, tabulating, and reporting OAA Title III information. Appendix Table A-1 presents a state-by-state listing of this vertical integration. Within many of these vertically-integrated states, however, there may be one or several AAAs with their own MIS, while the rest of the Area Agencies on Aging use the SUA's software application. For example, in some of the large urban areas, AAAs may have developed information systems that pre-date the state's MIS. Asking these AAAs to abandon their applications in favor of the state's system could deprive the Area Agencies of long-standing, effective means of addressing their own, local requirements. In many instances, vertical integration does not include service providers as users of an SUA information system. For example, while two-thirds of SUA

information systems involve AAA participation, only about half (53%) of these state systems involve provider participation.

Integration across Multiple Funding Streams and Programs (Horizontal Integration)

Horizontal integration refers to the coverage of multiple funding streams and programs within the scope of a state's information system. Horizontal integration is another important attribute, for virtually all SUAs derive the majority of their funds from sources other than the Older Americans Act. Table 4, below, lists the funding streams and programs that SUAs administer, with the number and percent of states that integrate data collection within their OAA Title III MIS, versus using a separate information system for this purpose.

Table 4: Integration of SUA Information Systems across Funding Streams

Funding Stream or Program Administered by the SUA	Data Integrated within State's OAA MIS	Separate SUA Information System
Long-Term Care Ombudsman Program (i.e., for the NORS report to AoA)	18% (8)	82% (36)
OAA Title III D Disease Prevention and Health Promotion Services Program	82% (37)	18% (8)
OAA Title III E National Family Caregiver Support Program (included in the SPR, but some SUAs track caregiver data separately from OAA Title III B and C)	85% (40)	15% (7)
OAA Title V Senior Community Service Employment	11% (4)	89% (32)
OAA Title VI Native American programs	20% (1)	80% (4)
OAA Title VII Elder Rights programs	48% (20)	52% (22)
State Health Insurance Programs (SHIP)	9% (3)	91% (29)
Medicaid Home and Community-Based Waivers	52% (17)	48% (16)
Social Services Block Grant programs	67% (10)	33% (5)
USDA nutrition support/AoA Nutrition Services Incentive Program (NSIP)	80% (33)	20% (8)
State-funded services	81% (35)	19% (8)
Participant contributions	69% (22)	31% (10)
Aging and Disability Resource Center funds	12% (2)	88% (14)

Integrating these multiple data requirements within a single information system also may help state and community programs on aging avoid fragmentation in the management and delivery of services, through single entry point systems and the Aging and Disability Resource Centers.

The funding streams and programs with a high degree of integration with OAA Title III information systems include Social Services Block Grants (which are administered by only a few SUAs), the Nutrition Services Incentive Program, state-funded home and community-based services, and participant contributions.

Such integration is not always possible, however. For example, one of the largest programs that SUAs administer is the Medicaid Waiver, but this funding stream often has its own record-keeping and reporting requirements, with separate state-mandated information systems. Approximately two-thirds of the SUAs administer Medicaid Waiver programs. However, nearly half of these (48%) use a separate information system for data collection purposes, rather than integrating these functions with OAA Title III. The study found that state Medicaid agencies frequently required SUAs, AAAs, and service providers to use separate Waiver software, limiting the ability to integrate the data collection requirements of multiple funding streams within a single information system. This has resulted in considerable redundancy and frustration on the part at the SUA, AAA, and service provider staff, who must frequently use multiple, duplicative information systems. Helping to eliminate perceived and actual barriers to integrating or coordinating multiple data-collection requirements may be an important role that NASUA can play. Fortunately, more than half of the states that administer Medicaid Waivers have integrated the data collection for this program with their OAA MIS applications (see Appendix Table A-1 for a state-by-state listing of where this integration has occurred).

Table 4 also shows many other funding streams and programs where the SUAs use separate information systems that are not integrated as part of the OAA Title III application. For example, the vast majority of record keeping and reporting for the Long-Term Ombudsman program occurs through the use of separate information systems. The same holds true for OAA Title V employment programs, the State Health Insurance Assistance Programs, and the Aging and Disability Resource Centers administered by the SUAs, where separate MIS applications

prevail. At the same time, only about one-half of the SUAs with OAA Title VII software applications integrate their Elder Rights data as part of the Title III MIS.

Information Systems Capabilities and Functions

In addition to the integration of multiple agencies and funding streams, there are many functions that a state's information system must accommodate. These include client registration and tracking the delivery of services, which use standard forms and procedures to collect data on a range of programs, such as congregate nutrition, home-delivered meals, and personal care. Some services involve specialized activities, including information and referral/assistance (I&R/A) and case management programs, which have specific requirements for identifying and linking clients and caregivers with available community services, assessing the level and scope of need for these services, and following up to ensure effective access and on-going support. Computer applications that address and integrate many of these specialized functions within the scope of the MIS have considerable advantages over single-use software programs. This integration enhances coordination of programs and reduces the burden of data collection on staff and clients.

Despite the potential benefits of integrating multiple functional requirements within a single information system, the study found that this was not always feasible for many reasons, and states sometimes employed at least one single-use application, even if their core MIS software for OAA Title III integrated client tracking for many other funding streams, programs, and functions. For example, some states use a separate I&R/A software application, given the specialized nature of this service and the extensive requirements for storing data about community agencies, services, eligibility requirements, and contact procedures. Also, I&R/A programs, and the software that supports them, may have been in place for many years prior to the advent of OAA Title III information systems. Changing these computer applications may not be a realistic option, if the state has a centralized I&R/A system, covering multiple constituent groups, or if the core OAA Title III information system does not have a strong I&R/A capability. Other examples of separate, special-use software include case management applications, which support long-standing functional assessment requirements and often exceed the capabilities of the state's core OAA Title III MIS.

When it does occur, the integration of many agencies, funding streams, programs, and functions is a positive attribute of a state's information system, which provides for coordination and economies of scale. However, when such integration is not possible, flexibility in SUA computer applications and policies is important in order to accommodate separate, existing information and software requirements as well. For example, a state's OAA MIS must be able to import data from and export data to the many other computer applications that are the reality in many SUA information systems environments, especially when considering the AAAs and providers. Table 5 lists the various capabilities of SUA information systems. Some of these capabilities, such as client tracking and case management, may occur only at the AAA or provider level as part of local agency use of the state's computer system.

Client Tracking

A large percentage of states (86%) have computer information systems that maintain records for individual clients, at least for OAA Registered Services. A similar number (83%) record the specific services these individuals receive, usually as logs that show the daily, weekly, or monthly number of service units (e.g., hour of homemaker services) that clients have received.

Table 5 shows that, despite the existence of these detailed client files, there is infrequent sharing of this information among multiple providers, which would avoid the redundant collection of personal data from clients, who receive more than one service. While over 80 percent of SUAs have systems that maintain individual client data, the table shows that less than half of these (43 percent) share this information among multiple providers that serve the same clients. However, 12 SUAs that identified "multiple provider access to a common client data base" as one of the top three areas for enhanced MIS capacity, showing an interest in reducing fragmentation.

One goal of this study is to identify how such sharing of client data among providers might occur. The intent is to avoid the need for clients and their caregivers to provide the same information, repeatedly, as they move from one agency to another. Creating a single client data base, which cuts across multiple agencies, funding streams, and programs, is very useful at the state level as well, for this allows the SUA to know about the full range of services that OAA clients are receiving, regardless of the particular funding streams that the State Unit administers.

Table 5: Capabilities and Functions of SUA Information Systems	
Capability and Function	**Percent of SUAs**
Client Tracking	
Client registration	86% (42)
Client tracking/service logs	83% (41)
HIPAA confidentiality compliance	57% (28)
Multiple provider access to common client data	43% (20)
Computer-readable client ID cards	31% (15)
Case Management	
Client assessments	69% (34)
Care planning	53% (26)
Provider Management	
Maintaining provider agency information	56% (27)
Service delivery/operations	34% (16)
Maintaining I&R/A resource directories	32% (15)
Staff administration	21% (10)
Provider quality assurance	15% (7)
Licensure and certification	8% (4)
Financial Management/Administration	
Service costing	51% (25)
Accounting	27% (13)

The barriers to such client data sharing include:

- Confidentiality concerns by various state agencies and local service providers, including the perception (often unfounded) that HIPAA prohibits such multi-provider access to common client data files;
- Inflexibility on the part of state Medicaid agencies, which sometime insist on separate reporting forms, software, and data bases, including an unwillingness to allow or support exports from SUA integrated information systems for Medicaid Waiver reporting purposes;
- Monthly or quarterly batch processing, by the AAA or SUA, of client data submitted by provider agencies with stand-alone versions of software (e.g., SAMS, AIM, etc.), which

means that there is a delay in posting new records to a central data base (to which providers often do not have access); and

- The high costs and technical demands of computer networks at the AAA, state, or national level (including Web-hosted data bases) to which multiple providers have real-time access for reporting and query purposes.

Fortunately, there are also examples of SUA information systems that have overcome these barriers and established networks to which multiple service providers have access. In these instances, there are certain categories of information to which only a single, authorized provider or staff person has access, such as case notes. For example, in Ohio, which uses SAMS software for OAA reporting, some AAAs have Citrix servers, where a common set of client information resides, to which individual providers have access for both reporting and query purposes, with confidentiality safeguards. This allows a service provider to determine if a client is already in the data base before collecting information that may be on file. If this is the case, then the provider collects only the additional information that may be necessary for the new service.

Some of the Ohio AAAs have moved to using Synergy's Web-hosted data system, called "Aging Network.com." This reduces the costs of AAAs maintaining their own computer networks or reduces the demands on AAA computer resources, which may be needed for other administrative purposes, such as personnel and payroll. Web-hosted data systems are not without their own costs, however, and AAAs often must continue maintaining their own computer networks, while paying the costs of Internet-based applications. Nonetheless, Web hosting of shared dada bases, either by an AAA or by the state, provides many opportunities for multiple providers to avoid collecting the same information from clients and caregivers as they move from one service to another. Facilitating the migration of local networks or stand-alone client tracking systems to a Web-hosted environment may be an appropriate role for NASUA consistent with the objectives of this study.

In Pennsylvania, which also uses the SAMS software, but as stand-alone systems at the AAA and SUA levels, with periodic batch reporting (File Transfer Protocol or FTP) to the state, there is a working agreement between the SUA and the state Medicaid agency for reporting purposes. Specifically, AAAs are responsible for authorizing services under the Medicaid Waiver program,

which they record within the SAMS software system. On a monthly basis, each AAA submits an electronic file to the SUA for incorporation within the state's SAMS application. The SUA then reports this information on service authorization (including providers and clients) electronically to the state Medicaid agency. This information is used by the state Medicaid agency to verify subsequent invoices for payment from the local service providers on the delivery of services. These invoices contain the units of each Medicaid Waiver service that clients receive, and the SUA is working with the state Medicaid agency to receive this information electronically for entry into the SAMS files. In this way, SAMS will include both the client registration and service delivery data, without the need for redundant systems at the local level.

Technology Innovations

A potentially important attribute of client tracking systems is the use of technology innovations to collect and record the use of services by program participants. As Table 5, above, shows, approximately one-quarter of SUA systems employ computer-readable media, such as the use of barcodes and readers, for capturing data about clients and services. The study found two major applications of bar code technology. First, the computer systems frequently generated blank service log forms for each current client in the data base. These logs consist of separate lines for each client, showing the person's name, unique identification number, and a bar code representation of that number. To the right of this information are blank spaces for manually recording the units of service that the client received, usually for each day of the month. Provider agencies or the AAAs use these logs to record the provision of services, either directly on these computer-generated paper forms or by transcribing this information from separate paper records that provider staff may keep. The data entry process involves scanning the bar code with a light pen or similar device, which displays a facsimile of the paper from for that particular client on the computer screen. A staff person at the provider agency or AAA then enters the information on service units from the paper log. The use of bar codes in this instance speeds the data entry process and minimizes errors, by avoiding the need to type each client identification number.

As a variation of this procedure, the study found that a few providers use this scanning technology with laptop computers or other portable electronic devices during actual service

delivery, avoiding the need for paper records. For example, a nutrition site staff person records the receipt of a congregate meal as clients move through the lunch line. Or personal care workers use PDAs to record the hours of care in the home. Such systems automatically record the date, time, agency and staff person providing the service. Staff then up-load this information to a central data base, usually at the end of each day. Such systems help minimize the staff burdens of collecting information, increasing the amount of their time serving clients.

As a second, highly replicable use of bar codes, the District of Columbia Office on Aging makes extensive use of this technology, where clients swipe identification cards when participating in senior center programs (at the time of the survey, this covered congregate meals and wellness programs). The card reader records the client identifier, the particular service the client used, and the date and time of service. Most service unit information consists of a series of defaults, such as one meal or one information session. However, participants in the wellness programs swipe their cards when they arrive and when they leave the session, giving a duration measure as well. The scanning equipment and software is provided by MJM Innovations[9] of Baltimore, Maryland, which links with the SUA's MIS application that is currently operated by Georgetown University. The DC Office on Aging has made a commitment to convert its MIS to SAMS, and Synergy Corporation has agreed to build an interface with the current bar code applications to avoid the need for changes in bar-coding procedures for the clients and senior centers. Synergy has announced plans to team with MJM to make this bar code application available to all SAMS users. MJM also supports the use of this technology in the City of Baltimore congregate nutrition program, as well as for many other Maryland AAAs, which is then linked to AIM, the commercial software available from Saber Corporation that most AAAs in the state are using.

In addition to swipe cards, the MJM application has an interface with an electronic "token" that clients can carry, which contains a unique identifier. The clients use this token with computer touch screens to record their participation in a range of senior center programs.

[9] http://www.mjminnovations.com/index.html

In a similar vein, New Mexico uses Synergy's SAMScan in conjunction with bar-coded identification cards for congregate meals, transportation, and homemaker services. AAAs then upload this information into SAMS 2000 for storage and processing.

In Ohio, home care workers use laptop computers to enter client and service information, which is then uploaded to the SAMS application.

In Seattle, Washington, the AAA uses bar-coded identification cards in conjunction with its own internally-developed MIS, to capture client and service information for congregate meals and health promotion services at nutrition sites. This is part of a coordinated venture with the City of Seattle, King County, and the United Way. As an illustration of the need for interface capabilities among multiple computer applications, this bar coding system uses its own software, which the AAA links with its separate MIS. Then, the AAA uploads this information to SAMS, which the SUA is using for OAA programs.

At the time of the NASUA survey, virtually all of these bar-coded identification card applications involved separate software, which required the transfer of data among several MIS applications.

Such technology is problematic for volunteers delivering meals to the homes of clients, given the large number who would need to obtain (and become proficient in using) portable card-reading devices. In addition, volunteers may not regularly visit the locations where up-loading of the data occurs. Other techniques for electronically recording the provision of services, such as dialing into a system for recording data via the telephone number keys, requires entering the homes of meals recipients, which is not always possible, according to study respondents.

Several additional states were considering the use of bar code technology but were not currently employing it. For example, the Pennsylvania Department of Aging has just purchased a bar code scanning device for potential use with an upgrade to its SAMS software capabilities (SAMScan).

As these examples show, the use of bar code technology is readily available to capture data at the point of service delivery, and there are many MIS applications where service providers are using this approach as part of their record keeping and reporting systems. Enhancing existing information systems to incorporate the use of bar code technology is another area where NASUA could provide encouragement. For example, the MJM Innovations applications, which are currently in use in Maryland as part of AIM and under development in many SAMS sites, provide information on design, implementation, and cost options. The swipe card or touch screen technology has four major cost components:

- Client identification cards, which vary in price from $0.50 to $1.00. depending on the quality and sophistication of the card. For example, the $0.50 card has only a name and bar code, while the $1.00 version also serves as a laminated photo ID card (agencies have found that clients prefer and keep track of the high-quality cards more often than they do for the low-quality ones);
- Card reader devices, such as a standard credit card swipe terminal, which costs approximately $355;
- A set-up fee of $75 per reader terminal; and
- A $50 per month per terminal Web hosting charge, which covers the transfer, storage, and delivery of all client data from the card readers at the service-delivery sites.

The Web hosting ensures standardization and facilitates the collection and transfer of client data to the SUA, AAA, or provider. Wireless capabilities exist for transportation applications, which require the addition of a mobile transmitting device, similar to a cell phone, that costs between $100 and $200 per reader, and a wireless access fee, which MJM has negotiated with local phone companies for approximately $10 to $12 per month per reader. MJM has developed direct links between its Web-hosted data files and local AIM servers, and it plans to do the same with SAMS applications, including links with Synergy's *AgingNetwork.com*. In this way, the user does not have to configure local interfaces between the swipe card application and the core MIS. For those users wishing to do so, however, MJM will develop a custom application using this swipe card technology.

While these uses of technology innovations would help address the goals of the NASUA study, only 4 SUAs identified computer-readable technology applications among the top three areas for new or enhanced capabilities, suggesting a facilitating role for NASUA.

HIPAA Compliance

Approximately 57 percent of the SUAs reported that their information systems are compliant with HIPAA confidentiality requirements. Given the uncertainty about what constitutes HIPAA compliance, the remaining states are not necessarily out of compliance. We found during the site visits that there was considerable confusion within the SUA and the state Medicaid agency, among others, about the specific requirements of HIPAA and any limitations this law imposes on sharing data among the SUA, AAAs, and service providers. This pertains directly to the information pooling objective of the NASUA study, which is designed to avoid the need for clients and caregivers to provide the same information more than once when registering for and receiving services.

Case Management

Under the case management heading, Table 5 also shows that 69 percent of the SUA information systems have a client assessment component, including documenting limitations in Activities and Instrumental Activities of Daily Living (ADLs and IADLs). As a related step in the case management process, care planning was a function supported by 53 percent of these information systems, including arranging for the services that clients need.

One interesting finding from the case studies was the presence of software utilities that use a range of client functional status and health data, in conjunction with demographic information, to construct composite measures of service needs. These computer applications use very detailed data about the client, including an in-depth profile of ADL and IADL limitations. For example, the two most frequently used commercial software products, SAMS and AIM, have algorithms that simulate the case management process and recommend an array of services based on certain underlying functional status, health, and demographic data from client registration and assessment instruments. In addition to the commercial vendor packages, the in-house information systems we reviewed during the site visits also include these assessment and service planning capabilities. For example, Georgia has what it calls the Determination of Need assessment instrument, which it revised from an original protocol, called the DON-R.

According to the Georgia Division of Aging Services, within the state's Department of Human Resources, the DON-R assessment instrument was developed during 1987 through 1989 by a team of researchers at the Gerontology Center of the University of Illinois at Chicago for use by the Illinois Department on Aging's statewide network in determining eligibility for home and community based services, including its Medicaid waiver program.[10] The DON not only serves as a basis for determining program eligibility, but also provides sufficient information for case managers to evaluate care needs and develop plans of care.

Another finding from the NASUA study is the frequent use of separate case management software applications in conjunction with an SUA's core MIS. For example, in Georgia, the AAAs use a case management software package developed by the Atlanta Regional Commission (the AAA serving the Atlanta area) entitled the Client Health Assessment Tool (CHAT), to determine eligibility and priority for Home and Community Based Services (HCBS) services.[11] The SUA negotiated an agreement with the ARC and is developing an interface, which allows the results of CHAT assessments to construct a DON-R score as part of the state's MIS. This will avoid the need for dual assessments of clients, one to produce a DON-R score and the other to determine service eligibility and needs using CHAT. Many agencies within and outside of Georgia use CHAT, through a licensing and fee agreement with the ARC. This is another example of the need for data import and export capabilities as part of any MIS that states may use.

Provider Management

Provider management functions in Table 5 identify the extent to which the information systems used by SUAs collect provider-specific data and have features that assist service providers with their internal management responsibilities. For example, the table shows that 32 percent of state information systems include features that support the operation of information and Referral/assistance programs, such as maintaining lists of available community resources, tracking the number and purpose of the calls, and reporting on the level and scope of I&R/A activities. These SUA software applications and resource data bases also provide an empirical

[10] This description of the DON-R came from: http://www.nashp.org/Files/GA_Assessment.pdf
[11] http://www.aoa.gov/prof/agingnet/HSSSI/Final%20Integrated%20Info%20Systems%20Case%20Studies%207-20-04.pdf

basis for planning by showing what services and geographic areas of the state may be without adequate coverage, given the data on consumer demand for services.

As stated above, I&R/A computer applications may or may not be integrated within the overall core SUA MIS for several reasons, including the existence of separate, long-standing I&R/A programs and associated software that are working quite well. During the state surveys and site visits, SUA staff reported the use of separate, specialized I&R/A applications, despite the availability of such utilities within their OAA client tracking systems. For example, similar to CHAT, the AAAs in Georgia use a software application developed by the Atlanta Regional Commission to support a broad range of I&R/A functions, called the Elder Services Program (ESP).[12] ESP and CHAT work together to provide comprehensive assessment and referral capabilities, and the SUA is completing an interface between these applications and its own MIS to avoid the need for data redundancies. In two states, one using SAMS (Ohio) and the other AIM (Minnesota), the software package "Resource House" from North Light, Inc., supports these I&R/A functions, separate from the core MIS.[13]

Under the Provider heading in the table, quality assurance was not a function of most SUA information systems, but 14 SUAs identified quality assurance capabilities among the top three applications for new or enhanced features. Also, during the study interviews, SUA staff indicated an interest in combining and presenting data from their information systems that would identify strengths and weaknesses in the state and community programs they fund. For example, the Pennsylvania Department of Aging is analyzing data on the results of client assessments, relative to the services that these clients are actually receiving. The purpose is to help determine if clients are receiving the care their assessments indicate they need.

As Table 5 shows, 56 percent of SUA information systems also collect and maintain descriptive data about individual providers, such as a unique identifier and specific services that these agencies offer (see the description of provider unique identifiers, below, under the categories of MIS data).

[12] http://www.atlantaregional.com/aging/elderservicesprogram.html
[13] http://www.northlightsoft.com/

Financial Management/Administration

Only a small number of the information systems that SUAs use for OAA reporting address administrative functions within a state's network on aging, such as financial management. For example, Table 5 shows that only about one-quarter (27%) of these systems support accounting and invoicing applications, and about one-fifth (21%) address staff administration functions, such as payroll. The statement of work for the NASUA study called for identifying the extent to which SUA information systems that cover OAA Title III record keeping also support these various managerial functions. SUAs collect information concerning staffing and invoicing, but they frequently do so using separate SUA software or generic state fiscal applications that are not integrated within the scope of the OAA Title III MIS.

The SUA staff we interviewed did express an interest in adding such functions as part of an integrated MIS. For example, the Pennsylvania Department of Aging has begun using the SAMS FinPak module to support the consistent allocation of costs to services by AAAs and providers, as well as addressing invoicing and payments among providers, AAAs and the state. In addition, Ohio is planning to adopt the FinPak financial management module, to replace its current software for AAA fiscal reports to the state.

While these figures show that only a small number of SUAs currently include various fiscal management functions within the scope of their OAA information systems, 19 SUAs identified service costing and other accounting applications among the top three areas in which they would like new or enhanced MIS capacity.

Information Systems Costs

The SUA survey asked about the costs of the information systems that support OAA record keeping and reporting, including those MIS applications that integrate other funding streams as well. The two broad categories of costs from the survey covered: 1) the initial development and 2) the on-going operation of the information system.

These costs were often difficult to construct and compare, given the incremental nature of systems development and the many components that comprise an MIS, such as software, hardware, staffing, training, and other supports. In some cases these costs and responsibilities were borne by state IT entities as part of their cross-cutting activities for many agencies, making the actual SUA-related expenses unclear. Also, if there was a considerable degree of vertical integration within the information system (where the state, AAAs, and providers all participated), the purchase of commercial software licenses, initially and annually for each of these agencies, constitutes realistic components of the costs; however, some SUAs covered these expenses for all users, while others did not.

Given these variations in the methods of MIS financing, the development and operations cost figures varied considerably among the states. Nonetheless, dividing the cost ranges into four equal groups of states, or quartiles, is one way of categorizing and presenting these figures.

Concerning these initial software acquisition and development costs:

- The quartile with most expensive systems ranged in cost from approximately $107,000 to $2,000,000;
- The second quartile covered initial software costs that were between approximately $47,000 and 107,000;
- The next one-quarter of SUAs reported spending between approximately $16,000 and $47,000; and
- The bottom quartile, included costs that were less than $16,000.

These costs cover what the SUAs reported as their initial investments in MIS software applications, some of which involved the marginal expenses of adopting simple spreadsheet procedures. Especially for the lower two quartiles, these figures do not represent the costs of acquiring new commercial software or developing information systems in house. At the time of the initial survey, several SUAs were in the process of considering the procurement of commercial software to replace their existing applications, and the substantial costs associated with these new acquisitions are not reflected in the costs figures, above. Still, these figures do show the dramatic variation in the investments that SUAs have made (and perhaps are willing to make) in MIS applications.

Concerning annual software maintenance expenses, including IT staffing and the on-going commercial licensing fees, the figures vary considerably as well. As with the initial software costs, these annual expenses are a function of both the software, itself, and the number of SUA, AAA, and provider users and licenses, which the SUA may or may not cover. Concerning these annual figures:

- In the quartile of states with the highest annual software costs, expenses ranged from $65,000 to $700,000;
- The next quartile covered annual costs from $27,000 to $65,000;
- The following quartile consisted of states that had between $11,000 and $27,000 in annual software costs; and
- The bottom quartile included states that reported less than $11,000 in annual software expenses.

Again, these costs were what the SUAs reported at the time of the initial survey, and the MIS upgrades that several states were considering will likely alter these figures substantially once the states make a final decision. Also, it is important to note that unless the SUA paid the initial and ongoing commercial software fees or other expenses for AAA and provider agency use of the MIS, which some SUAs have done, these figures do not include local costs.

Perhaps the easiest costs to document were the expenses for the initial procurement and annual licenses of commercial software. Given the large number of states that currently use commercial products, or are planning to do so in the near future, summarizing these costs may be of potential interest to many in the OAA network, including NASUA, AoA, SUAs, AAAs, and service providers. To provide as complete a set of information as possible, we have used the in-depth findings from the site visits to provide these cost figures. These cover the two most widely used commercial applications, the Social Assistance Management System (SAMS) from Synergy Software Technologies, Inc., and the Advanced Information Systems (AIM) software developed by Saber Corporation. The following description cover the two SAMS site visits, followed by one AIM site.

The Pennsylvania Department of Aging made a decision to use the SAMS software at the SUA and AAA levels in the state. In addition, the SUA decided to cover the initial and annual costs of

using SAMS by the state and AAAs to encourage the wide-spread use of the software. All but one of Pennsylvania's 52 AAAs use SAMS, and one that does not has its own sophisticated client tracking system, which exports data into SAMS for reporting to the SUA. Given the intensive involvement of AAAs in client intake, assessment, and authorization for services, the use of SAMS at the AAA level was very appropriate. The state decided not to make the SAMS software available to individual providers, given the existence of effective procedures that were already in place for collecting client and services information. For example, the SUA staff reported that the use of spreadsheet software, such as Excel, was adequate for collecting service use information, which the AAAs received from the providers and entered into SAMS for client tracking purposes. We found that many states followed this approach and limited the use of the MIS application to the SUA and AAAs, often because the additional commercial software user fees, initially, and on an annual basis, would be substantial if the providers also used the software.

The initial costs for licenses to use SAMS by staff at the SUA and AAA levels in Pennsylvania was $1.2 million. The annual software licensing fees total $700,000. This allows staff within the SUA and each of the 52 AAAs to use SAMS and receive the periodic updates and enhancements available from Synergy. This also provides the SUA with some technical assistance; however, most of the support for the use of SAMS comes from state staff.

In Ohio, the SUA, AAAs, and provider agencies selected SAMS after considering several other packages, as well as the development of an in-house system. These options for consideration included adapting the separate client tracking software that the state had already developed for all Medicaid Waiver programs. The selection and use of SAMS by the SUA, 11 of the 12 AAAs, and 485 providers ensured that virtually all agencies within Ohio's network on aging had the benefit of consistent software applications to support their functional responsibilities, including uses that were unique to a particular agency. The exception was one AAA that uses another software package, Q Continuum from CH Mack, that could effectively export data to SAMS. Because each AAA and provider purchased its own SAMS license, an individual agency could configure the software to include additional services and categories of client data, beyond the state's requirements.

Ohio placed the responsibility for covering the costs of initial and annual SAMS user licenses on the AAAs and, in most cases, individual service providers. This decision minimized the direct costs to the SUA, which needed only the basic SAMS software to accept and store data from the AAAs and service providers. Each AAA that uses SAMS pays an annual licensing fee of between $1,750 and $6,000, and each service provider pays between $200 and $4,000, depending on the particular software modules the agency is using and the number of clients in the data base, among other considerations. Ohio did not have a total figure for the SAMS annual software licensing fees across all the AAAs and service providers; however, states and localities considering the use of this software could estimate these expenses using the above figures, which are also summarized in tables on pages B-18 and B-19 of the Appendix. In at least one instance, an AAA pays an annual SAMS licensing fee of $30,000 for the Area Agency and all its service providers, which represents a considerable cost savings over the individual assessments. Such bulk purchasing agreements might provide similar cost savings to other SUAs, AAAs, and providers.

Concerning the costs of personnel to support the systems, the Pennsylvania Department of Aging employs three full-time staff persons, who respond to questions from AAAs about the use of SAMS. Also, there is another full-time information technology professional on the staff of the SUA, who is responsible for configuring SAMS to address the specific record keeping and reporting protocols of the state. This includes configuring SAMS to use Pennsylvania's service names and definitions, unit measures, client assessment criteria and procedures, and the many other specifications that are unique to the state. This IT professional is also responsible for programming routine and ad-hoc reports that respond to the information needs of the SUA and the AAAs. All these SUA staff members also provide training to state and AAA personnel, initially, and as updates to the software occur. While each AAA must have staff with a basic understanding of SAMS, the presence of the SUA personnel to provide technical and user support limits the need for extensive computer expertise at the AAA level. The actual costs of this SUA staff support were unavailable, but other states that are contemplating to use of commercial software may be able to estimate potential costs, using their own salary schedules.

In Ohio, there is one full-time support staff person to configure SAMS according to state standards, provide training and support, and configure routine and ad-hoc reports in response to SUA, AAA, and provider agency requests. Unlike Pennsylvania, however, the independent relationship between each AAA (and in some cases each provider) and Synergy for the software license, provides an opportunity for these individual agencies to receive technical and user support directly from Synergy, as well as the SUA.

The need for extensive SUA staffing with technical expertise, even when using software from a commercial vendor, is an important finding from the study. We found no instances where the state and AAAs could rely on these commercial vendors exclusively for technical and user support. This also held true for in-house computer systems, where the SUA and AAAs were completely reliant on state staff for maintaining the system and providing end-user support. However, the decision to use a commercial vendor, while minimizing the state's responsibilities for software development and updates, did not relieve that SUA of the need for staff to configure routine and ad-hoc reports (which are often extensive), train users, and provide on-going support. States considering the use of commercial packages must be sure to budget for this staff support, as well as the software, itself.

Beyond these full-time staff that directly support the use of SAMS, the states of Ohio and Pennsylvania have their own computer networks on which the data from the AAAs reside. The AAAs do not have real-time access to this state network, rather, they submit monthly files to the SUA as exports from their own SAMS applications. In this way, the state has a data base that covers all clients and the services they have received. Each AAA has its own stand-alone computer or local area network for operating its copy of SAMS and storing its client data.

Identifying all the costs that are attributable to the SUA's information system is difficult, often because many state and AAA functions share the use of computer resources. For example, the state's local area network, as well as those of many AAAs, support not only SUA-related client and services reporting, but also such routine functions as personnel management and payroll. Apportioning the computer systems costs to SUA-related reporting, especially OAA reporting, is

not possible. The same holds true for some of the central computing staff, beyond the SUA employees, whose technical support is essential.

Many such computer systems costs are shifting, however, to Web-hosted platforms. For example, in Pennsylvania, some AAAs and the SUA are beginning to use Synergy's *AgingNetwork.com*, which allows SAMS users to store and retrieve their data using a remote computer, accessible via the Web. There are many advantages to using this approach. First, individual users do not have to have the complete SAMS software configured on their individual computers or local area networks. Instead, they use versions of the software that are resident on the Web-hosted computer. This avoids the need to distribute to each AAA and other users the periodic updates that Synergy incorporates into the SAMS software, as well as SUA-developed enhancements. Instead, these modifications are available automatically for each user as soon the changes occur. In addition, the use of such Web-hosted applications and data storage capabilities reduces, if not eliminates, the need for the SUA, AAAs, and providers to maintain local computer networks of their own. This potentially reduces the need for SUA and AAA computer staff to maintain such computer networks, or it at least reduces the burden on such local systems that may be stresses by the large client files and data processing associated with the use of commercial client tracking software, such as SAMS.

These remote Web-hosted systems are not without their own costs, however. For example, in Ohio, the SUA, AAAs, and service provider that use this Web hosting service must pay an annual fee of $330. If the SUA, all 11 AAAs, and 485 service providers had their own accounts, the annual cost would be $164,010. Nonetheless, compared to the cost of maintaining their own computer networks, as well as the span-of-control problems with multiple stand-alone SAMS software, the use of Web-hosted applications is increasingly cost effective for SAMS and many other commercial and in-house client tracking systems.

South Carolina, the other commercial software site we visited, uses the AIM software developed by Saber Corporation. The system is characterized by vertical integration, where the SUA, AAAs, and service providers all use the software, in this case for Older Americans Act, state, and local funding. The SUA and AAAs do not administer the Medicaid Waiver program for

elderly clients in South Carolina; however, many of the OAA service providers do so under separate contracts with the State Medicaid Agency and must use the state's separate Web-based Waiver system for client/service reporting.

For each agency staff person using AIM, there is a $795 charge, initially and another $265 fee per year. The low cost appears to be a function of Saber having only a few staff responsible for periodic updates and limited technical and user support. However, in a vein similar to public-use software, states often make enhancements to the computer application, which are in turn available to all their AAAs, and providers that use AIM. This means that the SUA must employ at least one very knowledgeable individual to support the SUA, AAA, and provider staff using the system, including the configuration of output reports in response to the many internal and external agency requirements. Synergy uses a similar replication approach with enhancements it develops for individual SAMS users, which are then offered to other agencies as optional modules.

In South Carolina, there are 54 service providers using AIM, in addition to the SUA and 10 AAAs. Each of these users has several licenses, given the multiple staff using AIM in each of these agencies. For example, the SUA has 8 licenses, and the AAA we visited has 6 licenses. The service provider we visited, which operates multiple programs at various locations (e.g., senior centers, congregate and home delivered meals, and homemaker services), has 5 licenses. The SUA requires each AAA and provider to pay its own licensing fees for the use of AIM as a condition for receiving funds from the state. While a total annual cost figure for the use of AIM at all levels in the state was not available, other potential users could estimate their potential expenses by applying the above figures and adding the personnel and computer hardware and network requirements to this amount.

For those states that developed their information systems, in house, the costs are even more difficult to isolate, given the multiple state and consulting staff involved, frequently covering the MIS needs of more than one state agency. For example, in Oregon, one of the in-house MIS states that we visited, the information system that the SUA uses was primarily focused on addressing the Medicaid record-keeping and reporting requirements, including the Home and

Community-Based Waivers that constituted the majority of the funding for the programs on aging. The SUA and AAAs successfully petitioned the state to incorporate OAA and other non-Medicaid requirements in the MIS design, which resulted in a single information system for the Oregon network on aging to use for reporting purposes.

The initial cost of the entire Oregon Medicaid management information system, with the aging-related components, was $30 million, 90 percent of which was covered by CMS, with only 10 percent non-federal funding. In addition, 75 percent of the annual operating costs for this system are covered by CMS, with only 25 percent coming from non-federal sources. Also, the state information technology staff supporting this overall system is also available to the SUA, AAAs, and service providers. As was the case in Georgia, there are certain draw-backs to piggy-backing on a state-wide system that has many separate agency requirements to address. In particular, the SUA in Oregon is investing another $900,000 in state funds to enhance the OAA component of this system to address specific SUA, AAA, and service provider requirements that the initial application did not cover. This appears to represent a pattern, where the economies of scale and benefits of coordination that come from an integrated approach with Medicaid are balanced somewhat by the need to pay for aging-related enhancements that the core system does not address. Still, the Oregon approach provides a very cost-effective model for other states to consider.

Information System Data Categories

One objective of this study is to identify a core set of information that states collect, as a basis for limiting AoA reporting requirements to a sub-set of what SUAs need for their own purposes. While the staff we interviewed told us that external reporting requirements may have been the genesis of many of their early MIS development efforts (especially the data collection mandates from the 1992 OAA Amendments), SUAs, AAAs, and providers have embraced and expanded on many of these minimum data sets to support a range of internal functions. One SUA staff member we interviewed reflected this collective view by saying that once the SUA, AAA, and provider staff saw the benefit of the information, there was no desire to go back to the original, often cumbersome methods of data collection. Under these circumstances, trying to distinguish between what states collect for their own purposes, versus AoA reporting, was not possible.

What the survey did do was identify frequently occurring data elements, under several broad categories, as a basis for addressing this study objective.

The following tables (6-11) and accompanying narrative identify the types of data that SUAs collect in terms of Registered and Non-Registered Services and, within each of these two groups, whether the data are for individual clients or summary figures.

As a basis for ensuring uniform client data for their Registered Services, virtually all SUAs (98%) reported that they have a standard client registration form that AAAs and providers use to collect baseline participant information.

Demographics

For data on individual clients receiving Registered Services, and consistent with AoA reporting requirements, the most frequently occurring demographic data include age or birth date, gender, race/ethnicity, poverty level, and living arrangements (such as living alone) all involving between 79 and 81 percent of SUA information systems (see Table 6). Only 21 percent of SUA information systems collect data on client formal education levels, despite a recent National Institute on Aging/Census Bureau publication on the older adult population, which cited this variable as highly correlated with overall well being.[14]

A few states collect demographic data only as summary counts of clients for at least some of their Registered Services, including SUAs without a state-wide client tracking system. These states must rely on client tracking capabilities at the AAA or provider levels to capture this information as a basis for AoA reporting. In the table, the "Client" and "Summary" percentages may add to more than 100 percent because some states may use both methods of data collection, depending on the particular Registered Service. Among the "Other" demographic category, living in a rural area constituted the majority of responses.

Concerning Non-Registered Services, while individual client tracking may not be necessary for AoA reporting purposes, it is telling that approximately half (47 to 51 percent) of SUAs collect

[14] http://www.census.gov/prod/2006pubs/p23-209.pdf

detailed client data, under the same top four demographic categories, for at least some Non-Registered Services (e.g., transportation). During the case study site visits, SUA, AAA, and provider agency staff indicated that the benefits of having a comprehensive client data base, both for Registered and Non-Registered clients, outweighed the costs of doing so. Still, for a few services, such as legal assistance and information & referral programs, collecting and maintaining individual client data at the state level was not feasible, either because of confidentiality concerns or the logistical demands of doing so.

Table 6: Client Demographic Data Collected by SUA Information Systems

Demographics	Registered		Non-Registered	
	Client level	Summary	Client level	Summary
Age or birth date	81% (38)	33% (14)	51% (23)	26% (11)
Gender	80% (37)	29% (12)	48% (21)	24% (10)
Race/ethnicity	80% (37)	32% (13)	48% (21)	29% (12)
Living arrangements	79% (37)	24% (10)	47% (21)	21% (9)
Income	64% (30)	10% (4)	33% (15)	7% (3)
Poverty level	79% (37)	29% (12)	49% (22)	30% (13)
Public assistance benefits	36% (17)	2% (1)	18% (8)	9% (4)
Marital status	67% (31)	10% (4)	39% (17)	10% (4)
Education level	21% (10)	0% (0)	11% (5)	4% (2)
Other (specify)	44% (20)	17% (7)	27% (12)	12% (5)

Functional Status and Health

Table 7 shows that, consistent with AoA's reporting requirements under the SPR, the most frequently occurring functional status and health information, which SUAs collect on individual clients, includes ADL and IADL limitations (81% of SUAs) and a nutrition risk assessment (80%) (e.g., the Nutrition Screening Initiative (NSI) scores).

The presence of a family caregiver was the third most prevalent item that SUAs collect on individual clients for their Registered Services, covering 65 percent of the SUAs. While

representing only a small number of states, the "Other" category includes cognitive and mental health assessments, health conditions, and additional frailty measures.

Quality-of-life measures, such as the social functioning and emotional well-being indicators from such surveys as the Behavioral Risk Factor Surveillance system (BRFSS) survey, which occurs annually in every state, do not appear except infrequently among SUA MIS data. These outcome measures have appeared with increasing frequency in studies of the elderly population and constitute potential additions to what SUAs, AAAs, and providers collect about their clients.[15]

Table 7: Functional Status and Health Data Collected by SUA Information Systems				
Functional Status/Health	**Registered**		**Non-registered**	
	Client level	**Summary**	**Client level**	**Summary**
ADL/IADL limitations	81% (38)	26% (11)	30% (14)	16% (7)
Nutrition risk assessment	80% (37)	24% (10)	24% (11)	13% (6)
Family caregiver support	65% (30)	16% (7)	27% (12)	11% (5)
Self-assessed health status	45% (21)	2% (1)	13% (6)	7% (3)
Assistive devices (e.g., wheelchair)	41% (19)	0% (0)	20% (9)	4% (2)
Home barriers/modifications	38% (18)	0% (0)	15% (7)	4% (2)
Other (specify)	15% (7)	2% (1)	4% (2)	2% (1)

OAA Services Data

As Table 8 shows, nearly three-quarters (74%) of states collect data on the units of service that each Registered Services client receives; however, only half of the SUAs collect service units on individual clients for at least some Non-Registered Services.

The implications for AoA reporting are that unduplicated client counts and units of service information for at least some Non-Registered Services are reasonably available from only about half of the SUAs. Nonetheless, the fact that about half the states do choose to collect this unit-

[15] http://www.cdc.gov/hrqol/methods.htm

of-service information for at least some clients receiving Non-Registered Services, even without an AoA requirement to do so, suggests that SUAs feel the time and effort are worth the cost.

From the case study site visits, we saw a number of sophisticated uses of client functional status and service unit information. One such use involved comparing the computer-generated determination of service needs for a client, compared to the level and scope of services that client actually received. While differences for an individual client may be a function of special circumstances, patterns of differences for groups of clients may reveal problems with particular providers, AAAs, or services, when expected, versus actual service patterns vary considerably and persistently over time. In a similar vein, one state we visited estimated what an appropriate client-to-caseworker ratio should be, based on an algorithm it developed that used the assessment profiles of the clients, and compared this information with actual caseloads. Again, while a particular setting might warrant such inconsistencies, patterns of differences for particular groups of providers, case workers, or services may suggest the need for monitoring by the state or AAA.

Table 8: OAA Services Data Collected by SUA Information Systems

OAA Services	Registered		Non-registered	
	Client level	Summary	Client level	Summary
Units of each service	74% (35)	35% (15)	50% (23)	56% (25)
Number of clients by service	74% (35)	42% (18)	46% (21)	58% (26)
Expenditures by service	51% (24)	42% (18)	39% (18)	47% (21)
Other (specify)	2% (1)	2% (1)	2% (1)	2% (1)

These types of analyses fall under the rubric of *exception reporting*, where instances that stand out because of their differences from an overall group, while not confirming the presence of a problem, may warrant follow-up activities to explain the inconsistencies. For example, in one state we visited, the SUA found that some of these anomalies were a function of incorrect record keeping and reporting, while other differences identified long-standing agency patterns of relatively few clients per caseworker, compared to state-wide figures. This system was still under development when we conducted the interviews, and there were yet no examples of interventions by the SUA using this performance information.

Reason for Leaving/Termination

Our past encounters with SUA, AAA, and service provider information systems, when collecting client samples for AoA's national survey of OAA participants, showed a frequent absence of data on when persons leave the service delivery system and the reasons for termination. In addition, as part of AoA's Performance Outcomes Measures Project, we are working with states and AAAs to identify who leaves various home and community based programs, when this occurs, and where they go. Of particular importance for measuring outcomes are data on the time clients participate in these programs prior to nursing home placement, versus remaining in the community. However, the frequent absence of termination data impeded the analysis of nursing home diversion and cost savings associated with participation in home and community based services. For the AoA national survey, the absence of termination data on clients often meant that persons, who were no longer receiving services, were still on participant lists, which required a substantial over sampling to accommodate this problem.

Table 9 shows the extent to which such client termination information is captured by state information systems.

Table 9: Client Termination Data Collected by SUA Information Systems

Reason for Leaving Program	Registered		Non-registered	
	Client level	Summary	Client level	Summary
Mortality	56% (25)	5% (2)	31% (14)	5% (2)
No longer eligible	47% (21)	7% (3)	20% (9)	7% (3)
Nursing home placement	47% (21)	7% (3)	24% (11)	5% (2)
Left area	42% (19)	2% (1)	24% (11)	5% (2)
Status improved	39% (18)	5% (2)	17% (8)	% (2)
Other program placement	35% (16)	2% (1)	17% (8)	2% (1)
Moved in with family	28% (13)	0% (0)	13% (6)	2% (1)
Other (specify)	24% (11)	4% (2)	11% (5)	2% (1)

The most frequently occurring termination information that SUAs collect, for individual clients receiving Registered Services, includes mortality (56%), no longer eligible (47%), nursing home placement (47%), and left area (42%). Among the "Other" category, the most frequently occurring response was a voluntary exit.

While external reporting requirements may not call for client termination data, having this information in a data file, longitudinally, provides important opportunities to analyze the relationship between services and outcomes. About one-half of the states collect nursing home placement information for clients in their home and community based programs (i.e., Registered Services), but a similar number do not. Across all the response items in this section of the survey, including the "Other" category, there were 17 SUAs that collected no termination information, which may indicate a potential problem in purging data bases of inactive clients for unduplicated count purposes. Encouraging states to add this termination information to their data bases may be an important role for NASUA.

Quality Assurance and Client Satisfaction

As Table 10 shows, very few states collect data about levels of client satisfaction or goal attainment, regarding the programs and services that SUAs support. AoA's Performance Outcomes Measures Project has focused on consumer assessments of services, among other indicators of program quality, but very few states appear to be including such indicators within their information systems.

Table 10: Quality Assurance Data Collected by SUA Information Systems

Quality Assurance	Registered		Non-Registered	
	Client level	Summary	Client level	Summary
Goal attainment	13% (6)	7% (3)	11% (5)	2% (1)
Client service assessment/satisfaction	4% (2)	2% (1)	4% (2)	0% (0)
Other (specify)	4% (2)	2% (1)	2% (1)	0% (0)

We did find some exceptions to this rule, however. For example, the Florida Department of Elder Affairs conducts an annual sample survey of its home care clients, using the Home Care Satisfaction measure (HCSM), covering home delivered meals, homemaker services, personal care, and case management programs.[16] The HCSM produces a composite score across several domains of satisfaction, which when compared to a national benchmark, provides an assessment of services from the client's perspective as a basis for quality improvement. The AAA in Cincinnati incorporates the HCSM within the scope of its case management and home care program by administering the surveys to all clients receiving these services as a quality assurance activity.

AAA and Provider Data

In addition to identifying what data SUAs collect about clients and services, the survey asked about information of an administrative nature that states gather about AAAs and providers.

Table 11 shows that the AAA-related data that SUAs collect closely follow AoA's SPR requirements, covering counts for staffing (61%), and service expenditures for OAA funds (71%) and other funds (69%).

Less than half (47%) of SUA computer information systems collect data on the number of volunteers. Presumably, the AAA volunteer counts in many SPR submissions are based on best estimates. While service systems development and advocacy are important AAA functions, in addition to direct funding of services, the study found that SUA information systems collected very little data about the level and scope of these activities.

Concerning data on service providers, most SUA information systems (80%) capture a unique agency identifier for tracking purposes. Virtually all of these information systems use an identifier that the MIS automatically generates, rather than the Employer Identification Number (EIN). Only five SUAs use the EIN, with one additional state planning to adopt this method of provider identification. CMS is developing a system for unique provider identification called the

[16] Geron, SM, et al. The Home Care Satisfaction measure: A Client-Centered Approach to Assessing the Satisfaction of Frail Older Adults with Home Care Services. *Journal of Gerontology, SOCIAL SCIENCES 2000. Vol. 558, No. 55B, S259-S270.*

National Provider Identification (NPI), which it will require for all Medicare billing.[17] It is likely that the NPI will become the de-facto standard for agency identification in the future, covering not only Medicare, but Medicaid, private pay, and other sourced of funding.

Table 11: AAA and Service Provider Data Collected by SUA Information Systems		
Data Categories	**AAAs**	**Providers**
Staffing (e.g., numbers, roles, etc.)	61% (30)	20% (10)
Number of volunteers	47% (23)	18% (9)
Expenditures by service		
For OAA funds	71% (35)	55% (26)
For other funds	69% (34)	51% (24)
Expenditures for program development, advocacy, or other non-service activities	31% (15)	21% (10)
Unique provider identification number or other data for computing an unduplicated count of providers for the SPR	N/A	80% (36)
Other	4% (2)	17% (8)

In addition, approximately half of the SUA information systems collect provider expenditures for OAA funds (55%) and other funds (51%). For the remaining categories of data in the table, only about one-fifth of the states collect this information. This means that the collection and use of information about service providers may be primarily an AAA MIS function.

Linkage of OAA and MMIS data

During the survey and site visits, we identified several states, including South Carolina, that have embarked on efforts to link health and social services data from many agencies and programs to provide a holistic view of the care that individual older adults are receiving, regardless of the type or source of support. In particular, given the importance of considering both primary and long term care, when analyzing the overall well-being of OAA clients, especially those who are poor and qualify for Medicaid services, linkages between an SUA MIS and Medicaid Management Information Systems (MMIS) is potentially useful. For this reason, the NASUA

[17] http://www.cms.hhs.gov/apps/npi/01_overview.asp

survey asked SUAs to what extent their MIS applications were linked, either partially of fully, with the state MMIS. Approximately 28 percent of SUA information systems allowed linking OAA and Medicaid data to show which clients were common to both programs. Only 4 percent of the states reported they were able to do so fully, while the remaining 24 percent were able to do so partially. Integrating health and long term care data bases may be part of an overall effort that NASUA could encourage states to undertake to help coordinate MIS applications, as well as the underlying service delivery systems they represent.

Satisfaction with the Information System

The survey listed 14 attributes of information systems, covering a range of issue areas, such as cost, capabilities, and support. Using a five-point scale, where 1 represented the lowest level of satisfaction and 5 the highest, SUAs rated their information systems according to these attributes. Table 12 presents both the mean and individual scores to show the overall patterns, as well as the internal variations, which were often substantial. For example, "Ease of use" and "Updating files/purging inactive client records" each had a mean score of 3.4, but two and one-half times more states rated their satisfaction as poor (a rating of 1 or 2) for the later, than they did for the former.

The attributes that received the highest satisfaction rating were the initial and on-going costs, with mean scores of 3.8 out of 5. In addition, very few states rated their satisfaction with either of these costs as a 1 or 2. This was somewhat surprising, given the high costs associated with MIS development, either for commercial software or in-house development. However, those states that may have deferred the development of information systems because of high costs were not among the respondents. Also, AAAs and providers that were responsible for covering their own MIS costs, as a function of SUA mandates, were not among the respondents. However, this high level of satisfaction with MIS costs showed that making a commitment to develop an information management system includes accepting the costs associated with doing so. During the case study site visits, we found that states with high-performing information systems felt that the benefits far outweighed the costs. Given the responses to the full SUA survey, most states appeared to reach similar conclusions.

Table 12: SUA Information Systems Satisfaction						
Information System Attribute	**Rating, from 1 (lowest level of satisfaction) to 5 (highest level of satisfaction)**					
	Mean	**1**	**2**	**3**	**4**	**5**
Initial cost	3.8	5%	7%	24%	29%	34%
On-going costs	3.7	7%	7%	28%	24%	33%
Exporting data to other reporting systems	3.5	11%	14%	14%	34%	26%
Ease of use	3.4	7%	5%	47%	28%	14%
Updating files/purging inactive client records	3.4	20%	10%	18%	23%	30%
Report generation (e.g., AoA SPR tabulations)	3.4	12%	16%	19%	28%	26%
Ease of installation	3.3	9%	16%	35%	16%	23%
Customer support	3.3	15%	5%	39%	17%	24%
User training	3.3	12%	12%	32%	24%	20%
Flexibility to integrate multiple state and local data requirements	3.2	17%	17%	20%	17%	29%
Ad hoc queries	3.2	17%	21%	14%	19%	29%
Ease of modification to accommodate new reporting requirements	3.0	19%	24%	19%	14%	24%
Importing data from other reporting systems	3.0	22%	17%	19%	19%	22%
Written and on-line documentation	3.0	20%	17%	20%	34%	10%

Those attributes that received the lowest satisfaction ratings were "Ease of modification to accommodate new reporting requirements," "Importing data from other reporting systems," and "Written and on-line documentation." A bi-modal response pattern suggests that states were not uniformly satisfied or dissatisfied. For example, more SUAs actually rated "Written and online documentation" as a 4 or 5 than as a 1 or 2. A similar pattern occurred for the other two generally negative attributes as well. Levels of satisfaction did not vary substantially according the particular software application that a state was using.

During the site visits, several SUAs told us that limitations in the ability of their systems to accommodate changes, as well as barriers to linking OAA systems with other applications, such as those supporting Medicaid Waiver programs, constituted problems in otherwise successful applications. In addition, the absence of satisfactory documentation may have contributed to the state's need to employ its own technical and user support staff. The inability or limitations in SUA software applications to link and share data with Medicaid Waiver and other information systems, in the presence of other policy-related barriers to sharing information across agency and program lines within a state (e.g., HIPAA issues), suggest problem areas where NASUA could help SUAs explore how to remove these impediments to comprehensive and coordinated service delivery systems.

For example, the current HIPAA guidance from the HHS Office of Civil Rights identifies the OAA network on aging entities that are subject to HIPAA confidentiality requirements.[18] The SUA, AAA, and provider staff we interviewed said that the next step is receive guidance on how these covered entities, such as home health agencies receiving AAA funds, might share client information as part of an integrated information system. For example, we found that some SUAs have designated each party to an MIS as a "Business Associate," thereby allowing multiple agencies to tap into a common pool of client data without violating HIPAA confidentiality provisions (Tennessee). Other states limit such client data sharing to non-health-related variables, such as name, address, income, and birth date, restricting access to health information to the agency originally collecting it (Ohio). Apart from HIPAA concerns, this selective access to the contents of a common client data base addresses other confidentiality concerns that provider agencies may have, such as limiting rights to case notes to the client's case manager and supervisor.

Another approach is to remove personal identifiers, such as a client's name, leaving only a unique numeric code for computing unduplicated counts and conducting analyses. This is useful when an SUA receives data for tabulation purposes (South Carolina). A combination of an AAA and client code would allow the SUA to distinguish one individual from another for SPR and other analytical purposes (assuming that any cross-AAA movement of the same person is too

[18] http://www.aoa.gov/prof/civil_rights/hipaa/hipaa.asp

infrequent to be of concern). Such an approach is not feasible at the AAA and provider levels, however, if the goal is to avoid redundant data collection from the same client, who receives services from multiple providers.

SUA Information System Uses beyond AoA Reporting

The survey asked states if they used data from their information systems for any of the following purposes, and the vast majority indicated that they did:

- Annual or periodic reports to inform the general public about state and community programs on aging: 89% (42)
- Budget justification and accountability to state legislatures and others: 92% (44)
- Advocacy: 87%, (41)and
- Monitoring and quality assurance: 87% (41).

Perhaps more informative than these figures are the illustrations of state MIS data uses that we identified from the open-ended follow-up survey questions and during the case study site visits. For example, in response to the "Other, Specify" items in the initial SUA survey, respondents reported such applications as:

- Program management and evaluation use of MIS data by the SUA/AAAs/providers,
- Planning projections and needs assessments,
- Service gap analysis,
- Provider waiting list patterns,
- Presentations to various groups,
- Ad-hoc queries,
- Annual performance analysis for AAAs and providers,
- MIS links with Geographic Information System (GIS) to show where clients live, and
- Support for external inquiries, such as a cost-sharing study covering client contributions.

While on-going implementation and operational support for a state's MIS consumed much of the time and attention of SUA staff in the sites we visited, there were many uses of information beyond reporting to AoA.

One of the most frequently occurring examples of such SUA use of its MIS data is the publication of an annual report, summarizing the state's information on clients, services, and costs, often combining Census figures with MIS statistics. These are brief documents, perhaps numbering only 30 pages, with tables, charts, and graphs, and accompanying narrative.

AAA Information Systems Capabilities

The responses to the survey thus far cover SUA information systems, including any AAA and provider participation in an integrated state-wide MIS. However, some states have followed a model, whereby AAAs and providers may determine for themselves what types of information systems they wish to adopt. Under these circumstances, it is not unusual for AAAs and providers within a state to be using many different software applications, some commercial and others developed by the agencies, in-house, often with consultant assistance. Also, some AAAs and providers may be using essentially manual approaches or simple spreadsheet applications for collecting and reporting client and service information. In addition, the SUA may be using one software application, while the AAAs and providers are using several others. For example, Table 13 shows that 120 AAAs in 14 states have purchased their own commercial software, separate from the applications that SUAs are using. In addition, 58 AAAs in 15 states have developed their software in-house, often with outside consulting support. In some cases, these commercial and in-house software applications cover AAAs in the same states.

Table 13: Area Agency on Aging Information Systems Development Patterns

AAA MIS Development Patterns	Number of States	Number of AAAs
AAAs purchased their own commercial MIS	14	120
AAAs developed their own in-house MIS	15	58

It is interesting that some of the largest states follow this model, where the AAAs are free to select their own MIS applications. In these cases, SUA information system may be different from what the AAA and providers are using, which in turn may differ from each other. For example, New York, Texas, and California have given AAAs the flexibility to select their own software applications, as long as they meet SUA reporting requirements. New York, for instance, uses its own internally developed MIS and IT staff, while the AAAs use a range of

commercial and custom packages. The SUA's rationale for developing its own in-house MIS was to take advantage of the extensive IT staff support it had available and to provide the flexibility to accommodate a variety of different software applications that already existed at the AAA level. In New York, there are 36 AAAs that use SAMS, 4 that use the CH Mack Q Continuum package, 9 that use another commercial application called *Peer Place* from Jaw Networks, 3 that use the Summit Technology Services *Aging System*[19], and 7 AAAs that developed their own in-house systems, including New York City.

In Texas, the SUA and 9 AAAs use SAMS, while 8 use Q Continuum[20], and 10 use Saber's AIM software. In many instances, the AAAs' selection and use of these software packages preceded the state's decision to adopt SAMS, which explains the variety of applications in use throughout the state. In California, the SUA has its own internally developed system but will be considering and selecting a commercial package in the near future. Among California's AAAs, 12 use a version of Q Continuum as part of *CareAccess* under the local leadership of the Council on Aging, Silicon Valley, the AAA for Santa Clara County, while 15 use SAMS, and 6 have their own in-house software. [21]

In a similar vein, the Arkansas SUA has recently selected the RTZ commercial software application to address NAPIS reporting requirements, among other uses, while most of the AAAs are long-term users of SAMS. In Kentucky, the SUA and 2 AAAs use SAMS, while 9 AAA use an application called *Serv Tracker*[22], and 4 have their own internally-developed systems. In Illinois, the SUA and 5 AAAs use a package called *NAPIS Track*, which was initially developed by the State Unit on Aging in Iowa, while 8 AAAs use other applications.

In addition, there are several instances where the SUA and the vast majority of AAAs use the same software package, but one AAA has its own MIS, either internally-developed or a commercial package. For example, the AAA in Fairfax County, Virginia, has its own internally-developed software application and converts its data to the SUA's AIM MIS format for reporting

[19] http://www.summit-tsi.com/
[20] http://www.chmack.com/index.htm
[21] http://www.chmack.com/news/2003_03_13.htm
[22] http://www.accessiblesolutions.us/#

purposes. The Philadelphia Corporation for Aging, the city's AAA, has an internally-developed MIS that preceded the SUA's adoption of SAMS and uses a conversion utility for transferring data to the state. The Council on Aging of Southwestern Ohio, the AAA serving the Cincinnati area, uses the Q Continuum software and converts its data to the SAMS format for reporting to the state.

To varying degrees, all of these are examples of frequently occurring situations where the SUA and its AAAs do not use the same software to collect and report OAA client and services information. In some instances, this occurs as a matter of SUA policy to give AAAs the latitude to tailor their information systems to specific local needs, while still adhering to SUA data standards. For example, virtually all states have developed standard client registration forms, which set minimum data requirements that any MIS must address. In other cases, the state's decision to adopt its own computer MIS (either commercial or in-house) came after the individual decisions of AAAs to adopt their own information systems. Under these circumstances, the SUA determined that it would be disruptive to require the AAAs to convert to the state's application. Instead, interfaces between the SUA's MIS and those of the AAAs appeared most appropriate.

Even when the core OAA data collection and reporting is supported by a single state-wide MIS application, special use software, such as Georgia's use of CHAT/ESP at the AAA level for case management and I&R/A, requires such data transfers. Given the frequency with which these information imports and exports occur, even in the most integrated of systems, SUA staff recommended during the surveys and site visits that NASUA facilitate the development of suggested data transfer specifications for any software that SUA, AAAs, and providers use, in most cases using XML as the standard format.

It is clear that a multiplicity of approaches to SUA information systems development may be unavoidable. Unfortunately, this variety of systems may have drawbacks that limit the ability of SUAs to effect standardization of data, provide technical assistance, and arrange for cost savings through economies of scale. Still, a decentralized approach may make sense, especially if there are multiple MIS applications already in place that are working well.

C. Conclusions and Recommendations

The following conclusions and recommendations suggest how NASUA, with SUAs and AAAs, might use the results of this study to achieve each of the four objectives for this project.

1. Define the common data requirements necessary for policy and management decision making, including state and local initiatives (including advocacy) so as to limit federal requirements to a sub-set of state and local requirements.

Initially, AoA's SPR requirements were often the motivating factor behind the development of SUA information systems. These client, services, cost, and staffing information, among other SPR reporting categories, were the basis for the data that SUAs collected from AAAs and providers. Over time, however, SUA and AAAs indicated that they have realized the benefits of these and additional data to support a range of internal service delivery, policy, planning, and management decision making functions. Given these state and local uses of data, which this study has summarized in Table 5, federal reporting requirements are playing a decreasingly important role in SUA information systems over time.

Tables 6-11 show the data elements that are common to most SUA information systems, and Table 14, below, presents the ones that are collected by at least half of the SUAs under the Registered Services heading, with the corresponding figures Summary data and Non-Registered Services. As a comparison between this table and the SPR data categories will confirm, there is considerable overlap between what AoA requires and the data that SUAs collect, but we found that an agency's own use of this information surpassed external reporting requirements as the justification for data collection. Still, federal reporting requirements do play an important role in motivating states to collect essential data, according to case study interviews.

The figures on page 59, above, also confirm that virtually all SUAs reported using their MIS data for purposes beyond AoA reporting. For this reason, identifying the most frequently occurring data elements within SUA information systems, regardless of purpose, appears to be the most appropriate basis for determining any limits on AoA reporting requirements.

Table 14: Client Data Most Frequently Collected by SUA Information Systems				
Client Data Elements	**Registered**		**Non-Registered**	
	Client level	**Summary**	**Client level**	**Summary**
Age or birth date	81%	33%	51%	26%
Income	64%	10%	33%	7%
Poverty level	79%	29%	49%	30%
Gender	80%	29%	48%	24%
Marital status	67%	10%	39%	10%
Living arrangements	79%	24%	47%	21%
Race/ethnicity	80%	32%	48%	29%
ADL/IADL limitations	81%	26%	30%	16%
Nutrition risk assessment	80%	24%	24%	13%
Family caregiver support	65%	16%	27%	11%
Units of each service	74%	35%	50%	56%
Number of clients by service	74%	42%	45%	58%
Expenditures by service	51%	42%	39%	47%
Termination due to mortality	56%	5%	31%	5%

For Registered Services, two-thirds (67 percent) of the SUAs collect individual client data at the state level as a basis for computing unduplicated counts. The remaining states collect these unduplicated client counts for Registered Services as aggregate figures from the AAAs.

For at least some of the Non-Registered Services, 37 percent of the SUAs also collect individual client data at the state level. This is primarily a function of SUAs collecting individual client data for transportation services. The remaining states collect only aggregate data on the unduplicated number of clients for Non-Registered Services. If AoA decided to require SUAs to report the unduplicated number of clients receiving transportation services, 63 percent would have to change their information systems to do so. It may be that a correspondingly smaller percentage of AAAs would have to make changes in their MIS practices to do so, however. While the scope of the NASUA study was on SUA information systems, the case study site visits showed that many AAAs do collect client data for Non-Registered Services, even if the SUA

does not require them to report at this level of detail. At the same time, we found that OAA transportation programs are sometimes part of coordinated ventures at the local level, where human services transportation resources (e.g., for various age groups and funding streams) are pooled under the aegis of a single organization, such as a community action agency, for service delivery purposes. We found that under these circumstances, the AAA, and therefore the SUA, receives only aggregate figures on the numbers of trips, consistent with AoA's current SPR requirements. For the other Non-Registered services, AoA requirements for unduplicated counts would be problematic, either because of the group nature of the service (e.g., Nutrition Education), or because of provider client confidentiality concerns (e.g., legal services).

Another issue is that certain data elements, while not currently collected by a majority of SUAs, or required by AoA, still represent important information for a range of purposes. For example, there is a frequent absence of client termination data, beyond mortality, showing the exit date and reason for leaving the program, such as nursing home placement. There is a need to collect this type of information as a basis for measuring outcomes of OAA home and community based services, including nursing home diversion and associated cost savings. Nursing home and other placements for care recipients in the National Family Caregiver Support Program would also provide states with important program outcome information.

Keeping track of who leave the OAA service delivery system, and why, also helps ensure up-to-date client lists, as a basis for accurate unduplicated counts. In addition, local service providers will have access to lists of current clients for case management and service planning purposes, the absence of which can cause problems. For example, one of the providers we visited maintains its own computer client roster, in addition to what the SUA MIS provides, because the state files include many persons no longer receiving services. This is also a symptom of what occurs when state data needs for federal reporting requirements, rather than local uses of information, determine the design of the MIS.

Another category of data that is frequently missing from SUA information systems is client assessments of services. Consumer perspectives are essential for maintaining and improving service quality, and we found several examples of MIS applications that capture this information,

such as the use of the Home Care Satisfaction Measure by the AAA in Cincinnati, Ohio, covering all home-care clients. In addition to a powerful quality-assurance measure for home care, overall, this information on individual clients helps caseworker supervisors monitor staff performance. The Florida Department of Elder Affairs collects this information from a representative sample of home care clients as a basis for measuring consumer satisfaction with the care they are receiving. The use of periodic sample surveys of clients to collect this type of information may provide a cost-effective way of capturing data with a minimum of staff burden.

Also, the increased emphasis on quality of life measures in the gerontological research literature in recent years suggests that SUAs, which currently collect little data in this area, might consider doing so in the future. Examples of these measures include the Health Related Quality of Life items from the BRFSS[23] or the SF-36 and SF-12 that came from the Medical Outcomes Study.[24] The custodial emphasis of many case management and home care assessments and services, focusing primarily on ADL and IADL supports, may limit the ability of these programs to meet the full spectrum of client needs, without quality of life measures. Of particular importance are indicators of consumer choice and control, which AoA, CMS, and many states are now emphasizing.[25] Also, as a possible explanation for variations in the ability to advocate for oneself and make informed long-term care choices, client education is a powerful predictor service needs, but few SUA information systems collect this information. [26]

In addition, one important purpose of the Older American Act is to facilitate access to a range of existing benefits and services, even if SUAs and AAAs have no direct responsibility for administering them. For this reason, it is important to know which clients are eligible for and receiving Housing Choice Vouchers, SSI, Food Stamps, state general assistance, Medicaid acute and long term care, property tax relief programs, free public transit, and other entitlements and services. During our site visits, we also found that a few SUAs collect data on the actual use of acute health care, regardless of the payment source, such as hospital emergency room visits and in-patient stays. These are important indicators of how well OAA services may be reducing the

[23] http://www.cdc.gov/hrqol/methods.htm
[24] http://www.sf-36.org/home.aspx
[25] http://www.hcbs.org/htmlFile.php/fid/3591/did/1238/
[26] http://www.census.gov/prod/2006pubs/p23-209.pdf

need for these health services. However, we found that most SUA information systems do not collect these types of client data.

The purpose of this first study objective is to help ensure that AoA bases its reporting requirements on what SUAs and AAAs need and collect for their own purposes. The staff we interviewed, especially during the site visits, endorsed this approach and recommended continuation of procedures similar to what AoA has used in the past for this purpose. Specifically, we found substantial support for the periodic convening of representatives from SUAs, AAAs, and service providers to identify and update a consensus on data needs. For example, this group could decide if additional data on nursing home placement, consumer assessments of services, and participation in entitlement programs, among other information, is appropriate for the OAA network to collect, regardless of SPR requirements.

Given the interest expressed by SUAs, AAAs, and providers for this approach, it may be appropriate for NASUA (and the National Association of Area Agencies on Aging) to take the lead in convening such a group periodically to reach an on-going consensus on state data needs.

2. Eliminate the need for elderly individuals and caregivers to provide identifying information repeatedly to various service providers

The study identified many instances where local service providers, under SUA and AAA leadership, were able to tap into and share common data about clients, avoiding the need to collect information that was already in the MIS files. This occurred when the AAA or the SUA maintained a computer network, often Web based, to which these multiple agencies had real-time access. In some instances, users were not permitted to view information on the services that other providers were offering to their clients; in these cases, access was limited only to the basic demographic data that would involve redundancy. For example, case notes from one agency were often unavailable to another provider serving that same client, for confidentiality reasons. We found that many providers insisted on limiting what information was collectively available, in the interest of such staff and client confidentiality. Reaching a consensus at the state and local level on client data sharing was key to the success of these efforts to avoid redundancy in client data collection, the technology available for doing so notwithstanding.

Concerning technology, many SUA, AAAs, and providers that used the same software application, were nonetheless hampered in sharing common client data because of the batch processing nature of these systems. Specifically, the stand-alone software and data bases at many agencies (AAAs and/or providers) resulted in only periodic client updates to the AAA and the state. Also, individual users did not have access to these central data bases, and the files were not always current, given the quarterly reporting cycles characteristic of many state-wide or AAA-wide applications. Essentially, individual client data moved in one direction, from the provider, to the AAA and state, which created a basis for unduplicated counts but did not give agencies collective access for information sharing purposes. Movement to Web hosting of client data bases or other networking platforms, with collective access by the SUA, AAAs, and providers, will remove the technical barriers to the client data sharing that is essential to achieving this objective.

However, accomplishing this objective requires more than a technical solution. Other impediments to client data sharing that the study found were the many confidentiality concerns that the SUA, AAA, and providers raised, including assumptions that HIPAA requirements prohibited the very information sharing that this study objective is encouraging. Until these concerns are allayed, even centralized, accessible client data, through Web hosting or other means, will not eliminate the need for clients and caregivers to provide the same information repeatedly, as they move from one provider to another.

Incidental to these confidentiality concerns for sharing OAA clients and data, is the related problem of doing so for the Medicaid Waiver program, which is a major source of funding. Even when the SUA has administrative responsibility for operating the Medicaid home and community-based services, the proliferation of separate, state-mandated Medicaid information management systems often require duplicate record keeping and reporting, even for the same clients. As an extreme example, during one AAA interview we found that when a client calls to apply for services, the intake worker brings up two registration forms on two different computer systems, one for OAA services and the other for Medicaid Waiver program. When it is clear for which program the client is eligible, then the second intake screen is closed (in this state, there is

very little overlap in OAA and Medicaid Waiver clients; although, both programs support similar services).

During another site visit, in a state where the SUA and AAAs did not administer Medicaid Waiver programs, the local service providers, nonetheless, had to use two different computer reporting systems, one covering the OAA funds that the provider received from the AAA and the other covering the Medicaid Waiver funds that the provider received directly from the state Medicaid agency. Especially in rural areas, there are only a few service providers, and multiple reporting requirements and systems often converge at the local level, creating substantial staff burden and redundancy in client data collection and reporting.

These are but a few examples of the substantial barriers to achieving this second study objective, without substantial intervention by NASUA and others to remove perceived and actual limits to client data sharing. While the primary focus of this study was OAA information, the large percentage of SUA, AAA, and provider budgets that come from Medicaid home and community based programs suggests that until the overall issue of data integration is addressed, including combining OAA and Waiver client files, the opportunities to achieve this objective will be very limited. The frequency with which we encountered these barriers to client data sharing suggests that they will remain an impediment to achieving this objective without concerted action from the national level, possibly as technical assistance from NASUA to the states.

On a positive note, one factor that may mitigate the problem of redundant provision of client data is that registration for services often occurs at the AAA level, not at individual providers, which may allow clients and caregivers to avoid repeatedly giving the same information multiple times. Under these circumstances, the AAA authorizes the services and sends the client information to the multiple providers that may support the same client.

States also can help eliminate any redundant data collection, as clients and caregivers move among providers, by eliminating distributed MIS applications and encouraging the development of local area networks or Web hosted systems that link the AAA and its multiple providers, similar to what the SUA in Ohio is doing, using SAMS and *AgingNetwork.com*.

Also, there are other efforts outside the OAA network that may serve as examples for avoiding redundant client and caregiver data collection. Many of these pertain to the coordination of health services and the sharing of client data among multiple providers that such coordination requires. For example, an initiative called "Connecting for Health" is working to help agencies link data sets using information technology in health and health care, while protecting patient privacy and the security of personal health information. This public-private collaborative of more than 100 national organizations is enabling health professionals and patients to use information technology, so that they can receive coordinated care in emergency and routine situations, as well as in managing chronic illness. To accomplish this, "Connecting for Health" is working to create a new nationwide health information environment based on open, common standards that will allow patients, health care professionals, public health agencies, and other institutions to communicate in real time through a diverse array of technologies.[27] Given the range of hardware and software that many SUAs, AAAs, and providers are using, this approach for linking diverse information systems may help accomplish this second NASUA objective.

3. Improve data collection methods and systems so as to insure obtaining unduplicated counts of individuals across service providers and geographic locations

The many commercial and internally developed computer client tracking systems that the study identified at the state and local level provide an empirical basis for unduplicated counts covered by this objective. Except for those Non-Registered Services where logistical and legal concerns limit data pooling for unduplicated counts, the software tools and accompanying data collection procedures are readily available to accomplish this objective. In most of the states, the study showed that such procedures are already in place.

However, approximately one-third of SUAs do not collect individual client data at the state level, relying instead on summary reports from the AAAs for SPR-related information. While AoA reporting does not require having individual client data at the state level, the absence of such information limits the analytical opportunities for these SUAs. For example, SUA longitudinal analyses are possible using retrospective data on clients and services, showing outcomes and patterns of service utilization over time for various categories of clients (e.g., high levels of

[27] http://www.connectingforhealth.org/

frailty). They also show important combinations of demographic risk factors, such as low income, advanced age, living alone, social isolation, the absence of a caregiver, low levels of formal education, among other factors, which are important for targeting purposes.

The interviews with the 49 SUAs showed that many of the states without a client tracking capability were in the process of implementing systems to do so. In all cases where these new software applications were under development, the state has chosen to use a commercial package, which should speed implementation and allow these states to build on the work of their peers and the vendors that support them. All of these commercial systems have effective client tracking and unduplicated count capabilities.

Some of the same issues associated with achieving the second objective on pooling and sharing client data to avoid redundancy pertain to this objective as well. Such client data pooling at the SUA level helps compute unduplicated client counts. If states could remove the perceived barriers to pooling client data, especially by eliminating problems associated with incorrect HIPAA interpretations, the opportunities for building comprehensive client data bases at the SUA level, to compute unduplicated client counts, will increase.

If states set standards and requirements for client data exporting and importing, using XML, for example, then those AAAs and providers where there are separate client information systems, which might otherwise impede the building of integrated data bases at the SUA level, could provide standard extract files to the state for producing unduplicated counts.

Also, many SUAs reported that there will always be uncertainty about the degree of overlap between Registered and Non-Registered Services. The study found three general approaches that SUAs used to address this uncertainty. First, some states estimate the degree of overlap as a basis for reporting the total unduplicated number of clients on the SPR. A second group of states assumes that virtually all Non-Registered clients receive at least one Registered Service, in which case the SUA reports the only the Registered client figure as the unduplicated total. A third group of SUAs simply adds the Registered and Non-Registered client counts, given the inability to identify the overlap.

The inconsistency with which states construct their total unduplicated client counts for SPR purposes may be a source of error in the figures that AoA receives from the SUAs. For this reason, some SUAs recommended that AoA set standards or other guidance to help ensure consistency in the total unduplicated counts across all services.

Another facilitator for computing unduplicated counts is the use of bar-coding technology, which also reduces the burden on staff who collect data on individual client program participation, especially involving groups of clients, such as congregate meals, nutrition education, transportation, and recreational activities. This report has described many examples where the use of computer-readable identification cards allows agencies to identify individuals across many group services, especially in senior center settings. Many SUAs, AAAs, and providers could make use of the interfaces that already exist for the two most prevalent SUA commercial software packages, AIM and SAMS, both involving bar-coding capabilities from MJM Innovations[28] In addition to clients, home care staff can use this technology to record the delivery of services to individual clients, which reduces burden and increases the availability and accuracy of unduplicated client counts.

Finally, by pooling all provider and AAA client data on a single, Web-hosted system, the SUA will have an empirical basis for unduplicated counts. At the same time, AAAs and providers will have a single place to store and retrieve data on clients for supporting their services systems.

4. Reduce the expense of reporting system fragmentation by taking advantage of network economies of scale for information systems development and management without compromising competition in the marketplace

At the SUA level, there are only a few commercial software packages in use; the most frequently occurring is SAMS (covering 24 states), followed by AIM (covering 5 states), and RTZ Associates' NAPIS Care (in 2 states). One state (Illinois) is using a software package called NAPIS Track, which was developed by and transferred from the state of Iowa, but it is now

[28] http://www.mjminnovations.com/index.html

supported by Innovative Data Systems for the Illinois Department on Aging.[29] The remaining states have their own in-house systems.

When promoting economies of scale and benefits of coordination under this objective, one must also consider the many other computer applications in use by the AAAs and providers, beyond what the SUAs are using. For example, SUAs reported that 120 AAAs in 14 states have purchased commercial software, and 58 AAAs in 15 states had developed separate applications, in-house, apart from SUA integrated applications. This does not include the separate provider agency information systems, which were not covered by the study, but nonetheless potentially contribute to fragmentation and costs, which this objective seeks to avoid through integration.

Even when the AAAs and providers are using the same commercial software as the SUA, there are fragmentation risks. This includes instances where these AAAs and providers have many separate optional modules and enhancements, which are not in use at the state level. For example, the SAMS *Omnia* modules support client assessments and case management activities at the AAA and provider agencies, but the SUA usually does not need to acquire this module for state level tabulations. In addition, while the SUA, AAAs, and providers may be using the same software, each may be negotiating separately with the same commercial vendor for the initial and annual licensing fees, potentially limiting economies of scale that the state might otherwise realize. This means that what appears to be the use of the same software at the SUA, AAA, and provider levels actually represents quite different applications and procurement arrangements. This creates a risk for fragmentation unless the SUA becomes involved in software acquisition and use issues beyond its own internal application requirements.

The potential for fragmentation is also a function of the special-use software that SUAs, AAAs, and providers may be using, such as separate case management and I&R/A packages, even when there is a core OAA software application. These separate applications may offer the best support for particular aspects of a state's service delivery system. However, linking these disparate applications, through data sharing protocols, is an important state responsibility, consistent with this objective.

[29] http://www.indatsys.com/

Perhaps most important, the separate, state-mandated Medicaid Waiver software applications, which SUAs, AAAs, and providers often must use, in addition to their OAA MIS applications, contributes to fragmentation.

One of the most successful examples of a state realizing economies of scale occurred in Oregon, where the Medicaid MIS, covering the Waiver programs administered by the SUA and AAAs, also addresses the information requirements of OAA funds and other state-financed programs and services for the aging. In addition to having a single application that supports all agencies, programs, services, and funding streams, CMS paid 90 percent of the software development costs and covers 75 percent of the on-going expenses, because the state's OAA data needs were incidental to those of Medicaid. At the same time, the integration of the information system has supported the coordination of the service delivery system, itself. Becoming part of such a large application is not without its own risks, however. For example, the SUA is not always able to configure the specific reports it needs and as a result will be developing separate reporting capabilities at its own expense. In Georgia, the SUA began its MIS development work as part of an integrated state-wide information system. While this provided a common platform, with IT staff for support, it did not meet all the SUA's information needs, which required the development of separate applications that the SUA financed with its own resources. Still, the Georgia SUA computer system combined many separate software applications, covering a range of programs and funding streams, thereby reducing fragmentation.

Avoiding MIS fragmentation is also an issue of SUA leadership to ensure that even when allowing AAAs the freedom to choose from among several available options, including vendor software or custom MIS development, there are opportunities for economies of scale and benefits of coordination. For example, when multiple vendors are active within a single state, there may be several AAAs using the same one, which provides coordination opportunities. The presence of AAA and provider user groups in many states constitutes another example of how coordination can occur. Other possibilities for limiting the costs of independently operated systems include the use of bulk purchasing agreements that AAAs, with SUA support, might negotiate with software vendors. Pennsylvania, for example, has a single contract with Synergy for the use of SAMS by the SUA and all AAAs, which may be less costly than if each user had

to negotiate software licensing fees separately. Also, enhancements to a vendor package, which one AAA may finance, might be made available to all the state's AAAs at no additional cost.

Finally, there is the potential for documenting and replicating internally developed software from one state to another. There are very few examples where this has occurred. Two cases in particular cover the transfer of NAPIS Track from Iowa to Illinois and the replication of the design, but not the actual software, by Washington State, based on the Oregon model. In this case, Washington State adopted only Oregon's Medicaid Waiver component, electing to use SAMS for OAA and other MIS functions. Georgia indicated a willingness to share its system with other states, but the current staff would be able to provide only limited support, given their intensive involvement with the maintenance and support within Georgia. Also, any AoA funding to demonstrate the viability of such replication efforts may constitute government competition with commercially available software vendors.

Still, there is much that states can share concerning their individual and collective experiences in selecting an approach to MIS development and using the resulting system. We recommend that, in addition to this report, a Web Cast be used to convey the results of this study to all SUAs. This Web Cast could be based on the briefing, including computer slides, that we will conduct for NASUA and AoA on the findings from the surveys and site visits. Web Casts allow participants to submit questions, either in advance or during the conference, which the presenters can address as time permits. Web casts can be saved for later viewing by those who were not available for participation in the original session. Follow-on Web Casts could cover specific topics, such as the integration or sharing of data among multiple software applications that a state may be using. For example, the study found that even in the most coordinated of settings, it was not unusual for multiple, special use software packages to be operating simultaneously. In particular, we found that separate I&R/A, case management, and fiscal management packages often accompanied the use of a core client tracking software application, with considerable frustration by the SUA, AAA, and provider staff, who needed to move data from one application to another. Web Casts or other forums could help states decide when it is appropriate to actually integrate these multiple applications within their core MIS, versus facilitating the exchange of data among them.

Appendix A: SUA Information System Characteristics

NAPIS Information System Reported for Survey Results	#	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS	KY	LA	MA	MD	ME	MI	MN	MO
In-house/Custom-developed	24	✓		✓	✓		✓		✓	✓	✓		✓			✓	✓			✓		✓	✓		✓
Commercial: AIM	5																				✓			✓	
Commercial: SAMS	15					✓						✓		✓					✓						
Commercial: other	1														✓										
Contracts out to university	1							✓																	
Manual/Excel	3		✓															✓							
Completed interviews	49																								
Post-Survey Transition																									
Commercial: NAPIS-Care (RTZ)	2		✓																						
Commercial: New SAMS Users	8						✓	✓										✓		✓		✓			
RFP	2				✓											✓									
Thinking about changing	3			✓					✓													✓			
Number of AAAs		13	8	8	33	16	5	0	0	11	12	4	13	6	13	16	11	15	37	23	19	5	16	7	10
SPR Compliant AAAs		13	8			16	5	n/a	n/a	11	12	4	13	dk	13	16	11		37	0	19	5	16	7	10
Multiple Provider Access		y	n	n	n	y	n	n	n	y	y	y	n	n	n	n	y	n	y	n	y	n	n	n	n
Vertical Integration																									
AAAs		13	0	8	0	16	4	n/a	n/a	11	12	4	12	6	8	16	11	15	37	20	18	0	16	7	0
Providers		118	0	0	0	120	0	0	0	230	125	7	0	0	0	0	7	0	145	7	2	0	0	7	0
Counties/Cities		0	0	0	0	0	0	0	0	15	95	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Other		0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	64	3	0	0	0	0	0
Unduplicated Counts																									
Registered: individual client		y	n	y	n	y	y	y	y	y	y	n	y	y	n	y	y	n	y	n	n	n	y	y	n
Registered: aggregate		n	y	n	y	n	n	n	y	n	n	y	n	y	y	n	n	y	n	y	y	y	n	n	y
Non-registered: individual client		n	n	n	n	n	y	y	y	y	y	n	n	n	n	n	n	n	y	n	n	n	n	n	n
Non-registered: aggregate		n	y	y	y	y	y	n	y	n	n	y	n	n	y	y	y	y	n	y	y	y	y	y	y
Non-registered: estimate		y	n	n	n	n	y	n	n	n	n	n	y	n	n	n	n	n	n	n	n	n	n	n	n
Total: Individual client		n	n	y	n	n	n	y	n	n	y	n	y	y	n	n	y	n	y	n	n	n	n	n	n
Total: Aggregate		n	y	y	y	y	n	n	y	y	n	y	n	n	y	y	y	y	n	y	y	y	n	n	y
Total: Estimate		y	n	n	n	n	y	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	y	y	n

Horizontal Integration		AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS	KY	LA	MA	MD	ME	MI	MN	MO
1. Program/Funding Source																									
LTC Ombudsman (NORS)		y	n	n	n	y	n	n	y	n	y	n	n	n	n	n	n	n/a	n	n	n	n	n	n	y
OAA Title III-D Disease Prev		y	n	y	y	y	y	n	y	n	y	y	y	y	y	y	n	n/a	y	n	y	y	y	y	y
OAA Title III-E Caregiver		y	n	y	n	y	n	n	y	n	y	y	y	y	y	y	y	n/a	y	n	y	y	y	y	y
Community Service Employment		n	n	n	n	n	n	n	y	n	y		n	n	n	n	n/a	n/a	n	n	n	n	n	n	y
Title VI Native American		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n	n/a
Title VII Elder Rights		y	n	y	y	y	y	n	y	n	y	y	y	n/a	y	n	n	n/a	y	n	y	n	y	n	y
Senior Health Insurance-SHIP		n	n/a	n	n	n/a	n	n	n/a	n	y	y	n/a	n/a	n	n/a	n	n/a	n/a	n	n	n	n/a	n	n/a
Medicaid HCB Waivers		y	n	n/a	n	n/a	n/a	n/a	y	y	y	n/a	n/a	n/a	n	y	y	n/a	n/a	y	n	n	n/a	n	y
Other Medicaid programs		y	n	n/a	y	n/a	n/a	n/a	n/a	y	n/a	n/a	n/a	n/a	n	n/a	n	n/a	n/a	y	n/a	n/a	n/a	n	n/a
Social Services Block Grants		n/a	n	n/a	n/a	n/a	n/a	n/a	y	n	y	n/a	n/a	n/a	n/a	y	y	n/a	n/a	n/a	n/a	n/a	n/a	n	y
Nutrition Services Incentive-NSIP)		y	n	y	y	n	y	n/a	y	y	y	y	y	n/a	n	y	y	n/a	y	n	y	y	y	n	y
State-funded programs		y	n	y	y	y	y	n/a	y	y	y	y	y	y	n/a	y	y	n/a	y	y	y	n	y	n	n/a
Participant contributions		n	n/a	y	y	n	y	y	y	n	y	y	y	n/a	n/a	y	n/a	n/a	n/a	n	n	n/a	y	y	n/a
Aging & Disability Resource-ADRC		n/a	n	n/a	n/a	n/a	n/a	n/a	n/a	n	n/a	n/a	y	n/a	n/a	n/a	n/a	n/a	n	n	n	n	n	n	n/a
Other programs & funding sources		n/a	n	n/a	n/a	n/a	n/a	n/a	n/a	n/a	y	n	y	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	y	n	n/a
2. Link to MMIS		p	n	n	n	n	n	n	p	p	p	n	n	n	p	p	p	n	n	p	n	n		n	n
3. Enterprise-level		n	n	n	n	n	n	n	y	n	n	n	n	n	n	y	n	n	n	n	n	n	n	n	y

Legend:
n/a = not applicable: SUA does not administer the program or SUA did not answer due to lack of automated system;
p = partially links

State Technology Innovations	#	AL	AR	AZ	CA	CO	CT	DC	DE	FL	GA	HI	IA	ID	IL	IN	KS	KY	LA	MA	MD	ME	MI	MN	MO
Barcode/Card-Reader/Scanning (service unknown)				2		y																		y	
Barcode registration-meals																			y			2			
Barcode registration-transportation																									
Barcode registration-homemaker																			y						
Barcoded client rosters-meals																								7	
Machine readable swipe card for cong. meals and wellness								y																	
Tablet PCs-Client Assessment		y																y							
Touch screen-client self-registration																					5				

Legend:
# = number of AAAs using technology;
y = being used by AAAs or providers; # not known

NAPIS Information System Reported for Survey Results	MT	NC	ND	NE	NH	NJ	NM	NV	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
In-house/Custom-developed	✓	✓		✓	✓	✓		✓	✓			✓							✓					✓	
Commercial: AIM											✓				✓					✓					
Commercial: SAMS			✓				✓			✓			✓	✓		✓	✓				✓	✓	✓		✓
Commercial: other																									
Contracts out to university																									
Manual/Excel																		✓							
Completed interviews																									
Post-Survey Transition																									
Commercial: NAPIS-Care (RTZ)																			✓						
Commercial: New SAMS Users						✓		✓										✓							
RFP																									
Thinking about changing																									
Number of AAAs	10	17	0	8	0	21	6	0	59	12	11	17	52	0	10	0	9	28	12	25	5	13	6	4	0
SPR Compliant AAAs	10	17		8		0			59	12	11	17	52		10		9	28	0	24	5	13	6	0	n/a
Multiple Provider Access	y	y	y	y	n	n	n	n	n	y		y	y	y		y	y	n	n	n	n	n	y	n	y
Vertical Integration																									
AAAs	10	17	n/a	8	0	0	4	n/a	0	11	11	16	52	n/a	10	n/a	9	0	9	25	5	10	6	0	n/a
Providers	43	410	40	0	0	0	44	51	0	519	40	y	2	26	54	79	59	0	0	0	0	3	21	59	50
Counties/Cities	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	80	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	y	0	1	0	70	0	0	0	0	0	0	0	0	0
Unduplicated Counts																									
Registered: individual client	y	y	y	y	y	n	y	y	n	y	y	y	y	y	y	n	n	n	n	y	y	y	n	y	y
Registered: aggregate	n	n	n	n	n	y	n	n	y	n	y	n	n	n	n	y	y	y	y	n	y	n	y	n	n
Non-registered: individual client	n	y	y	n	n	n	y	y	n	n	y	y	y	n	y	n	n	n	n	y	n	y	n	y	y
Non-registered: aggregate	n	n	n	y	y	y	n	n	y	y	y	y	n	y	n	y	y	y	y	y	y	n	y	n	n
Non-registered: estimate	y	n	y	n	n	n	n	n	n	n	n	n	n	y	n	n	n	n	n	y	n	n	n	n	n
Total: Individual client	n	y	y	n	y	n	y	y	n	n	y	y	y	y	y	n	n	n	n	y	y	y	n	y	y
Total: Aggregate	n	n	n	y	y	n	y	n	y	n	y	n	n	n	n	n	y	y	y	n	y	n	y	n	n
Total: Estimate	y	n	n	n	n	y	n	n	n	y	n	y	n	n	n	y	n	n	n	n	n	n	n	n	n

Horizontal Integration	MT	NC	ND	NE	NH	NJ	NM	NV	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
1. Program/Funding Source																									
LTC Ombudsman (NORS)	n	y	n	n	n	n	n	n	n	n	n	n/a	y	n	n	y	n	n	n	n	n	n	n/a	n	n
OAA Title III-D Disease Prev	y	y	n	y	n	y	y	y	y	y	y	y	y	n	y	y	y	y	y	y	y	y	y	y	y
OAA Title III-E Caregiver	y	y	y	y	y	y	y	n	y	y	y	y	y	y	y	y	y	y	n	y	y	y	y	y	y
Community Service Employment	n	n	n/a	n	n/a	n/a	n	n	y	n	n	n/a	n	n	n/a	n/a	n/a	n/a	n	n	n/a	n	n	n	n/a
Title VI Native American	n/a	n/a	n/a	n/a	n/a	n/a	n	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	y	n/a	n/a	n/a	n/a	n/a	n	n/a	n/a	n/a
Title VII Elder Rights	n	y	n	n	n/a	n	n	n	y	n	n	y	y	n/a	n	y	n	y	n	n	n	n	n	n	n
Senior Health Insurance-SHIP	n	n/a	n/a	n/a	n/a	y	n	n	n	n	n/a	n/a	n	n	n	n	n	n	n	n	n	n/a	n	n	n/a
Medicaid HCB Waivers	y	n/a	y	n	n	n	n/a	n	n/a	n	n	y	y	y	y	y	y	n/a	n	n/a	y	n	n/a	n	n
Other Medicaid programs	n/a	n/a	n/a	n/a	n/a	n	n/a	n	n/a	n	n/a	y	y	y	y	y	n/a	n/a	n	n/a	y	n	n/a	n	n
Social Services Block Grants	n/a	y	n/a	n/a	y	y	n/a	n/a	n/a	n	n/a	n/a	y	n/a	y	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n	n/a
Nutrition Services Incentive-NSIP)	y	y	n	y	n	y	n	n	y	y	y	y	y	n/a	y	y	y	y	y	y	y	y	y	n	y
State-funded programs	y	y	n/a	y	y	y	n	n	y	y	n/a	y	y	n/a	y	y	y	y	y	y	y	y	y	y	y
Participant contributions	n/a	y	n	n/a	n/a	y	y	n	y	y	n/a	y	n	y	y	y	n/a	y	n	n	y	n	n/a	n	n
Aging & Disability Resource-ADRC	n	n	n	n/a	n/a	n	n	n/a	n/a	n/a	n/a	n/a	n	y	n	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n	n	n/a
Other programs & funding sources	n/a	n/a	y	n/a	n/a	n	n/a	n/a	y	n/a	n/a	n	n	y	y	y	n	n	n/a	n/a	n/a	n	n/a	n/a	n/a
2. Link to MMIS	n	n	n	n	n	n	n	n	n	n	n	y	p	n	p	p	n	n	n	n	p	n	n	n	n
3. Enterprise-level	y	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n

Legend:
n/a = not applicable: SUA does not administer the program or SUA did not answer due to lack of automated system;
p = partially links

Technology Innovations	MT	NC	ND	NE	NH	NJ	NM	NV	NY	OH	OK	OR	PA	RI	SC	SD	TN	TX	UT	VA	VT	WA	WI	WV	WY
Barcode/Card-Reader/Scanning (service unknown)							y			y	y		y		y	y				y		y			y
Barcode registration-meals							y																		
Barcode registration-transportation							y																		
Barcode registration-other							y																		
Barcoded client rosters-meals																									
Machine readable swipe card for cong. meals and wellness																									
Tablet PCs-Client Assessment																									
Touch screen-client self-registration																									

Legend:
# = number of AAAs using technology;
y = being used by AAAs or providers; # not known

Appendix B: Case Study Site Visits

Georgia Case Study

Background and Staffing of SUA

Georgia's aging population is growing faster than 39 other states in the U.S. In 2000, Georgia had an over-60 population of 1,071,080, and Georgia projects this figure to grow to 1,621,899 in 2010, an increase of 51 percent.

OAA programs in Georgia are managed by the Division of Aging Services (DAS) in the Department of Human Resources (DHR), which in turn manages 12 Area Agencies on Aging (AAAs). See Appendix A for an organization chart. The 12 AAAs manage 233 providers. The overall Division budget in FY 2005 was $108.7 million, including $60.7 million in state funding. OAA funding was about $22 million. Major programs managed by the DAS include:

1. The Community Care Services Program (CCSP) helps Medicaid-eligible individuals who can not perform activities of daily living to continue living in their homes and communities and avoid placement in nursing homes.
2. Home and Community Based Services Program (HCBS) provides support to older Georgians so that they may remain independent and self-sufficient.
    a. In home assistance such as Homemaker and Personal Support services help people with functional limitations to continue to live in their homes and communities.
    b. Congregate and home delivered meals are provided to groups in senior centers and individuals who are homebound.
    c. Health promotion and disease prevention services include nutrition screening, counseling, education and physical fitness programs.
    d. Other home and community based services as needed by clients in Georgia.
3. National Family Caregiver Support Program (NFCSP).
4. The Wellness program is targeted at increasing the ability of older adults to perform everyday activities and remain living in their own homes.
5. The Adult Protective Services Program (APS) serves adults age 18 and over and investigates reports of abuse, neglect and exploitation and provides intervention to reduce the risk of further maltreatment.
6. The Long–Term Care Ombudsman Program seeks resolution of problems and advocates for the rights of residents of long-term care facilities.
7. The Elderly Legal Assistance Program (ELAP) promotes prevention of costly legal problems through the provision of legal information and education to seniors 60 and over.
8. The GeorgiaCares program is the State Health Insurance Counseling Program (SHIP), built on a foundation of a public-private partnership formed to provide Medicare and Medicaid beneficiaries with information about medical coverage and access to all available low-cost prescription medication programs.
9. The Senior Community Services Employment Program (SCSEP) provides training and placement in part-time community service assignments for low-income people 55 and older, in most cases leading to unsubsidized employment as participants exit the job training and readiness portion of the program.

Motivation for Developing the SUA Information Management System

The State of Georgia made Y2K dollars available in 1998 to modify the current Management Information System (MIS) that had existed since 1989. The purpose of that system was collecting data on aging services to meet NAPIS and other reporting requirements. The existing MIS system designed in dBase and then in Clipper, was innovative and effective for the time in which it was created, but the aging network had evolved beyond the capabilities of that system. The existing MIS system was unable to add new programs or funding sources easily. AAAs also said that they could not use the old system for generating Ad-hoc reports, and they had to use a slow modem connection for transmission of data, which was very time consuming.

The aging network had become more diverse in the 1990s, and the Georgia DAS was fortunate to receive additional state dollars. Many new programs had created their own management information systems, and the Division of Aging Services (DAS) had multiple data systems all collecting data, with redundancies and gaps. In addition, these were all distributed (stand-alone) data base systems, and the state wanted a centralized (networked) system that could be used by all programs.

The DAS took this opportunity to hold a Joint Application Development (JAD) meeting in 1997-98 with the SUA, AAAs, and local providers to develop a statewide system named Aging Information Management System (AIMS). The requirements analysis lasted nine months to a year.

The DAS adopted and incorporated the Baldrige principles for strategic planning as a result of the leadership and direction of several Division Directors. A key ingredient in measuring success with the Baldrige principles is performance data. Therefore, a new and improved data collection and report system was essential. In addition, Georgia thought that there was a moral imperative to serve the growing aging population and to manage programs efficiently and effectively through the use of data.

Approach to Developing the System and Implementation Process

The Georgia Division of Aging Services wanted a centralized aging management information system that would collect and report all programs and services regardless of funding or information needed for reporting. DAS wanted to be able to track a client over time and determine how the aging network could effectively and efficiently serve the client's needs. The DAS also wanted to change the focus from the individual service or funding source to the individual client; so they could see the data concerning any client in Georgia and know ALL programs assisting this client, using one virtual client file. In the process of implementing AIMS, Georgia consolidated five separate information systems, distributed among 12 regions, covering 60 separate databases.

The DHR initially contracted for AIMS development in a client server environment with a national IT company in 1998, but the contractual relationship did not produce a working system for the Division. Once the contract ended with the outside vendor and DHR assumed

development internally, the AIMS DAS IT team was formed. This team consisted of "program experts" who worked side-by-side with the Information Technology staff to improve the current client server system and develop necessary reports.

The original version of AIMS had many problems with connectivity and was too slow, so the need for a faster system drove the state's and AAAs' interest to use Web-based technology. Georgia wanted to be on the cutting edge of system development. The AAAs agreed with the state assessment of AIMS. Once DHR took over the development, the IT team members took the initiative and commitment to become experts in the Web environment by learning Microsoft .Net.

The AIMS system is designed for all levels of the aging network (state, AAAs and local providers) to enter and/or retrieve data. They are charged with using this data to manage the aging programs in an efficient and effective manner. To facilitate this use, the individual login ID and password are the same for AIMS (where data is entered) and Crystal Enterprise (where reports are run).

Cooperation in building the AIMS system was extensive within the AIMS DAS IT Team, involving AAA, provider, and state users through the entire process of development. As a result, the users have more ownership in the outcome and product.

The AIMS program was initially installed locally in each AAA and provider. This approach created difficulties in downloading to each computer for every change made in AIMS. The state began to require minimum specifications for computers and software to be used with AIMS by the state, AAAs, and their contracted providers. DAS IT approved and issued only quarterly updates for software improvements on the client server to minimize the problems of updates. It is difficult to maintain and keep manuals and report lists current when the demands for data change frequently.

Georgia began using AIMS for fiscal year 2000, but did not migrate data for the Area Plan or Home and Community Based Services (HCBS). Conversion of the existing data to the new system was too difficult for this to occur. State OIT migrated or archived data from MIS to the new AIMS database for other programs such as LTCO and CCSP.

The AIMS system collects data on a broad range of client activities and decisions, funding sources, payments for services, and invoicing. AIMS contains the budget, authorization, payment and accountability for all funds in the aging network in Georgia. If an expense is not documented in AIMS, it does not get paid. The state monitors the expenditures of AAAs using an Area Plan developed from AIMS, which contains the funding sources, number of clients, units of service provided, and cost of various units of service. AAAs also prepares contracts using AIMS data for each of their providers, and they monitor the progress on a monthly basis using the contract information against actual service units and costs. The funding sources in AIMS include; federal, state, local government, community action agencies, United Way, and other charitable foundations and organizations. See Appendix B for the specifications on software and hardware used in Georgia.

In a system this broad, it is crucial to have common data elements and definitions across the state and all users of the system. Georgia DAS has established uniform collection of data by developing program standards and processes. An example is the Taxonomy of Service Definitions, which must be used by all programs and is currently being updated by the SUA. A DAS Chart of Accounts and Uniform Cost Methodology were also developed so the aging network will generate their costs using the same account descriptions and costing principles for determining either unit reimbursed services or line item reimbursed services.

Assessment forms are also standardized and the state uses the DON-R, NSI Checklist, Depression assessment, and other specific assessments developed for individual programs. The Caregiver program is using the Montgomery-Borgatta Caregiver assessment as part of a national study on measuring caregiver burden. Medications Management has a checklist used for this program.

Users help design reports based on how they need to see the data, and they have Web access to reports with various views. The state creates report templates for the AAAs/providers, which in turn can run the reports whenever they want.

While most data sets are entered into AIMS using check boxes and drop down lists, AIMS does provide "case notes" functionality, which permits free typing of significant information on clients not captured in tables and grids. While reports cannot be generated from these case-notes data, it is a function that can assist providers and case managers with service coordination and management.

The AIMS data helps to create standard contracting documents between DAS and AAAs and subsequently for contracts between AAAs and their providers. The AIMS data that supports the contract documents includes: specification of services, funding sources and units of service to be provided, and estimates unduplicated or duplicated clients to be served.

Georgia can generate reports from AIMS that provide information about clients receiving Medicaid, OAA and state-funded services simultaneously since the state has one integrated client database. Clients have a unique ID regardless of program or service received.

The state moved to the Web for each module as soon as possible, and only the Area Plan and Administrative Section or AIMS remain in the client server. Georgia is currently working on bridging their Gateway Information and Assistance system that is currently entered on an external system that was developed and is maintained by Atlanta Regional Commission. This system is being created in a Web environment and will be compatible with AIMS basic client data to avoid entering two separate systems, using two separate entry utilities. This system is used by all AAAs in Georgia for Information & Assistance, Client screening and Assessment, and Waiting List information.

In the Web environment, AIMS will run on a laptop computer if Internet access is available. In most cases, however, staff would not need to access AIMS in the field, since the resource and client assessment programs, ESP/CHAT, will run on a laptop for subsequent uploading. AIMS is designed as an overall management information system, rather than a more

narrowly focused case management system. Completion of the work currently underway to link the ESP/CHAT applications (which cover I&R and client assessments) with the AIMS, will enhance the effectiveness of case managers and service providers in capturing essential client and program data.

The conversion of data from the old system to AIMS ran on parallel systems for about six months. Most of the data from the old system did not have to be re-entered and the historical data were preserved. The AAAs found that it took about three years to get all the providers to enter the data correctly.

Georgia performs monitoring and quality control of the program through a number of methods. They conduct a physical check of records by sampling 10 to 20 percent of the records. The state also reviews reports from AIMS and looks for missing data elements and records of the same services being delivered by different providers in the same locations. The state also monitors the AAAs' performance through each Area Plan and compares the planned and actual performance on a monthly basis. The AAAs have their own quality control system, in addition to the state's quality-assurance protocols. For example, one AAA said that it reviews about 5 percent of the cases.

Georgia has a "need-to-know" basis for security and it is linked to program specific requirements. Access to AIMS is based on program security for each person who either updates data or views data for their information only. Reports are accessible on the Web-based system on the same security basis. Confidentiality is maintained based on security levels in AIMS. If one is working in CCSP, then this user sees folders and data elements relevant for this program. This is true of all specific programs. In addition, the login ID and password is one's signature in AIMS.

Unduplicated Client Counts for AoA Registered Services, Non-Registered Services, and for OAA Programs Overall

Most of the client data supplied by Georgia come from unduplicated client counts. Georgia achieves the unduplicated counts by having the AIMS require a client search first; so there is a process to determine if a client already exists, if so, then only the additional information needed for this client file is entered. Each individual client service must have the client registration information completed and entered into AIMS. AIMS then assigns a unique identifier automatically for each new client in the system. If the SSN # or Medicaid # is entered (although not required for all programs) then AIMS will not allow duplicate SSN # or Medicaid # to be added. The state uses Oracle SQL functions to calculate unduplicated counts.

For Non-Registered services, Staff Activity Logs are being developed in the Web-based system for the major group services; so the aging network will have a more accurate idea of the activities provided and how many clients attended each session (e.g., Elder Abuse Prevention, Wellness, and Caregiver/Kinship Care, GeorgiaCares, and LTCO staff logs). There is probably some duplication in these services but the state minimizes the duplication. There is currently some duplication in the counts from group services, senior centers, and Legal Services.

Implementation and Operating Costs

The overall Department of Human Resources had $100 million for system design with the Y2K money from the state. The Division of Aging Services estimates that $4 million was spent up to the year 2000, which includes both the cost of the state IT contractor and the internal SUA IT development costs. The SUA spent $100,000 for hardware and connectivity. The ongoing cost for maintenance, upgrades and operations to run AIMS for a year is $600,000. The state estimated program staff support for systems support at $200,000 to $300,000 a year. The state also estimated that field support is $125,000 a year which includes a help desk that is contracted out. AAAs pay a yearly $2,500 licensing fee to the Atlanta Regional Commission Area Agency on Aging to access the ESP/CHAT system, as does each AAA.

Maintenance of Information Management System

The Department of Human Resources Office of Information Technology staff is responsible for system development and maintenance and they operated the Help Desk for AIMS until it was contracted through an outside computer support vendor. The DAS staff thinks that they have done an excellent job because of the joint participation within the AIMS DAS IT Team and their commitment to assuring that AIMS is the best system possible and meets the needs of its users.

DAS has a small OIT team, and, while they have good skills, they are often assigned to other OIT projects. DAS has a need for a full-time report writer staff member for AIMS, alone, who is not available because of resource constraints; so the SUA is struggling to keep up with report requests from users.

Leadership of Key Individuals

The Division Director and Leadership Team were key for the development of the vision and charter for AIMS development. They also were crucial for resource development and continuing support of the AIMS quality improvement since SFY 2000.

The AIMS DAS IT Team is dedicated to the success of AIMS for the long term. While work on this team is a part of their job responsibilities each person has a personal commitment to AIMS development and providing customer service for the users of the system. In addition, AAA staff and other AIMS users help develop the system, test it, improve processes, create reports and communicate with the AIMS DAS IT Team when there are problems.

Cooperation of all Participating Agencies and Staff during the Information Systems' Development Process

Georgia had a very inclusive process in developing the AIMS system, and they continue to work on obtaining the cooperation of all users through continuous communication through the AIMS Web page and/or e-mails, meetings and training. Georgia involved state staff, AAAs, and local providers and agencies in the planning and development process to build ownership with the data collection process and AIMS. Both AAAs that the team interviewed were very positive

about the collaborative role played by the State of Georgia in designing and implementing AIMS.

Georgia now includes a requirement for using AIMS in the contracts with AAAs contracts with providers. The DAS only accepts data via AIMS for contracting and reimbursement of services or programs.

Scope (agencies, programs, functions) of the Requirements Analysis and Design for the Information Management System

Georgia included all aging programs and services contracted for by DAS and AAAs in the scope of the DAS requirements, since they wanted a centralized, statewide system. The AIMS system includes Older Americans Act funded services, but Georgia also included state funded programs and other federal programs such as the Medicaid Waiver, or grants in the development of AIMS.

Training of Staff

Georgia launched an extensive training program to implement the AIMS system; although providing training support is a challenge due to the lack of resources that can be dedicated to training. Georgia also provides periodic update training on AIMS, with DAS IT program experts providing one-on-one or classroom training when changes or additions occur. Georgia developed a Web-based training manual, and AAAs train new users in the Area Agency and provider agencies. Georgia is exploring methods to provide interactive training modules. In addition, the AIMS DAS IT Web page provides information about AIMS, and the Web Training Manual is available at this link.

Evaluations of the training are collected on each training session and have been very favorable the majority of the time. Users are usually very grateful to have a chance to ask questions and receive training. The AAAs are developing staff resources to have an AIMS trainer on staff.

Technical Support (e.g., trouble shooting)

Georgia has a Help Desk that may be called when there is a problem with AIMS, but it had only a limited capacity. For this reason, Georgia recently contracted out the Help Desk function to a private firm in Texas. The Help Desk reports help the DAS staff justify needed OIT staff time support.

DAS also has two staff that provide technical support to AAAs in the field. DAS calls them circuit riders and they visit AAAs on a rotating basis to provide support and check for problems.

The DAS also is working with the AAAs to develop technical support staff to handle technical problems of providers and AAA staff.

Report Generation

In addition to the AoA reporting, the SUA and the aging network use AIMS for management, validation of data entry, developing the Area Plan (budgets, persons, units planned, compared to actual), advocacy to justify funds for current programs and to justify additional dollars needed based on demographics, documented need and service resources statewide and by local area. The Georgia staff can generate data by service, by county, by provider, by fund source, by AAA, and statewide for all contracted services in the state.

The AIMS system also produces the planning and budget documentation for the Area Plan. AIMS tracks federal, state, and local funds, and it tracks services. AIMS provides all of the data to the AAAs on funding sources, number of clients served, and income earned, and by providing services projected for the next year. This information is then incorporated into the Area Plan for each AAA, and the AAAs are then monitored by their performance against this plan by the state on a monthly basis.

During a period of competition for limited funds, DAS was able to quickly provide statistical data on the persons served, services received, and funds spent from the provider level, PSA level, and statewide – when other divisions or departments could not. The upcoming linkage of the ESP/CHAT applications with AIMS will further document unmet need for services through the automation of the waiting list function.

Has The Information Management System Addressed its Original Purposes and Have The Benefits of the System Justified The Costs?

Georgia is very pleased with the AIMS system and thinks that it has fulfilled its original purpose and justified its costs. Georgia has a statewide centralized data base that includes all programs and services, fund sources, and Area Plan contracting documents. They can determine through assessments (DON-R, NSI, and others) for individual services, if they are targeting to the right clients with the right services. Georgia can measure change over time in individual client's activities of daily living, as well as track outcomes, such as nursing home placement.

The information from AIMS is helping Georgia move to a system of case management to serve those clients with the greatest need. The Division of Aging Services has also successfully used data from AIMS to advocate for resources in a very competitive funding environment.

During the interviews, the AAAs are very pleased with the quality of the data from AIMS and think the reports that AIMS generates are very useful for the project monitoring and for presentations to local funding agencies and local government.

Other Software that the SUA, AAA, or Providers Use in Addition to the Main Information System Software

The 12 Georgia AAAs serve as the single entry point, or Gateway, to all services contracted through these agencies, as well as to a wide range of other services and assistance available through public and private resources. Gateway functions include the provision of I&A,

Client Screening and Assessment, and Waiting List information. The state is developing software that will bridge to the Gateway information and assistance system that is currently entered on an external system, described in the next paragraph, which was developed and is maintained by Atlanta Regional Commission. The bridging system is being created in a Web environment and will be compatible with AIMS basic client data to avoid having to enter data in two separate systems.

The State of Georgia uses the software system called Elderly Services Program/Client Health Assessment Tool (ESP/CHAT). ESP/CHAT is used by the Community Care Services Program (Medicaid waiver program) and some of the Home and Community Based Services funded through OAA. CHAT is in the process of being Web-enabled and a statewide database is being maintained by the SUA. AIMS and ESP/CHAT will be able to communicate directly in the near future. The AAAs said that the current CHAT and AIMS incompatibility was their only major concern now and that should be resolved soon.

AAAs also interacts with the Georgia Legal Services system. Georgia receives aggregated data on Legal Services clients at the end of each month. The legal services providers use separate, specialized client tracking software.

Replicability to Other States

Georgia considers AIMS to be in the public domain; so the state would not consider selling it, but would in theory consider offering technical assistance/consulting if another state chose to follow the same path. Sharing the Georgia AIMS technology does not appear to be a problem, from the Georgia IT leadership's perspective.

Recommendations

The State of Georgia had several recommendations for NASUA and AOA, including:

- Clear data expectations - decide the information you want and then let the current systems build an interface to upload this data in your format.
- Share best practices, but do not mandate "one system fits all" – it will not be feasible nationwide without a tremendous amount of resources
- Federal funding for development and maintenance of statewide, centralized systems
- Allow states that have developed resources and initiatives to collect quality data to remain viable. Support these efforts that include more than just OAA funding and programs, but provide data about the aging community and assist us all to serve them efficiently based on real-time data.
- Support from leadership for collection of data that will benefit the ability to serve clients more efficiently and effectively and the desire for quality data
- Planning and testing by users of any new the systems to build ownership and commitment.

Appendix A

Organizational Chart

fact sheet

Georgia Department of
Human Resources

DIVISION OF AGING SERVICES

The Division of Aging Services administers a statewide system of services for older Georgians and adults with disabilities. These programs offer maximum independence and dignity for participants, especially the most vulnerable. The division provides in-home services to maintain independence; public education and outreach services; health promotion services; senior employment services and an ombudsman program for Georgians in long-term care. Beginning in FY 2005, the division will be responsible for investigation and protective services for vulnerable adults.

The division's FY 2005 budget is $108.7 million, including $60.7 million in state funds.

The **Community Care Services Program** (CCSP) helps Medicaid-eligible individuals who cannot perform activities of daily living to continue living in their homes and communities and avoid placement in a nursing home. In FY 2003, Georgia's CCSP served 14,687 people and did so at a per-person cost that is among the lowest of southeastern states. The program spent $5,836 on each consumer. The average cost of a nursing home placement was $22,151. This means that taxpayers saved $16,315 for each CCSP client who avoided institutional placement.

In FY 2003:

- 593 Georgians received **adult day health services.** This includes nursing care, personal care, occupational, speech and physical therapy, dietary services, and social work.
- 2,575 received **alternative living services.** These services are provided in state-licensed residences with 24-hour supervision and support services for people who cannot remain in their homes.
- 6,663 persons received **emergency response services.** These services provide two-way electronic communication between a monitoring service and an isolated individual.
- 2,992 consumers received **home-delivered meals**.
- 3,210 individuals received skilled **home health services and social services** provided by a home health agency.
- 11,509 individuals received **personal support services** such as light housekeeping, basic personal care and caregiver relief.
- 15 people received **out-of-home respite care**, offering temporary relief for caregivers who have full-time responsibility for the care of a frail or disabled person.

The **Home and Community-Based Services Program** (HCBS) is available to elderly people age 60 and older. It provides supports to older Georgians so that they may remain independent and self-sufficient.

In FY 2003, 37,554 seniors received HCBS services. This includes:

- **Congregate and home-delivered meals** are provided to groups in settings such as senior centers, and to individuals who are temporarily or permanently homebound. The meals meet at least one-third of a person's recommended daily nutritional requirement. The group meals also provide opportunities for adult education, socializing and recreation. In FY 2003, a total of 16,598 individuals received home delivered meals and 14,013 were served in senior centers.
- **Health Promotion and Disease Prevention** services (nutrition screening, counseling, education and physical fitness programs) aimed at reducing/avoiding disabilities from chronic disease are provided by each Area Agency on Aging.
- **Homemaker/chore services** helped 4,214 people to stay in their homes by providing helpers who performed routine household tasks.

The **National Family Caregiver Support Program** (NFCSP) supports family caregivers as its targeted client group rather than care receivers. This program is available to family caregivers, age 18 and older, of persons with Alzheimer's and other dementias as well as persons caring for frail, older adults with chronic health conditions. In FY 2003, a total of 1,930 family caregivers received adult day care services and 1,989 family caregivers received temporary relief from their caregiving responsibilities through respite services provided by Georgia's aging network.

The **Wellness Program** is aimed at increasing the ability of older adults to perform everyday activities and remain living in their own homes. Activities are focused on health promotion and disease prevention. Services are designed to improve health status, increase functional abilities, avoid or delay problems caused by chronic diseases and enhance quality of life. In FY 2003 the Wellness Program served a total of 18,907 clients.

Effective July 1, 2004, the Division of Aging Services will be responsible for **Adult Protective Services (APS).** APS serves persons over age 65 and disabled persons over age 18 who do not reside in a long-term care facility. Services are provided in all 159 counties. The program investigates reports of abuse, neglect and exploitation and provides intervention to reduce the risk of further maltreatment. Program staff find another residence for the abused person; arrange for medical assistance; educate caregivers as to proper care; find a senior center to provide day services; and, if necessary get law enforcement to intervene. In FY 2003, a monthly average of 4,880 adults received APS services.

The **Long-Term Care Ombudsman Program** seeks resolution of problems and advocates for the rights residents of long-term care facilities with the goal of enhancing the quality of life and care of residents. In FY 2003, the Ombudsman program visited residents in nursing homes and personal care homes and provided them with information and education. The program worked to resolve 8,299 complaints. It resolved 94% of complaints to the complainant's satisfaction.

The **Elderly Legal Assistance Program (ELAP)** promotes prevention of costly legal problems through the provision of legal information and education to seniors 60 and over in a variety of areas of civil law. Representation is provided when necessary. ELAP served

30,440 seniors in FY 2003. Seniors also received brief legal assistance from the division's partner, **the Georgia Senior Legal Hotline.**

The **GeorgiaCares Program** is a private-public partnership that consists of: Georgia's State Health Insurance Assistance Program (SHIP), the Senior Medicare Patrol and a special initiative to provide Medicare beneficiaries with access to all available low-cost prescription medication programs. More than 450 trained volunteer counselors provide information on Medicare, Medicare-Approved Drug Discount Programs, Long-Term Care Insurance, Medicare Supplemental Insurance (Medigap), Medicare Savings Programs and Low Cost Prescription Assistance Programs. They also help Medicare beneficiaries sort through complicated Medicare issues and educate them on Medicare fraud, error and abuse. Since July 2002, GeorgiaCares has saved Medicare beneficiaries over $54 million in health-related costs.

The **Senior Community Service Employment Program (SCSEP)** provides part-time community service assignments for low-income people 55 and older and helps them obtain employment. In FY 2003, 92% of participants had incomes below the federal poverty level; 82% were over age 60; and 36% were over age 70.

Looking to the future

The aging of Georgia's population is one of the most significant trends affecting our state today. By 2011, the first baby boomers – the generation born between 1946 and 1964 – will celebrate their 65th birthdays. Georgia's population aged 60 and older is expected to increase 81.6 percent between 1990 and 2010. Those 85 and older are by far the fastest growing age group; they will increase by 264.9% percent by 2010.

This growth in the elderly population is placing greater demands on state government. To meet these challenges, the Division of Aging Services continues to strengthen its public-private partnerships with an array of community-based service agencies. By focusing on the outcomes of these services and streamlining program operations, the division makes sure that the services are cost-effective and that they respond to the needs of elderly and disabled Georgians.

Georgia Department of Human Resources
Office of Communications
www.dhr.georgia.gov
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Appendix B

Computer Configuration Description Worksheet

a. Computer hardware
   i. Workstations NA
   ii. Other input devices (e.g., optical scanners, magnetic card or bar code readers, PDAs) **none**
   iii. Data storage (fixed, removable) Data is stored in a centralized Server Oracle 10G database
   iv. Communication devices (e.g., modems, wireless routers) Users connect to the AIMS system through the internet. They have some T1 connections.
   v. Output devices (e.g., printers, plotters) printers
   vi. Other hardware (please specify) _____

b. Computer software
   i. Date base management Oracle 10G, Crystal Enterprise, Business Objects
   ii. Spreadsheet Excel
   iii. Graphics _____
   iv. GIS/mapping GIS coming
   v. Communications _____
   vi. Operating system Windows 2000 and XP
   vii. Utilities _____
   viii. Other software (please specify) _____

c. Web hosting
   i. Browser requirements _____
   ii. Other Web requirements (please specify) _____

d. Other computer hardware and software requirements (please specify) _____

_____

Ohio Case Study

Background and Staffing of SUA

Ohio has a rapidly growing aging population with an estimated 2.0 million over 60 years of age in 2005 and a projected aging population of 2.8 million by 2020. The Older Americans Act (OAA) programs in Ohio currently serve over 300,000 clients.

The Ohio Department of Aging (ODA), which serves as Ohio's State Unit on Aging (SUA), is a cabinet level agency that reports directly to the governor. ODA has a staff of over 100 employees that are located in eight Divisions. The primary program Divisions include: Older Americans Act Programs, Community Long Term Care and Elder Right, which houses Ohio's Long Term Care Ombudsman Program. In addition to administering OAA programs, ODA also administers several Medicaid funded community based long-term care programs, including, but not limited to: PASSPORT HCBS waiver, the Assisted Living Program, PACE, and Choices. Ohio has 12 Area Agencies of Aging (AAAs) that manage ODA programs at the PSA level and contract with and/or certify over 1,500 local OAA and Medicaid service providers. ODA's overall budget is $380 million. Ohio receives $46 million from the Administration on Aging (AoA) and contributes another $16 million in state funds to support OAA programs and services. OAA and state funds leverage another $55 in local funds for programs on aging. In addition, voters in 61 of Ohio's 88 counties have passed senior services property tax levies which generate over $100 million annually for senior services.

ODA maintains three major program related information systems: Synergy's Social Assistance Management System (SAMS) for OAA data management, evaluation and reporting, PASSPORT Information Management System (PIMS) for Medicaid Waiver long-term care program administration, evaluation and reporting; and the Ombudsman Documentation & Information System for Ohio (ODIS – Ohio) for Ombudsman administration, evaluation and reporting. Program Divisions, with the support of ODA's Information Services Division, are responsible for the administration, deployment, and development of these information systems.

Motivation for Developing the Information Management System

As AoA's data collection needs and reporting requirements increased, the AAAs asked the SUA for a new sophisticated data system that could meet the demands of increasingly complex federal, state, and local information requirements. The AAA's were using a system developed by the Department of Aging that was initially programmed in dBase and Fox Pro to collect AoA NAPIS data. This system was not technically robust, focused only on reporting, and did not meet the AAAs and providers operational needs. The PIMS software that was being developed during this same period could not be adapted for use with OAA programs because it was controlled by the state Medicaid agency and did not have the flexibility to accommodate the local nuances and needs of based OAA programs. A service provider in Cleveland was using the Synergy SAMS product and introduced it to ODA and the AAAs. After some exploration and testing of the software on the part of the AAAs, Ohio's network on aging decided to use the Synergy product. The SUA, 11 Area Agencies on Aging, and 485 providers have been using

SAMS for the past six year. The 12th AAA (Cincinnati) converts its client/service data from another vendor software package, QContinuum, to SAMS for state reporting.

Approach to Developing the System and Implementation Process

In 1979, the Ohio Department of Aging developed the Ohio Aging Services Information System (OASIS) to collect aggregate program information for OAA programs. The Ohio Department of Aging then created another in-house reporting system to collect and report data for the new NAPIS requirements in 1996. The second system was developed in the DOS operating system and was called the new Ohio Aging Services Information System (NOASIS). OASIS and NOASIS functioned as parallel systems and did not link with each other.

The Ohio Department of Aging submitted a request to the state legislature to fund the development of a software application in 1997, which was rejected. The state did use Medicaid funds to develop the in-house PIMS system. The development of this software was a top down process with little local agency involvement, and it was very difficult to implement. Unlike SAMS, PIMS is a centralized, Web-based database (Oracle) with the data stored on state-maintained servers, and the files can be accessed in "real time" via the Web. This centralized, top-down design is possible because, unlike OAA services, Medicaid programs exhibit very little local variation and have uniform data requirements, statewide.

The provider in the Cleveland PSA that was using SAMS was having a good experience with the software. The provider and AAA urged ODA to consider using it to replace OASIS and NOASIS. After a review and selection process, including SAMS and QContinuum used by the Cincinnati AAA, Ohio selected SAMS 3.0 in 2000. The product was not fully developed, but Ohio chose to begin using it as part of the SAMS development process. In 2002, Ohio migrated from stand-alone SAMS 3.0 to the network versions, SAMS2000. The conversion to SAMS2000 was difficult and some AAAs had to lose historical data on their clients as part of the process. The SAMS software replaced the NOASIS system a few years ago, and the hope is to replace OASIS over the next year with another Synergy product, FinPak, the financial management module.

It took all of the AAAs and providers a year to become fully operational on the SAMS 3.0 system, including converting some of their existing data and adopting the procedures of the new system. The AAA thought the process was a lot of work, but would be worth the effort in the long run. With the subsequent conversion to SAMS2000, the AAAs became very frustrated with the complex process and the loss of some of their historical client data.

The next step for Ohio is moving SAMS to Synergy's Web-based system called AgingNetwork.com. The SUA hopes to move all AAAs and providers to AgingNetwork.com, with the exception of the Cincinnati AAA. The Cincinnati AAA has used the Q software system since 1999, and will export data into SAMS in an XML format for state reporting on a quarterly basis.

Information on the costs of services, for reporting to the SUA and AoA, is currently input into the OASIS program by the AAAs. The SUA plans to evaluate the Synergy FinPak program

in the spring of 2006. If the AAAs convert to FinPak they will be trained on the new software and cost allocation systems, which will replace OASIS.

The SUA uses SAMSAdministrator to set the access permissions and limits for all users which maintains confidentiality. The SUA has two system administrators, who have access to all of the files across the state. The AAAs have access to all of the files in the AAA's jurisdiction, and the providers have access to all the clients that use their services. This allows for the creation of a single client database, while protecting confidential files.

The AAAs have expressed a serious concern that they have to use two software programs, SAMS and PIMS, which cannot be limited to exchange data on clients. Many of AAA clients participate in both Medicaid waiver programs and OAA services, but AAAs cannot combine their records for a comprehensive overview of the clients' needs and services.

Because of confidentiality and HIPAA concerns, providers share only limited client data in the SAMS system in Ohio. A new provider with an existing client will have to do a new assessment of clients already in the system, given these confidentiality safeguards. However, part of the new assessment is automatically filled by SAMS, which includes general client demographic profile information and characteristics.

The SUA also operates a quality control system by reviewing service delivery information from client files and checking for completion of all AoA reportable information on all active clients.

Unduplicated client counts for AoA Registered Services, Non-Registered Services, and for OAA programs overall

The SAMS software creates a unique client identifier for all clients entering the system. Clients have another unique identifier in the PIMS system. The SUA tries to find a match for producing a total client count using such common identifiers such as social security number, address, age, etc.

Unduplicated client counts are composed of both Registered and Non-Registered services. Ohio recently designated transportation as a Registered Service. For some Non-Registered Services, such as nutrition education, the state uses an estimate of the people receiving the service rather than tracking these clients in SAMS.

Implementation and Operating Costs

The SAMS 2000 system has a pricing plan that is geared to the number of users. The state level basic SAMS system costs $25,000 initially and $12,500 for the annual renewal. AAAs pay from $2,500 to $12,000 initially and from $1,750 to $6,000 annually, while each provider pays from $200 to $7,000 initially and $200 to $4,000 for the annual renewal. AAA and provider license fees are determined based on the number of clients that are in the database. There are additional costs if the agencies using modules that are not in the basic system. Optional SAMS modules include:

- **Omnia** (has 4 different modules: Designer, Interviewer, CE, and Analyzer) for client assessments and outcome measures;
- **Beacon I&R** for integrated information and referral;
- **OmbudsManager** for Ombudsman management and NORS reporting;
- **FinPak** for budget allocation, tracking and reporting for AAAs and providers; and
- **SAMScan** for scanning bar codes of clients.

Table 1 provides a price structure for total initial cost for all participants that wish to get a new SAMS license. The SUA's initial cost estimates are archived, and therefore, not available for this report. Each AAA and each provider contracts separately with Synergy for the SAMS software. Therefore, it is difficult to calculate cost estimates, as the SAMS license fees depend on the number of clients in each agency's database. Ohio has 11 AAAs that use the software, and each agency has a different number of clients in the database. More importantly, the state has nearly 500 service providers that have different client counts in the database, making it nearly impossible to estimate the initial costs that the entire state network paid to implement SAMS2000. The state's AAAs and providers pay for their own SAMS costs, as follows:

Table 1. Initial Pricing for SAMS

			State		Agency		Provider	
Tier	Min Clients	Max Clients	Initial	Renewal	Initial	Renewal	Initial	Renewal
Tier 1	**0**	**500**					**$200**	**$200**
Tier 2	**501**	**3,000**			**$2,500**	**$1,750**	**$700**	**$500**
Tier 3	**3,001**	**10,000**			**$3,750**	**$2,250**	**$1,200**	**$900**
Tier 4	**10,001**	**20,000**			**$8,000**	**$4,000**	**$4,000**	**$2,000**
Tier 5	**20,001**	**Unlimited**	**$25,000**	**$12,500**	**$12,000**	**$6,000**	**$7,000**	**$4,000**

Ohio is trying to move the majority of the AAAs and associated providers to, AgingNetwork.com. Pricing for AgingNetwork.com is separate from SAMS, with a cost of $300 per user initial infrastructure fee, a $330 per user per year charge, $120 per hour for domain preparation, and approximately $600 for data conversion and domain set up. If we make assumptions on the number of users, we can estimate the initial cost of converting to AgingNetwork.com in Ohio in Table 2.

Table 2. Initial Pricing for Aging Network.com in Ohio

State Entity	Price for Basic Aging Network	Number of Entities	Number of Users (estimated)	Total
SUA	$300 per user infrastructure fee	1	3	$ 900
	$330 user charge per year	1	3	$ 990
AAAs	$300 per user infrastructure fee	11	5	$ 16,500
	$330 user charge per year	11	5	$ 18,150
Providers	$300 per user infrastructure fee	485	1	$ 145,500
	$330 user charge per year	485	1	$ 160,050

Ultimately, Ohio's users will create a single, centralized database, thereby, eliminating fees for separate domain preparation. In addition, since the state is trying to move the majority of the AAAs to AgingNetwork.com, Synergy has waived the domain preparation fee for that single state-wide database. If the number of client names in the database remains consistent between 2005 and 2006, then we can estimate that SAMS license fees for AgingNetwork.com will be an additional $126,650 for all Ohio's users (includes ODA, AAAs and providers). The most expensive AgingNetwork.com license fees are paid by AAA10A (Cleveland) which is the largest agency in Ohio. That agency paid $20,600 for SAMS license fees in 2005. The federal government and the state of Ohio split the cost 50/50 on buying the initial equipment for the AAAs to implement the first (stand-alone) SAMS systems. The SUA, AAA, and providers fax their own SAMS license fees, however.

Maintenance of Information Management System

Maintenance of the SAMS system including software upgrades is provided by Synergy if the database resides on AgingNetwork.com. Agencies that maintain their own software are responsible for installing upgrades of SAMS. Synergy receives input on maintenance issues and upgrades from all of their clients across the country. In addition, Synergy has a National User Group which meets once per year, and Ohio has its own User Group composed of AAAs and one provider, which meets once per month to discuss system improvement and problems.

Synergy provides the upgrades to SAMS; although that process was problematic in the past. The reason is that each upgrade had to remove the old system before the new system could be installed. Last year, all upgrades had to be installed as they became available because the system was not downward compatible. If an upgrade was not installed, data could not be transferred from providers to the AAA and from AAAs to the SUA. Synergy was providing upgrades every few months, which created extra work for the AAAs and providers. Under AgingNetwork.com, upgrades will be transparent to the users and should not cause any problems. In addition, Ohio has some users that have implemented a CITRIX computer network installation for the SAMS software, which resembles AgingNetwork.com. These users also have an easier time meeting upgrade schedules, because they upgrade one central server that houses the software as opposed to each individual computer in the agency and at provider locations. Currently, all of Ohio's AAAs are on AgingNetwork.com or a CITRIX type system.

Leadership of Key Individuals

The initial leadership in making the decision to move to SAMS was provided by the Cleveland AAA, which was an early user of SAMS. The SUA then assumed the leadership position in installing SAMS as a statewide system. During the installation the SUA created a Users Group that met once a month and employed a full-time staff person to support the SUA, AAAs, and providers in the use of SAMS.

Cooperation All Participating Agencies and Staff During the Information Systems Development Process

There was excellent cooperation among the SUA, AAAs and providers during the system development process. The AAAs initiated the process. SAMS is largely already developed, and the Ohio agencies suggested improvements that have been incorporated over time. The basic SAMS system allows the SUA have administrator rights to customize the system to meet the requirements of the state, AAAs and providers.

Scope (agencies, programs, functions) of the Requirements Analysis and Design for the Information Management System

The AAAs and SUA adopted the SAMS system by Synergy which was a complete system designed for the OAA program. Because this was a conversion of Ohio's existing application, there was no design document developed for the system. Synergy worked with the State User Group to confirm the state requirements for the system.

Training of Staff

The AAA staff were all trained initially by Synergy and the SUA on the SAMS system. The AAAs in turn trained the providers on the use of the system. When periodic upgrades occur, the SUA trains the User Group members, who in turn train the AAA staff and then the provider staff. Synergy comes to Ohio once a year to train users.

Technical Support (e.g., trouble shooting)

Synergy provides the major technical support; although the SUA also maintains a help desk. The SUA and AAAs said that the Synergy maintenance and response times have improved. The SUA provides programmatic support to the AAAs.

Report Generation

Both the SUAs and AAAs use SAMS extensively for reports. The SUA uses SAMS and OASIS data as input in a wide variety of reports including:

- An annual report;
- AAA monitoring reports;

- State Performance Report (SPR) report;
- State budget requests and justifications;
- Requests from state legislators;
- Requests from task forces and other agencies;
- Evaluation of OAA policies;
- Evaluation projects and reports (e.g., Ohio's Nutrition Program for Older Adults, Senior Center: Ohio's Blueprint for the future);
- Follow the development of new programs (e.g. Family Caregiver Support Program)
- Service data for the Governor's visits to Regional Cabinet meetings across the state; and,
- Nutrition Services Incentive Program meal counts for reimbursement.

AAAs use the SAMS data for annual reports, reports to city officials and county commissioners and reports to other funding sources such as local Levies, Community Action Agencies, and Community Development Block Grant recipients. The Toledo AAA also uses SAMS for geographic mapping of all of its clients.

Providers use SAMS data for funding requests to Community Action Agencies, Community Block Grant funding, local Levies, county commissioners, their board of directors, the United Way, and local foundations.

While most agencies must use separate reporting systems for OAA and Waiver Programs, the Golden Age Centers provider in Cleveland uses SAMS and Crystal Reports to prepare reports and billings, combining data from PIMS and SAMS on their clients. This appears to be the only group in Ohio currently capable of generating these reports by integrating the two different systems. The SUA has just purchased Crystal Reports and is planning to write programs so that AAAs can easily generate their own reports.

How Well Has the Information Management System Addressed its Original Purposes; Have the Benefits of the System Justified the Costs?

The majority of the AAAs and the SUA are very satisfied with the Synergy SAMS system. SAMS has gone through two major upgrades and most of the AAAs and SUA are moving shortly to the Web-based Aging Network.com operated by Synergy.

Summary of Other Software That the SUA, AAA, or Providers Use in Addition to the Main Information System Software. What Interfaces Exist among Them and How Well Do They All Fit Together

The State of Ohio uses SAMS for the OAA programs. The Ohio Department of Aging also uses the PIMS software for the Medicaid waiver program. The two programs are not compatible and do not share data. This is a problem for the AAA staff who want merged data on their clients.

In addition to SAMS, the state has another program, OASIS, which collects AAA cost data for AoA. The OASIS program is not compatible with SAMS, but will likely be replaced with FinPak operating on AgingNetwork.com beginning in 2007. The Cincinnati AAA uses a commercial program called Q for client intake, assessment and service provision. Cincinnati exports the Q data into SAMS. Q covers only OAA programs, and the AAA must use the separate PIMS application for Medicaid waiver clients.

Some of the AAAs and providers use additional modules of the Synergy software. A provider in the Mansfield AAA uses SAMScan with bar codes. The Toledo AAA uses the Beacon I&R module for all of its Information and Referral functions. A Cleveland provider, Golden Age Centers, uses Crystal Reports with SAMS and PIMS for billings. This provider has both horizontal and vertical integration of the complete aging service system.

The Toledo and Mansfield AAAs are using PDAs with the Windows CE operating system for client assessments using Synergy's Omnia Designer software module on a limited basis. A case worker can get four client assessments on a PDA before they upload the data to a computer.

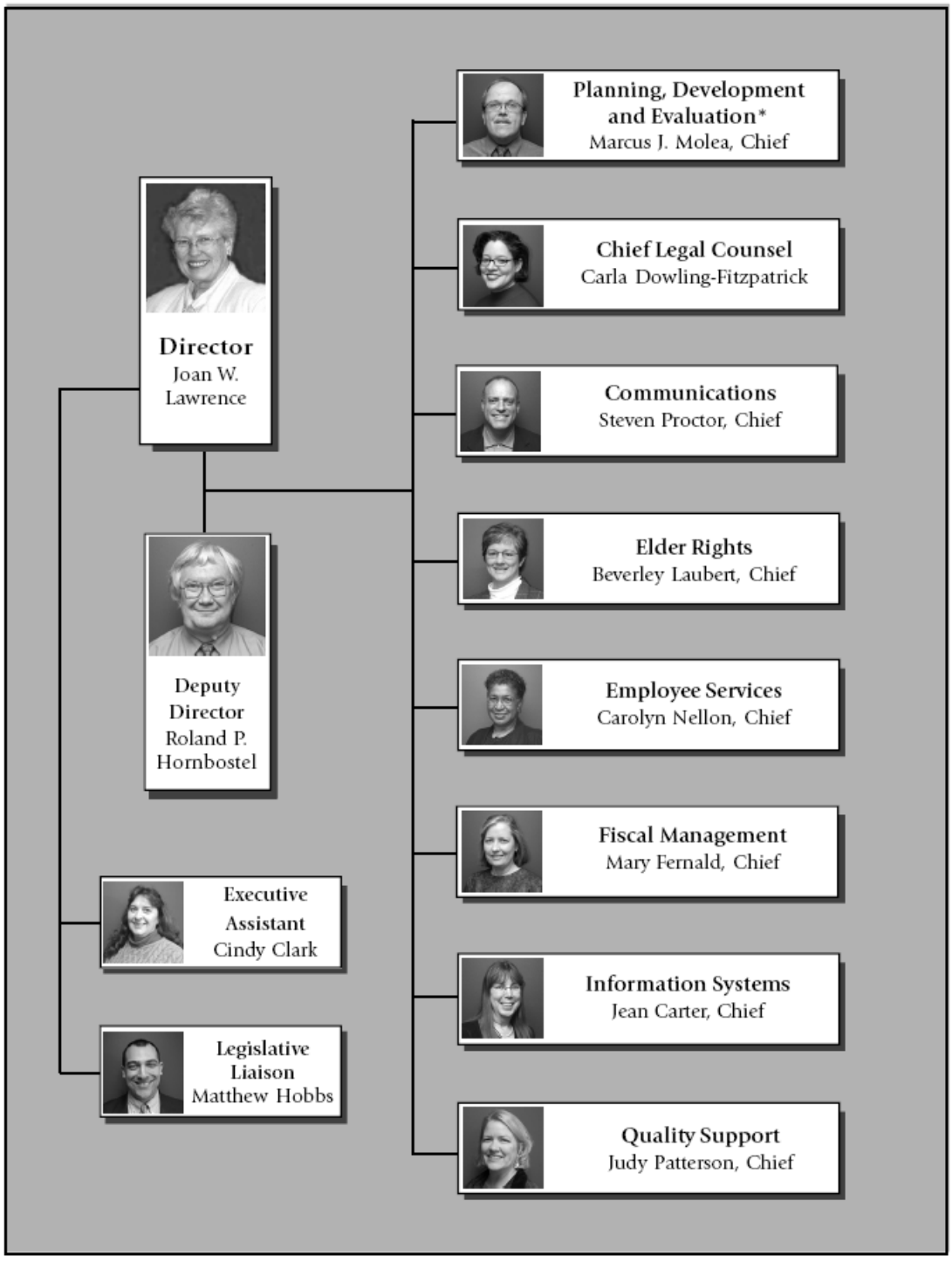
Recommendations

The one national recommendation for NASUA and AoA that Ohio mentioned was to standardize the national reporting systems based on the XML language.

Another obvious recommendation from Ohio's perspective is to move toward integrated information systems for OAA and CMS programs. It is very important for AAAs, all of which operate both OAA and Medicaid programs, to have integrated information on their clients. It also saves administrative time if they are not maintaining two separate systems for this purpose.

Appendix A

ODA Organizational Chart



** Division responsible for guiding the development and implementation of the state plan*

Appendix B

Computer Configuration Description Worksheet

e. Computer hardware

i. Workstations ____12 AAAs and 520 providers with multiple work stations

ii. Other input devices (e.g., optical scanners, magnetic card or bar code readers, PDAs) One provider uses bar codes with SAMSCAN and they are planning on smart cards

iii. Data storage (fixed, removable) __Ohio IT providers servers for PIMS and SAMS

iv. Communication devices (e.g., modems, wireless routers) __State provides T1 lines for AAAs

v. Output devices (e.g., printers, plotters) Printers_____

vi. Other hardware (please specify) _____

f. Computer software

i. Date base management ___SAMS and Microsoft Access_____

ii. Spreadsheet _____Excel_____

iii. Graphics _____Excel and Page Maker_____

iv. GIS/mapping _____Maptude_____

v. Communications _____Group Wise Email_____

vi. Operating system SQL Server 2000, Windows 2003, computers use Windows 2000

vii. Utilities _____

viii. Other software (please specify) _____

g. Web hosting

i. Browser requirements _____Nothing specific_____

ii. Other Web requirements (please specify) _____

h. Other computer hardware and software requirements (please specify) _____

_____

Minimum System Configuration for Stand Alone System for SAMS2000

1. PC with Pentium III (at least 500 MHz) or higher

2. 256 MB of RAM minimum, 512 MB recommended

3. 250 MB available disk space (plus room for SAMS2000 data)

4. CDROM

5. Microsoft windows 2000, NT or XP

6. Internet Explorer 5.5 or higher

7. System user with Administrator powers during installation procedure

Oregon Case Study

Background and Staffing of SUA

Oregon had a population of 3.4 million in the 2000 U.S. Census, and the Center for Population Research and Census at Portland State University estimates that there are currently 617,424 persons aged 60 or older.

The State of Oregon administers funds under Titles III and VII of the Older Americans Act. The State Unit on Aging (SUA) is located within a consolidated Department of Human Services (DHS) and the Division of Seniors and People with Disabilities (SPD). The Assistant DHS and SPD Director, James Toews, is officially the Director of the SUA, although the day to day operations of the SUA are managed by Lee Girard, in the Office of Home and Community Supports (See Appendix A for an organization chart). Lee Girard manages a staff of five. The SPD budget for the past fiscal year, excluding Medicaid, was $76,885,000. Oregon's Older Americans Act (OAA) funding allocation last year was $13,839,300.

Oregon has designated two types of Area Agencies on Aging (AAA). The Type A AAA is a public or private non-profit agency or unit of local government that administers the OAA program and the Oregon Project Independence (OPI) programs for a Planning and Service Area. Type A agencies administer Medicaid, financial and adult protective services, and regulatory programs for the elderly and persons with a disability. Type B AAAs are a local government administering the OAA, Oregon Project Independence program, Medicaid, financial and adult protection services, and regulatory programs for the elderly and persons with a disability. Type B agencies can contract with the state to provide employee support for program operations. Oregon has 17 AAAs with nine Type A and eight Type B agencies.

Motivation for Developing the SUA Information Management System

Prior to 1997, the SUA had a stand alone information system at each AAA. The original information system was developed by a contractor (a one-person shop with OAA experience). The earlier system used by the state and AAAs was a DOS-based system programmed in Clipper. Initially the AAAs had to send disks to the SUA with the client information. Later, they upgraded to sending the information via email once a year. The same contractor developed a process to send data in the correct format for the SPR.

For the state as a whole, Oregon received some criticism from CMS on the operations and systems for the Medicaid program. State agencies were not doing well with CMS requirements for reporting on assessment and on a plan of care. As a result of the CMS concerns, Oregon decided to build the ACCESS computer system. "ACCESS" is an acronym for Automated Computer Capture and Storage System. Oregon decided to build an "in-house" system because the available commercial systems could not meet their needs at the time. The requirements analysis and systems design for ACCESS began in 1995 and was focused on a comprehensive system for Medicare, Medicaid and state funded programs.

Another factor in creating the system for Oregon was the need for improved reporting systems and a single entry system for case managers. The subsequent addition of the OAA modules was at least partly due to AAAs pushing for a large, integrated system that covered all the funding streams and programs on aging.

Approach to Developing the System and Implementation Process

After Oregon decided to build its own computer system, it contracted with a firm, Deloitte Touche, through a public bid process in 1995. Deloitte Touche conducted an extensive requirements analysis for the design of the new system, with 40 participants over a four month period. Case managers were involved in the design of the Client Assessment Planning System (CAPS). In particular, Deloitte Touche and the state thought it was important to have involvement and buy in by the users. They also wanted to have a portable system for use on a laptop for the case managers, to create greater efficiency and reduce paper records and other duplication. The Oregon staff said that they are a national leader in community based care systems, and the ACCESS system reflects this focus.

In 1997, the base eligibility system was developed. The system was originally planned for Medicaid and state funded programs only. The OAA modules were added in 2000 to 2001. The next module was to be protective services reporting, but there was no funding.

The SUA has a very collaborative relationship with the AAAs. So the decision to participate in a new OAA system was the AAAs, and they advocated that OAA services be integrated into the ACCESS system. The Oregon State Unit on Aging now uses Oregon ACCESS as its computer system for client eligibility and intake, assessment and tracking purposes. Because the AAAs wanted OAA added into ACCESS, Oregon can easily merge data on OAA and Medicaid clients receiving community based long term care.

The SUA piggybacked on the original MIS contract to incorporate the OAA modules. The SUA used its original contractor to help Deloitte Touche develop the OAA portion of Oregon ACCESS, and Deloitte Touche also conducted a comprehensive requirements analysis with the AAAs.

The development process used in Oregon for the ACCESS system follows a series of steps including:

- Requirements analysis
- Prototyping
- Software development phase
- Software testing
- Training
- implementation

When the ACCESS system was developed and became operational in 2002, the AAAs slowly came on-board. The AAAs did not have to convert their existing data into the new system and just started entering data into the ACCESS system as they came online. They

maintained their records for the year and reported the data at the end of the year as they had in the past to reconcile the old and new data. The AAAs were involved in the training plan for the new ACCESS system. The state used a rolling conversion and training plan for the AAAs, and each AAA was trained on the new system one month before the conversion. Many of the AAA staff were already trained on using the ACCESS system is Medicaid and client modules. All of the 15 participating AAAs converted to ACCESS within one year.

Two counties and one provider declined to participate in the full system and required an additional system (ORBIT) at the state level to be created to receive their data. Oregon created the ORBIT data system to operate on top of the ACCESS system in what the state calls the warehouse. The agencies and provider that did not enter all of their data in the ACCESS system would send their data to the warehouse in a specified format where it would be merged with the ACCESS data using the ORBIT program. The AAAs uploaded their data on a monthly basis and ran batch reports. Service identifiers track where the service was provided.

The ORBIT program is difficult to use and very difficult to generate any reports other than the SPR report for AoA. ORBIT was programmed in Visual Basic with the Microsoft database program, ACCESS, in the background. The SUA no longer supports Visual Basic in its department. Oregon has contracted with a firm, PSS Inc., for a major upgrade of the OAA portion of ACCESS, including upgrading the ability to generate reports in ACCESS. The principal of PSS previously worked with Deloitte Touche on the early systems development contract and is very familiar with the application.

Oregon is now moving to a prototype Web-based program. The Web-based program will capture expenditure data from AAAs and providers, will be a data analysis tool, and will enhance Oregon ACCESS. All of the AAAs and providers have agreed to participate in the Web-based system, and it will become operational in the spring of 2006. The AAAs will be able to use the Web-based system for AAA-specific reports, which could not be done in the past using ORBIT.

As an example, under the current system, the Clackamas County AAA staff spends 76 hours a month entering data, and the director spends additional time preparing reports. The AAA receives new client data and updated client data on a spreadsheet each month from each service provider. The AAA assigns unique client identifiers to each new client. The providers and AAA track clients to produce unduplicated counts of clients receiving services. The monthly spreadsheet is an Excel workbook with tabs for each service area. Under the new Web-based system, both the AAA and providers will be entering data directly into the Web-based ACCESS program.

The SUA is also modifying the ACCESS system so that AAAs can enter services without a client. This applies to Non-Registered services, such as Legal Services, whose providers are very concerned about client confidentiality. External data sources will be required to enter data monthly for services that are not specifically attached to a client record.

Entering data is a one-stop point of entry for the clients. AAAs like the ACCESS system because the application is legible, case managers receive more information, and the information is more accurate. The old assessment system used numeric coding, but now case managers can

select a description of a service from a drop down box. Assessments can be performed in a clients' home with a laptop computer. The OAA client intake process takes about two hours with the assessment. The ACCESS system also has a provider data base for referrals. An example of using Oregon ACCESS for the client entry function is shown in Appendix B.

ACCESS has a very sophisticated client assessment system. The Client Assessment Planning System (CA/PS) has two different options:

- Basic ADL/IADL and Nutrition Risk Assessment; and,
- Nutrition Risk Assessment – client assessment for Medicaid and state funded OAA.

After the user completes the CA/PS online, the ACCESS system will begin auto filling a client care plan. The automatic care plan can be overridden to address specific client needs. Rates are entered for providers and services. The user can override the system as necessary. The ACCESS system then calculates the service costs and a maximum authorization level for spending.

The SUA and AAAs have access to portions of the ACCESS system. The state grants access rights to all of the users, and specified users have access to portions of the ACCESS system. Confidentiality of the clients is assured through the use of a unique identification code and the limited access to the system by the users. For example, an AAA would only have access to information on its clients. Some of the SUA staff have access to the entire system.

Uniform collection of data on clients and services is ensured by the use of one system (ACCESS), and the training on inputting data into the system. The ACCESS system uses standard client assessment instruments and procedures. The new Web-based enhancement to the ACCESS system will provide uniform definitions and measures for cost accounting and the allocation of administrative costs to services. The single point of entry in ACCESS allows OAA and Medicaid to share a file instead of having separate databases on a client. Oregon operates a quality assurance test on the data by both reviewing the electronic data on a sample of clients and by re-interviewing a small sample of clients.

AAA staff administration costs are not currently in the ACCESS system, but they will be included in the new Web-based enhancement that will be implemented in the spring of 2006. AAAs currently enter information from their own records into the SPR on an annual basis. The ACCESS system is being enhanced to allow for easier invoicing and payments. The financial management system is now used by about one-third of the AAAs, and most AAAs have their own financial management systems. The state is connecting Oregon ACCESS to AAAs financial management systems, which will allow them to generate client billing, invoices, and monthly reports.

When clients enter the ACCESS system, they are given unique identifier numbers. The system also assigns a reassessment date. The default on reassessment is 12 months, but it can be modified to a shorter time frame. Users can go into ACCESS and see what services a client has received. ACCESS generates reports by service and by client.

The Oregon Network of Care was just implemented last week (November 2005). It has Web-based access to available services information. Oregon leads the nation in Web-based care.

The computer hardware and software specifications for ACCESS are listed in Appendix C.

Unduplicated Client Counts for AoA Registered Services, Non-Registered Services, and for OAA Programs Overall

The ACCESS system assigns a unique client identifier to each new client for Registered clients. This identifier is used for all Oregon programs. Any client using services for OAA programs has the service entered into ACCESS, and the client identifier is matched to name and Social Security Number. Non-Registered clients are aggregated in the counts. The two client types are combined for state estimates. The services that provide the greatest difficulty in providing unduplicated counts are transportation and legal services. The state does have experience using smart cards but only for Food Stamps.

Implementation and Operating Costs

The original systems development cost was $30 million dollars, with 90 percent of the funding for the system coming from federal funding and 10 percent from the state. The OAA application represents a small component of the overall system database. As a Medicaid system, annual operations have been subsidized by a 75/25 federal/state match. When the system was completed there was little funding for ongoing maintenance support. Oregon has designated $900,000 for maintenance and a major upgrade of the OAA portion of the Oregon ACCESS system to a Web-based input system that can generate reports useful to the state and AAAs. All of the $900,000 is state funding.

Several SPD staff are assigned to support the ACCESS system. There is a help desk that requires support from IT staff, and one full-time staff person currently supports the data warehouse. A state business analyst spends about 10% time on ACCESS. Ongoing training support takes about 10% of a trainer's time.

The SUA provides funding to AAAs for laptop computer replacements on a periodic basis and a smaller version of ACCESS can run on the laptops for client intake and assessments.

Maintenance of Information Management System

The ACCESS system was designed in 2001 and implemented the following year. The 15 participating AAAs slowly entered the system over the course of the year, and it was fully operational in 2002. There has been little maintenance in the past several years; although there is the new $900,000 contract for maintenance and a major upgrade.

The IT support group in DHS operates a help desk. When small problems are identified in the system, IT staff can try to fix them or suggest a "work around" for the user. The new upgrade is partially aimed at preventing "work arounds" that circumvent the system.

Leadership of Key Individuals

The leadership for the development of the ACCESS system was shared among a number of organizations. The CMS criticism was one impetus. DHS leadership decided to build an in-house system and applied for a Federal grant to fund 90 percent of the cost. After the initial Medicaid and client intake and assessment system was developed, the AAAs pushed to develop an OAA system module that could be integrated into ACCESS.

Cooperation all Participating Agencies and Staff During the Information Systems Development Process

Oregon had great cooperation from most of the AAAs in the development and implementation of the ACCESS system for OAA programs. The AAAs pushed for the development of an OAA add on to the current ACCESS system, and then they were very involved in the requirements analysis and design phases for the system. The SUA developed a phased implementation of Oregon ACCESS with training one month before the implementation by each of the AAAs. One reluctant AAA joined the full system one year after the start of the implementation. Two AAAs and one provider declined to fully join the ACCESS system requiring special data collection solution within ORBIT and the warehouse.

The key to maintaining the cooperation seems to be focused on meeting the needs of the AAAs and involving them in the requirements analysis and design phases. The new upgrade and system design taking place now has the AAAs very involved in requirements analysis, design, and prototype testing.

Scope (agencies, programs, functions) of the Requirements Analysis and Design for the Information Management System

The scope of the ACCESS system is much broader than the AoA programs. It was originally developed for Medicaid, client intake and assessment, and state programs. The AoA programs were added several years after the inception of ACCESS. Each module of the ACCESS system went through an extensive requirements analysis phase lead by the contractor, Deloitte Touche.

Training of Staff

Oregon has an extensive training program for SUA and AAA staff. When the new ACCESS system was rolled out, the SUA staggered the implementation in AAAs and trained each AAA one month prior to the implementation in the AAA. The AAAs that participated in Medicaid were trained earlier on the client intake modules of ACCESS and had a basic familiarity with the ACCESS system. The training programs were successful with few errors occurring in the system and AAAs expressing satisfaction with the operations.

Technical Support (e.g., trouble shooting)

Oregon has a help desk for AAAs that have a problem with the ACCESS system. The help desk is staffed by IT professionals. The help desk staff can explain how to correct the problem reported, suggest a work around to the problem, or put in a request to fix a bug in the program. The AAAs seem to be satisfied with the operations and support of the help desk.

The help desk has a three tier system of response depending on the needs of the user.

- Help desk questions and answers;
- Business Office for more technical questions; and,
- IT Technical Team for very technical problems.

One issue that has been a constant problem over the past several years is the need for the policy to tell the computer systems staff when a policy changes that affects the programming in the system. They are working to improve this communication, but it has been an issue for several years. The ACCESS core system is very stable. It is the modifications in process or policy changes that cause problems.

Report Generation

The overall data system as utilized by the SUA and AAAs was very poor at report generation, aside from producing the SPR data. Because of the non-participation by two AAAs and one large provider, Oregon had to create a data collection system over ACCESS called ORBIT. ORBIT is very difficult system to use for report generation because a user has to have very strong technical and programming skills.

The new enhancement to ACCESS will be Web-based and have report generation capabilities that will be easy for the AAAs to use. All of the AAAs will participate in the new ACCESS enhancement for reporting the data to the state. AAAs were very involved in the requirements analysis for the enhancement and they are currently prototyping the system.

Has The Information Management System Addressed its Original Purposes and Have The Benefits of the System Justified The Costs?

The cost of the overall ACCESS system development including Medicaid and other state programs was $30 million dollars. Oregon does think the ACCESS system is good, but it may not have been worth the cost.

Oregon would not advocate for a SUA to build its own system, especially if Oregon had to do it all over again. However, when Oregon ACCESS was implemented, there were not any sophisticated commercial systems available that met their needs.

Other Software that the SUA, AAA, or Providers Use in Addition to the Main Information System Software

The only other software system used by the SUA and two AAAs was the ORBIT system, which was developed for the convenience of two AAAs and a provider. ORBIT made report generation very difficult and only a few power users knew how to generate reports. Most AAAs could not use it to generate reports on their activities. The new Web-based module available in the spring of 2006 will eliminate the use the ORBIT.

Replicability to Other States

The State of Washington transferred part of Oregon's system for its Medicaid and client assessments. The system was transferred in terms of the design and intellectual property, but the ACCESS system needed to be reprogrammed to run in Washington. The Oregon ACCESS system was designed in Sybase Power Builder to run on a Unix platform. Washington used a Microsoft platform; so the system needed to be reprogrammed in Java. Washington only used the Medicaid and client assessment modules from the Oregon ACCESS system. Washington uses SAMS for OAA reporting.

The Oregon ACCESS system is an open system and available for free to any state. However, any other user needs to run the system on a UNIX platform, and the system would probably need some modifications for the specific state. A ballpark estimate to install and modify ACCESS to run in another state is $500,000. That $500,000 does not include equipment costs. It would take about a week to install Oregon ACCESS with a Sybase server. The state would have to go through the process of doing a requirements analysis, development, testing, documentation and training. The estimate is that this process would require several consultants and a few more state IT staff, and about six months to implement, if there are no changes to the system. The new Web-based data input and report generation module that is being finalized is easily transferable to other states, and it is written in XML.

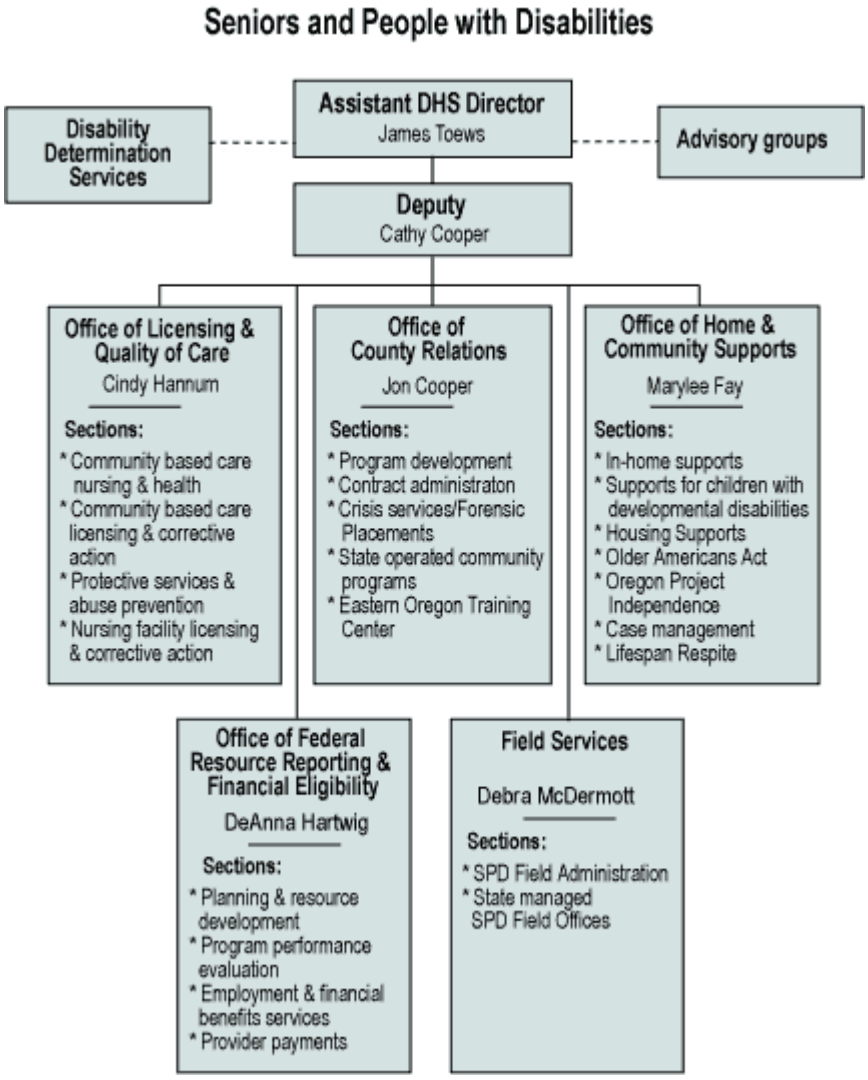
Recommendations

Oregon suggests new data systems used by SUAs use an XML format as a standard. AoA could also provide a Web service to validate and transmit the data. Oregon would like to send its data to AoA, hit a button to check for errors, fix any errors identified, and send a final transmittal of the data to AoA.

Oregon would like some additional assistance from AoA's Regional Office in the on-going development of its reporting system. The reporting system is designed to provide all of the data needed by the SPR. The state has had some technical questions on the SPR, which it would like the Regional AoA staff to help answer.

Appendix A

DHS/SPD Organization Chart



Appendix B

Steps to Enter a New Client Into Oregon ACCESS

I&A

- Select a login branch.
- Options in the toolbar change based on access rights.
- Select worker. The cases assigned to that worker will be available. A Medicaid worker might not have access or may have read only access to OAA modules. For example, the call module tracks calls and was developed for information services for OAA. The system does not require a name but the user can add information to the I&A system. If the caller is and existing client, the system will track that the person called. The I&A worker can also put in information the case manager would need.
- Once in the system, the user conducts a search to see if the new client is already in the system. The system searches the local database then the state aging system then CIS [CIS (first system) is the Client Index System] which is the database of CMS clients in Oregon. That system has people who receive child welfare, food stamps and TANF. Originally there was no crossover between the systems and each office had its own copy of the search system. Now, since everyone is on the mainframe, users can now do these three searches. If the person is inactive the data will be archived. The ACCESS system is for Seniors and People with Disabilities (SPD). A lot of families have people who get a lot of different services. If the person is found in the search, their information can be downloaded from CIS to ACCESS.
- There are required fields, however those will be changing, so that a call can be entered more quickly. Because of the number of required fields, the I&A system in Oregon ACCESS is not being used consistently. Northwest Senior and Disability Services uses it; however most AAAs only use it occasionally. Some of the larger AAAs have their own I&A systems. The rest use handwritten records, and only maintain their systems locally. They enter batch entry revisions.
- The current contract will help this to be more user friendly and will write standards for it.
- The user can choose to get a unique client identifier from the mainframe.
- The user can create a screening (button on screen) to see if the caller qualifies for services and any data that was entered carries forward. The system stores the calls but when the user creates a person in ACCESS, the information already entered carries over.
- To create a person in ACCESS:
    - The first screen is Demographics.
    - Then the user assigns the person to either Case, Resource Assessment or Screening.
    - The birth date is the age control.
    - This system is used by all of SPD, not just OAA.
    - The screening is accessed by a series of tabs on the screens that are specific to the information needed for each type of client. The case worker knows which information s/he needs to ask for each program. There are few prompts for missing data, because the system ahs been designed around that assumption.
    - The user can add detail in addition to what is on the first screen.
- For OAA NAPIS the user asks if the person lives in the city limits.
- The tabs are for:
    - Person,
    - Address,
    - Food stamps,

- Medical,
- Spouse or contact,
- Nutritional risk (wait to enter later, usually in full case),
- ADL (wait to enter in full case)

- All of these screens also come up in the full case.

- The user can search for a referral for resources from a database maintained by the local offices. One and one half weeks ago Network of Care was implemented. The public can get local referral information from the web.

Client Intake

- Next module is Case. At first, this was only the application form. Now it is a case management tool as well.
  - Assign New is a new case.
  - Resource Assessment is Medicaid.
  - The person on the phone is the primary applicant. The user can add a second person to the case, such as a spouse (and the same search is conducted before that second person is added to the case.
  - "Assign Existing" is assigning the added person.
  - The narrative is running free text.
  - Next go to More Detail, then screening. This is also tab based and has sections:
  - Person,
  - Address,
  - Veteran or Native American,
  - Contacts,
  - Previous assistance,
  - Education.

- The OAA workers use "Service."
- The client assessment is for Medicaid. OPI uses it too.
- Food Stamps,
- Employment Initiative,
- Benefits,
- Adult Protective Services. This has highly restricted access and is for basic complaint tracking. There are no validations or checks on Social Security Number.
- If information is pulled from CIS, it will be read only.

OAA mostly uses

- Person,
- Address,
- Contact (who is person not already on case and the worker must enter the person's role—caregiver, spouse, etc.),
- Previous assistance,
- Education,
- Income or employment,

The worker may or may not use any one tab based on the program. The worker has to know the resources.

- Property—The user can put in as many records as needed. The fields can change depending on use. Property transfers relate more to food stamps. Shelter costs,
- Funeral, Life and burial insurance,
- EPD (employed persons with disabilities).
- Medical has tabs for health insurance, as well as medical services the agency is providing to the individual. This information will be used, after a provider search, to authorize services.
- Medical costs.
- Physical.
- Medical transportation.
- Services tab is used to print the authorization form.
- Service needs.
- OAA summary screen has basic information on it.
- Income level can be auto calculate from income screens.
- Must enter race and ethnicity. The worker will use the race and ethnicity information on the demographics screen tab for Medicaid, as well as for caregivers who are part of the FCSP. This one is specific to OAA.
- Can enter a start date.
- Can also flag as Not OAA eligible. This precludes account from being captured for the SPR count and information.
- The authorization defaults to the district. If the person will be receiving home-delivered meals, the user will pick the route, as well as how many units per month the client is authorized. This information filters to the providers that meet criteria, and they can then add even more detail.

- There are many different types of authorizations within each service. For example, home-delivered meals has
  - OPI,
  - Title 19, which is a catch all for different things.
  - OAA
  - Medicaid Waiver
  - Type of meal.
  - Funding source.

- Information can be entered by date by number of meals received. This is typically done monthly, and must be filled in, ever for multiple providers. This is person level.

- FCSP tab on which the user can collect information about the care recipient. It asks the care recipient's year of birth, so that the SUA can find people who are caring for a child under the age of 18. Oregon has the Grandparents raising Grandchildren program.
  - Nutrition risk. As complete the NRI there is a bar chart next to the questions showing level of nutrition risk.
  - ADL questions for OAA clients go much quicker.
  - IADLs.
  - ADLs for Medicaid waiver clients.
  - There are algorithms for assigning a service priority number.
  - Care Planning.
- All of this connects to the mainframe and there is a system that connects to payment.

Appendix C

Computer Configuration Description Worksheet

i. Computer hardware

i. Workstations _____Approximately 1800 including 400 to 500 lap top computers

ii. Other input devices (e.g., optical scanners, magnetic card or bar code readers, PDAs)

iii. _____Only a special devise for blind users called JAWS

iv. Data storage (fixed, removable) Fixed data storage in computer center on Unix platform

v. Communication devices (e.g., modems, wireless routers) _____

The SUA has hard connections with the AAAs_____

vi. Output devices (e.g., printers, plotters) Only printers_____

vii. Other hardware (please specify) Lap tops supported by State, Mirror server, DHS mainframe, ORBIT server, middle ware, new Web server coming

j. Computer software

i. Date base management __Power Builder 9.02 by Sybase_____

ii. Spreadsheet _____Excel_____

iii. Graphics _____

iv. GIS/mapping _____

v. Communications _____

vi. Operating system _____UNIX IBM AIX_____

vii. Utilities _____Sybase PC Anywhere and Sybase Lightweight for laptops

viii. Other software (please specify) _____IBM Webstream_____

k. Web hosting

i. Browser requirements _____State standard browser_____

ii. Other Web requirements (please specify) _____

l. Other computer hardware and software requirements (please specify) _____

_____

PENNSYLVANIA CASE STUDY

Background

Pennsylvania has a large and diverse elderly population, totaling 2.5 million persons age 60+. While the state has many metropolitan areas, including Philadelphia and Pittsburgh, it also has one of the largest state populations living in rural areas. This diversity exists within and across the state's 52 Planning and Service Areas (PSAs), some of which have a large elderly population living in an urban core and sparsely populated surrounding locations, while others have very few older persons, overall, who live in small towns and rural areas.

The Pennsylvania Department of Aging (PDA), which serves as the State Unit on Aging (SUA), has cabinet rank and administers an annual budget of $450 million, including Medicaid Waivers, state lottery proceeds, and other federal and state funds, in addition to Older Americans Act (OAA) allocations, which account for only 9 percent of the total. The vast and diverse areas of the state, the large number of Area Agencies on Aging (AAAs), and the multiplicity of funding sources and associated accountability requirements, among other factors, had a major influence on the SUA's information systems decision-making process, and the SUA staff felt strongly that any MIS should accommodate all of these important factors.

Motivation for Developing the SUA Information Management System

The SUA was concerned that there was a "disconnect" between the perception of what its network on aging was accomplishing, versus the reality of what was actually occurring, and a good information system was essential for reconciling this difference. In addition, AoA's reporting requirements, in conjunction with an increasing emphasis at the state and local level on program outcomes, provided a compelling argument to develop a strong MIS. Consistent with our findings during other case study site visits, AoA's NAPIS/SPR requirements had a strong influence in initiating this information systems development process, but internal needs for timely, accurate, and comparable information became equally important motivating factors.

Given the integration of many, diverse funding streams and programs that the SUA and AAAs administer, PDA decided to cover all of these sources of financing and associated services in the design of the MIS. The SUA released an RFP with the requirements for the information system, including a data dictionary and a call for software recommendations. As a result of this process, PDA selected a consultant, who recommended using an Oracle DBMS for a custom-developed MIS. However, the consultant did not really respond to PDA's functional requirements, and the SUA issued another RFP, this time to commercial software firms and received bids from three vendors: CH Mack (Q Continuum), Saber Corporation (AIM), and Synergy (SAMS). A panel of SUA and AAA staff reviewed and rated all three proposals and participated in oral presentations by each vendor. PDA selected SAMS, which received the highest score, in large part because it had existing features to address AoA's SPR requirements. According to the SUA staff, the other vendors did not have this capability and would have needed to develop it as part of any contract with PDA.

Approach to Developing the System and Implementation Process

PDA insisted on buy-in from the AAAs before moving ahead with the acquisition and implementation of SAMS. As an incentive, PDA purchased the requisite hardware and paid for the software licensing fees for all AAAs, as well as SUA staff. The state set standards for the system to incorporate, which provided an empirical basis for migration from the systems the AAAs were using, which varied across agencies, to SAMS. Without such standards, the SUA staff said this migration process would have been impossible. Nonetheless, there was still substantial difficulty in converting these systems and data bases at the AAA level to SAMS. As another contributor to the conversion difficulty, the AAAs continued to maintain their existing MIS applications, while migrating to SAMS, which meant that these agencies were operating two systems at the same time during the transition. During all our SUA interviews and site visits, we found that such migration practices and difficulties virtually always occurred, whether changing to a new MIS or converting to an upgraded version of the same software (e.g., from distributed to networked versions). It is reasonable to conclude that any SUA contemplating the adoption of a new MIS or converting to an upgraded version of the same one, must anticipate substantial difficulty in the migration of data and systems to the new application.

The SUA allowed any AAA to adopt its own MIS, other than SAMS, as long as it met the state specifications. However, only one, the Philadelphia Corporation for Aging (PCA), which already had a very sophisticated MIS, elected not to use SAMS. Instead, PCA exports its data from this internal MIS to SAMS for state reporting purposes.

The implementation process has taken several years, given the level and scope of client and service data involved. The initial transition to the SAMS application took about two years, but the overall process occurred between 2000 and 2005. The focus is now shifting from implementation and operation issues to the use of the information for planning and management purposes. SAMS has provided the SUA and the AAAs with a valuable management tool; however, the implementation process was not easy. For example, there was resistance to automation from local case workers, who were used to recording the results of their assessment, including case notes, using pencil and paper. The ease or difficulty of implementation was also a function of the personality of the AAA director, and where there was a perception that information was valuable, the resistance was minimal. Another very difficult aspect of the implementation process was training. While PDA staff provided extensive training, it was still difficult for the AAA staff to understand and become proficient in using the system's operational components.

Another key aspect of the design and implementation process was the avoidance of distributed data bases. Instead, the SUA encouraged AAAs to develop and use local area networks or Web-hosted systems to avoid the fragmentation that stand-alone SAMS applications would have created. This approach has been reasonably successful; however, SAMS data bases are not linked across AAAs in Pennsylvania, requiring batch processing of the data for the purposes of tabulation and reporting to the SUA, rather than having one, central file to which all AAAs can contribute and from which they can retrieve data on a real-time basis. SAMS in Pennsylvania is still under development, and the SUA is planning to move as many AAA data bases to Synergy's

Agingnetwork.com Web-hosted server as possible to avoid the risk of fragmentation. Some of the AAAs have made this conversion, and the SUA can download the data from Synergy's server to its own computer system for tabulations and reporting purposes. Given the size of the SUA's client data files and the range of sophisticated analyses that PDA performs, it is not realistic to use Synergy's remote server for anything other than interim storage of AAA client registration and services data.

While Web hosting of client data bases can reduce or eliminate the need for the AAAs to purchase and maintain their own local computer networks, the SUA found that there are real limitations in using *Agingnetwork.*com beyond simple storage and tabulation purposes. Some of this limitation is a function of insufficient capacity at the remote Web-hosted site, according to the SUA staff, but difficulties also occur when using the Internet for applications that require processing-intensive tabulations and high-volume exchanges of data between sites. Moving large amounts of data back and forth, between the SUA and the remote data storage site, for example, often exceeds the limits of Internet communications capabilities, as well as the hardware and software that each location is using. This is another issue for states to consider when contemplating Web-hosted data bases, either using their own computer networks or those of a software vendor.

Another important decision in the design and implementation process was the degree of vertical integration in the system. PDA made a decision to install and cover the costs of SAMS for the SUA and all AAAs. However, the design did not include the use of SAMS at the service provider level. The rational for this decision was a function of the service delivery system in Pennsylvania. Specifically, the AAAs are responsible for virtually all client intake and service authorization functions, which means that the AAA is an appropriate locus for client registration and data entry. Providers deliver services to these clients in accordance with the level and scope of services that the AAAs have authorized. The SUA staff felt that, under these circumstances, simple spreadsheet utilities or manual procedures were sufficient for providers to record and report the actual units of each service that the clients received. There is also a cost issue of including service providers as SAMS users, which would add considerably to the initial and annual licensing fees for use of the software (PDA, through its AAAs, funds 650 senior centers, among many other providers - see cost information, below).

One goal of the NASUA study is to identify how clients and caregivers can avoid supplying the same information, repeatedly, when moving from one service to another. Except perhaps for senior center services, the centralization of client intake and service authorization within the AAA, using SAMS, helps avoid this potential redundancy in data collection.

Unduplicated Client Counts for AoA Registered Services, Non-Registered Services, and for OAA Programs Overall

For the purposes of constructing and reporting the unduplicated client count for the AoA SPR, the SUA assumes that virtually all of the non-registered clients also received at least one Registered Service. For this reason, the PDA unduplicated client count for Registered Services is the same as the total, for SPR reporting purposes. The only circumstances where this assumption may not be correct is for senior center services, where participants may not be

receiving a Registered Services, but tracking the senior center activities, individually, is not possible. Every 30 days, each AAA uploads its SAMS client file to the state for unduplicated client count tabulation purposes.

Implementation and Operating Costs

The SUA acquired SAMS, including the Omnia client assessment module for itself and all 52 AAAs, at an initial cost of $1.2 million. The annual licensing fees for this software for the SUA and the AAAs total $700,000. In addition, the SUA purchased computer equipment, including servers for the AAAs, which cost $3.2 million. Concerning the costs of personnel to support the systems, the SUA employs three full-time staff persons, who respond to questions from AAAs about the use of SAMS. Also, there is another full-time senior information technology professional on the staff of the SUA, who is responsible for setting up SAMS to address the specific record keeping and reporting protocols of the state. This includes configuring SAMS to use Pennsylvania's service names and definitions, unit measures, client assessment criteria and procedures, and the many other specifications that are unique to the state. This IT professional is also responsible for programming routine and ad-hoc reports that respond to the information needs of the SUA and the AAAs. In addition, these SUA staff members provide training to state and AAA personnel, initially, and as updates to the software occur. While each AAA must have staff with a basic understanding of SAMS, the presence of the SUA personnel to provide technical and user support limits the need for extensive computer expertise at the AAA level. The actual costs of this SUA staff support were unavailable, but other states that are contemplating to use of commercial software may be able to estimate potential expenses, using their own salary schedules. As the AAAs become comfortable using SAMS, the focus of these SUA staff persons will shift from custodial support to developing custom reports and conducting analysis for program evaluation and quality assurance purposes.

Many computer systems, and associated costs, are shifting to Web-hosted platforms. In Pennsylvania, some AAAs and the SUA are beginning to use Synergy's *AgingNetwork.com*, which allows SAMS users to store and retrieve their data using a remote computer, accessible via the Web. There are many advantages to using this approach. First, individual users do not have to have the complete SAMS software configured on their individual computers or local area networks. Instead, they use versions of the software that are resident on the Web-hosted computer. This avoids the need to distribute to each AAA and other users the periodic updates that Synergy incorporates into the SAMS software, as well as SUA-developed enhancements. In Web-hosted applications, these modifications are available automatically for each user as soon the changes occur. In addition, the use of such Web-hosted applications and data storage capabilities reduces, if not eliminates, the need for the AAAs to maintain local computer networks of their own. This also potentially reduces the need for AAA IT staff to maintain such computer networks, or it at least reduces the strain on such local systems that may be burdened by the large client files and data processing associated with the use of commercial client tracking software, such as SAMS.

These remote Web-hosted systems are not without their own costs. However, given the developmental nature of Web hosting in Pennsylvania, there were no cost figures available at the time of the site visit. In addition, the SUA recently ordered the SAMS SCAN bar code reading

software module, as well as the scanning equipment, to use on a demonstration basis. Depending on the extent to which the state uses this feature of SAMS, the costs will increase, but the SUA feels that the rise in productivity may justify these expenses.

Maintenance of the Information Management System

Most of the maintenance responsibilities for SAMS fall on the four SUA IT staff persons. Synergy is responsible for updates to the software, such as accommodating AoA's SPR data and electronic reporting requirements, but end-user support at the SUA and AAA level is a PDA responsibility. This is consistent with the other site visits, where in-depth expertise and extensive staff time by the SUA are essential, regardless of the user-friendliness of the software or the availability of external technical support.

Leadership of Key Individuals

The PDA Secretary and the Director of the Division of Program Integrity, among other SUA leaders, were instrumental in the MIS development process by making the commitment of substantial funding and staff support for a state-of-the art information management system. The initial investment of $4.4 million for the acquisition of SAMS and computer servers for the AAAs could not have occurred without this leadership from the top. In addition to this funding, PDA hired a full-time senior-level IT professional and three additional MIS staff to support the design and implementation process in the SUA and AAAs. The SUA staff we interviewed said that without this leadership, as manifest in the commitment of substantial funding and staff, there would not have been a successful MIS implementation process in Pennsylvania.

Cooperation of All Participating Agencies and Staff during the Information Systems Development Process

Cross-agency cooperation was essential, and the SUA employed a variety of techniques to ensure the participation of all AAAs. First, the purchase of SAMS and the PC servers to host this software for the AAAs removed a substantial cost barrier to cooperation. At the same time, the SUA made the awarding of OAA and other funds to the AAA contingent on the adoption of SAMS and the collection and reporting of client data, per the state's specifications. The SUA staff said that for most of the AAAs, cooperation occurred with little additional action by the state. However, there are still a few AAAs where the staff are resisting full participation in the new MIS. For these, the prospect of funding loss is an important inducement for cooperation, in addition to the financial and staff support the SUA provided. Consistent with our findings from the other site visits, there appears to be a need for both positive and negative incentives to ensure full cooperation among all participating agencies. The SUA also provided for an incremental implementation process, in this case covering the period from 1999 to 2002 for the major systems components, with the process essentially still under way. By allowing a realistic time period for implementation, with considerable staff and financial support, cooperation levels were high.

Scope (agencies, programs, functions) of the MIS Requirements Analysis and Design

The SUA decided to avoid a silo approach to MIS development and cover all programs and funding streams within the scope of the SAMS application. This included the SUA and AAAs (but not the providers) and covered OAA funds, the Medicaid Waiver, senior centers and other lottery-supported services, and state-financed community-based long-term care initiatives, such as the Domiciliary Care program.

In addition to client registration and tracking, the MIS captures the results of functional assessments carried out by the AAAs as part of the intake and service authorization process.

Training of Staff

The SUA held an initial 2-3 day training session at a regional level for all AAAs. The timing of this training was important to ensure that it was close to when the AAA staff would begin using the application. The intent was to avoid a lengthy period in advance of the actual use of the MIS, where the staff might forget what they learned before applying their new knowledge.

In addition to this formal training, the SUA formed user groups, which initially met quarterly but now convene on an as-needed basis. Also, the Pennsylvania Association of Area Agencies on Aging has taken on some of the responsibilities for periodic MIS training. While Synergy also provides some training, most of this activity is carried out by PDA staff. The need for the SUA staff to develop and deliver user training, even when the state has acquired a commercial software package from a vendor, was an important finding from the state surveys and site visits. While commercial software packages offer many advantages over internally-developed information systems, including the availability of technical staff, we found no instances where vendor-provided training eliminated (or even reduced in many cases) the need for SUA staff to take the lead on user training.

Technical Support (e.g., trouble shooting)

In a similar vein to training, PDA staff were responsible for the vast majority of technical support for SUA and AAA personnel using SAMS. Currently, the senior IT staff person and the three additional technical staff support basic SAMS operations at the AAA level. While the system has been in place for several years, the technical and user support still focuses on implementation issues and problems. The SUA staff we interviewed felt that this operational focus would shift to data tabulation and utilization support as the AAAs became familiar with the SAMS operations.

Report Generation

PDA uses SAMS to produce the AoA SPR, among many other reports. Of particular interest is the use of client data to perform a range of quality assurance tabulations. For example, PDA uses the client-assessment results to determine how appropriate the caseloads are among AAAs and providers. There is considerable variation in the number of clients for which an individual case manager is responsible. The SUA is in the process of configuring reports that show, for

given levels of ADL and IADL limitation, what variations exist in these caseloads. Based on the ADL/IADL assessments, the SUA assigns a score to the clientele and determines what an appropriate caseload is for this level of frailty and need. Agencies with unusually high or low caseloads, relative to this score, will be contacted by the state to determine the reasons. This report does not constitute the final determination of appropriate or inappropriate caseloads. It simply serves as a basis for inquiry as to why the figures vary as they do.

In addition, PDA is using the client assessment and service delivery data, in conjunction with Census demographic and disability figures for particular PSAs, to determine if the characteristics of the clientele and the nature of the services they are receiving are consistent with the actual needs of the older persons living in these locations.

PDA staff use Crystal Reports and SPSS to analyze SAMS data files and configure custom tabulations.

Has the Information Management System Addressed Its Original Purposes and Have the Benefits of the System Justified the Costs?

The primary purpose of installing SAMS was to provide a cost-effective flow of data from the AAAs to PDA, using innovative computer applications. The PDA staff we interviewed said that AoA's SPR requirements may have been the initial motivation for developing the MIS, but since then the SUA and AAAs have found that the availability of timely, accurate, and comparable data is very useful for their own purposes and fully justifies the costs.

This response is very consistent with what we found in the other high-performing MIS states, where external requirements may have been the genesis of information systems development efforts, often at high costs, but the value of the information for internal planning and management quickly surpassed external requirements as a cost-effective justification for automation

Other Software that the SUA, AAAs, or Providers Use in Addition to the Main Information System Software

Currently, the case management and I&R/A functions are separate from the client registration and tracking that occurs as part of SAMS. The SUA staff would like to integrate these functions at some point in the future.

In addition, despite the administration of the Medicaid Waiver by the SUA, there are some separate computer applications that operate concurrently with SAMS. While the AAA authorizes all Medicaid Waiver services as part of the client assessment and eligibility determination process, it is the service providers that document the units of service that these clients actually receive. This reporting of service units occurs as part of the invoicing process, where the providers bill the state Medicaid agency on a unit-costs basis and include figures on the units of service that each client received as supporting material. This information often does not go directly to the AAA or the SUA, which means that the SAMS client files are missing this important data on the units of service that each Medicaid Waiver client received (although, in

many respects, this information simply confirms the units of each service that the AAA authorized, which is in the SAMS files). To address this omission, the SUA has arranged for several data sharing steps between PDA and the state Medicaid agency.

First, once the AAA authorizes Medicaid Waiver services for clients, the SUA exports a file with this information from SAMS and sends it to the state Medicaid agency. This provides the state Medicaid agency with the data it needs for reporting to CMS and to support the payment of providers. Concerning the units of service that clients actually receive, the state Medicaid agency exports a file from its provider invoicing data, which lists the amounts and dates of each Waiver service for each client. The SUA imports this file into SAMS as a method to record services actually rendered by providers. This mutually beneficial exchange of data between the SUA and the state Medicaid agency is an example of how important MIS export and import capabilities are to the operation of an MIS in a complex environment. The remaining problem is that the AAA does not always receive this client service unit information for its own SAMS data files. To address this problem, some AAAs request that providers also submit data to them on the units of service that each client received, in addition to the state Medicaid agency.

The SUA SAMS files on individual clients are not currently accessible by the AAAs. Instead, each AAA maintains its own computer network and version of SAMS. The SUA is planning to remedy this limitation by moving all AAAs to *Agingnetwork.com*, Synergy's Web-hosted platform to which the AAAs and SUA will have real-time access. Currently, the SUA receives periodic submissions of client data from the AAAs on a batch processing basis, which is only available to SUA staff.

Replicability to Other States

In many respects, the experiences in Pennsylvania and the other SUAs using SAMS (or any other commercial software product) provide an excellent vehicle for best-practice replication. For example, we found that in many states there are similar problems, and the solutions in one SUA may be appropriate for another. In particular, the stand-alone design of many SAMS and other applications, where each AAA has its own version of the software that is not linked to an accessible PSA-wide or state-wide network, creates severe limitations in the ability of states to avoid redundancy in client data collection. One objective of the NASUA study is to identify ways for NASUA, AoA, and SUAs to implement information systems that avoid the need for clients and caregivers to supply the same identifying information repeatedly as they move from one provider to another. The presence of stand-alone SAMS or other applications, which do not allow file sharing across agencies, limits this capability. PDA's effort to encourage migration of the AAA client files to a single, Web-hosted server, in this case Synergy's *Agingnetwork.com*, represents an important step for accomplishing this study objective.

Given the depth of Synergy's market penetration across SUAs, AAAs, and providers, replication can also take the form of identifying and transferring successful approaches to using SAMS from one state to another. For example, Pennsylvania has developed a procedure for importing Waiver payment and service unit information from the state Medicaid agency into SAMS. The SUA has also configured SAMS to export client assessment and service authorization data to the state Medicaid agency. Given the uniformity across the states concerning the type of Medicaid

Waiver authorization, invoicing, and unit-cost payment information, replicating the PDA procedures for such data transfers to other states may have wide-spread benefit.

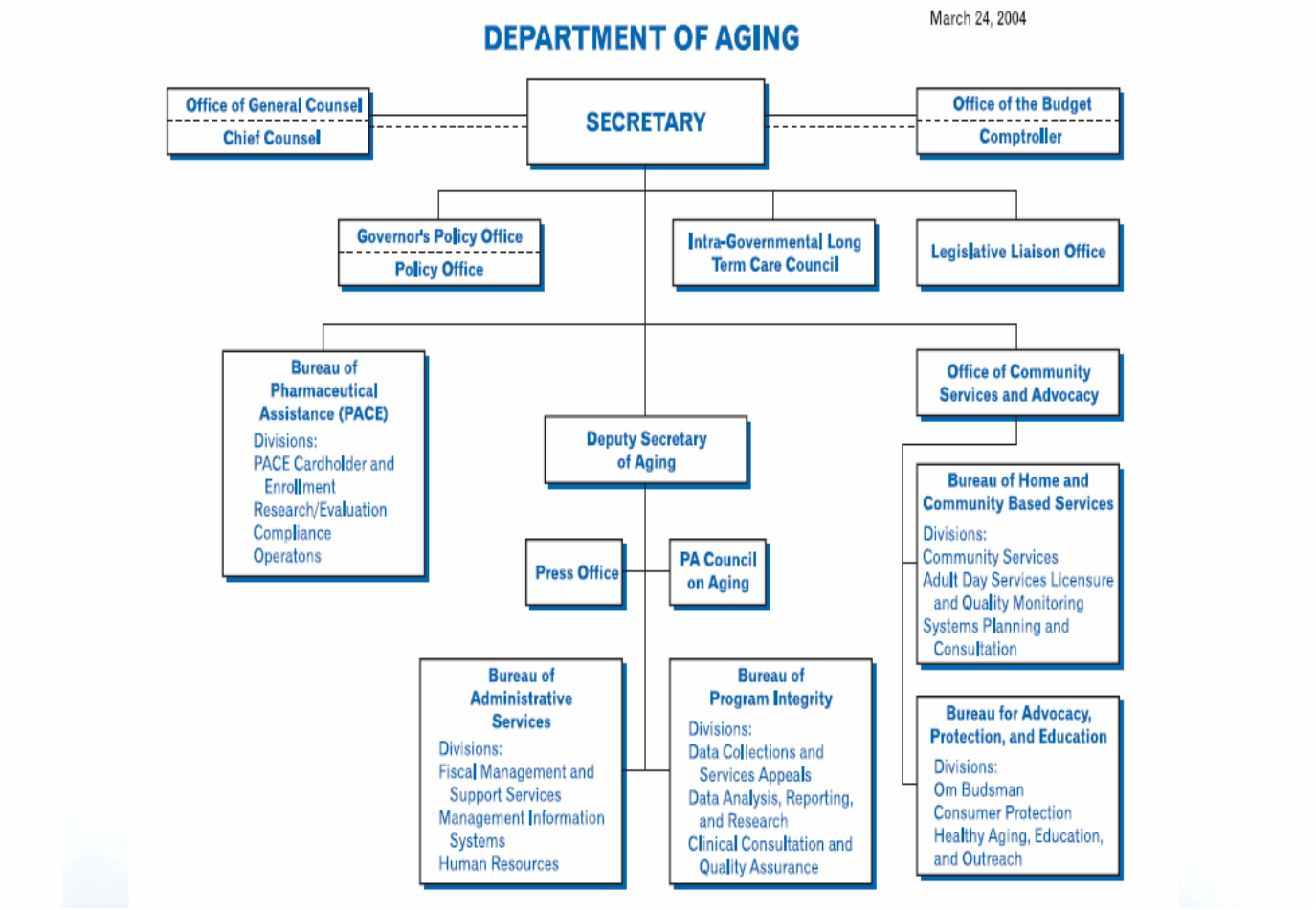
Concerning costs, Pennsylvania has contracted with Synergy, directly, for the initial and annual software licensing fees for users at the SUA and in all 52 AAAs. It may be that the bulk purchasing arrangements that Pennsylvania has negotiated, if they are followed by other states, could result in substantial cost savings, compared to separate agreements between Synergy or other vendors and individual AAAs and service providers. Groups of states with similar requirements could do the same, potentially resulting in substantial cost savings. NASUA, as a representative of SUAs, may be able to play a negotiating role, facilitating collective agreements between groups of SUAs and Synergy or other vendors.

Also on the procedural front, Pennsylvania is not experiencing the HIPAA-related limitations in sharing individual client data that other states are encountering. In particular, Waiver service providers send their client data to the state Medicaid agency, which in turn sends this information to the SUA for consolidation with OAA and other clients in the PDA SAMS data files. At the same time, AAAs send the SUA client data on Waiver service authorizations, and the SUA sends this information to the state Medicaid agency. While the SUA administers the Waiver program in Pennsylvania, the inter-agency relationships, policies, and procedures that govern these Medicaid Waiver data transfers may serve as a model for other states that are encountering resistance from the various parties involved (e.g., AAAs, providers, state Medicaid agency, and the SUA).

Recommendations

The SUA is planning to expand the use of SAMS by incorporating additional modules. In particular, the state is encouraging the use of Beacon, the SAMS I&R/A module, beyond the few AAAs that currently use this option. The state would like both consumers and agency staff to have user-friendly access to the Beacon files for information and referral purposes. In addition, the SUA wants to link the Beacon data with a geographic information system (GIS) to allow mapping the location (and gaps in coverage) of specific services. Finally, the SUA suggested the configuration of a national Beacon data file that is accessible to consumers (and staff) via the Web to facilitate distance caregiving.

In order to accomplish these goals, the SUA recommends leadership and action at the national level to set standards and facilitate the implementation of these cross-state I&R/A capabilities.


March 24, 2004
DEPARTMENT OF AGING
Office of General Counsel
Chief Counsel
SECRETARY
Office of the Budget
Comptroller
Governor's Policy Office
Policy Office
Intra-Governmental Long Term Care Council
Legislative Liaison Office
Bureau of Pharmaceutical Assistance (PACE)
Divisions:
PACE Cardholder and Enrollment
Research/Evaluation
Compliance
Operatons
Deputy Secretary of Aging
Office of Community Services and Advocacy
Press Office
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Data Analysis, Reporting, and Research
Clinical Consultation and Quality Assurance
Bureau for Advocacy, Protection, and Education
Divisions:
Om Budsman
Consumer Protection
Healthy Aging, Education, and Outreach

SOUTH CAROLINA CASE STUDY

Background

The South Carolina Lieutenant Governor's Office on Aging (the State Unit on Aging) uses the AIM system, a commercial client tracking software package developed for use in South Carolina by a former Tennessee SUA and South Carolina senior Center director. AIM is used in four other states as well (Maryland, Minnesota, Oklahoma, and Virginia). South Carolina's network consists of 10 Area Agencies on Aging (AAAs) and 46 Councils on Aging (COAs), which are the major service providers. There is at least one COA per county (although, this varies by population size), all of which use AIM to track clients and the units of service they receive. In addition, AIM users can (and do) enter information on Medicaid Waiver clients into the system, if they desire. However, this funding comes directly from the State Medicaid Agency (the SUA and AAAs do not administer the Waiver program). All information on Older Americans Act (OAA) clients is sent monthly as a file to the SUA via email, using the AIM system's reporting capabilities. This provides a basis for unduplicated client counts for the State Program Report (SPR) required by the Administration on Aging (AoA).

Prior to July 1, 2004, the SUA was part of the South Carolina Department of Health and Human Services and before 1996 it was a free-standing Commission on Aging for 25 years. The SUA expenditures from all sources for the 2004-2005 fiscal years were $25.4 million.

In addition to the SUA, the site visit included interviews with the Central Midlands AAA, a quasi-governmental agency that is part of a cross-cutting Council of Governments (COG). The AAA has a 46-member board, which consists of representatives from 14 member governments including cities, towns, and counties as well as citizen appointees and state legislative delegate representatives. There is also a Regional Aging Advisory Council where members are recommended by the AAA's Board and by the council. The Chair of the Council comes from Board, and he is currently a local elected official. Services are provided through Councils on Aging and other providers, which have submitted competitive bids. Central Midlands serves the following counties: Fairfield, Lexington, Newberry and Richland.

We also interviewed staff from the Lexington County Recreation and Aging Commission, which is the local Council on Aging that serves four of the five school districts in Lexington County, SC. Services for the fifth school district are provided by a sub-contractor.

Motivation for Developing an Information Management System

Prior to implementing AIM, South Carolina had a DOS-based client information system (CIS) that was developed and maintained by the University of South Carolina. Once Windows became available, the South Carolina Office on Aging surveyed the state's AAAs and providers for recommendation for a computer client tracking system. At the time, many of the AAAs and providers were using AIM and indicated they would like to continue doing so. The state considered SAMS, another commercial client tracking software package, as well as updating the

CIS system to a Windows environment. The State determined that it made good economic sense to implement AIM given the extensive work necessary to convert CIS, as well as the AAA endorsement. The cost of SAMS far exceeded AIM (see cost discussion, below), which was an important factor for the state. The SUA met with the AAAs and providers, and the decision to implement AIM was unanimous.

AIM was originally developed for use in South Carolina by the former director of one of the states largest senior centers, through this company, Saber Corporation. The content and function of the State's existing CIS influenced the development and configuration of AIM. The SUA contracted with Saber to customize AIM for South Carolina, incorporating the CIS data on clients, services, agencies, and costs.

The SUA staff told us that buying a commercial software package did not mean the state could then just "walk away" with little direct involvement. Some providers lacked computer skills when AIM was implemented, which still requires extensive support from the state. For example, the SUA has configured over 70 custom reports beyond what could be produced in the versions of AIM originally in use at the local level. These reports were developed to address the unmet reporting needs of the AAAs and providers. Many AAAs and providers need to produce unique reports for other funding sources (both to obtain them and account for their use). Other reports were developed by the SUA for data editing and cleaning purposes.

Within the past few years, the AoA Regional Office has required a competitive bidding process for providers of OAA services in South Carolina. As part of this process, the SUA requires that all bidders commit to purchasing AIM if they win a contract.

While the SUA and AAAs do not administer Medicaid Waiver funds, the state Medicaid agency may contract directly with the same providers that receive OAA funds. Providers may use AIM to input data for Medicaid clients, but they do not to report Medicaid Waiver client's data to the SUA. Instead they print out Medicaid client records from AIM and use a separate state Medicaid computer system to enter this information (there is currently no electronic transfer capability between AIM and the Medicaid MIS system). In addition, some of the COAs can (and do) serve non-aging clients, especially through transportation programs. The COAs also have received state contracts to provide transportation under the auspices of the Americans with Disabilities Act (ADA). Those non-aging clients are entered into AIM, but the providers filter them out before reporting to the SUA.

The SUA has also developed a customized AIM users' manual. This manual shows the AAAs and providers how to gain access to AIM and offers simple solutions for trouble shooting.

AIM contains a standardized client intake and assessment form. The AAAs and providers can modify the form, by adding fields to it. They cannot delete fields from it, however. Key to the successful implementation and use of AIM is the determination of SUA staff to insure that the system provides the necessary reports for use at the state, AAA and provider level, and that the users are supported whenever and however needed. Consistent with the findings from all the case studies, we believe that if the state did not offer the level of personalized support that it

does, this system would not work effectively. During the interviews, the SUA staff stated that without this level of support, the providers would not be satisfied with the AIM system.

AIM is used to collect OAA and state data on nutrition and social services. South Carolina has implemented other software packages to capture information on clients of the National Family Caregiver Support Program, information and referral/assistance, and reports on elder abuse as part of the Long Term Care Ombudsman program (see next section).

AIM was implemented in the AAA that we visited prior to the current director joining the agency eight years ago. The implementation of AIM was a "bottom up" process, rather than a "top down" one, because the AAAs and providers were already using AIM when the state implemented it. The AAA wanted AIM for accountability purposes. For example, recently, the AAA visited a provider to confirm that clients received services funded by SSBG (Social Services Block Grant) and other state funding sources as reported to the AAA. As part of the monitoring visit, the AAA selected clients from the AIM database, whose services were billed for a particular month.

As another example, monies for services are allocated by the AAAs, in part, according to the collective results of client's needs assessments, and AIM provides this information for the development of the Area Plan.

AIM data were also given to prospective contractors, which identified the existing level and scope of services, as a basis for completing proposals. There is now competition in the proposal process, per AoA Regional office requirements. For the first time, the AAA awarded home-care funding to a for-profit agency, which has purchased AIM and reported data to the AAA successfully using this software.

This AAA also has a contract with the Columbia Urban League to provide legal services. The League uses AIM, but AAA monitoring of legal services is done anonymously to protect attorney/client privacy.

The Lexington County Recreation and Aging Commission, the COA provider site we visited, uses AIM for all services and funding sources, beyond what the AAA funds. For example, this provider receives Waiver funds directly from the state Medicaid agency and tracks the clients and services using AIM. Units of service are tracked on paper forms that have barcodes pre-printed on them by the AIM system for existing clients. These forms are distributed to service delivery sites for completion and returned to the provider. Provider staff then wand the barcodes on the forms and type in the corresponding units of service information.

Approach to Developing the System and Implementing Process

As a motivation for selecting AIM, SUA staff said Saber's price was significantly less than SAMS, another contender, and still is. Most AAAs and about one-quarter of the providers were already using AIM. These AAAs and providers pushed hard for adoption of the AIM system; they all felt it made good economic sense. The system is flexible and its "open" database

design, which allows users easy access for query purposes. The SUA IT staff configures most of what the AAAs and local providers need in terms of capabilities and reports.

The state does not use AIM to track: 1) caregiver clients enrolled in the National Family Caregiver Support Program (NFCSP), 2) complaints made to the LTC Ombudsmen, and 3) calls made to the Information and Assistance telephone lines. The SUA contracted for a separate caregiver system, which is Web-based and uses Microsoft's Active Server Pages (ASP), a Web-based programming language. The server is SQL based and reports are in Java script. The state is now paying to have a service bureau host the systems, and it plans to bring this capability in-house by converting it to AIM or one of the states other applications.

The Caregiver system produces unduplicated counts of caregivers and care recipients. However, it does not capture group training and support group activity, which must be recorded manually and entered as aggregate counts for SPR reporting purposes. There are 10 caregiver advocates, one in each AAA. They determine eligibility; promote the program, track services, record demographic data, and award mini-grants to caregivers. The mini-grants allow caregivers to purchase supplies, and services, such as hygiene products and respite care.

Users can search the information system to determine if a new caregiver has received support in the past. The system can record clients, as well as inquiries that may not be linked to an individual. This information then can be reported to AoA.

There is usually not an overlap between care recipients of caregivers and clients who receive homemaker services. Most of the clients who have homemaker services are still living independently, and the caregiver is not living in the same house. In-home respite care for the NFCSP is usually provided for caregivers who are living with the care recipient all the time and cannot leave without support. The respite care is usually provided by a friend, neighbor or relative, because the caregiver actually hires the respite care provider, but tracking these "providers" is not really possible.

However, part of the software does provide a way to track reimbursement for direct payments to caregivers and units of service. The system records the services rendered and the number of units used (e.g. two hours of respite care). The system can distinguish among the various funding sources that support care giving. It can also help identify matching funds. The system also tracks the state's separate Alzheimer's respite care services.

The caregiver system uses Crystal Reports for tabulations and ad-hoc queries. The state gets a copy of the caregiver database from each AAA once per month. The host company will not allow the state to access the live database from the host site, nor are there sufficient reports configured by the vendor in the caregiver system to address all SUA needs. Because AIM provides access to a live database with considerable reporting flexibility, the state will be converting the caregiver system to AIM or another existing system at some future point.

The latest version of AIM does have fields for caregiver services, so this information can be captured for NAPIS reporting. The state has a new grant is to try to combine some of its separate systems, including adding the caregiver program to AIM. However, the SUA is also

considering moving caregiver reporting into the separate system used for Information and Assistance, called Tapestry (see below).

NORS reporting for the Long Term Care Ombudsman program is captured by the OMBUD system, which is a Web-hosted application, developed by IN Data Systems. OMBUD is a separate statewide data system; there are 10 links located in the AAAs plus the one at the SUA. This system has the ability to take the AAA-level data files and export them to one SUA database. The state is very satisfied with the support it receives from IN Data Systems; most problems are resolved within 24 hours.

Reporting of ombudsman activities requires no individual identifying information. The name of the complainant is not reported; users only need to report the number and type of complaints to AoA for the Ombudsman Program.

The SUA does not plan to convert the ombudsman program reporting system to AIM because the state staff feel that what they have is working well. Individual client tracking, a plus in AIM, is not required for reporting for the Ombudsman Program. Saber did develop a module for reporting for the Ombudsman program, but the state was so involved in getting AIM implemented for the SPR that it never implemented the Ombudsman component.

The SUA also has an Information and Assistance Information System that is separate from AIM. As part of a cross-cutting human services effort, the SUA program spent 2.5 years developing an I&R/A MIS with a contractor, as an in-house application. Then, when the SUA transferred out of the South Carolina Department of Health and Human Services (DHHS) and into the Lieutenant Governor's Office, it lost access to the MIS application and support. As an alternative, the SUA chose Tapestry by Vision Link, a commercial I&R/A software package. Tapestry is a Web-hosted system, based in Denver, CO. Because it is Web-based, there is no software requirement for the user's PC except for Internet access. The cost for Tapestry is based on the number of providers listed in the resource database, not the number of users, which is very economical. The initial cost for the program was $60,000. The SUA pays $400 per month for statewide use of the system.

South Carolina's I&A program is called SC Access. There is a public site (available on the Web -- https://scaccess.communityos.org/) and a private site for I&A workers to search for available services. Workers can also record intake information using Tapestry, as well as make electronic referrals to service providers. They can also check if the client is currently being served by the AAA and add the call as a contact to the record. If the person is not currently a client, the I&A worker can create a new record.

The I&A workers are cross-trained to use the Aging and Disability Information Center (ADIC) which is South Carolina's name for Aging and Disability Resource Center.

AIM had an early I&A module; however, it was too cumbersome to use, according to the SUA.

South Carolina's Computer Systems

All told, the SUA has the following client tracking and reporting systems:

1. AIM,
2. Caregiver,
3. Ombudsman,
4. I-Care, which is used for South Carolina's State Health Insurance Assistance Program (SHIP). The Federal government contracted for the development of this software and made it available free-of-charge; and
5. Tapestry for I&A.

There is a close working relationship between the providers, AAAs, and the SUA in South Carolina. The state hopes to use its $2.85 million CMS Systems Change Grant to consolidate the computer systems into one application (or as few as possible). Another important need for consolidation concerns dispatching capabilities for all transportation providers. This involves integrating scheduling and tracking (for payment purposes). The South Carolina Department of Transportation is involved in this effort as well, which will consume the largest portion of the $2.85 million CMS grant.

Another portion of this CMS grant will go toward prioritizing the home and community based services waiting list, which currently functions on a "first come/first served" basis. Case workers feel strongly that the waiting list should remain this way; the SUA feels that those with the greatest need should be served first.

AIM is not Web-based. Saber is working with the SUA on consolidating the SUA, AAA, and provider systems, using Web-hosting. As part of this effort, AIM may accommodate caregiver data eventually, but, if not, Tapestry will do so. The separate ombudsman software is working well and will not be consolidated.

The SUA conducts regional MIS training for the AAAs, and the AAAs, in turn, train and support providers. Users always encounter problems, but they are usually addressed in training. In the past, the SUA had a statewide AIM users group; however, it was getting so large it was awkward to meet. For this reason, training is done on a regional basis.

The new for-profit homecare provider, that is becoming active under the new competitive bidding system, was quite willing to adopt the AIM system. This provider may bid in other PSAs in the future. Having AIM also helps the provider prepare new bids and proposals. AIM produces truly unduplicated counts, because even for non-registered services, the SUA collects individual client information.

The AAA staff we interviewed would like their entire computer needs to be addressed by one system, but that is not the reality. Programs are administered separately at the federal level, which contributes to the fragmentation through separate reporting requirements. Core MIS software packages have features to cover certain programs, but they are not as strong as the systems currently in use (e.g. AIM's I&A module does not meet South Carolina's needs as well as Tapestry does). The separate caregiver and I&R systems are Web-based. It would be better if

these databases were "open" for easy export and import, as AIM is. The AAA staff noted that Synergy has SAMS but said it is expensive and not nearly as flexible as AIM.

The AAA staff said that the key is to figure out a way to share information across systems. Federal standards for certain pieces of information would help, as would guidelines for sharing information. Then, the AAA could develop a way to program a bridge between the systems. There is a much better chance to effect this crosswalk if there is commonality in fields (e.g. numeric to numeric/alpha to alpha; standard field lengths and values, etc.).

As a limitation mentioned by the provider staff we interviewed, AIM does not support scheduling the delivery of services (e.g., transportation, homemaker, and home-delivered meals). AIM is historical, and shows every client who ever received services. For this reason, the provider we visited actually maintains a parallel client database of active clients (using an application that preceded AIM) for program operations support. The SUA staff who accompanied us to the provider site will be developing an AIM report utility to avoid this duplication.

Most of the provider's service delivery site staff (at its seven senior centers) are not "computer people" according to the COA and having the centers perform data entry and editing is not a viable option (only three have dial-up connections to the Internet, which would limit data transmission). Also, having the centers enter data would also involve paying for more AIM licenses, training, and support. For this reason, the Council on Aging staff does all data entry, using the bar-coded, AIM-generated paper forms that the senior center staff completes by hand.

Each center has multiple funding sources for any one service, and individual clients are assigned to a single funding source for service tracking. A client cannot be charged to more than one funding source for a particular service, except under limited circumstances. The bar code assigned to a client for a service is limited to one funding source.

The congregate meals clients sign in each day at the senior center, and then mark on the log the days they intend to eat at the senior center. The centers require the attendees to make a reservation for their meals. This log is sent to the caterer and is subsequently used to record service units..

The provider also has "Results Plus," which is a fund raising software package, whereby gifts can be easily tracked by staff. The centers have a suggested donation for clients for each meal. If the center knows who gave the money, they can link that donation to that person's meals in Results Plus. This information is then transferred into AIM.

Approach to Developing the System and Implementation Process

The SUA selected AIM, given the extensive use of this software at the AAA and provider levels. At the state level, the AIM implementation process was one of converting the state's outdated DOS-based Client Information System (CIS) to a Windows application that could accommodate all the variables and capabilities of the current MIS. AIM satisfied this requirement, while building on the successful use of this commercial software by many AAAs

and providers in the state. Compared to the cost of other commercial software or developing a new system, in-house, the SUA staff said that AIM was the most efficient and effective choice.

Mapping the data fields from CIS to AIM was an important part of the design and implementation effort. Saber Corporation consisted of just two individuals, which was too small a staff to provide the level of support needed for the aging network in South Carolina. SUA staff had to learn Windows; they had to learn AIM; and they had to learn both of them well enough to support the roll out of the MIS. Saber hired a third person, who coordinated and supported the conversion of data from the DOS system to AIM. Also, existing local versions of AIM had to be converted to the state version. Many data items had to be standardized, including the client assessment variables, which were configured to match the CLTC (Medicaid Waiver) assessment. While the SUA and AAAs do not administer waiver programs, many OAA providers do, which calls for consistency.

Since the implementation of competitive bidding, the relationship between the providers and the SUA has changed. In the past, the SUA was a "hand holder" when the providers needed help with their computer systems. Also prior to the "arms-length" relationship with providers that accompanied the new competing bidding requirements, the SUA would have given these agencies the computer system, or the money to install one. Now, the providers are expected to purchase AIM and their own computers, and to contract directly with Saber for their software and support needs. This requirement is part of the RFP process and the resulting services contracts with the AAAs. The SUA will issue guidance on system requirements, but technology acquisition is considered by the SUA to be part of the cost of doing business. The initial purchase price for AIM is $796 per license, plus $265 per year for each staff person using AIM concurrently (see separate cost discussion, below).

The SUA has many internal uses of information beyond AoA reporting. For example, this state is participating in AoA's Performance Outcomes Measures Project (POMP) and is studying the effects of OAA services on emergency room use and hospital admissions. Concerning the latter, the SUA has received an endowment from Duke University to create a "Seniors Cube," which is a database warehouse of information on older persons in South Carolina, who receive any of the many health and social services administered by various state agencies.

One use of the Senior's Cube is to determine what difference OAA funding makes in avoiding costly services, such as emergency room use. The State Office of Research and Statistics (ORS) has built a database from client records of many state agencies and local hospitals. In this way, the SUA is able to access the impact of state program participation on emergency room use and hospital admissions. ORS was able to include variables, such as units of service, poverty level, health conditions severity, demographics, and types of services. The results of the analysis show that receiving OAA service makes a difference in reducing hospitalization.

The state also mines the data in the AIM system for other uses as well, including budgeting (The current governor favors activity-based budgeting). This involves looking in great detail at the programs each agency runs, asking: "What is the focus?" "Does it make a difference?" "Does it matter?" "What does it accomplish?" The state has substantial

accountability requirements and last year, DHHS was still responsible for (and helped with) the SUA's budget request. This is the first year the Lieutenant Governor's Office on Aging has had to put together a budget justification that specifically addresses these accountability issues. The data in AIM, as well as the results of the prior POMP awards and the current Advanced POMP grant, allowed the SUA to include data showing what the programs accomplish.

The Governor is also proposing a three-year budget request process for planning purposes. In the next twenty years the number of seniors in South Carolina is predicted to double. The SUA plans to put a formula in the budgeting process to allow for this change and to adjust for inflation to maintain the same levels of service. However, the South Carolina legislature has signed a no new taxes pledge, which makes the availability of data essential.

MIS-related costs constitute a huge issue for the provider that we visited. For example, when the provider had to upgrade to a new version of AIM recently, it had to buy new computer equipment, because the new version did not work on the existing Windows 98 platform. Specifically, the provider had to buy four new computers and a new server. It also costs money to train provider staff members to use the upgraded system.

Unduplicated Client Counts for AoA Registered Services, Non-Registered Services, and for OAA Programs Overall

For AIM, the SUA receives data on individual clients on a monthly basis from the AAAs via email. Providers send their data by email to the AAAs. Some services are not logistically feasible to track on an individual client basis, such as I&A.

The separate Family Caregiver reporting system, called Portal, gives unduplicated counts of caregivers and care recipients. It does not capture group trainings and support groups, except as aggregate counts.

There's a public side (available on the Web) and a private (staff) side to the state's I&A system, call SC Access. The public and I&A workers can search for available services using this system. I&A workers use the SC Access and its client intake screen when responding to I&A inquires. It is not possible to track use of the public side of SC Access.

AAAs use a separate I&A software package, called Tapestry. Because there is no interface between Tapestry and SC Access (or AIM) many I&A inquiries are addressed at the local level, but these are not recorded and tracked for reporting purposes.

Implementation and Operating Costs

In the initial interview, the SUA told us that budget was not rated as a barrier. Initial and on-going costs were rated with average-to-high satisfaction for both AIM and the caregiver systems. Each user license for AIM is only $796 per year with a $265 annual maintenance fee per concurrent license. As per SUA policy, each AAA and provider pays its own AIM license fees, which is a requirement for receiving funds. These agencies include the licensing fees in

their overall budgets, which the SUA and AAAs pay as part of the awards for services and program administration.

When the SUA left DHHS and became part of the Lieutenant Governor's Office, it lost access to the DHHS I&A software and IT support. The SUA decided to purchase an off the shelf program and chose Tapestry by Vision Link. Tapestry is a Web-hosted system, based in Denver, CO. Because it is Web-based, there is no I&A software required for the locals user's PC. The cost for Tapestry is based on the number of providers in the resource database, not the number of users. This is very economical. The initial cost for the program was $60,000. The SUA pays $400 per month to use the system, which covers all AAAs and providers.

The SUA hopes to use its CMS Systems Transformation Grant to consolidate the caregiver MIS into AIM or Tapestry. This award is for $2.85 million, and is part of the ADIC/Systems Change Grants. In addition to the MIS conversion, much of this award will be spent on coordinating transportation services for the elderly and persons with disabilities.

Saber has an Ombudsman module, but the state was so involved installing the core features of AIM that the state's Ombudsman program contracted for the development of its own system, which will not be integrated into AIM. The development and operating cost figures were not available for separate Ombudsman MIS.

Maintenance on the Information Management System

Technical and user support is handled by the SUA and by Saber. The Saber support is all done by one person, the firm's owner. Given this limitation in assistance from the vendor, all support requests are submitted through the SUA, which provides much of the help for its own staff, the AAAs, and providers. The SUA decides which requests it can address which ones need to be referred to Saber.

Leadership of Key Individuals

During the initial telephone interview, the SUA rated leadership as "4" out of "5" (5 was highest) in importance for the implementation of AIM. During the case study visit, the SUA told us that at the time it was deciding on the MIS conversion from DOS to a Windows environment, the SUA director was a former Council on Aging (service provider) director, who had used AIM. The SUA conducted a review of available MIS options, however, the providers said they were going to use AIM no matter what the SUA decided.

The SUA decided on AIM and the system has satisfied the state's needs quite well. State staff had to take a strong role and they developed a standardized assessment form within AIM, which the providers can supplement with their own features. Concerning uniform service costing, all AAAs and providers negotiate a unit rate; they are reimbursed from the state and AAA accordingly.

The implementation of AIM followed a "bottom up" process. There was support at the provider level for adopting the AIM system, and when the state met with the providers, the decision was unanimous to convert to AIM.

Cooperation of all Participating Agencies and Staff during the Information Systems Development Process

Given their prior use of the software, the providers told the state they were going to keep using AIM, even if the state also implemented some other system. The selection of AIM secured their full cooperation.

As another factor that facilitated cooperation, Saber Corporation has a continuing commitment to this low cost software. However, the SUA feels that this system would not have worked had it not been for on-going state technical and user support to the network on aging in South Carolina, in addition to what the vendor was able to provide. If the providers and local AAAs did not have this SUA support, they would not be satisfied with AIM.

Scope (agencies, programs, functions) of the Requirements Analysis and Design for the Information Management System

There was no formal requirements analysis, per se. All the requirements were imbedded in CIS (the DOS based system) and AIM simply replicated these variable and functions from CIS.

The major addition to AIM was incorporating the state's Medicaid Waiver Client Assessment form as a functional component for Older Americans Act services. While the SUA and AAAs do not administer the Waiver, many providers do. Providers and AAAs can tweak the assessment forms for their own use; however, the state-level AIM application is programmed to accept only a common core of data.

This AAA we visited uses the Computer Systems Innovation (CSI) fiscal management software application. This is a nationwide accounting system for government and non-profit use. The AAA is part of a Council of Governments (COG), which uses the software across the board.

Training of Staff

The SUA staff conducts most of the MIS training. As one innovation, the SUA is implementing Web-based training and support. Much of the support consists of SUA IT staff configuring reports in AIM, which AAAs and providers can then produce on a regular basis.

AIM offers a wide range of export procedures and data formats using a drop-down menu box. However, the report generator in AIM does not give all the detailed tabulations that the providers and AAAs need. The SUA uses InfoMaker from Sybase, Inc. to develop these reports. The next iteration of training the SUA offers will include instructions on a simple SQL code to get better reports. The SUA said that good service-delivery staff may not be the most computer savvy, which means that frequent in-depth training is essential.

Technical Support (e.g., trouble shooting)

The SUA staff is the primary technical support resource for AAAs and providers.

Report Generation

AIM provides summary reports by provider, by PSA. AIM includes 70 standard reports, plus 70+ more that the SUA has developed.

The SUA can create reports for many purposes because AIM uses an "open database" architecture. The SUA uses InfoMaker by Sybase as a report writer to create custom reports. The information from the custom reports can go back into AIM to update the database. The SUA has also exported data and created special reports consisting of client profiles for the Governor's annual accountability reports.

When AIM becomes Web-based, it will be housed on a Saber Corporation server. The local providers and AAAs will use the state server to house their data. They will still have the AIM software loaded onto their machines, and they will still only see their agency's clients' data.

Based on the client assessment, the AIM system assigns a priority score. This is based on an algorithm, using codes that are entered as responses to assessment questions. Providers have the responsibility for data entry into AIM. The client assessment has added information on Emergency Risk for Disaster Evacuation, and Providers/AAAs do, in fact, use the emergency information.

The AAA we visited told us that, although CMS is giving grants to encourage integration, the South Carolina Medicaid lawyer said that the AAAs cannot roll up identifying data, because it violates HIPAA. This is inconsistent with the integration goal of CMS grants, according to the AAA. The SUA is looking for ideas to deal with this problem. The AAA stated that CMS and AoA should be working together at the federal level and give permissions for merging data; otherwise the single entry point concept will never happen.

The AAA has a central database to which multiple providers have access, but so far it is rare for a client to receive services from more than one provider. The new for-profit homecare provider and the COA could serve the same client, however. The home care agency completes assessments and decides on the level of service. The homecare contractor cannot go into AIM and pull information from other providers (COAs), but the SUA can do so. The providers need direction from AoA and CMS to address HIPAA. They cannot integrate service data due to HIPAA. The people who sit on the providers' boards' can be liable as well, so they prefer to err on the side of caution. NASUA needs to take this up, otherwise "NAPIS data will be a mess," because there will never be an unduplicated count.

How Well has the Information Management System Addressed Its Original Purposes; Have the Benefits of the System Justified the Costs?

AIM's cost has justified the benefits of the system. As one missing benefit, however, AIM is not Web-based. The AIM developer has no time to do custom reporting. He is working with the SUA on consolidating the multiple SUA/AAA/provider databases on the Web, with plans to implement this application in early 2007. Once this occurs, the SUA will need to convert the AAA and providers to a Web-based application. A remaining task is to determine how to share information across the many, separate systems that SC uses (e.g., I&A, Ombudsman, fiscal management, caregiver).

Recommendations

It would be helpful to have Federal standards for certain pieces of information and guidelines for sharing information. Then the SUA could build bridges between the systems. It is much easier to cross over between systems, if there is commonality in fields (numeric to numeric/alpha to alpha; standard field lengths and values as well).

Appendix C: Commercial Software Summaries

Commercial Software Summaries

The following provides a brief summary of the commercial software applications that the study found during the course of the interviews and site visits. This summary includes software used by SUAs, as well as packages that the states reported were in use only at the AAA level or service provider level.

SAMS 2000 Product Overview

SAMS2000™ Social Assistance and Management System, a tool for automating client case management and service tracking, was designed by Synergy Software Technologies, Inc., a software development firm in Essex Junction, Vermont. SAMS2000 includes basic functions essential for collecting NAPIS data: client registration, service delivery records, and running reports.

In addition to SAMS2000, Synergy offers a "suite" of programs that can be used as stand alone products or integrated into a comprehensive, integrated system, which allows users the ability to link the functions inherent within each product. Most of the SUAs that identified themselves as users of SAMS2000, use additional modules, particularly the module for producing the State Program Report and the assessment module. When integrated with other modules, SAMS2000 offers additional functions including service and care planning; goal setting; meal route management; journaling and action item management; provider contract management, invoicing and payment; high volume service unit data entry; and service order generation.

The suite of programs offered by Synergy include:

SAMS2000: SAMS 2000 is a client case management and service tracking system.

NAPIS Reporter: NAPIS Reporter is a special report module which reads the SAMS2000 database and produces the NAPIS State Program Report. The NAPIS Reporter queries the SAMS database; extracts demographics and service units and performs statistical calculations; and produces an on-screen version of the NAPIS report formatted to meet AoA specifications.

Agency reports may be easily rolled up into a combined state report. The user can edit the results, add narrative sections, and produce the entire report online.

Omnia System: Omnia is an assessment system comprised of the following subsystems:

- Omnia Designer: Omnia Designer allows users to design their own assessment forms. Existing intake forms, screening tools and comprehensive assessment forms can be automated in Omnia Designer or the user can select assessment questions from a catalog of over 3000 data items. Different assessments can share data. The assessments designed in Omnia Designer can be integrated into SAMS2000, so that assessment information can be shared with other approved users.
- Omnia Interviewer: Omnia Interviewer is the tool used to conduct assessments on laptops. A separate Omnia Interviewer user license is required for each laptop which has Interviewer installed, and for each concurrent user of custom assessment forms within SAMS2000.
- Omnia Analyzer: Omnia Analyzer is a reporting tool which enables users to perform statistical analysis and outcome measures of assessment data. Group analyses can run for specific client characteristics.
- OmniaCE: Omnia/CE enables Omnia assessments to be downloaded to handheld computers and then uploaded to SAMS2000.

SAMScan: SAMScan is a tool used in conjunction with scanning client identifiers and service units from different bar-coded rosters printed from SAMS2000. SAMScan downloads service records from a scanning device and allows the scanned records to be reviewed and edited before uploading the data to SAMS2000.

OmbudsManager: OmbudsManager is an ombudsman case management data system for tracking nursing home complaints and NORS reporting.

NORS Reporter: NORS Reporter is a special report module which reads the OmbudsManager database and produces the NORS Report formatted to meet AOA specifications.

Beacon I&R: Beacon I&R is a data management system for Information & Referral/Assistance.

FinPak: FinPak is a tool for allocating and tracking funds from different funding sources, as well as linking budget, expenditure, and provider data to client case management and service information.

SAMS 2000 is a 32-bit application utilizing an SQL Server2000® database foundation. At the time of the initial interviews, some states were in the process of upgrading to SAMS 2000 from SAMS 3.0, an earlier 16-bit Access-based version for 486's.

SAMS2000 runs on a wide area network or Web-based version. Synergy offers Web-hosting and Web access through agingnetwork.com.

Advanced Information Manager (AIM) Product Overview

Advanced Information Manager (AIM) is a client tracking/service delivery data management system developed by Saber Corporation, a software development company based in South Carolina. At the time the survey was conducted, AIM was being used statewide by five SUA's and their network of AAAs and service providers.

The primary modules of AIM consist of:

- Client Demographic Tracking
- Service Delivery Tracking
- Client Assessment Tracking

AIM also includes additional modules:

- Service Authorization System
- Client Referral Generation and Tracking System
- Client Care Needs System, which includes the ability to have the computer assist in determining client service requirements based on client assessment data
- Reporting System which provides data retrieval

AIM provides a Reporting System which includes over 60 pre-defined reports. Administrators and users of AIM software can design additional reports using QueryBuilder or InfoMaker (Sybase). Once these new custom reports are designed, they can be saved and integrated into AIM's Pre-defined Reports List, so that they become part of the system and are always available. Reports run from within the AIM program can be exported to other common data formats including Microsoft Excel. Additionally, Open Database Connectivity (ODBC) allows other programs such as Microsoft Word, Microsoft Access, and Crystal Reports to connect to the

database. This enables users to perform functions such as ad-hoc reports and Mail Merges in Word using the data within AIM.

AIM is a 32-bit application that runs on Windows 95, Windows 98, Windows ME, Windows NT, Windows 2000, and Windows XT. It utilizes PowerBuilder, Java, and Sybase SQL Anywhere.

Other related software products that integrate with AIM include:

- Information and Referral System
- AIM Transport System providing scheduling and routing
- AIM Remote System providing automated data transfer

NAPISCare (RTZ Associates) Product Overview

NAPISCare is part of the GetCare Web-based family of products developed by RTZ Associates of Oakland, California. At the time the initial survey was conducted, although none of the SUA's had been using this product, some reported that their AAAs were using the software independently of the SUA's system. Since then, two SUA's have announced that they selected the RTZ NAPISCare products for use at the state level.

NAPISCare is an online tool for recording, tracking and reporting information on clients, services, and costs. It functions as a Single Point of Entry system for AAAs and providers to enroll and manage clients. Providers record enrollments and services as part of their day-to-day operations. AAA staff can monitor performance and compliance in real time.

NAPISCare accepts and exports data in a variety of formats and methods:

- Electronic Transfer: AAAs can send their DBF or XML data files to the RTZ software and review the submitted data onscreen.
- Direct Input: AAAs can input and edit NAPIS information online through NAPISCare Web screens.
- CARE Tool Input: Using the CARE Tool, AAAs can enter NAPIS data into their systems.

To create NAPIS reports, NAPISCare automatically aggregates AAA data and conducts data validity and error checks. RTZ offers SUAs the option of having RTZ analysts, who specialize in NAPIS reporting review the data. The NAPISCare State Reporter system creates the DBF/XML report for AoA.

Other modules in the GetCare family of products include:

GETCare: An online information resource and directory of services for clients and their families

CASECare: An online multi-agency case management tool for tracking clinical, service, and cost data; includes data reporting for HCBS Waivers

The GetCare family of products are all Web-based with Web-hosting provided by RTZ. RTZ serves as the Application Service Provider.

Q Continuum Product Overview

Q Continuum is an integrated care management system developed by CH Mack, Inc., based in Cincinnati, Ohio. At the time the survey was conducted, although Q Continuum was not being used by any SUAs, it was used by a number of AAAs throughout the country.

The software helps users manage the following types of functions:

- Case Management
- Intake and Assessments
- Information & Referrals
- Care and Service Planning
- Service Utilization and Billing
- Predictive Modeling
- Utilization Management
- Referrals
- Caregiver Tracking & Assessment
- Management Reporting

- Government Reporting (including NAPIS FY05)
- Human Service Provider Modules
- Congregate Meals
- Home Delivered Meals
- Transportation
- Adult Day Care, Home Care

Q Continuum can be run in via a LAN, WAN or stored and accessed on the Web. Web-based access to Q Continuum System is provided through CareAccess, a California health and human services portal. Through CareAccess, Q Continuum System is delivered over the Web and accessible from an Internet browser at a fixed price per user per month.

Innovative Data Systems Product Overview

NapisPak 3.0

NapisPak 3.0 is a software program designed specifically for state and area agency personnel to track clients and services for state, agency and local level reporting. Within the NapisPak software family, there are three core integrated modules, Information and Assistance, Care Plan Manager and NapisPak 3.0. The layout and design are easy to use and very user friendly. Internal programming ensures at every step of data entry that information is entered correctly and quickly the first time.

Components of NapisPak 3.0:

- Information and Assistance
- Client Registration
- Intake and Assessment
- Referral
- Case Management
- Care Plan Manager
- Service Mapping
- Driver Log
- Route Planning and Mapping
- Log Daily/Monthly Services
- Admin

- NapMail
- AutoMed (Automated Medicaid Billing)
- Reports

NapisState

NapisState is a new program designed to allocate budgets for agencies and providers. Individualize budgets to satisfy rules and requirements. Produce graphs and charts. SRT reporting ready! Excel compatible. Use past records to produce forecasts for future projections.

PeerPlace Product Overview

PeerPlace® is a web-based solution that offers health and human services agencies one integrated system with an easy to navigate workflow environment.

PeerPlace® is a community-wide network enabling collaboration among professionals providing community based services. As a web-based client tracking system, it is designed to accommodate both direct and contracted service providers.

- Master Client Database - maintains unduplicated counts of people receiving services across multiple programs, with a powerful search engine to find existing records.
- Care Path Workflow - comprehensive client management system from Information and Assistance through Referrals, Intakes, In-home Assessments and Care Plans. Each program area is configured uniquely for user action workflow, data validation and reporting.
- Universal Referrals - any connected program can manage incoming and outgoing electronic referrals, providing ease of coordination across the community.
- Service Tracking - collect all relevant data at point of service and map to proper funding sources and service types for instant reporting.
- Web Access - easy to deploy and use, requiring only a PC connected to the Internet.
- Security - leverages same encryption technology as banks, with role-based security meeting HIPAA standards.
- Scalability - multiple agencies and/or program service areas connect and share information securely, accommodating an unlimited number of users and programs.
- Flexibility - each program chooses from a suite of workflow paths, with additional customization of program specific forms included.

- Consumer Access - public facing module with on-line access to resource directory, requests for personal assistance, news, documents and forms.
- Database Interface - this provides an application program interface (API) so agencies can connect to an existing system required by a program. This can be accomplished for transmission of any demographic or service unit information.
- Reporting - suite of tools produces ad-hoc views, pre-defined printable reports and data downloads for exporting data to industry-standard formats.

Appendix D: SUA Information Systems Management Survey

SUA INFORMATION SYSTEMS MANAGEMENT SURVEY

(To be completed by the telephone interviewer)

We appreciate your willingness to participate in this important survey of the state's information system management practices. NASUA and AoA are interested in how you collect and tabulate information about Older Americans Act programs, as well as other funding streams, as a basis for completing the annual State Program Report, among other uses of the data.

First, I would like to be sure I have your correct name, title, and contact information.

Name(s) of SUA Respondent(s) _____

Title(s) _____

Name of SUA _____ Interview Date _/_/___

Address1 _____

Address2 _____

City _____State _____ Zip Code _____

Telephone _____Fax _____

Email address_____

Interviewer comments:

The first set of questions cover the Organization of the State Service Delivery System

6. What is the placement of your SUA within state government?
   a. A separate cabinet-level agency or other independent entity
   b. Part of multi-purpose state human services agency
   c. Other (please specify) _____

7. How many AAAs are in the state (if a single state PSA, enter 0)? ____

8. Other than the AAA (or SUA), how many counties or cities serve as administrative intermediaries between the AAAs (or SUA) and service providers (i.e., where a multi-county/regional AAA (or the SUA) makes OAA awards to county or city offices on aging, which are responsible for awarding funds to providers)? ____ (if none, enter 0)

9. What is the total annual budget from all sources administered by the SUA, including Medicaid Waivers for which the SUA has programmatic (but not necessarily payment) responsibility (please use the latest fiscal year(s) for which you have the most conveniently available information). $_____

10. What percent of this amount consists of Older Americans Act **federal** funds? _____%

The next set of questions cover the computation of Unduplicated Client Counts

11. How does the SUA compute SPR unduplicated client counts (check all that apply)?
    a. SPR **Registered Services**
       i. The SUA receives data on individual OAA clients from the AAAs or providers, with a unique identifier for each person for computing unduplicated counts
       ii. The SUA receives aggregate client data on unduplicated counts
       iii. The SUA uses another approach to computing unduplicated client counts (please specify method) _____
       _____
    b. SPR **Non-registered Services**
       i. The SUA receives data on individual OAA clients from the AAAs or providers, with a unique identifier for each person
       ii. The SUA receives aggregate data the unduplicated number of OAA clients
       iii. The SUA uses another approach to computing unduplicated client counts (please specify method) _____
       _____

12. How does the SUA compute the **total** unduplicated count of all persons served for the SPR (the combination of both Registered and Non-Registered clients)?

    a. Actual count based on individual client data that the SUA receives

    b. Actual count based on a total aggregate figure from each AAA or provider

    c. Estimated count (please describe the estimation method(s) _____
    _____
    _____

13. Which one of the following best describes how the SUA has standardized the collection and reporting of unduplicated client counts for the SPR?

    a. SUA has made available a standard client tracking computer information management system, and AAAs/providers collect and report OAA client data using that system

    b. SUA has set specifications for client tracking systems, and the AAAs/providers collect and report OAA client data according to these specifications

    c. AAAs/providers collect OAA client data according to their own specifications and crosswalk the data to the SUA reporting categories

    d. Other (please describe): _____
    _____
    _____

    Additional or explanatory information: _____
    _____
    _____

<u>The next questions cover the technical aspects of the SUA's OAA Information Systems</u>

14. In what form do AAAs or providers submit OAA data to the state? (select all that apply; if the state uses multiple systems or methods, estimate the percent of data that the SUA receives, by category)

    a. Web-based electronic transmissions ____%

    b. Non-web-based electronic transmissions (e.g., via modems, email, etc.) ____%

    c. Mail-in disk, tape, optical scanning forms, or other computer-readable media ____%

    d. Paper reports ____%

    e. Other data collection procedures (please specify) _____
    _____ ____%

15. At the state level, which of the following best describes the information management system for collecting, storing, and tabulating OAA information (If there are more than one system, complete multiple entries, as shown)?

a. Commercial, off-the-shelf computer information management system

i. Vendor name _____

1. Product name _____
2. Modules/options _____
3. First year of use _____
4. Year of most recent modification _____

ii. Vendor name _____

1. Product name _____
2. Modules/options _____
3. First year of use _____
4. Year of most recent modification _____

b. In-house (custom developed) computer information management system

i. Name of the system (for reference purposes) _____
_____

ii. Who developed the system (please select all that apply)?

1. SUA staff
2. Other state agency staff
3. Contractor
4. Other (please specify) _____

iii. First year of use _____

iv. Year of most recent modification _____

c. Manual storage and tabulation of paper reports from AAAs

Additional or explanatory information: _____
_____
_____

16. Is the SUA information management system part of a state enterprise-level application (e.g., a computer application required for use by multiple state agencies)?

a. Yes (please specify the names and roles of the other agencies)
_____
_____

b. No

17. In what other ways do state government information systems policies and plans affect the SUA? (please check all that apply)

    a. SUA must advertise existing information system support contracts for periodic re-competitions (e.g., no sole-source procurements, even for existing SUA systems)

    b. SUA must adhere to an existing state minimum data set for information collection purposes

    c. A separate state agency has oversight and decision making responsibility for information systems development in the SUA (please specify the agency name and its location in state government)

    _____

    _____

    d. Other current or future information systems requirements with an impact on SUA information systems (please specify each requirements and the impact)

    _____

    _____

    e. None of the above

18. Which of the following best describes the architecture (i.e., hardware, software, method of access) of the computer system(s) that the state use(s) for collecting and tabulating OAA data? (if the state uses more than one system or method, estimate the percent of data for each)

    a. Mainframe systems with mainframe programming languages and data bases ____%

    b. PC network/client-server systems with relational data base software ____%

    c. Web-based hosting of data bases ____%

    d. Other (please specify) _____

    _____ ____%

19. Please specify the type(s) of database software that the SUA information system uses for maintenance and query purposes (e.g., SQL, Oracle, Access, etc.) _____

    _____

    _____

20. In addition to the SUA, how many other agencies in the state are using this information management system to collect and tabulate OAA data? (please enter the number of each type of agency; use 0 if not applicable)

    a. AAAs _____

    b. Counties/Cities (other than the AAA) _____

    c. Providers _____

    d. Other agencies (please specify) _____ ____

21. Which of the following capabilities and functions are integrated within the state's OAA information management system(s), even if a function occurs only at the local level?

Client Tracking

a. Client registration
b. Client service logs (e.g., recording the units of each service that a client receives)
c. Multiple provider access to a central client data base (e.g., to eliminate the need for clients and caregivers to provide information repeatedly to various service providers)
d. *Smart Cards* and readers or related devices using computer-readable client identifiers
e. HIPAA compliance, including protecting client confidentiality
f. Other client tracking capabilities (please specify) _____

Case management

g. Client assessments (e.g., identifying ADL/IADL limitations and support needs)
h. Care planning (e.g., arranging for services, recording care plans, etc.)
i. Other case management capabilities (please specify) _____

Provider management

j. Quality assurance (e.g., measuring client satisfaction, adherence to standards, etc.)
k. Staff administration (e.g., recording the characteristics, roles, and activities of staff)
l. Service delivery/operations (e.g., scheduling transportation trips or home care visits)
m. Maintaining I&R/A resource directories (e.g., lists of available community services)
n. Maintaining OAA provider-based information (e.g., lists of AAA providers, services)
o. Licensure and certification (e.g., assuring compliance with laws and regulations)
p. Other provider management capabilities (please specify) _____

Financial management

q. Accounting (e.g., invoicing, payments, internal audits, etc.)
r. Service costing (e.g., attributing costs to specific services and funding sources)
s. Other financial management capabilities (please specify) _____

Summary reporting

t. Storing and processing of summary information from the AAAs/providers (e.g., SPR counts of clients, by service, demographics, and other aggregate information)
u. Other summary reporting capabilities (please specify) _____

Other capabilities

v. Other capabilities of the information system (please specify) _____

22. Using the above list, enter the letters of the top three areas in which you would like to have a new or enhanced information systems management capability ___, ___, ___

23. Please estimate the costs of the information management system(s) that the SUA uses to collect and tabulate OAA data, by the source of funds that the state used to finance them.

a. Purchase/development/initial cost:

Cost Category	Source 1:	Source 2:	Source 3:	Total
i. Software				
ii. Hardware				
iii. Staffing				
iv. Training				
v. Other				

b. Annual operations costs:

Cost Category	Source 1:	Source 2:	Source 3:	Total
i. Software				
ii. Hardware				
iii. Staffing				
iv. Training				
v. Other				

24. On a scale of 1 to 5, from least to most problematic, rate each of the following barriers to information systems development, overall, and for each agency (rate each cell 1-5; for example, if budgetary concerns were a substantial problem for AAAs, then enter 4 or 5).

Types of Barriers/Resistance	Overall	SUA	AAA	Provider	Other
a. Budgetary (e.g., high costs/limited funding)					
b. Administrative (e.g., limited staff, other priorities, difficulty securing approvals)					
c. Technical (e.g., limited agency information technology availability and capability)					
d. Philosophical (e.g., beliefs in the limited value of information systems)					
e. Political (e.g., staff unwillingness to cooperate, change, share data, or use information systems)					
f. Procedural (e.g., commitment to existing, long-term (legacy) information systems)					
g. User (e.g., limited computer skills)					
h. Other (please specify)					

25. On a scale from 1 to 5, from least to most important, rank each of the following as facilitators for the development of the information system (rate each item 1-5)

a. Available funding ___

b. Leadership from a key individual ___

c. State information systems development mandate ___

d. Cooperation from AAAs and providers ___

e. High costs and problems of previously fragmented information systems ___

f. Recommendations from other agencies with effective information systems ___

g. Other facilitators ___ (please specify) _____

26. Has the SUA set standards that govern the development of information systems by the AAAs (or providers) for the collection of information necessary to prepare the SPR?

a. Yes (please specify all that apply)

i. Prescribes a minimum data set that information systems must collect and maintain

ii. Specifies how to allocate costs to services and funding streams

iii. Other (please specify) _____

b. No

Categories of Data that the OAA Information Management System Collects

27. What data about OAA ***clients and services*** does the SUA information system collect?

a. Demographics	Registered		Non-registered	
	Client level	Summary	Client level	Summary
i. Age or birth date				
ii. Income				
iii. Poverty level				
iv. Public assistance benefits				
v. Gender				
vi. Marital status				
vii. Living arrangements				
viii. Education level				
ix. Race/ethnicity				
x. Other (specify)				

b. Functional Status/Health	Registered		Non-registered	
	Client level	Summary	Client level	Summary
i. ADL/IADL limitations				
ii. Self-assessed health status				
iii. Nutrition risk assessment				
iv. Family caregiver support				
v. Assistive devices (e.g., cane)				
vi. Home barriers/modifications				
vii. Other (specify)				

c. OAA Services	Registered		Non-registered	
	Client level	Summary	Client level	Summary
i. Units of each service				
ii. Number of clients by service				
iii. Expenditures by service				
iv. Other (specify)				

d. Reason for Leaving Program	Registered		Non-registered	
	Client level	Summary	Client level	Summary
i. No longer eligible				
ii. Status improved				
iii. Mortality				
iv. Nursing home placement				
v. Other program placement				
vi. Moved in with family				
vii. Left area				
viii. Other (specify)				

e. Quality Assurance	Registered		Non-registered	
	Client level	Summary	Client level	Summary
i. Client assessment/satisfaction				
ii. Goal attainment				
iii. Other (specify)				

f. Other OAA Client Information	Registered		Non-registered	
	Client level	Summary	Client level	Summary
(specify)				

28. Does the state have a standard client registration form (or minimum data requirements for such a form) that AAAs/providers use for **OAA Registered Services**?

    a. Yes

    b. No

29. What data about ***AAAs*** (or the SUA if a Single-State PSA) does the state's OAA information management system collect?

    a. Staffing (e.g., numbers, roles, etc.)

    b. Number of volunteers

    c. Expenditures by service

        i. For OAA funds

        ii. For other funds

    d. Expenditures for program development, advocacy, or other non-service activities

    e. Other (please specify) _____

30. What data about OAA service ***providers*** does the SUA OAA information system collect?

    a. Staffing (e.g., numbers, roles, etc.)

    b. Number of volunteers

    c. Expenditures by service

        i. For OAA funds

        ii. For Other funds

    d. Expenditures for program development, advocacy, and other non-service activities

    e. Unique provider identification number or other data for computing an unduplicated count of providers for the SPR (please specify)_____

    f. Other (please specify) _____

31. Among the funding streams and programs administered by the SUA, which of the following are integrated within the information management system that the SUA uses for collecting OAA data, and which ones are part of a separate information system that the SUA uses for data collection? (please check all that apply in the respective columns)

Funding Stream or Program (check applicable box but only if SUA administers the program or funding stream, otherwise enter N/A)	Integrated with SUA's OAA Information System	Separate Information System Used by the SUA
a. OAA Title III B		
b. OAA Title III C1		
c. OAA Title IIIC2		
d. Long-Term Care Ombudsman Program (i.e., for the NORS report to AoA)		
e. OAA Title III D Disease Prevention and Health Promotion Services Program		
f. OAA Title III E National Family Caregiver Support Program		
g. OAA Title V Senior Community Service Employment Program		
h. OAA Title VI Native American programs		
i. OAA Title VII Elder Rights programs		
j. State Health Insurance Programs (SHIP)		
k. Medicaid Home and Community-Based Waiver(s)		
l. Other Medicaid programs		
m. Social Services Block Grant programs		
n. USDA nutrition support/AoA Nutrition Services Incentive Program (NSIP)		
o. State-funded services (please specify program name for reference purposes) _____		
p. Participant contributions		
q. Aging and Disability Resource Center funds		
r. Other funds (please specify source) _____ _____		

32. Does the SUA's information management system allow the state to link OAA and Medicaid Management Information System (MMIS) data for common clients?

    a. Yes, fully

    b. Yes, partially (please specify) _____

    c. No

33. Other than preparing the SPR, how does the state use OAA data? (check all that apply)

a. Annual or periodic reports to inform the general public about your programs

b. Budget justification and accountability to the state legislature or others

c. Advocacy (e.g., highlighting solutions to pressing problems, such as elder abuse)

d. Monitoring and quality assurance

e. Other uses (please specify) _____

_____

Satisfaction with the OAA Information Management System Operation and Development

34. On a scale from 1 to 5, where 1 is the lowest and 5 is the highest level of satisfaction, how would you rate each of the following attributes of your information management system? (rate each item 1-5; if there is more than one system, rate them separately)

System Attribute	Name of System(s)			
a. Initial cost				
b. On-going costs				
c. Ease of installation				
d. Ease of use				
e. Ease of modification to accommodate new reporting requirements				
f. Updating files/purging inactive client records				
g. Flexibility to integrate multiple state and local data requirements				
h. Ad hoc queries				
i. Report generation (e.g., AoA SPR tabulations)				
j. Exporting data to other reporting systems				
k. Importing data from other reporting systems				
l. Customer support				
m. User training				
n. Written and on-line documentation				
o. Other attributes (specify)				

AAA Information Management Systems Capabilities (skip for Single-State PSAs)

(Questions 35-40 pertain to separate AAA information systems, beyond the SUA applications and AAA participation in them, described thus far in this survey.)

35. How many AAAs in the state have their own computer information system to collect and maintain OAA data? (this includes either aggregate or individual client data) _____

36. Who developed these information management systems that the AAAs use? (please check all that apply, and specify the number of AAAs)

    a. SUA purchased/developed an information management system for AAAs to use ___

    b. AAAs purchased commercial, off-the-shelf information management systems ___

        i. Vendor and product name (please specify, with number of AAAs)
        _____ ___

        ii. Vendor and product name (please specify, with number of AAAs)
        _____ ___

        iii. Vendor and product name (please specify, with number of AAAs)
        _____ ___

    c. AAAs developed their own information management systems ___

37. How many AAAs collect and maintain individual client data for OAA programs using these information systems? ___ (Interviewer note: confirm overall AAA total ___)

38. How many AAAs use these systems to create a central client data base to which multiple providers have access? (to eliminate the need for clients and caregivers to provide information repeatedly to various service providers) ___ (Interviewer note: confirm overall AAA total ___)

39. How many AAAs use the following technology innovations as part of their information systems to collect OAA data from and about individual clients?

    a. *Smart Cards* and readers or related devices that use computer-readable client identifiers ___ (Interviewer note: confirm overall AAA total ___)

    b. Other (please specify) _____ ___
    (Interviewer note: confirm overall AAA total ___)

40. How many AAAs, with their own information systems, are SPR compliant? (AAAs with systems that produce the information necessary for SUA reporting to AoA)

    a. AAAs with systems that are SPR compliant ___ (Interviewer note: confirm overall AAA total ___)

    b. AAAs with systems that are not SPR compliant ___ (please specify reasons)
    (Interviewer note: confirm overall AAA total ___)
    _____

41. Do you have other comments about the development and operation of information management systems in your state?

Thank you. This concludes the survey. After we analyze the results, we may want to conduct a follow-up interview with you for additional insights into your approach to information systems management.

Appendix E: SUA Follow-up Information Systems Management Survey

SUA Follow-Up Information Systems Management Survey

(To be completed by the telephone interviewer)

Name(s) of SUA Respondent(s) _____

Title(s) _____

Name of Agency _____ Interview Date _/_/___

Address1 _____

Address2 _____

City _____State _____ Zip Code _____

Telephone _____Fax _____

Email _____

Interviewer Comments:

SUA Follow-up Information Systems Management Survey

The purpose of this follow-up interview is to expand our understanding of your information management system. We are particularly interested in:

- How you compute unduplicated client counts, by service and for OAA programs overall;
- Your methods that allow clients and caregivers to register once for a service and thereafter have this information available to other providers;
- Your common requirements for data on clients, services, providers, costs, and other aspects of your service delivery system; and
- The economies of scale and benefits of coordination you have realized from your approach to information systems development.

1. How does your information management system produce unduplicated client counts for each of the following, including estimates, versus actual counts?

   a. OAA Registered clients

   b. OAA Unregistered clients

   c. Total OAA Title III B and C clients

2. Are your client identifiers unique across AAAs, providers, and services; are they assigned by the state's information system, or do AAAs and providers construct them based on a standard procedure set by the state?

3. How does the information management system eliminate the need for clients and caregivers to provide identifying information repeatedly to various service providers?

4. Please describe if and how the SUA's information management system addresses each of the following functions:

   a. Client tracking (e.g., client registration and service logs with units of service)

   b. Client assessments (e.g., identifying ADL/IADL limitations and support needs)

   c. Care planning (e.g., case management activities, such as making and documenting service arrangements)

   d. Service costing (e.g., attributing costs to specific services)

   e. Staff administration (e.g., recording the numbers, roles, and characteristics of staff)

   f. Service delivery (e.g., scheduling transportation, maintaining I&R/A resource directories, etc.)

   g. Financial management (e.g., Invoicing and payments)

   h. Processing of summary information only from the AAAs (e.g., total counts of clients, by service, demographic characteristics, and other aggregate information)

   i. Other capabilities

5. Using the following list of characteristics, please describe the state's standard client registration form for OAA programs; why did you select the items on this form, and how do you define/categorize them?

   a. Demographics

      i. Age

      ii. Income

      iii. Poverty level

      iv. Receipt of public benefits (e.g., SSI, Medicaid, Food Stamps, housing subsidies, Low Income Home Energy Assistance, general assistance, etc.)

      v. Family status (e.g., married, widowed, etc.)

      vi. Living arrangements (e.g., living alone, living with children, etc.)

      vii. Education level

      viii. Other demographic information (please specify) _____
      _____

b. Functional limitations and health status

i. ADL/IADL limitations

ii. Self-assessed health status

iii. Family caregiver information

iv. Assistive devices (e.g., wheelchairs, walkers, etc.)

v. Home accessibility modifications (e.g., ramps, roll-in showers, grab bars,

vi. Other functional limitation and health information (please specify)
_____

c. Exit information

i. Date of exit

ii. Reasons for exiting

iii. Other exit information (please specify) _____
_____

d. Other OAA client information (please specify) _____
_____

6. Using the following list, what data about OAA ***services*** does the SUA collect for each client, how do you define each item, and why do you collect it?

   a. Units of each service provided

   b. Dates of service provision

   c. Provider agency name

   d. Staff identifier

   e. Other service information (please specify) _____
   _____

7. Using the following list, what data about ***AAAs*** does the SUA collect, how do you define each item, and why do you collect it?

   a. Budget sources and amounts
      i. OAA Title III B and C

      ii. Other funds

   b. Staffing (e.g., numbers, roles, etc.)

   c. Number of volunteers

   d. Expenditures by service
      i. For OAA Title III B and C funds

      ii. For Other funds

   e. Expenditures for program development, advocacy, or other non-service activities

   f. Other AAA information (please specify) _____
   _____

8. What data about OAA service ***providers*** does the SUA collect, how do you define each item, and why do you collect it?

   a. Budget sources and amounts

      i. OAA Title III B and C

      ii. Other funds

   b. Staffing (e.g., numbers, roles, etc.)

   c. Number of volunteers

   d. Expenditures by service

      i. For OAA Title III B and C funds

      ii. For Other funds

   e. Expenditures for program development, advocacy, and other non-service activities

   f. Unique provider identifier

   g. Other provider information (please specify) _____

      _____

10. Please describe the hardware and software components of your information system.

11. Why you chose this particular configuration?

12. How satisfied you are with the system?

13. What are the benefits relative to the costs?

14. What changes you would recommend to this system?

15. What other comments do you have about your information management system?

Thank you. This concludes the interview.

Appendix F: SUA/AAA/Provider Information Management Systems Site Visit Guide

SUA/AAA/Provider Information Management Systems

Site Visit Guide

(Complete for each SUA, AAA, and provider interview)

Name(s) of Respondent(s) _____

Title(s) _____

Name of Agency _____ Interview Date _/_/___

Address1 _____

Address2 _____

City _____State _____ Zip Code _____

Telephone _____Fax _____

Email _____

Comments:

SUA/AAA/Provider Information Management Systems

Site Visit Interview Guide

1. What was your motivation for developing an information management system, including both internal and external factors and problems that you needed to address?

2. Why did you choose the approach you followed, including the use of a commercial package or an internally-developed application, and why did you select a web-based, versus a locally installed system?

3. Please give me a general overview of your information management system development and implementation process; what problems did you encounter and how did you overcome them?

4. How long did it take for all users of the information management system to convert their existing data and procedures to the new system; how difficult was this process, and what improvements could you recommend?

5. How does your agency produce unduplicated client counts for AoA Registered Services, Non-Registered Services, and for OAA programs overall; how do you use unique client identifiers for this purpose; if applicable, how do you compute estimates of unduplicated client counts?

6. Please describe the implementation and operating costs; were these costs in line with what you expected, and how did you pay for them?

7. Who maintains your information management system (e.g., installs upgrades, corrects errors, etc.); is this arrangement working well?

8. Did the leadership of key individuals contribute to the successful implementation of your information management system; if so, who were they, and what role did they play?

9. How did you secure the cooperation all participating agencies and staff during the information systems development process; how do you maintain that cooperation?

10. What other factors help explain why your agency was able to develop its information management system, including the program and funding stream environment in which the system operates?

11. What was the scope (agencies, programs, functions) of your requirements analysis and design for the information management system, and did it cover more than the AoA SPR requirements (request copy of the written analysis)?

12. Did you develop a design document that set the specifications for the information management system (e.g., identifying the data that the system will collect and the functions it will support); what were the major components of this design document (request copy of the design document)?

13. What standards has the agency developed or adopted for the uniform collection of data on clients, services, and costs to ensure the consistency of the information across agencies and programs, including the use of standard client assessment instruments and procedures, cost accounting standards, and the allocation of administrative costs to services?

14. What types of training and support do users receive on the application of these standards; how well do they follow these standards?

15. What other training and support on the use of the information management system is available, who provides it, and how satisfied are the users?

16. What routine technical support (e.g., trouble shooting) is available, who provides it, and how satisfied are the users with this assistance?

17. Beyond addressing the AoA SPR requirements, how do you use the information management system, including reporting to other agencies, planning, management, and advocacy?

18. To what extent have you integrated data from multiple programs, funding streams, and functions (e.g., client tracking, fiscal management, etc.) within the scope of your information management system, why did you do this, and how did you address the differing requirements of the various programs?

19. Who has access to the various data bases in your information management system, and how do you guarantee confidentiality?

20. To what extent have you, or can you, merge data on OAA and Medicaid clients receiving community based long term care?

21. How well has the information management system addressed its original purposes; have the benefits of the system justified the costs?

22. What types of standards do you think are appropriate for AoA to set to ensure uniformity and coordination in the development of information management systems?

23. What other comments, insights, or recommendations do you have about the effective development of information management systems?

Input Form/Screen Description Worksheet
(Complete for each form/screen)

a. Name of input form/screen _____

b. Program(s) or service(s) that use this form _____
_____

c. Purpose of this form _____
_____

d. Date developed or last updated _____

e. Major categories of data on the form _____
_____

f. Frequency of form completion _____

g. Average number of forms per completion period _____

h. Who completes this form? _____

i. Who receives and processes the completed form? _____

j. Method(s) of data entry _____

k. User assessment of the form
   i. Strengths _____
   _____
   ii. Weaknesses _____
   _____

l. Comments _____
_____

Output Report Description Worksheet

(Complete for each report)

a. Name of output report _____

b. Program(s) or service(s) that use this report _____

_____

c. Purpose of this report _____

_____

d. Date developed or last updates _____

e. Major categories of information on the report_____

_____

f. Frequency of report production _____

g. How many users receive a copy of this report (electronic or paper) _____

h. Who are these users of the report? _____

i. Method(s) of report generation (identify source data, computational algorithms, etc.)

_____

_____

j. User assessment of the report

i. Strengths _____

_____

ii. Weaknesses _____

_____

k. Comments _____

_____

Computer Configuration Description Worksheet

m. Computer hardware

i. Workstations _____

ii. Other input devices (e.g., optical scanners, magnetic card or bar code readers, PDAs)

iii. _____

iv. Data storage (fixed, removable) _____

v. Communication devices (e.g., modems, wireless routers) _____

vi. _____

vii. Output devices (e.g., printers, plotters) _____

viii. Other hardware (please specify) _____

n. Computer software

i. Date base management _____

ii. Spreadsheet _____

iii. Graphics _____

iv. GIS/mapping _____

v. Communications _____

vi. Operating system _____

vii. Utilities _____

viii. Other software (please specify) _____

o. Web hosting

i. Browser requirements _____

ii. Other web requirements (please specify) _____

p. Other computer hardware and software requirements (please specify) _____

_____

Technical and User Documentation Description Worksheet

(Complete for each set of documentation)

a. Document name _____

b. Purpose _____

c. Users _____

d. Date developed or updated _____

e. Description