munity development covers a wide range of activities, including infrastructure planning and development, civic capacity building, economic development, risk management, outreach and natural resource management.

Outreach, a core component of community development, will improve the delivery of USDA programs and technical services to under-served and uninformed rural communities as well as traditional customers. Outreach planning components exist at the local, state and national level. **Section 2.1.2.2.4, Outreach**, describes the functions of State and National Outreach Councils and the development and implementation of long-term state outreach plans. State outreach plans specify actions that must be taken to engage under-served communities and improve access to USDA programs and services. These activities and tasks are carried out by field office staff in close coordination with state outreach coordinators. Service Centers are the mechanism by which state outreach plans are implemented in most cases. Accomplishment of the activities and tasks stated in the county outreach plan contribute directly to attaining state outreach goals. Both the county and state outreach plans are considered "living" documents that are updated as the needs of under-served communities change.

Progress is monitored locally and reported through state outreach coordinators to state outreach councils on a periodic basis. Outreach councils provide feedback and update state outreach plans as necessary. State FACs and outreach counsels monitor progress from a statewide perspective and report results to the national outreach entities. **Figure 2.3-4** illustrates how information is shared between local, state, and national outreach components.

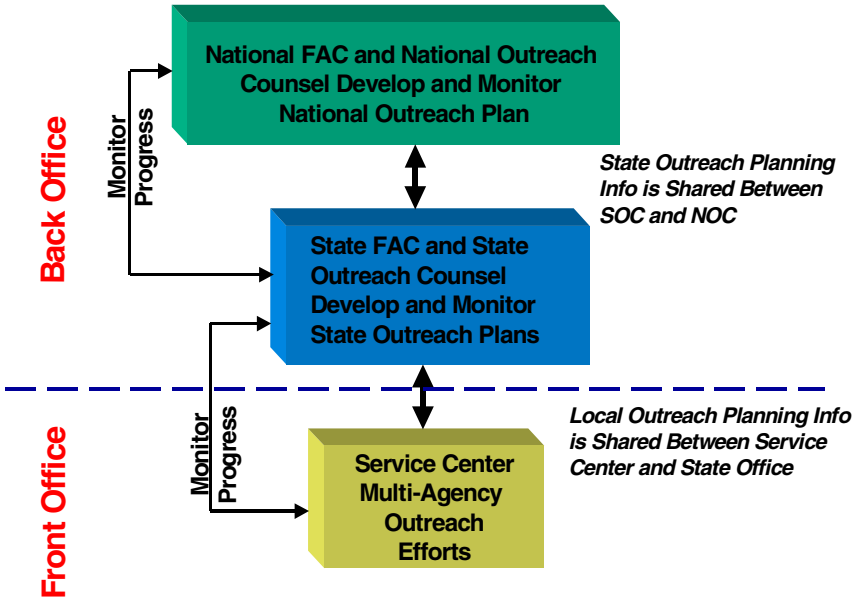


Figure 2.3-4. Outreach Components

Through the concept of front- and back-office delivery, USDA will increase awareness and visibility in order to increase funding to limited-resource, socially disadvantaged, and re-

mote communities, groups, and individuals to improve housing facilities, water and land quality, businesses, agriculture, and overall community structure.

This is accomplished through an integrated, multi-agency approach to outreach that result in community development initiatives and projects . Mobile tools such as the mobile office, kiosk, and network conferencing equipment significantly increase the ability to reach remotely located communities with programs and services. Mobility—taking the programs to the people—is key to successfully reaching many under-served populations and traditional customers that must travel great distances to a Service Center. This is particularly true for Native Americans residing on tribal lands. Both the mobile office and network conferencing capability will greatly enhance access to programs and services by expanding USDA presence on tribal lands. In addition, it is envisioned that the mobile tools will be used in conjunction with other partner organizations. For example, it is possible that a county health department nurse practitioner may be on board the mobile office at specified times to provide vaccinations to children. Other Federal and state agencies have expressed a similar interest.

Front-office activities are performed by Service Center staff and include gathering/ analyzing information, developing strategy and implementing solutions. As a first step, Service Center employees collect and analyze information about local issues and potential opportunities. This may be done through face-to-face contact with community stakeholders or taken from survey information gathered by other organizations such as land grant universities and non-profit groups. This is the first step in a locally led effort to target limited USDA and other resources to areas of greatest need. Local input is the basis to establish resource priorities and develop alternative methods to meet needs and enhance community strengths. The result is a multi-agency outreach plan that outlines what programs/services will be provided, timeframes, responsibility, and outcome evaluation criteria. It is at this point that individual agencies will deliver the programs and services outlined in the strategy. State outreach coordinators are apprised at each step in the process and may take an active role in solution implementation in some cases.

Community leaders, stakeholders, and community-based organizations play a vital role throughout the process and are ultimately responsible for the continued success of most initiatives. With that in mind, an integral part of front office is to identify and establish partnerships with local governments, community-based organizations, and private entities with which USDA can work to leverage all available resources for the benefit of rural America. Many partner organizations have established credibility with groups of potential customers that may benefit from USDA programs. Building on such relationships expedites USDA access to provide information and increases program delivery activities in previously unserved areas. Partner information will be maintained at the Service Center in a single resource directory. The electronic directory will serve as a quick reference to locate points-of-contact, addresses, phone numbers, etc. The existence of such a directory will also enable any Service Center employee to quickly and effectively refer customers to other organizations for assistance.

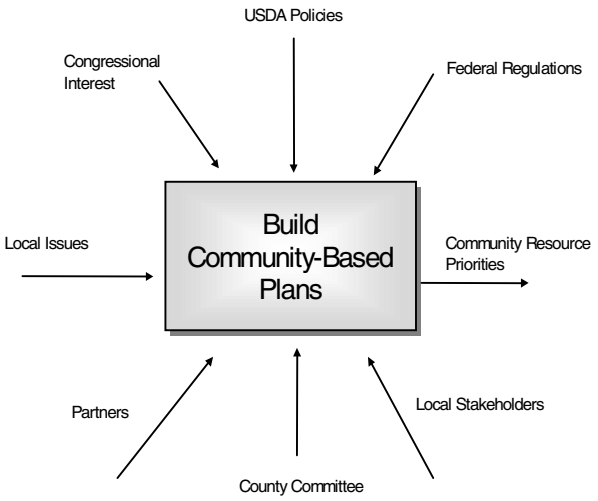


Figure 2.3-5. Community Development Activity Model

The Community Development Activity Model, **Figure 2.3-5**, shows how in the Model Service Center, agency staff work collaboratively with community stakeholders to identify local concerns using shared technologies and common base information about social, economic, and natural resource conditions. They develop common Service Center strategies for addressing the range of issues in their local communities. During their contacts with community stakeholders, they share information and expertise from their own agencies, as well as partner agencies. They facilitate a local process from issue identification through resolution. This collaborative process typically requires considerable up-front time working with community contacts on issues, strategies, and solutions. However, once consensus is reached, the collective resources of the Service Center agencies, partner agencies, and community members can be put to the most effective use. The community then shares these solutions. The community development business processes and activities performed at the Service Center level fall under the following general categories:

- Formation, facilitation or identification of local stakeholders to identify community problems (weaknesses) and opportunities (strengths).
- Prioritization of local issues and implementation of strategies.
- Analysis of problems and their root causes through detailed assessments
- Development and analysis of alternative solutions.
- Establishment of partnerships.
- Securing resources (both USDA and partner: financial, technical, voluntary).
- Measurement of outcomes and evaluation of strategies.
- Build leadership/civic capacity.

The model in **Figure 2.3-6** . provides the activities and processes that occur in this business area. Currently, BPR efforts such as the Customer Information Management (CIM), Outreach, Lending, and CARAA projects directly support community development.

In addition, the Community Outreach Cookbook has been published and provided to agency outreach coordinators and the USDA Office of Outreach for review and comment. Initial feedback is very positive.

The “Cookbook” is a step-by-step guide for conducting front-office outreach activities at the local level. It contains the following templates and examples:

- Community Inventory Assessment to gather local input on the overall health of the community as related to 25 categories.
- Resource Directory format and example categories.
- Example cover letters and phone scripts.
- Priority Matrix as a tool to quantify local input and systematically establish priorities.

- USDA Assessment to gain detailed information on local issues.
- 25 Mixing Bowls (i.e., charts) to identify partners and the resources they may contribute to resolve a specific community issues.
- County Outreach Plan.

Figure 2.3-7 shows the flow of the Cookbook. The complete outline can be found in **Appendix N**.

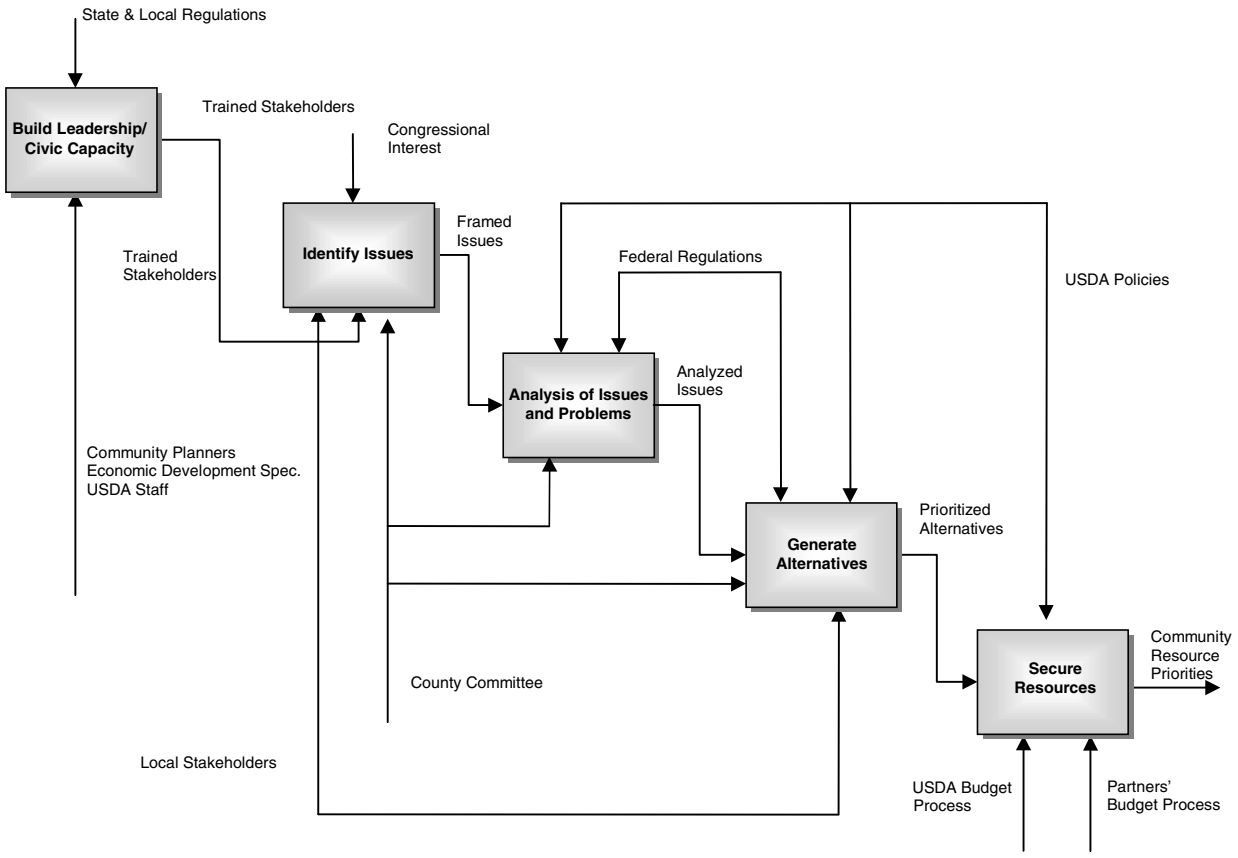


Figure 2.3-6 Building Community-Based Plans

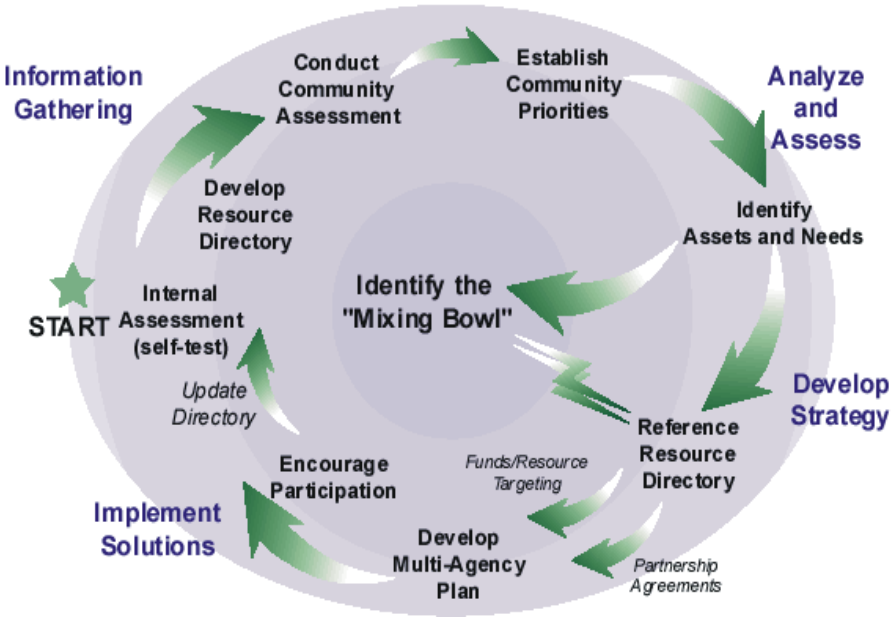


Figure 2.3-7 Handbook Structure

Providing automated tools to help carry out these business functions is key to improving customer service, maximizing staff time, and building local consensus. These tools enable Service Center staff and local groups to acquire and analyze complex sets of information on social, economic, and natural resource conditions. The result of this analysis is quantitative information that provides the foundation for local consensus and action.

Automated front-office tools, such as the Community Inventory Assessment and County Outreach Plan, facilitate the electronic sharing of information between local and state offices, thereby requiring state outreach councils and coordinators to spend less time collecting data and more time performing back-office activities such as data analysis to determine progress made toward the goals outlined in the state outreach plans.

Performance Measures

- Reduce the amount of time Service Center agencies spend on information collection and analysis (links to SCI Goal 1, Objective 4 and Goal 3, Objective 2).
- Decrease duplication of effort among Service Centers and partners (links to SCI Goal 1, Objective 6 and Goal 4).
- Increase the leveraging of Service Center agencies and their partner resources (links to SCI Goal 3, Objective 3 and Goal 4).
- Increase level of local acceptance and sustainability of Service Center activities (links to SCI Goal 4).
- Increase outreach to local customers (links to SCI Goal 2, Objective 7).
- Increase quality of life for local communities.

Agencies Involved

The Service Center agencies most directly involved in the community development business area are the Rural Development Agencies, Natural Resources Conservation Service,

and Farm Service Agency. Numerous local councils, districts, planning and other local groups, and state and Federal agencies are also involved.

Partnerships between agencies will be critical to successful reengineering of the community development business area. To ensure involvement of the most skilled and knowledgeable staff, regardless of agency affiliation, the community development business area will work closely with agency business leadership and other SCI initiatives. These areas will cosponsor teams and share improvement opportunities to reduce duplication of effort in areas that cut across business areas.

Barriers

- The barrier with the most significant impact is the lack of a shared vision of community development among and within Service Center agencies.
- Service Center agencies' current community development efforts are stovepiped and not well organized or funded, and opportunities for leveraging are not adequately used.
- Service Center agencies lack public visibility and credibility in the community development business area.
- Most Service Center staff are not trained in community development techniques and may feel uncomfortable undertaking activities in this area.
- Service Center agencies may be reluctant to develop common performance measures to document accomplishments.
- Local Service Centers do not share a common community development planning process and thus do not have a common understanding of the social, economic, and natural resource issues in their local communities.

2.3.1.1.2 Lending

The lending business area will establish a seamless, one-stop shopping environment for Service Centers. Through education, electronic tools, and streamlining of common business processes, Service Center employees will change the way they administer lending programs. Reengineered processes need to make program delivery less costly, more efficient, and seamless to the customer. These reengineering efforts will reduce administrative costs and increase program delivery capabilities at Service Centers and assist individuals, families, farmers, and ranchers in becoming more successful. **Figure 2.3-7** depicts the lending activity model.

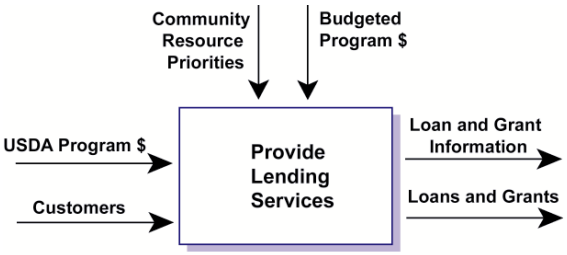


Figure 2.3-7. Lending Activity Model

The business area defines lending as any Farm Service Agency (FSA), Rural Development (RD), or Natural Resource Conservation Service (NRCS) program that makes funds available for loans (both direct and guaranteed) or grants to the public (individuals and entities).

Lending activities can be broken down into two categories: front-office and back-office processes. Front-office processes are those activities that deal with lending information dissemination and application acceptance, while back-office activities include, but are not limited to, processing applications, loan

closings and loan servicing. The majority of front-office activities deal with customer-to-employee interface, while back-office activities deal with USDA employee actions to get a customer a loan. The only exception to this is in loan closings, where there is still some customer interface, but not necessarily with the same person who accepted the application. The majority of agency goals and objectives are not broken down into front-office and back-office activities but rather outcomes of those activities.

Goal 1—Good Jobs and Diverse Markets. Rural Development will improve the quality of life in rural America by encouraging the establishment and growth of rural businesses and cooperatives.

- Objective 1.3—Direct Rural Development program resources to those rural communities and customers with the greatest need.
- Objective 1.4—Manage the loan portfolio in a manner that is efficient and effective.

Goal 2—Quality Housing and Modern Community Facilities. Rural Development will improve rural residents' quality of life by providing access to technical assistance, capital and credit for quality housing, and modern essential community facilities.

- Objective 2.3—Direct Rural Development resources to those rural communities and customers with the greatest need.
- Objective 2.4—Maximize the leverage of loan funds to increase the number of rural residents assisted by Rural Development programs.
- Objective 2.5—Manage the loan portfolio in a manner that is efficient and effective.

Overall Objectives

- Provide quality customer service.
- Increase diversity.
- Increase lending activities.
- Improve lending program delivery.
- Increase availability of program information.
- Increase lending activities to the under-served.

Figure 2.3-8 shows how these overall lending objectives relate to higher-level goals and objectives at FSA, RD, and USDA.

The model in **Figure 2.3-9** describes activities that take place in the lending business area. The projects involved in lending consist of quick hits that will add value to processes at Service Centers, followed by more significant pilot projects designed to prove concepts developed during the reengineering of the lending process.

Goal/Objective	USDA Goal	USDA Subgoal	FSA Goal	FSA Obj	RD Goal	RD Obj	Mgt Initiative
Provide quality customer service	1	1.3	3	3.1, 3.3	1,2	1.4, 2.5	4, 5
Increase diversity	1	1.3	3	3.4	1,2	1.3, 2.3	4, 5
Increase lending activities	1	1.1, 1.3	1	3.4	1,2	1.3, 2.3	4, 5
Improve lending program delivery	1	1.1, 1.3	1	3.3, 3.4	1,2	1.4, 2.5	4, 5
Increase availability of program information	1	1.1, 1.3	1	3.3, 3.4	1,2	1.3, 2.3	4, 5
Increase lending activities to the under-served	1	1.1, 1.3	1	3.3, 3.4	1,2	1.3, 2.3	4, 5

Figure 2.3-8. Goal/Objective Relationships

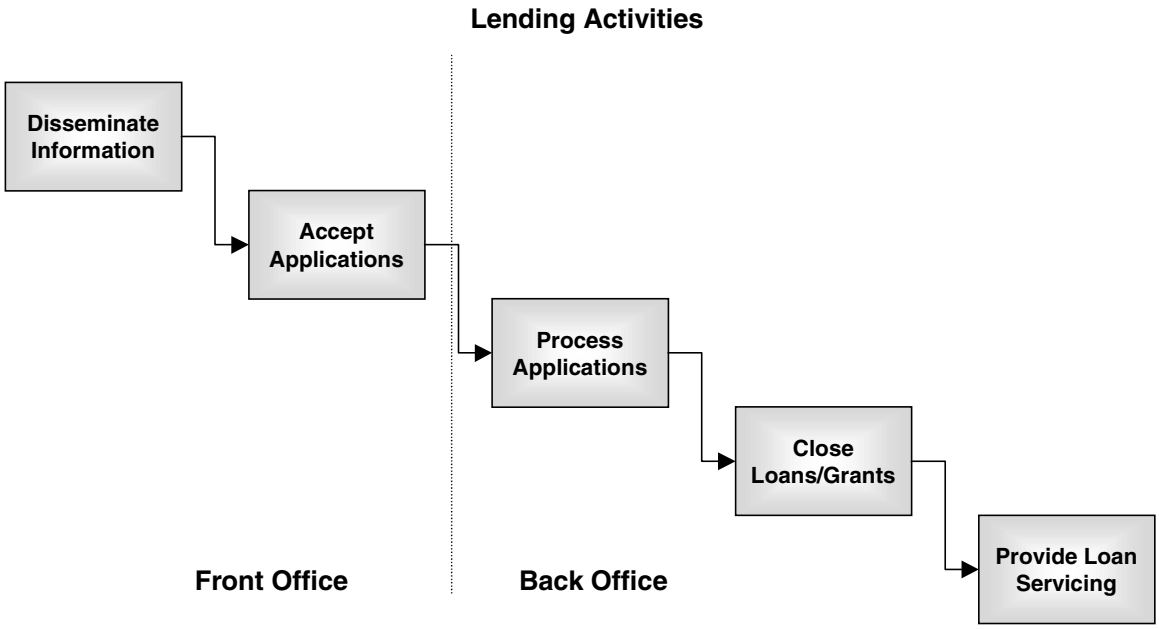


Figure 2.3-9. Providing Lending Services

Intended Results and Benefits from Quick Hits

The following are considered front-office quick hits because they are short-term projects that will help accomplish a seamless one-stop shopping environment for Service Center lending. These quick hits will provide the tools to educate Service Center employees and the rural customers they serve. Educating the employees will ensure that lending program information and applications are being provided in response to all inquiries. The goal of the reengineering effort in the front office is to reduce or eliminate the time a USDA employee spends in disseminating information and accepting applications, while simultaneously increasing the information flow to the customer.

- Comprehensive Service Center lending program booklet provides detailed information about all lending programs, and can be provided in hard copy or electronically. Program brochures need to have the same look and feel as if they came from only one agency.
- Training program for first-time USDA borrowers.
- Electronic program information provided by web site, kiosk, CD, etc.
- Service Center posters advertising web sites for lending program information.
- Web site provides Service Center description and location for lending offices, county coverage, and contact names and telephone numbers.
- Application checklist detailing requirements for a completed application and eligibility requirements (hard and electronic copy).
- Web site links to existing information for assisting lending activities (farm plans, family budgets, real estate sales, etc.).
- Pre-qualification software will allow customers to quickly determine eligibility for USDA lending programs, and will be deployed in kiosks, on the web site, and in Service Centers.

Enabling Technologies for Quick Hits

- Basic office automation software.
- Legacy systems loan programs.
- Customized commercial software.
- Web technology.
- Kiosks.

Performance Measures

The following measurements will be used to determine the success of this lending project:

- Increase efficiency of a seamless mechanism of providing lending information and assistance to Service Center customers through any employee by 300 percent (quality customer service).
- 50 percent improvement of application processing time.
- Increase lending program diversity by 50 percent.
- Increase lending activities by 50 percent.
- Improve lending program delivery customer service by 100 percent (surveys).
- Increase program information throughout community agencies and organizations by 50 percent.
- Increase lending activities to under-served by 100 percent.

Agencies involved:

- Farm Service Agency.
- Rural Development.
- Natural Resources Conservation Service.

In the Service Centers, the agencies most directly involved in the lending business area are Rural Development and the Farm Service Agency. Conservationists work with a multitude of possible customers outside of the Service Center, but they normally are not directly involved in the lending process. One of the major objectives of the lending reengineering efforts is to increase lending presence to all 2,500 Service Centers. Currently there is only lending presence in some 800 Service Centers. With the advent of a lending information booklet for all programs, even stand-alone NRCS offices will be able to distribute lending program information and provide application assistance to customers.

Understanding this close relationship between agencies will be critical to successful reengineering of the lending business area. To ensure the involvement of the most skilled and knowledgeable staff, regardless of their agency affiliation, the lending business area will work closely with both the Service Center Organizer and the Customer Information Management BPR teams.

Barriers

- Annual appropriations do not take into account long-term efforts with even longer-term benefits.
- Service Center employee make-up (Federal, state, and county) makes it difficult to streamline processes.

2.3.1.1.3 Managing Risk

The business of agriculture is inherently risky. Farm and ranch operations are susceptible to erratic weather patterns, natural disasters, and fluctuating commodity markets. To be successful, or—in many cases—to survive, producers must understand and correctly use a wide variety of risk management tools. The Managing Risk core business area focuses on helping producers manage the economic risks of farming, specifically yield or production risk, input and output price risk, legal/societal risk, and casualty loss risk. USDA currently offers producers several programs and services to manage these risks, including:

- Disaster assistance payments and emergency loans.
- Subsidized crop insurance (yield- and revenue-based).
- Price support
- Market transition (i.e., production flexibility contracts).
- Technical assistance in planning and implementing risk-mitigating land management practices.
- Contracts to remove ecologically-sensitive land from production.
- Technical assistance for marketing cooperatives.
- Risk management publications and training.

These risk management services originated independently over time; many are Federal programs enacted through legislation. The vision of the Managing Risk core business area is to reengineer the management and delivery of these legislated programs, and to align all of USDA's risk management offerings so that producers can more effectively select and use USDA managing risk tools.

The Model Service Center will maximize the use of automation to present USDA Managing Risk programs and resources. Producers will directly access systems that allow them to view the tools (programs) in relation to their overall farming operation risk management strategy. Once producers have made an informed decision to use a USDA program, they will be able to apply for programs, determine their eligibility, and receive approval in a format most convenient for them—in person at the Service Center, over the Internet, through kiosks placed in the community, or even phone or fax. With the required information infrastructure in place, USDA can quickly get payments into the hands of producers. In effect, this allows customers to directly access the "back-office" Service Center processes, reducing the overall time required to receive a service or benefit.

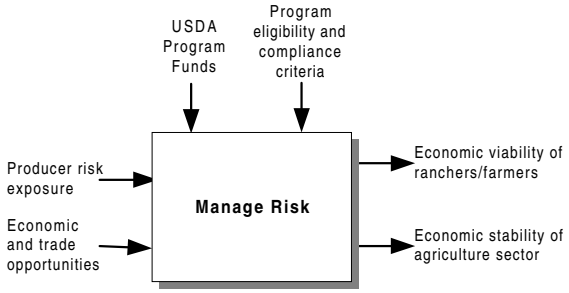
To maintain a high level of data integrity and program compliance, the Model Service Center will employ sophisticated, statistically sound techniques. Digital aerial photography and satellite imagery technology now on the horizon will give USDA the ability to remotely verify producer reports and automatically detect instances of misrepresented data. Potentially limited Service Center resources can effectively be concentrated on minimizing program fraud and maintaining the soundness of program payments.

The Model Service Center will be a conduit of data and information to Agency decision makers. Service Centers will collect field observations (e.g., monitoring reports, disaster event reports), maintain environmental data (e.g., weather, soils, conservation areas), and maintain current and historical land use data. Collectively, this data will be a powerful tool, allowing the assessment of crop conditions and yields, supporting the development of new actuarial products, generating consensus crop damage areas, and answering Secretarial and Congressional information needs.

Activity Model

The activity model for the Managing Risk core business area is shown in **Figure 2.3-10**. As depicted, the inputs to the business area are economic and trade opportunities for producers counterbalanced by exposure to a variety of risks. Managing Risk activities take these inputs, within the constraints of USDA program fund availability and program eligibility and compliance criteria, and respond to producers' needs, depending on each producer's unique situation. The outcome of the Managing Risk activities is the economic viability of individual ranchers and farmers, which in ag-

gregate, leads to the economic stability of the agriculture sector.



2.3-10. Risk Management Activity Model

The Managing Risk core business area supports the following USDA strategic goals and objectives:

- USDA Goal l—Expand economic and trade opportunities for agricultural producers and other rural residents.
  - Subgoal 1.1—Enhance the safety net for farmers and ranchers.
- USDA Goal 3—Promote sensible management of natural resources.

The Managing Risk core business area supports the following FSA strategic goals and objectives:

- FSA Goal 1—Farm Programs—Provide an economic safety net through farm income support to eligible producers, cooperatives, and associations to help improve the economic stability and viability of the agricultural sector and to ensure the production of an adequate and reasonably priced supply of food and fiber.
  - Objective 1.1—Maintain a high Agriculture Market Transition Act (AMTA) participation rate for eligible acreage
  - Objective 1.2—Provide marketing assistance loan and loan deficiency payment (LDP) programs enabling recipients to continue farming operations without marketing their product immediately after harvest
  - Objective 1.3—Stabilize the price and production of tobacco and peanuts
  - Objective 1.4—Provide a financial assistance safety net to eligible producers when natural disasters result in catastrophic loss of production or prevent planting of noninsured crops.
- FSA Goal 2—Conservation and Environment—Assist agricultural producers and landowners in achieving high-level stewardship of soil, water, air, and wildlife resources on America's farmland and ranches, while protecting the human and natural environment.
  - Objective 2.2—Provide Emergency Conservation Program funding for farmers and ranchers to rehabilitate farmland damaged by wind erosion, floods, hurricanes, or other natural disasters, and for carrying out emergency conservation measures during periods of severe drought.
- FSA Goal 3—Farm Loans—Assist eligible individuals and families in becoming successful farmers and ranchers.
  - Objective 3.1—Improve the economic viability of farmers and ranchers
  - Objective 3.4—Maximize financial and technical assistance to underserved groups to aid in establishing and maintaining profitable farming operations.

The Managing Risk core business area supports the following RD strategic goal and objective:

- RD Goal 1—Good Jobs and Diverse Markets—Improve the quality of life in rural America by encouraging the establishment and growth of rural businesses and cooperatives.

- Objective 1.2—Encourage and promote the use of marketing networks and cooperative partnerships to increase and expand business outlets.

The Managing Risk core business area supports the following NRCS strategic goal and objectives:

- NRCS Goal 2—A healthy and productive land that sustains food and fiber production, sustains functioning watersheds and natural systems, enhances the environment, and improves urban and rural landscapes.
  - Objective 2.1—Healthy and productive cropland sustaining U.S. agriculture and the environment
  - Objective 2.2—Healthy and productive grazing land sustaining U.S. agriculture and the environment.

The Managing Risk core business area supports the following RMA strategic goal and objectives:

- RMA Goal 1—To strengthen the safety net for agricultural producers through sound risk management programs and education.
  - Objective 1.1—Producers have economically sound risk management tools available to meet their needs
  - Objective 1.2—Increase the agricultural community's awareness and effective utilization of risk management alternatives
  - Objective 1.3—Improve program integrity and protect taxpayers' funds.

Overall Objectives

- Streamline benefit applications, eligibility determinations, and payments.
- Appraise disaster losses and issue payments arising therefrom in a more timely basis.
- Streamline compliance processes while reducing the burden on the customer.
- Improve projections of future risks and potential impacts of disasters by improving the quality and accessibility of data used to make risk appraisals and automating their calculation.
- Implement an information infrastructure to facilitate the setup and delivery of various cross-agency programs enacted for managing risk in an expeditious manner to meet the expectations of producers, Congress and other stakeholders.
- Provide customers direct access to program information, applications, and approvals through a variety of channels (e.g., Internet, kiosks, booklets, mobile Service Centers/vans, etc.).
- Increase the effectiveness of customer counseling and education on managing risk.

The model in **Figure 2.3-11** describes activities and their associated inputs and outputs that take place in the Managing Risk core business area.

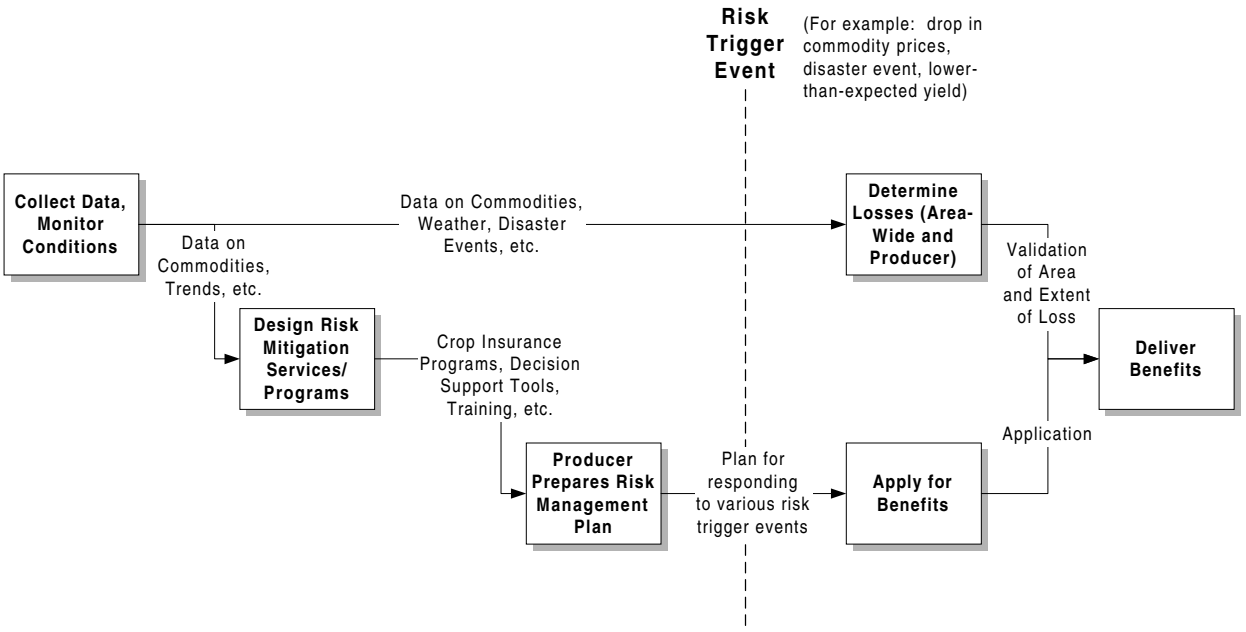


Figure 2.3-11. Activities and Associated Inputs/Outputs in the Managing Risk Core Business Area

Performance Measures

- Reduce the amount of time between the submission of a benefit application and receipt of payment by the applicant by at least 50 percent (percentage reduction targets will be set by program).
- Reduce the amount of time for eligibility determinations (percentage reduction targets will be set by program; instantaneous [within minutes] determinations will be targeted where possible).
- Reduce the amount of time to appraise disaster losses (percentage reduction targets will be set by program, includes Secretarial designations).
- Increase program compliance (percentage increase targets will be set by program).
- Perform compliance activities with reduced Service Center FTEs (baseline will be set through analysis of FSA's Work Measurement System).
- Successful testing and implementation of cross-agency data sharing capability that facilitates Managing Risk program delivery between RMA, FSA, RD, and NRCS.
- Increase the number of channels (e.g., Internet, kiosks, booklets, mobile Service Centers/vans, interactive telephone response systems, fax) available to customers of each Service Center to at least three.
- Increase the effectiveness of customer counseling and education on managing risk. Effectiveness will be measured through numbers of customers served, numbers of customers utilizing USDA programs, and number of non-USDA risk management tools used by producers.

Agencies Involved

The Managing Risk business area includes mission areas of all three Service Center agencies, as well as Risk Management Agency (RMA) and Cooperative State Research, Education, and Extension Service (CSREES) activities not currently performed in the Service Center. In addition, many universities working in partnership with CSREES have developed managing risk services (generally decision-support tools and training programs) targeted toward farmers and ranchers that would con-

ceptually be included in the Managing Risk business area. Other agencies involved in the Managing Risk business area include the National Agriculture Statistics Service, the Foreign Agriculture Service, and the Federal Emergency Management Agency.

Barriers

- Although not necessarily a barrier, a significant challenge facing the Managing Risk business area is the sheer magnitude of agencies and activities involved. SCI leadership must ensure that ample attention is focused on building a shared vision across such diverse groups and ensuring participation across agencies.
- Assuming that all the stakeholders will be involved in driving the Managing Risk business area activities, the achievement of the coordinated delivery of services across agencies requires integrated information systems—a formidable task in itself. Both technical and business area experts must continue to work together to put the required infrastructure in place.
- The services provided to customers in the Managing Risk business area tend to be legislatively driven, i.e., Congress enacts a program and USDA reacts to the requirements. It can be difficult for both Service Center employees and agency leaders to view ostensibly disparate programs as a unified set of options that fit into customers' risk management plans. Conversely, it can be difficult for customers to make informed decisions about USDA program participation without the context of their own risk management plan. Ultimately, this barrier is one of changing both USDA's and customers' views.
- Assumptions about the number, staffing, and distribution of Service Centers in the future will dramatically affect the implementation of the Managing Risk objectives. This business area, and SCI as a whole, must constantly evaluate the impact of agency and Congressional decisions to ensure that rollout plans account for both the current and project Service Center service delivery structure.
- Depending on the outcomes discussed in the previous item, the skills of Service Center employees will need to be upgraded rapidly to implement cross-servicing, to keep up with new technology, and to deliver new programs. The re-skilling of the workforce is further complicated by unknowns regarding the composition of Service Center staff. Questions such as, "Should RMA be represented in the Service Centers?" and "Should there be imagery analysts in the Service Centers, or possibly in state offices?" are frequently discussed by the agencies as well as the business process reengineering teams. Answers to these questions will significantly affect the Managing Risk business area implementation plans.
- The final, and probably most critical, potential barrier for the Managing Risk business area is understanding customers—who they are, what their needs are—so that USDA can provide the best service to both today's and tomorrow's farmers and ranchers.

2.3.1.1.4 Conservation and Environment

The Conservation and Environment core business area includes activities focused on ensuring the long-term sustainability of the nation's resources. This focus is balanced by society's needs and desires for a healthy environment, social well being, and economic prosperity. At the Service Center level, the guiding principles are:

- Maintain a balance between protecting the environment and fostering agriculture production by assisting producers and landowners with conservation planning related to developing wildlife-sustaining watersheds and wetlands, reducing erosion, and improving soil and water quality.
- Promote conservation planning and environmentally sustainable management approaches that improve soil and water quality, intensify soil conservation, and facilitate transitions to sustainable systems.

In support of these principles, Service Center staff collects, analyzes, and disseminates information about the condition and trends of the nation's soil and other resources, and provides financial and technical assistance for resource assessment and treatment. Financial and technical assistance activities are applied to a range of scales, from a specific field, to a county, a portion of a county, a watershed, a multi-county region, or the geographic area best suited to address the resource conservation needs identified. The customer may be an individual farmer or rancher, a local community group, or a conservation district.

In the Model Service Center, conservationists capitalize on the strategic use of field-level information technology to return to the field, where they can work alongside with individuals, groups, and communities. Field conservationists require real-time access to data and information onsite, and they require the ability to share and exchange data and information with customers, operating in an electronic environment that is well within the commercial mainstream.

Figure 2.3-12 shows the Conservation and Environment Activity Model. The model shows the inputs to the business area are individual producer and community objectives, as well as the current state of the land. Guided by USDA policy, the Conservation and Environment business activities convert these objectives into a more healthy landscape, more productive individual farmers and ranchers, and program eligibility and compliance criteria.

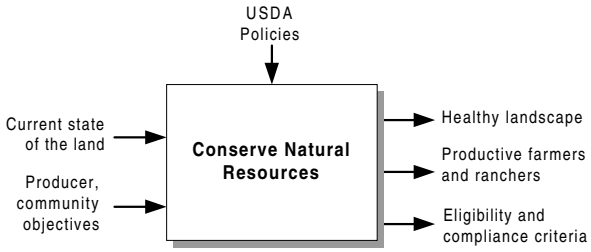


Figure 2.3-12. Conserving Natural Resources

Providing automated tools to help carry out these business activities is key to improving customer service and maximizing staff time. These tools may have unique functions such as computing urban storm runoff, or may be cross-cutting tools that support all the general categories mentioned above, e.g., conservation planning tools, conservation engineering and economic models and tools, ecological evaluation tools, or program support tools.

Overall Objectives

- Provide assistance to landowners and communities to restore, enhance, and protect wetlands on private lands, streamline wetland delineations, and conduct timely assessments of wetland status and trends (NRCS Goal 2, Objective 4). The Wetland Determination Toolkit enables Service Center employees to complete wetland determinations more effectively and efficiently, as well as share information with state and national employees and partner agencies.
- Develop the capability in Service Centers to effectively share data and information with primary Service Center conservation partners. Primary partners would include conservation districts, state conservation agencies, and others as identified through

analyses. Meeting this objective would allow Service Centers to provide an integrated source of information that can be shared both within Service Centers and with customers (SCI Goal 4, Objective 2).

- Provide a strong and effective grassroots conservation partnership across the United States and its territories, commonwealths, and affiliated governments (NRCS Goal 1, Objective 1). This goal includes working with Resource Conservation and Development Councils (RC&Ds), as well as other Federal and local partners to pursue conservation goals.
- Provide individuals with support and help needed to be effective stewards of the natural resources on their property and in their communities (related to NRCS Goal 1, Objective 3 and FSA Goal 2). Reengineered conservation processes and tools will provide employees and customers with the science-based tools and information needed to complete "what if" analyses at customer locations using GIS technology, resulting in improved quality conservation alternatives and decisions.

The model in **Figure 2.3-13** describes activities and their associated inputs and outputs that take place in the Conservation and Environment core business area.

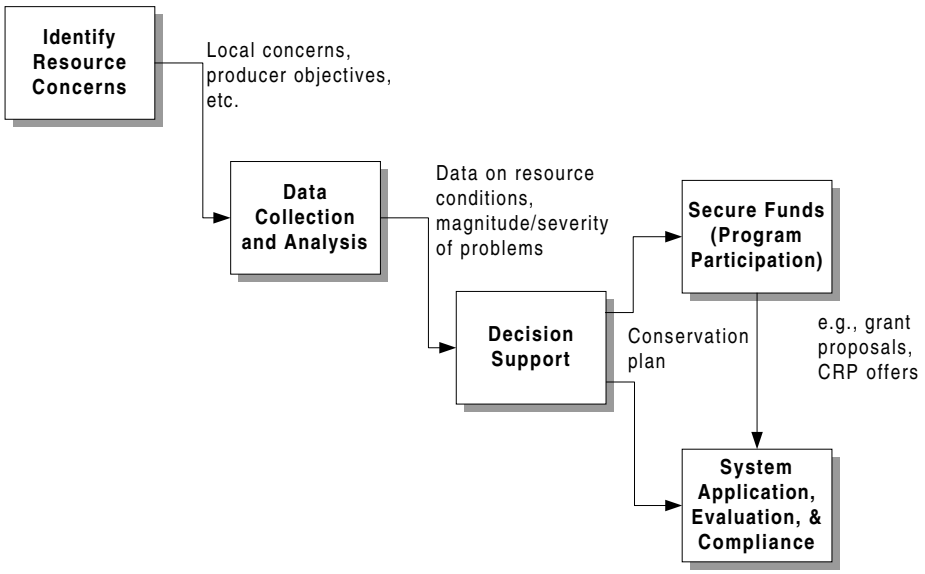


Figure 2.3-13. Activities and Associated Inputs/Outputs in the Conservation and Environment Core Business Area

Performance Measures

- Reduce amount of time a customer must devote to receive conservation services and products (links to SCI Goal 2, Objective 3).
- Reduce amount of time field conservationists must devote to produce conservation products and services (links to SCI Goal 3).
- Meet or exceed customer-defined standards for program delivery (SCI Goal 2, Objective 4). This objective focuses on increasing the quality of customer service and is targeted to all customers of the Conservation and Environment business

area. The Conservation and Environment business area projects will provide improved customer service by building on available commercial software capabilities, reengineering conservation-related work processes, and enabling data sharing.

Agencies Involved

Within the Service Centers, the agencies most directly involved in the Conservation and Environment core business area are the Natural Resource Conservation Service, Rural Development agencies, and the Farm Service Agency; however, agency staff works with myriad partners outside Service Centers, including conservation districts, conservation agencies, the Extension Service, and the Forest Service.

While the majority of conservation activities are performed by NRCS, FSA performs a valuable role, particularly in the administration of conservation programs. For example, FSA traditionally performs such activities as coordinating publicity and conducting outreach for program sign-ups; handling applications and eligibility determinations for many conservation programs, such as CRP and Emergency Conservation Program (ECP); ensuring continued compliance of program participants; and processing program payments to those participants.

The Rural Development agencies perform a number of conservation and environmental activities, which are primarily environmental assessments completed before providing financing or other technical assistance for construction projects. These analyses rely heavily on information available from FSA and NRCS.

Understanding this close relationship between agencies will be critical to successful reengineering of the Conservation and Environment core business area. To ensure the involvement of the most skilled and knowledgeable staff, regardless of agency affiliation, the Conservation and Environment core business area will work closely with other Service Center initiatives. It will co-sponsor teams and share improvement opportunities to reduce duplication of effort across business areas. Due to the highly technical nature of conservation science, the Conservation and Environment core business area expects most cross-agency improvements to occur in customer outreach, information sharing, contract administration, and program support.

Barriers

- The barrier with the most significant impact is lack of information technology resources, namely geospatial data and information systems. Conservation and Environment are a land-focused business, and GIS software and data are the basic tools for any land-oriented business, just as spreadsheets are a basic tool for an accounting business.
- Annual appropriations do not take into account long-term efforts with even longer-term benefits. Because of the extensive time required to improve the quality of soil and other resources, the Conservation and Environment core business area's frame of reference is many years in the future.
- The fragmentation of the Conservation and Environment core business area across two agencies in the Service Centers is a potential barrier to successful reengineering and implementation. However, FSA and NRCS have already developed close coordination for the delivery of programs like the Conservation Reserve Program and the Emergency Conservation Program. These programs are administered by FSA, while NRCS provides the technical assistance to landowners to accomplish program conservation goals.

- Keeping up with changes in conservation and environmental science is a potential barrier, as developments within science spring from the private sector, USDA institutes, and academia. This network of partners must continue to be responsive to changing environmental and agricultural conditions. If it fails to do so, the Conservation and Environment core business area's progress will be severely impeded.
- The Conservation and Environment core business area's changing customer base, while not itself a barrier, poses challenges to Service Centers to remain responsive to customer needs. Recent trends indicate the growth of both small farming units and large production operations, which have squeezed out the mid-sized farms and created a more segmented customer base. Service Center agency staff will have to understand the varying customer needs and continue to tailor products and services to meet those needs.

2.3.1.2 Administrative Support

In mid-fiscal year 1997, the three Service Center agencies—FSA, RD, and NRCS—engaged in several administrative management reengineering projects. Each of these projects conformed to a number of guiding principles spanning all aspects of administrative services in the Service Center agencies. Each reengineering effort used a documented BPR methodology and reengineered multiple dimensions of the administrative area. Technology, one of the dimensions, identified in each project was reengineered to the degree necessary to support the reengineered processes, organizational structure, management structure and other dimensions. The following overview represents the "To-Be" business envisioned in future Service Center agencies.

General Business Objectives Applicable to Administrative Support (AMS)

- Promote and utilize reusable processes and procedures.
- Reduce cycle time for all administrative processes.
- Eliminate non-value-added steps from all processes.
- Provide decision-makers with direct access to appropriate information.
- Empower all agency employees with administrative management tools and information.
- Standardize administrative processes (where appropriate) into predefined workflows.
- Provide "enter once/use often" data-driven information systems to offset shrinking administrative workforce.

Combined Administrative Management System (CAMS) Vision

In the frenetic environment of today's business, operating principles and processes put in place 20 years, 5 years, even a year ago no longer apply. Today's business strategies focus on flexibility, not size; teamwork and empowerment instead of command and control; technology and outsourcing as opposed to layers of middle management. Success, if not survival, hinges on how quickly USDA can reevaluate, restructure, reorganize, or reengineer to better deliver products and services. To succeed in these arenas, it is imperative that our infrastructure—our human, financial, and property resources—are optimally managed to ensure mobilization of resources is swift, on target, and measurable.

Supporting the administrative management business area, multiple sub-systems will be put into place during the next 5 years. Generally, these can be characterized as shown in **Figure 2.3-14**.

Human resources	One integrated HR system for all three SC agencies.
Budget and financial management	Integrated budget planning and financial management system with interfaces between the SC agencies and with NFC's FFIS system.
Property management	Integrated property and asset management system between the SC agencies.
Records and directives	Integrated web-based record and directives management system serving as a repository for all policies, procedures, correspondence and other information.
Electronic acquisition	Integrated electronic acquisition system for the SC agencies.

Figure 2.3-14. Administrative Management Business Area Subsystems

The first phase of this 5-year vision is the overhaul of core human resource (HR) business processes. Associated with this overhaul are new policies and delegations of authority for all HR specialists in the three Service Center agencies. An enabling system has been purchased to provide assistance and enable users to skillfully and efficiently manage the organization's most valuable and expensive resource—our people. It extends the role of traditional human resources management systems to focus on self-service transaction processing coupled with the ability to provide a comprehensive knowledge base for tracking, understanding, and deploying the skills of our collective employee base. **Figure 2.3-15** details the Service Center's Administrative Business Process.

USDA Service Center Agencies Administrative Business Processes		
Administrative Management and Leadership a. Develop Policy and Guidance b. Integrate Policy c. Determine Customer Satisfaction d. Coordinate Administrative Management Analysis	**Civil Rights** a. Perform Policy & Analysis Coordination b. Support Operations	**Facilities** a. Provide Facility Utilization Support b. Allocate Facility Space c. Develop Health Safety d. Maintain Facility Inventory e. Dispose Facility
Finance a. Perform Accounting b. Perform Cost Management c. Manage Budget d. Perform Receipt Management e. Disburse Funds f. Perform Property Accounting	**Human Resources** a. Perform Workforce Planning b. Support Employee Acquisition c. Manage Employee Program d. Support Employee Performance	**Information Resources** a. Perform Program Management b. Manage Information & Data c. Provide Application Information Systems d. Provide Information Technology
Procurement a. Analyze Requirement b. Acquire Goods and Services c. Manage Acquisition	**Property** a. Provide Technical Utilization Support b. Manage Property c. Report Property Utilization d. Dispose of Property	**Travel** a. Arrange Travel b. Provide Relocation Service c. Monitor Travel Expense

Figure 2.3-15. USDA Service Center Agencies Administrative Business Processes

Scope

As mentioned above, the CAMS project covers HR, financial, property, records, and electronic procurement. Phase 1 covers the following business processes and sub-processes:

- Agency Profile Management.
- Office Location Management.
- Occupational Series Management.
- Pay Plan Management.
- Accounting Code Management.
- Personnel Office Management.
- Locality Pay Management.
- Classification Standards Management.
- Nature of Actions Management.
- Awards Management.
- Salary Planning.
- IDP Management.
- Training Implementation.
- Training Evaluation.
- Performance Plan Management.
- Competencies Management.
- Employee Profile Management.
- Position Management.

Benefits to Business

Transaction Processing. The following list represents the major benefits of CAMS for administrative management transaction processing:

- Integrated data between the budget, financial, human resources, property, electronic acquisition, and records management areas and ability to link information through business-defined relationships.
- Ability to define and use automated business rules.
- Ability to support image processing.
- Ability for automated process scheduling for redundant and pre-established due dates.
- Ability for electronic signatures.

Decision Support and Executive Information. The following list represents the major benefits of CAMS for decision-support and executive information:

- The ability to perform predefined and ad-hoc trend analysis within an integrated database of Service Center budget, financial, human resources, property, electronic acquisition, and records management information.
- The ability to perform predefined and ad-hoc projection and "what-if" analysis within an integrated database of Service Center budget, financial, human resources, property, electronic acquisition and records management information.
- The ability to interface with Microsoft Office, including cut/paste data into Excel spreadsheets, mail merge with Word and upload/download of appropriate data with Access.
- The ability to obtain graphical displays of detailed and summary information.
- The ability to interface with other third party tools, including OLAP, e-mail and Internet-based systems.
- The ability to automatically schedule and execute reports according to defined schedules.

System-Wide Requirements.

- All information technology components must be compliant with the department's IT architecture and common computing environment.
- System security must be defined and managed consistent with all Federal and department security requirements.
- Workflow automation must exist and be customizable.
- Automatic software distribution must exist.

- IVR, Internet, and e-mail interfaces must exist.
- The system must use the existing "non-trusted" USDA WAN.

Workflow Management. The following list represents the major workflow benefits of CAMS:

- Steps within a business process will be identifiable as discrete business objects and capable of being sequenced as determined by the agency.
- Workflow steps will be able to be automatically routed to any employee within a Service Center agency, based on the role in the workflow.
- Routing methods will include Internet, electronic, e-mail, or paper forms.
- Workflow steps will be capable of interfacing with a work list to queue a job on an employee's to-do list.
- Workflow management will allow creation, modification, and deletion of workflows; will be able to manage employee access to specific workflows; will be able to analyze active workflows to determine backlogs; and will be able to log workflow completions to analyze workflow cycle times and bottlenecks.

Access Management. The following requirements represent the access provisions of the AMS:

- Security must be definable by user, groups, module, and data.
- All data transported on "untrusted" communication lines must be encrypted.
- Administrative management personnel will access the system through a Windows 95 or NT workstation consistent with the agency's and department's IT architecture.
- All non-administrative management employees will access the system through systems already in place (or being purchased through the department's LAN/WAN project). Interfaces will include Internet, IVR, and/or e-mail.
- Employees will have access to the system on a 7-days-per-week, 24-hours-per-day basis.
- Employees will have access to the system from any approved work location.

Project Objectives.

- Promote and use reusable processes and procedures.
- Reduce cycle time for all administrative processes.
- Eliminate non-value-added steps from all processes.
- Provide decision-makers with direct access to appropriate information.
- Empower all agency employees with administrative management tools and information.
- Standardize administrative processes (where appropriate) into predefined workflows.
- Provide "enter once/use often" data-driven information systems to offset a shrinking administrative workforce.

2.3.2 Applications Architecture

The applications layer of the SCI architecture describes the integrated framework for the "target" applications environment that the USDA wishes to create and maintain, setting direction on:

- Interoperability.
- Open systems.
- Public access.
- End-user satisfaction.
- Security.

Using the "Design Down" and "Build Up" architecture rule for application design enables

the SCI reengineered business process efforts while incorporating the enterprise data view and leveraging the emerging technology platform.

2.3.2.1 Approach

Lessons learned on how best to conduct architecture planning has culminated in the identification of critical success factors in **Figure 2.3-16**.

Architecture Defined	The applications architecture needs to be defined up front and used consistently throughout. This will add to the cohesiveness of the reengineered applications.
Business Driven	Wherever possible, use the architecture process to reinforce support of key operational and business drivers.
Participative Process	Involve teams of architects, planners, and managers directly in the creation and review of deliverables. Establish "buy-in."
Presumptive Resolution	Do not get bogged down in facts or in information that is not available. Be presumptive, make the best guess, and document assumptions.
Architecture, Not Design	Avoid too much detail. Focus on architecture decisions and save some creative work for the designers to follow.
Minimum Set	Do not set out to establish standards for everything in sight. Focus on those where key infrastructure is involved and leave the user departments to sort out the rest.
Key Deliverables	It is more important to produce results that everyone can abide by than to follow specific processes or methods. Use the framework, but be creative and experimental with methods using standard tools and techniques.
Open, Non-Secretive	Do not hide a team away and stamp everything "confidential." Invite participation and circulate drafts for review and discussion. Avoid alarming affected parties.
Ongoing Process, Not Event	Do not produce a shelf document and then allow everyone to get back to their former ways of making IT decisions. Creating ongoing processes for updating and reviewing are critical.
Reusable Building Blocks	Create reusable building blocks that can be used in each additional SCI component as it launches its own planning process for the first time.
Configuration Management	The architecture should be placed under Configuration Management controls. This should be done immediately after all baseline tasks are completed. This will assist in not only ensuring that all transition or migration work proceeds without adversely affecting normal business operations, but will also ensure obsolete elements of the architecture are removed and replaced.
Project Plan	A detailed project plan should be created driving down to the individual project level. Priorities should be set for the logical progression of the migration to the new architecture. Individual milestones should be identified and completion dates set. With a project of this magnitude, this will separate it into workable tasks with attainable goals.
Architecture Compliance	Ensure architecture compliance without regard to dollar threshold amounts. The overall architecture will be undermined by technology acquisition decisions that are optimized to specific needs of USDA agencies if architecture compliance is not ensured for projects with life cycle costs below established dollar thresholds.
Review Process	Implement a formal review process to determine architecture compliance. A final review should be performed to certify compliance with the architecture.

Figure 2.3-16. Critical Success Factors

2.3.2.2 Integrated Information Flow—Internal

The core business of USDA is based on the customers and the land. Making a loan to a customer on a property, creating a conservation plan for a farmer, or calculating a disaster payment for a producer after a crop loss—all non-administrative work in a Service Center—is based on customer, land, or both. Therefore, to implement one-stop shopping, Service Centers must be able to effectively share and utilize core information about customer, land, and the link between the two.

All non-administrative applications will link back to the same core information within the Service Center and among Service Centers, as shown in **Figure 2.3-17**.

Figure 2.3-17. Sharing and Utilizing Core Information

Cross Agency Information Within a Service Center

Sharing land and customer information within the Service Center is essential to track all USDA activities conducted with that customer or on that land across agencies. Thus, if a particular Service Center staff member is not available when a customer calls or comes in for help, another Service Center staff member can perform basic service functions, such as provide a status update or program information. More important than sharing core information, is the necessity for the core information to be common across all agencies. In this manner, agencies can access each other's information, but more important, the information is built from the same foundation—the unique customer identifier and the unique core land identifier. Just as reengineered business processes cross agency boundaries, so will applications.

Another business requirement for information within a Service Center environment is the

ability to request information on a set of customers (e.g., all the conservation plans and accompanying documentation for Rancher Thompson or the loan application and backup for a Guaranteed Loan customer). After the Service Center staff member selects up to 15 customers, the applications automatically gather the information required from various data sources and download it to a local computer or laptop for the staff member to "undock" and take to the field or customer site. After the work is completed, the laptop is "redocked," and the changes are synchronized into the applicable data sources.

Cross Agency Information Across Service Centers

In addition to sharing information within the Service Center, sharing information among Service Centers is critical for a number of reasons. The applications architecture, along with the business architecture and data architecture, requires that certain core information be stored centrally. As shown in **Figure 2.3-18**, a central repository model will:

- Facilitate a customer's occasional visit to another Service Center and the ability to access home Service Center data.
- Identify customers nationally, which will make it impossible for customers to default in multiple locations or otherwise misrepresent themselves.
- Track program participation and benefit thresholds.
- Allow oversight entities (e.g., state offices and headquarters) to access information directly.

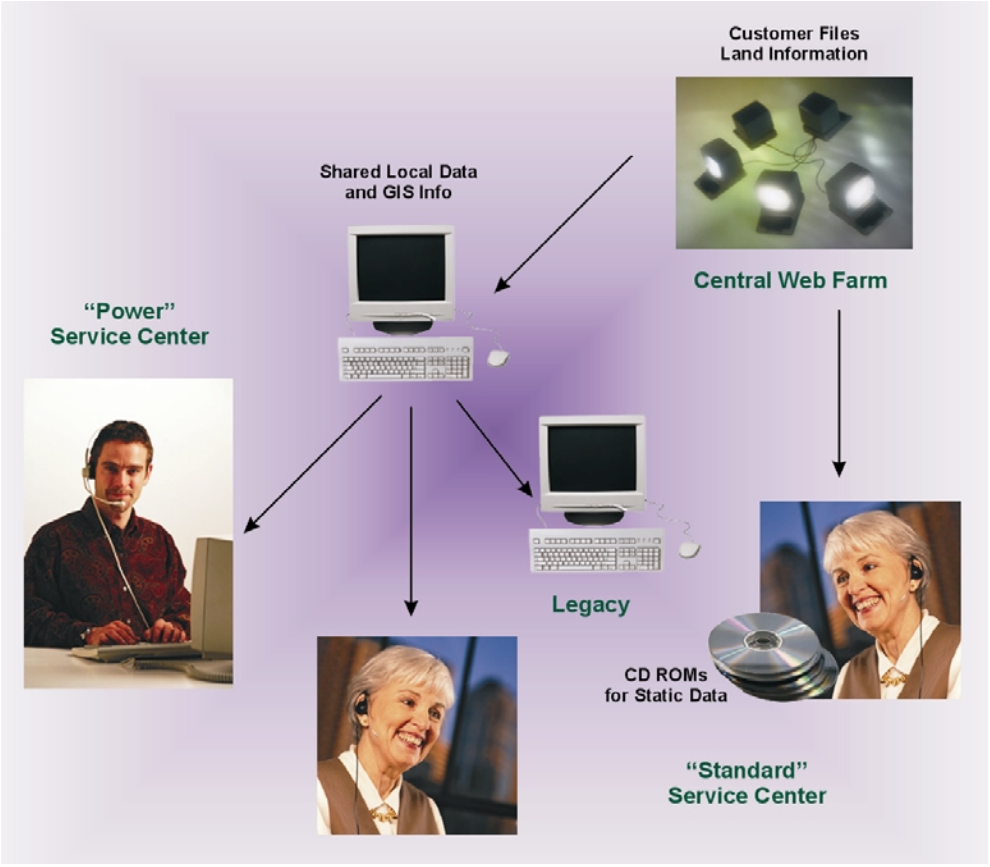


Figure 2.3-18. Central Repository Model

Not all information is required or envisioned to be stored centrally. Given the current bandwidth restrictions and the transition phases as legacy systems are first aligned with the SCI environment and then encompassed, the location of the information will be tuned and optimized. Thus, the applications architecture must be flexible enough to evolve with the transitions.

2.3.2.3 Integrated Information Flow—External

By centralizing the core Service Center information, additional information flows can be accommodated both as sources of information and as users of Service Center information. As shown in **Figure 2.3-19**, the applications architecture will ensure a defined interface that is reusable by multiple applications, sources, and repositories. The information flowing internally and from external sources will be specified by business rules and needs.

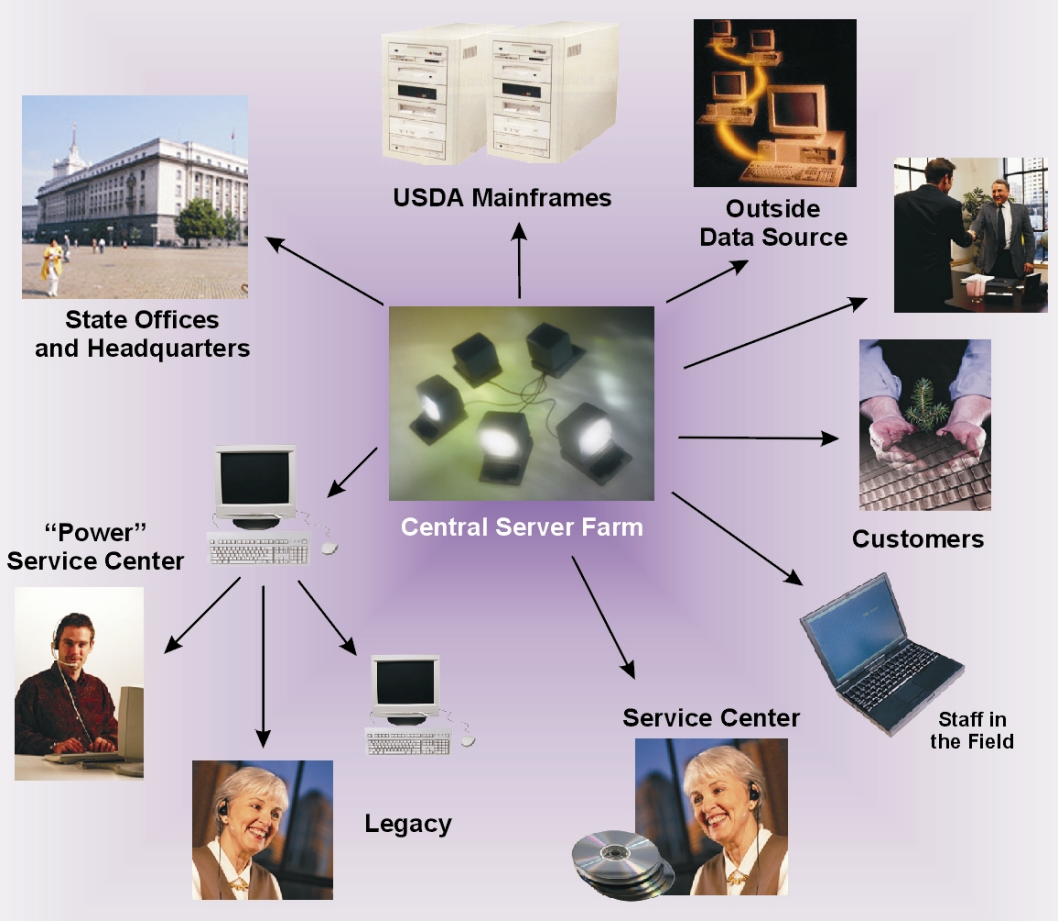


Figure 2.3-19. Integrated Information Flow—External

2.3.2.4 Client/Server Architecture

A traditional client/server architecture, illustrated in **Figure 2.3-20**, has limitations in support of a large deployment:

- Contention can occur on databases.
- There is little reuse across additional applications.
- There is limited security functionality.
- An active access to databases must be maintained.
- Access is difficult over a distributed network.

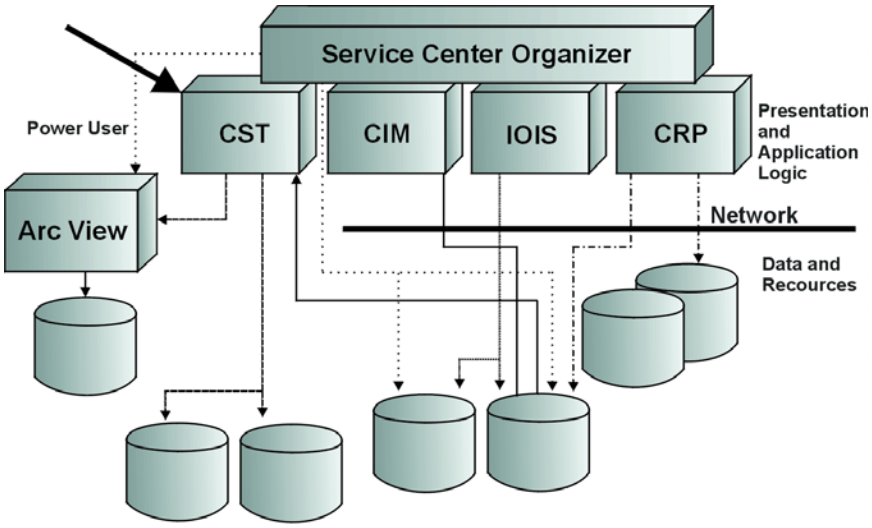


Figure 2.3-20. Traditional Client/Server Architecture

2.3.2.5 Three-Tier Architecture

By implementing a three-tier (also called a multi-tier or n-tier) architecture, a more flexible environment for an enterprise architecture can be created. Three-tier architecture, shown in **Figure 2.3-21**, allows for reusable components or code to be created to perform two basic functions: (1) business logic and (2) data access. The benefits of this approach in the USDA environment include:

- Simplified client management.
- Improved database and application performance.
- Simplified data sharing among components.
- Use of multiple transparent data sources.
- Database replication.

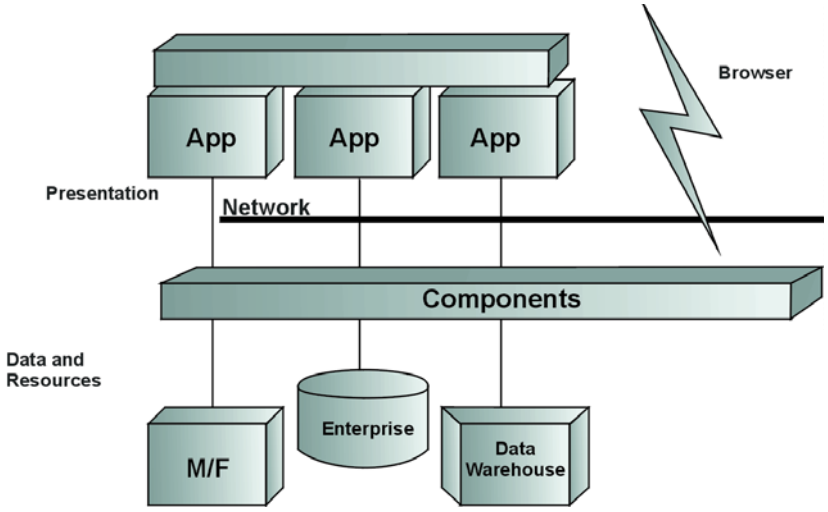


Figure 2.3-21. Three-Tier Architecture

2.3.2.5.1 Presentation Layer

The presentation layer provides the visual interface for presenting information and gathering data in an application. The presentation layer connects the user with the application and requests the business and/or data services needed by the user to execute business tasks. The presentation layer can consist of different versions of user interfaces using the same "back end" layers for business logic and data access.

For example, four different user interfaces accessing the same logic and data would be:

- Web-based user interface for a Service Center staff member working from a client site to access the latest loan rates, qualification calculations and status of a customer file.
- Web-based customers could access their own file to see application status of loan submission.
- Client-based user interface could be used from the Service Center to access the loan status as well as show all other applications in a geographic area (shown graphically on a map).
- Client- or web-based applications could be available to access loan status for Service Center staff members unable to use traditional interfaces due to physical challenge.

All these interfaces could use the same logic, reducing recoding and allowing for the "look-and-feel" to be easily updated, refreshed or modified.

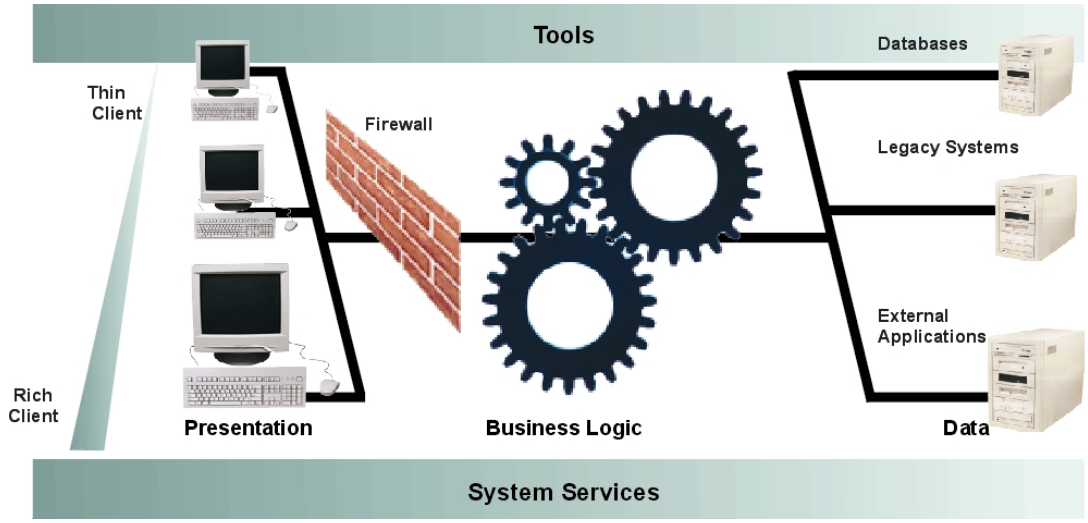


Figure 2.3-22.

2.3.2.5.2 Business Logic and Data Access Layer

The middle-tier of the three-tier architecture consists of components to centralize the frequent activities that many different applications require. The two main types of components are:

- Business rules
- Database access.

Business Rules

Business rules or calculations —like minimal loan qualifications or acreage calculations— can be broken out of the presentation layer of an application and made available for other applications to share and use. This provides four major advantages:

- Reduces the time for other applications to research, write and document the business logic.
- Standardizes the business rules across applications.
- Allows business rules to be rapidly updated if they are changed (new legislation)
- Allows new applications to be rapidly created since existing rules and code can be leveraged.

Business services respond to requests from the user (or other business services) in order to execute a business task. They accomplish this by requesting the data services needed and applying formal procedures and business rules to the relevant data. This protocol insulates the user from direct interaction with the database. Because business rules tend to change more frequently than the specific business tasks they support, they are ideal candidates for encapsulating in components that are physically separate from the application logic, itself.

Data Access

Data access components interact directly with the database or databases. Instead of each application's duplicating database access code within the application, this code can be separated for many applications to use.

Benefits include:

- Reduces time for programmers to research the database access requirements, how to deal with different types of databases on diverse host machines (e.g., DB2 on a mainframe in Kansas City, Oracle on a UNIX box in Fort Collins, and SQL Server on an NT machine in St. Louis).
- Increases security. Access to the databases can be limited to the components, themselves. Security requirements, down to specific elements authorized, can be addressed in the component as well.
- If a database update is required, no change needs to be made to the code unless the application desires to use the new fields.
- If a database is moved or replaced, the code changes can take place in the component and not in all the applications relying on the component. This minimizes the impact of technology refreshment and upgrades.

Data services maintain, access, and update data. They also manage and satisfy requests to manipulate data that are initiated by business services. Separating data services allows the data structure and access mechanisms to be maintained, modified, or, if necessary, even re-architected without affecting business or user services.

2.3.2.5.3 Data Layer

The data layer benefits from the component separation as mentioned, and the access can be more easily tuned, as well. Components connect to the database, get the information they require and drop the connection instead of the traditional approach of maintaining a connection as long as the user is in the application.

Also, data for an application can come from a combination of data sources including:

- Centralized national databases.
- Local databases.
- Data warehouses.
- External data repositories (other agency data).
- A combination of many or all of these.

The user's view can still be seamless.

2.3.2.6 Security

A three-tier application must be secure against unauthorized access. More specifically, different groups of users have different privileges when using the application. For example, some users are authorized to update customer information, but other users are only authorized to view customer information—or a subset of the customer information. An important aspect of security is how an application determines what group a user belongs to and, based on that group, what privileges the user has in the application.

Two-Tier Security

In a typical two-tier (client/server) application, users log on to the database directly. Each user has a different login, and that information resides in the database. The database is protected from unauthorized access because users must supply a valid login to use the database. More sophisticated databases can create groups of users and manage privileges on a group basis. For example, you can create a supervisor group and assign the same privileges to all users who are supervisors.

There are two drawbacks to security in two-tier applications:

- **Scalability is reduced.** There are a limited number of connections to the database, and if every user has a different login, the connections can be used up quickly.

- **Applications cannot be integrated easily.** If one application must call another to get work done, they must have a way of verifying the user's credentials. Often, the user must log on again, or must start a new session with the second application.

Three-Tier Security

In a three-tier application, you separate business logic into a middle tier. Users no longer access the database directly from their client application. Instead, they access components (reusable code written to an industry standard). The objects then access the database and perform updates or retrievals on behalf of the users.

In this scenario, you split security into two types. The first type is application security, which involves authorizing users for access to the application code, or packages. Application security is implemented in the middle tier by using MTS.

The second type is data security, which involves authorizing the various packages for access to the database. Data security is implemented in the data services tier by using the database.

Application security involves authorizing users access to specific components and interfaces in packages, limiting their capabilities. Thus, users are mapped to the application functionality that applies to them.

Data security involves authorizing MTS packages access to the database. Each package is assigned an identity that the database uses to authenticate the package, and then access is granted to the database for that package.

Advantages of Three-Tier Security

There are five advantages to three-tier security:

- Because the user does not log on directly to the database, all database access can be totally encapsulated by the components. This ensures data integrity.
- Because multiple concurrent users connect to the database with the same package identity, you can use connection pooling to reduce the load on the database. This improves scalability dramatically.
- Because each user does not need a login to the server, it reduces administration when setting up application access.
- Instead of thinking about end-user security in terms of databases and tables, you can think about security in terms of the roles that an individual plays in the organization, which is a more efficient method of administering security and also allows different views of data for different users (or the public). Sensitive data can be isolated and presented—or modified—only by users with the appropriate authorities.
- When one application package calls another application package, you do not need additional logins or sessions. You can configure security to authenticate package-to-package calls.

2.3.2.7 Applications Policies and Standards

Creating applications in a distributed environment requires that policies and standards must be in place for the creation of common look-and-feel applications. It is especially essential for development centers to be using common tools and software packages to minimize work duplication, enable code reuse, and utilize common software and telecommunications methodology. Processes also must

be well coordinated to avoid duplicate information collection processes.

A sound applications architecture involves establishing standards and infrastructure. Given the distributed development environment of USDA, communications and clear definitions also are critical. SCI applications development is focusing on establishing development standards and fielding infrastructure.

Standard	Approach
User Interface	
N-tiered Architecture	
Common COTS	
Security	
Training	
Policies and Procedures	

Evaluation Criteria

- Cost (procurement and lifecycle costs).
- Management (configuration and systems).
- Security (provides support for securing sensitive information).
- Scalability (easily scalable to support increase or reduction in demand).
- Availability (to information anytime, anywhere).
- Flexibility (supports rapid changes to business requirements).
- Technology (supports technology refreshments).
- Legacy migration.
- Data reliability.
- Functionality (delivered to Service Center).

2.3.3 Data Architecture

Through the SCI, USDA has embarked on a major data architecture initiative. Sound data management practices are essential to enable data sharing among the agencies and programs.

Enterprise data architecture entails:

- Defining the location and distribution for enterprise data.
- Managing an integrated enterprise data model.
- Coordinating with business areas and software developers.
- Maintaining data standards and conventions.
- Coordinating the implementation of data policy.
- Administering a central repository for metadata.
- Identifying and managing standard data elements.
- Providing data modeling assistance to projects.
- Providing quality assurance oversight.
- Delivering training to those who create, manage, and use the enterprise's data assets.

In line with Zachmann's framework for enterprise information, the Service Center data team has taken the following approach:

- Began an enterprise data model, concentrating on core data.
- Began working with CCE and L/W/V on optimizing location of data servers across the enterprise in support of the business application.
- Adopted a framework for managing the various pieces of data management.

2.3.3.1 Overall Approach

This section discusses the approach outlined above. These enterprise data administration activities are primarily carried out through the Service Center data team as they support the

Software Development Centers and perform a coordination role in the Business Integration Center (BIC). The BIC is the focal point for all BPR activities and particularly for the integration of business, data, and technical platforms. The BIC also provides a testing forum for cross-agency and agency-specific projects.

Data management is the business of managing the data resource. The Service Center agencies (FSA, NRCS, and RD) have billions of dollars invested in electronic data and in the infrastructure of software, hardware, and staff necessary to collect and maintain this data. To manage data as described above, an effective data management infrastructure must be implemented. The components of this infrastructure include the following items.

2.3.3.2 Enterprise Data Model

Two key responsibilities of data management are 1) promoting, sharing, and reuse of data across business areas, and 2) ensuring that new data integrates into an enterprise model. This is critical to achieving the vision for integrated accessible data presented in the Service Center Vision.

The enterprise data model, shown in **Figure 2.3-23**, is a high-level view of the data used by an organization. The model focuses on how each piece of data relates to other data in the enterprise, and how business areas are supported by the various systems and data sets available throughout the enterprise.

Figure 2.3-23. Enterprise Data Model: See foldout.

Sharing and reuse of data is an essential feature of the Service Center enterprise. The enterprise model serves as a device for planning and integrating data across agencies and across program areas. The model may not contain all the detail associated with a complex system, focusing instead on integration points between systems. The model also aids in planning the unique identifiers and data names needed to allow data to flow smoothly between computers throughout the organization.

The format for the enterprise model consists of boxes representing systems and stand-alone data sets. Inside these boxes are smaller boxes representing tables and files of data. The name of the table/file is shown at the top, followed by a representative list of data elements contained in the table or file. Where cross-system data relationships can be determined, lines are drawn between the table/file boxes. The model is supported by an electronic metadata repository that provides the ability to search for specific data elements or to look for key words in data element definitions.

The data team is developing and maintaining the Service Center enterprise data model. Each project's individual data model is reviewed and integrated into the enterprise model. Enterprise metadata is reviewed to ensure key clashes are properly handled, and maximum sharing and reuse of data and related processes is attained. Linkage points with legacy systems that will continue to be used also are incorporated into the enterprise model.

It is not the intent to develop a holistic enterprise data model that includes all Service Center data. Because of the immense quantity and size of data stores held and used by the agencies, it is advantageous to group data according to the potential breadth of usage or sharability among the partner agencies. Through BPR work already completed, the following categories of data assets have been identified:

ENTERPRISE MODEL

APRIL 29, 1999

Service Center Data & BPR Initiatives

GIS — GEOSPATIAL DATA

- CLU Subdivisions
- Wetlands
- High Risk Areas
- Land Cover / Vegetation
- Conservation Practices
- Soils
- Common Land Units
- Roads
- Hydrography
- Orthophotography

Common Land Unit Layer
Feature Identifier
Common Land Unit Number
Calculated Acres
State Code
County Code
Farm
Tract Identifier
Highly Erodible Land Indicator
ABSTRACT PARCEL

Customer Land Link
Land Link Identifier
Customer Identifier
Feature Identifier
State Code
County Code
Link Beginning Date
Link Ending Date
Customer Land Associat
Owning Project
Association Validation

CLU — Common Land Unit (Interim Application)

County List
Numeric State Code
Numeric County Code
Check Digit
Office Type Code
Combined Office Code
Headquarters Office State Code
Headquarters Office County Code
State County Name
State Abbreviation

Common Land Unit Layer
CLU Application
Links attributes of
the Common Land
Unit Layer

TFD — TABULAR FEATURE DATA

TABULAR "FEATURE" DATA HAS A RELATIONSHIP TO GIS FEATURES.

EXAMPLES OF FEATURE TYPES:

FARM
TRACT
COMMON LAND UNIT
SUBDIVISION
BUILDING LOT
RANCH
MANAGEMENT UNIT
RESPONSE UNIT
CONSERVATION TREATMENT UNIT
LEGAL BOUNDARIES

"SA S36 Tabular Data"
AMC:TPM
AMC:FPM
AME:PBM

TABULAR DATA DESCRIBING SPATIAL FEATURES (For CST)

Enterprise_A
Enterprise_I

Tract
Tract_ID
Enterprise
Tract_Num

CLU
CLU_ID
Tract_ID
Enterprise

Subfield
Subfield_I
Subfield_I

LU_History
Feature_ID
Customer_ID
Customer_Land_
Link_Beginning_
Link_Ending_Da

CST — CUSTOMER SERVICE TOOLKIT

Pilot Site Version

SERVER DATABASE (using SQL Server)

CLU_Schd_Prac
Practice_Code
Planned_Year
Planned_Month
Planned_Amount
Applied_Amount

CLU_Prac_Cost_Shr
Cost_Share_Program

Subfield_Schd_Pra
Practice_Code
Planned_Year
Planned_Month
Planned_Amount
Applied_Amount

Subfield_Prac_Cost_Sh
Cost_Share_Program

Spatial_File
File_ID
North
South
East
West
Projection_Code
Feature_Units_Code

File
File_ID
Checkout_ID
Platform_Co
Modification_
Description

ature_2_Fil
File_ID

ature_Geome
Feature_ID
North
South
East
West

Feature
Feature_ID
Feature_Name
Feature_Classific
Feature_Status

ST Customi
Customer_ID

tomer_Fol
Customer_I

tomer_Subfo
Customer_ID

Study_Area
Study_Area_ID
Study_Area_Name
Projection_Zone
North
South
East
West
North_Lon
South_Lon

CIM — CUSTOMER INFORMATION MANAGEMENT

CIP EMail
Customer Identifier
Email Address Rec

CIP Phone
Customer Identifi
Phone Sequence
Phone Type

CIP Customer
Customer Identifier
Customer Type Code
Tax Identifier
Tax Identifier Type Code
Common Customer Name
Legal Last Name

CIP Customer Relationship
Customer Identifier
Related Customer Identifier
Customer Relationship
Last Change Date

Customer Address L
Customer Identifier
Address Identifier
Address Effective D

CIP Individual
Customer Identifi
Legal Last Name
Legal First Name
Legal Middle Nam
Name Prefix
Name Suffix
Nickname

CIP Business
Customer Identifier

CIP Address
Address Identifier
Supplemental Addre
Supplemental Addre
Supplemental Addre
Delivery Address
City Name

IOIS — INTEGRATED OFFICE INFORMATION

Conservation_Program
Customer_ID
Conservation_Type
Cost_Share_Program

mmodity_Loan_Particip
Customer_ID
Commodity_Type

AMTA_Producer
Customer_ID
AMTA_Producer_Type

OIS Look_Up Table
Table_Name
Field_Name

ervice_Center_Custome
Customer_ID
Entity
Business_Type
Eligible_Voter
Cooperator
USDA_Employee
Facility
Terrace_Practice
Waterway_Practice

acility_Community_Towi
Customer_ID
Community_Town_Name
Community_Facility

Other_Program
Customer_ID
Other_Program

Practice
Customer_ID
Practice_Type

IOIS Producer
Customer_ID
Producer_Type

rm_Loan_Program_Borrow
Customer_ID
Farm_Borrower_Type

SCO — SERVICE CENTER ORGANIZER

Customer File
Folder_ID
Customer_ID
Customer_File_Name
Customer_File_Revision
Customer_File_ID
Template_ID

SCO Folder
Folder_ID
Folder_Name
Folder_Category
Folder_Level
Folder_Parent_ID

SCO PROGRAM_FILE
Folder_ID
Program_File_Name
Program_File_Revision
Program_File_ID
Template_ID
Program_File_Location

SCO TEMPLATE
Template_Name
Template_Revision
Folder_ID
Template_ID

CO REPORTING_FI
Folder_ID
Reporting_File_Name
Reporting_File_Revis
Reporting_File_ID
Template_ID
Reporting_File_Locat

dministration F
Folder_ID
Admin_File_Na
Admin_File_Re
Admin_File_ID
Template_ID
Admin_File_Loc

MFH — MULTI-FAMILY HOUSING

PROJECT

Project
Borrower Iden
Project Identif
Project ID Ch
Project Alpha

SERVICING FI

ct Servicing Action Fil
Closing Required Code

PROJECT SUPERVISC

Project Finding
Create Date
Resolution Date

Supervisory Activity

Finding
Supervisory Event C
Supervisory Event I

Project Supervisory Event
Create Date
Comment
Fiscal Year

upervisory Activity Findin
Closing Required Code

upervisory Eve
Supervisory Eve
Supervisory Eve

isory Event Trackin
Sequence Number
Status Code
Status Name

sument T

t Supervisory Doc

t Supervisory Event Trackin
Tracking Item Date

MULTI-FAMILY INTEGRATED SYSTEM PILOT PROJECT

GLS — GUARANTEED LOAN SYSTEM

Geographic State
Code
Abbreviation Name
Name
FIPS

Geog County Servicing Office
Business System Code
Program Code
Effective Date
Expiration Date

Geographic County
Code
Name

ORGANIZATIONAL STRUCTURE DATABASE

Servicing Office GLS
Agency Office Type Code
State Code
County Code
Sub Office Indicator
Contact Person
Address 1
Address 2
Address 3
City Name

Congressional Distric
Code
Status

Geog County Cong Distric
Effective Date
Expiration Date

vicing Office Hierar
Business System Nam
Program Code

GLS
CUBS
NAAS
Security

OIP CIM Link

Customer Identifier
Site Identifier

OIP — OFFICE INFORMATION PROFILE

Site
Site Identifier
Site Name
Site Description
Site Current Status Code
State Code
County Code
City Code
Street Delivery Address
Street City Name
Street State Abbreviation
Street Zip Code
Street Standardized Addres
Street Standardized Addres
County Name
Congressional District Cod
Latitude
Longitude
Site Main Phone Number
Site Main Phone Extension

Site History
Site Identifier
Status Sequence
Site Status Cod
Site Action Req

Organizational Unit
Organizational Unit Ide
Site Identifier
Agency Code
Agency Abbreviation
Department Office Type
Agency Office Type Cod
Street State Abbreviation
Organizational Unit Pur
Organizational Unit Cur
Organizational Unit Acti
Organizational Unit Acti
Organizational Unit Acti
Org Unit Plan Compliar
Organizational Unit Ider
Site Identifier New
Organizational Unit Per
Percent Time Covered
Org Unit Point of Contac

nizational Unit Hi
Organizational Unit I
Status Sequence N
Site Identifier
Site Identifier Old
Organizational Unit
Org Unit Status Cod
Org Unit Status Beg

Point of Contact
Point of Contact Identifi
Point of Contact Name
Point of Contact Functi
Point of Contact Public
Point of Contact Phone
Point of Contact Phone

Servicing Office
State Code
County Code
Organizational Unit Iden
Local County Indicator
Creation Date

Plan
State Abbreviation
State Code
County Name
County Code
City Name
City Code

CCE — Common Computing Environment

CCE Status
CCE Status CPU
CCE Configuratio
CCE Purchase O
CCE Vendor
CCE Ship Site Id
CCE Ship State A
CCE Ship Date
CCE Ship Create
CCE Ship Chang
CCE Ship Date D

CCE Equipment
CCE Equipment CPU
CCE Configuration Co
CCE Vendor
CCE Equipment State
CCE Equipment Agenc
CCE Equipment Organ
CCE Warranty End Da
CCE Equipment Instal
CCE Installation Creat
CCE Installation Last E

CCE Configuration
CCE Configuration I
CCE Configuration I
CCE Configuration S
CCE Configuration T

Fiscal Year Alloca
CCE Configuration Co
CCE State Abbreviation
CCE Fiscal Year
Headquarters Quantity

LWV — LAN/WAN/Voice - IBM Database

SiteCertification
USDA Site ID
Site In Compliance F
Site Certified State
Site Certified Compli
Site Certified Date
Site County Code

SiteMaster
USDA Site ID
Site Name
Street Address
CITY
STATE
ZIP
CLIN
COUNTY
FIPS
Emergency Number

WorkOrder
USDA Site ID
Install Level
Issue Date
Req Start Date
Req Comp Date
Receipt Date
Survey Release Da

Site Schedule
USDA Site ID
Install Level
Type
Duration
ScheduleStart
ActualStart
CompleteDate

CLIN
CLIN Number
Telephone Requi

Acceptance
USDA Site ID
Install Level
Description
Survey Date
ItemID

Change Order
USDA Site ID
Install Level
Version Number
Creation Date
User
Receive Date
Submit By
Submit Date
Sent To Sub
Req Change Desc
Req Change Reas
Req Change Item
Req Reason Code
Req Install Start
Req Install End

DLOS — DEDICATED LOAN ORIGINATION SYSTEM

CAMS — COMBINED ADMINISTRATIVE MANAGEMENT SYSTEM

S_POSITION_DATA
POSITION_NBR
EFFDT
EFF_STATUS
DESCR
DESCRSHORT
ACTION
ACTION_REASON
ACTION_DT
DEPTID
JOBCODE
POSN_STATUS
STATUS_DT
BUDGETED_POSN
CONFIDENTIAL_POS
KEY_POSITION
JOB_SHARE
MAX_HEAD_COUNT
UPDATE_INCUMBEN
REPORTS_TO
REPORT_DOTTED_L
ORGCODE
ORGCODE_FLAG
LOCATION
MAIL_DROP
COUNTRY_CODE
PHONE
COMPANY
GVT_SUB_AGENCY
PAYGROUP
EMPL_TYPE
STD_HRS_DEFAULT
HOLIDAY_SCHEDUL
BARG_UNIT
UNION_CD
SHIFT
REG_TEMP
GVT_WORK_SCHED
FULL_PART_TIME
MIN_HRS
TUES_HRS
WED_HRS

S_PERSONAL_DAT
EMPLID
NAME
NAME_PREFIX
LAST_NAME_SRCH
FIRST_NAME_SRCH
ADDRESS1
ADDRESS2
ADDRESS3
ADDRESS4
CITY
COUNTY
STATE
ZIP
COUNTRY
ADDRESS1_OTHER
ADDRESS2_OTHER
ADDRESS3_OTHER
ADDRESS4_OTHER
CITY_OTHER
COUNTY_OTHER
STATE_OTHER
ZIP_OTHER
COUNTRY_OTHER
COUNTRY_CODE
PHONE
SSN
SIN
NATIONAL_ID
PER_STATUS
ORIG_HIRE_DT
SEX
AGE_STATUS
I/S_WORK_ELIGIBLE
DISABLED_VET
DISABLED
PREFERRED_LANGU
OFFICIAL_LANGUAGE
BILINGUALISM_CODE
ETHNIC_GROUP

PS_LOCATION_TBL
LOCATION
EFFDT
EFF_STATUS
DESCR
DESCRSHORT
CITY
COUNTY
STATE
COUNTRY
GVT_ST_CNTRY_DES
GVT_LEOPAY_AREA
GVT_LOCALITY_ARE
GVT_MSA
GVT_CMSA

Recruitment
Training
nformance Manageme
Benefits
Payroll

CRP — CONSERVATION RESERVE PROGRAM

CRP Work / Leal

CRP_SUM
FSA_ID
State_ID
Count
Tract
Field

CRP_Data
StateID
CountyID
PreparerID
FieldAcres
WeightedAv

CRP_SOIL_SUMMARYE
DocNum
Sequence
SoilNum
SoilType
SoilAcre
SoilRentalRate

CRP TBLCOUNTY
OffNum
Num-State-
NumCounty
CtyAcres

TBLCRP3_SoilID
DocNum
SoilType
SoilMethodID
Field
FOTG_ID
Acres
IsHEL
T_Value
K_Value
L_Value

TBLCRP3_SUMM
TblCRP3_Summa
DocNum
TotalTractAcres
Calc103
Calc102
WeightedAveWater
Calc201
Calc106
WeightedAveWindE
Calc105

TBLSOILATTRIE
SoilMethodID
SoilType
CountyID
StateID
RIPS
SoilName
T_Value
K_Value

TBLDOMAINC
DmnNm
DmnCdVal
DmnCdDesc

TBLDOM
DmnNm
DmnLongN

TBLCRPFORM
TractNum
DocNum
PgmYr
SignUpNum
EligDate
FarmNum
ApplName
ApplAdr1
ApplAdr2
ApplAdr3
CrspIntnAcre
AdminStCty
PhysCty
ContrNum
EnrolAcre
CostShare
RentalrateOfrd
CRP1ExpirAcre
CRP1ExpirNum
CRP1ActiveAcre
CRP1ActivNum
OffType
AlotOtpAcre
RednFcp
RednPnuAcre
RednTobAcre
HELAcre
NatCPAAcre
SCPAWtQualAcre
SCPAWtlifeAcre
SCPAArQualAcre
CrpSwtrlandAcre
CrpdWetndAssoAcre
WtlBkPgmAcre
CREPAcre
NonCrpdWetlandAcre
SosurEnrlvAcre
WetlndProtoAcre
CntrSignUpCnclAcre
CntrSignUpMaxgTreeA
SoilLossTol
ErsnWtlIdx
ErsnWndIdx

TBL10
ProdDNu
ProdDTyp
ProdNam
CropYear
FarmInten
LandLord
RefuseHE
AffiliatedF
NoNRCS

TBL1026PR
DocNum
PrvtTblNum

TBLFIEL
DocNum
FieldNum
CropOrLndU
Practice
CropStat
CtrlAcre

TBLPRACTI
DocNum
Practice

TBLSOI
DocNum
SoilNum
SurveyIDN

CARAA — CONSERVATION AREA RESOURCE ASSESSMENT AND ANALYSIS

DEM — DEMOGRAPHICS AND BUSINESS AREA ANALYSIS

WARE — DATA WAREHOUSE PILOTS

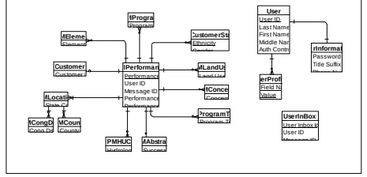
REAMMORTIZATION

CORE ACCOUNTING

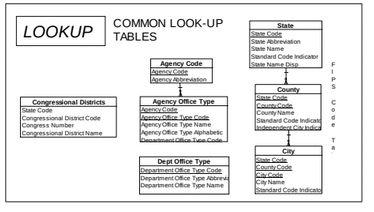
DEMOGRAPHICS

TOBACCO

PRMS — PERFORMANCE AND RESULTS MEASUREMENT SYSTEM



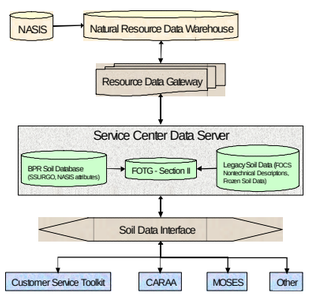
LOOKUP — COMMON LOOK-UP TABLES



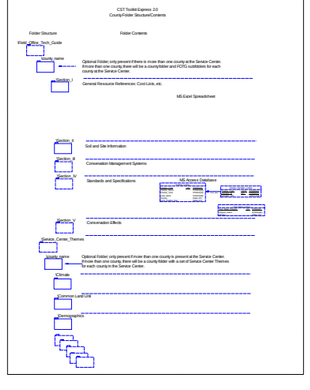
EMAIL — EMAIL - Phase I

LNV Email Plan
Mail Drop
Mail Name
Given Name
Surname
Middle Initial
Title
Agency
Affiliate Name

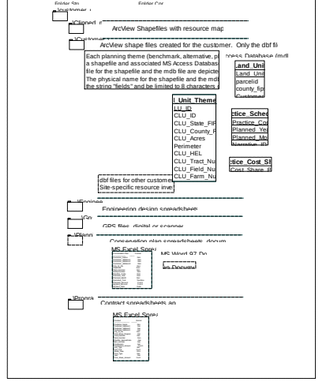
SDI — SOILS DATA INTERFACE



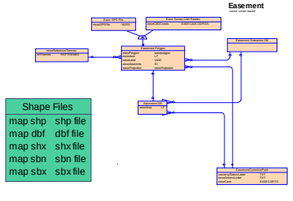
CST-E — CST Toolkit Express 2.0



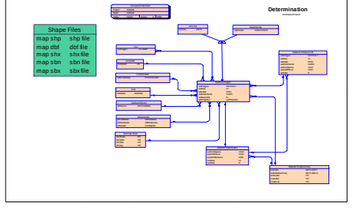
CST-E — CST Toolkit Express 2.0



WET — WETLAND EASEMENTS



WET — WETLAND DETERMINATION



ACRES — ACTUAL COST RECOVERY EVALUATION SYSTEM

COMMON & SHARED DATA SOURCES

APPLICATIONS & SYSTEMS

- Common data is data jointly owned, used, and managed by Service Center partners. The common data sets of interest for the BPR initiative are customer data, office data, administrative data, land-unit data, and standard geospatial data.
- Shared data is data owned and managed by a specific Service Center partner but shared by other partners. The shared data sets of particular interest for the BPR initiative are the natural resource data sets, specifically soils, plants, climate, and demographic data.
- Unique data is data owned and managed by a specific Service Center partner and not shared.

The data team's initial focus is on a core data set that includes common data plus elements from shared data sets as shown in **Figure 2.3-24**. It is expected that this core data will endure through multiple business cycles, and the greatest demand for data sharing and access will exist in this core data area. Attention to the core data set should offer the largest potential return on investment.

More rigor is being applied to the definition, collection, and maintenance of data and metadata for the core set. Individual agencies are encouraged and assisted in applying similar rigor to their unique data. Emphasis is placed on data for new and reengineered national systems, with legacy systems being addressed at the discretion of the business areas.

The data team encourages the development of reusable software modules to encapsulate access to common data. These reusable software modules are referred to as components, and all applications that need to access the data will do so via the provided components. This approach offers a number of advantages; one of the key advantages is better control of data integrity. All changes to the data, i.e., creation, updates, and deletes, are handled by the components, allowing business rules to be implemented and enforced in one place. This relieves projects of the burden of writing their own access routines. Components also hide implementation detail, thereby reducing the impact of changes to the database. By ensuring that all data access must pass through established components, security and privacy are enhanced.

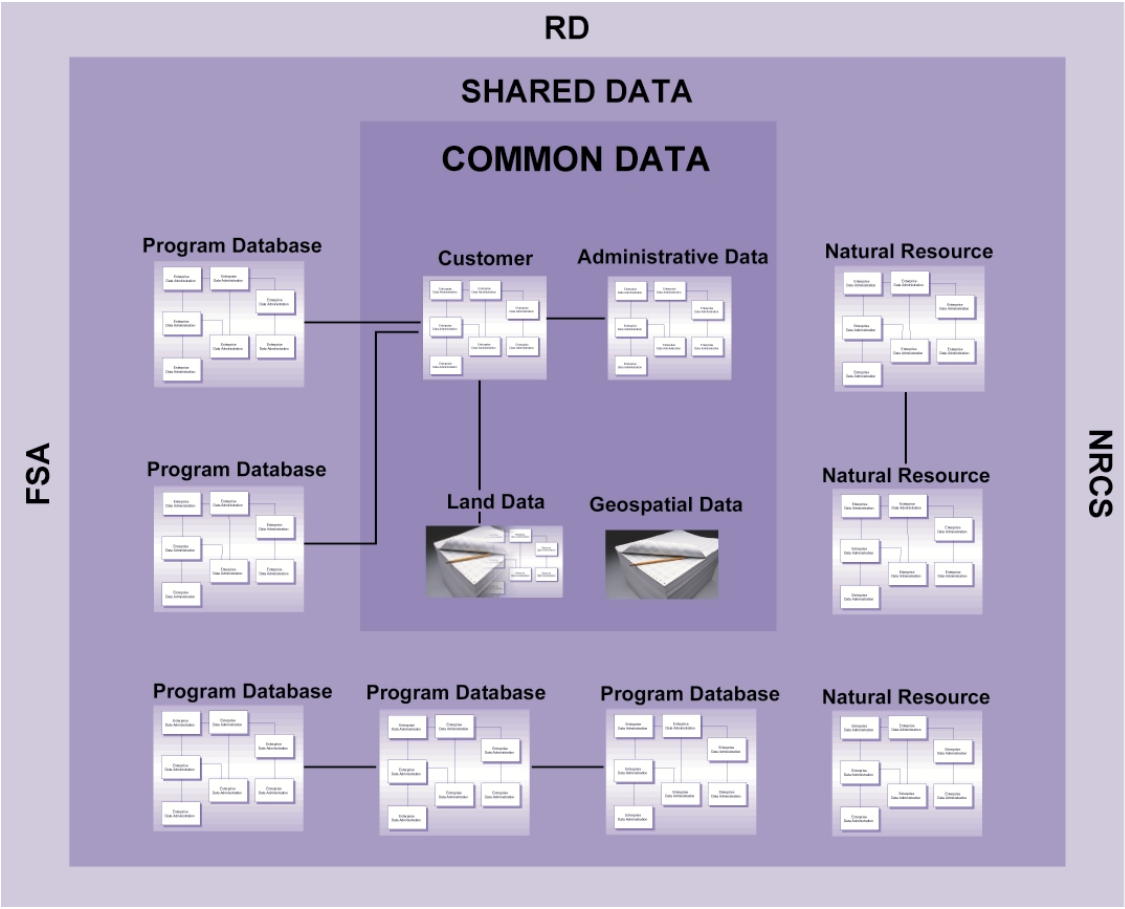


Figure 2.3-24. Core Data

2.3.3.3 Common Policies, Standards, and Guidelines

In line with the data management maturity model framework, common data management policies, standards, and guidelines are being implemented, ensuring the ability to effectively manage and share data and information. These include:

- **Data Management Policy**—Establishes the data management policy for the partner Service Center agencies. The standards and procedures developed by the data team are in support of the policy.
- **Metadata Content Standard**—A series of standards that define the minimum metadata that projects must provide to populate the development center CASE tools and central repository (**See Figure 2.3-25**).
- **Data Naming Standard**—A data element standard was completed earlier by the data team and is being actively maintained. Other naming standards will be developed.
- **Metadata Repository Interface Standard**—Defines the physical interface between the central repository and development center CASE tools and other metadata sources.
- **Geospatial Data Standards**—Establish standards for defining, modeling, managing, and integrating geospatial data sets.
- **Data Management Deliverable Standards**—A set of standards that define the

content of data management deliverables for each phase of the system lifecycle.

- **Repository Administration Procedures**—Define the operating procedures for the central repository, including procedures for updating metadata and extracting standard data elements; procedures for security, maintenance, and daily operations; and procedures for establishing standard data elements.
- **Enterprise Data Model Procedures**—Define the procedures for maintaining the enterprise data model.
- **BIC Data Management Procedures**—Define activities the data team will perform when software projects bring their deliverables to the BIC.
- **Common Data**—Define the data administration procedures for managing common data, common test data, and software components that can be shared.
- **CM/QA Procedures**—Define CM and QA procedures needed to support data administration's CM and QA plans, covering change control, review, audit, and other processes.

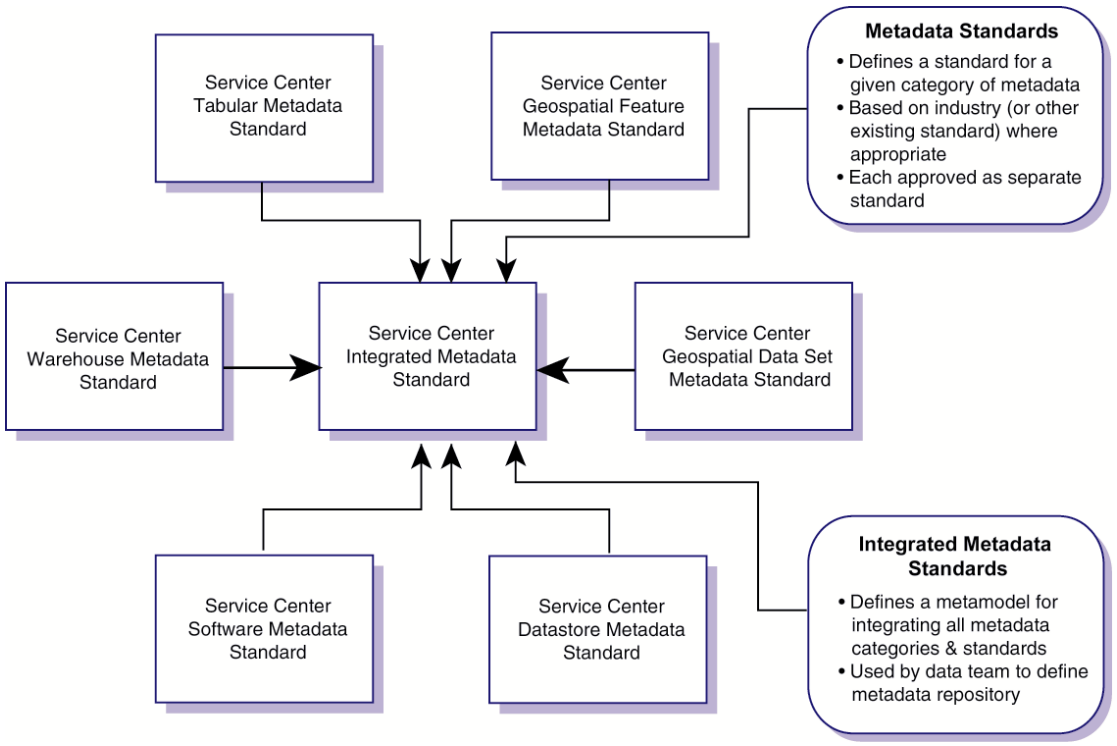


Figure 2.3-25. Metadata Standards

A web site is being established that will provide developers and data stewards with easy to access policy, standards, and guidelines. This information is organized by software development lifecycle phase.

2.3.3.4 Implement Data Administration Program

Data administration encompasses the day-to-day technical functions that support ongoing business operations. It includes collecting, defining, certifying, organizing, protecting, and delivering both data and metadata (data about data).

The Service Center data team is responsible for coordinating overall data management activities for business process engineering. The new Support Service Bureau will assume these activities when it becomes functional.

Data administration responsibilities include such functions as acquiring and maintaining necessary software tools, managing a central repository for metadata, providing access to metadata for reporting and decision making, constructing an enterprise-wide view of data, promoting sharing and reuse of data assets across business areas, providing quality assurance over data management functions, managing data-related projects in support of one or more business areas, and other functions essential to a thorough data management process.

2.3.3.5 Central Repository of Metadata

To further promote data sharing and integration, the data team will maintain a central repository of metadata and an enterprise data model. The team will take an active role in managing common data. The data team will develop and maintain a central repository to store, maintain, and distribute metadata. Initial emphasis will be placed on collecting metadata for BPR projects, and in particular for common/shared data. The repository will also be available to support legacy systems and other application development initiatives as needed. The data team will provide interfaces for accessing the repository through CASE tools, direct access tools, and the Internet. The data team will provide maintenance, operation, tuning, backup and recovery, and archiving of the repository, which is necessary to make this a useful tool for application developers and other users. **Figure 2.3-26** is a schematic model for the repository being implemented.

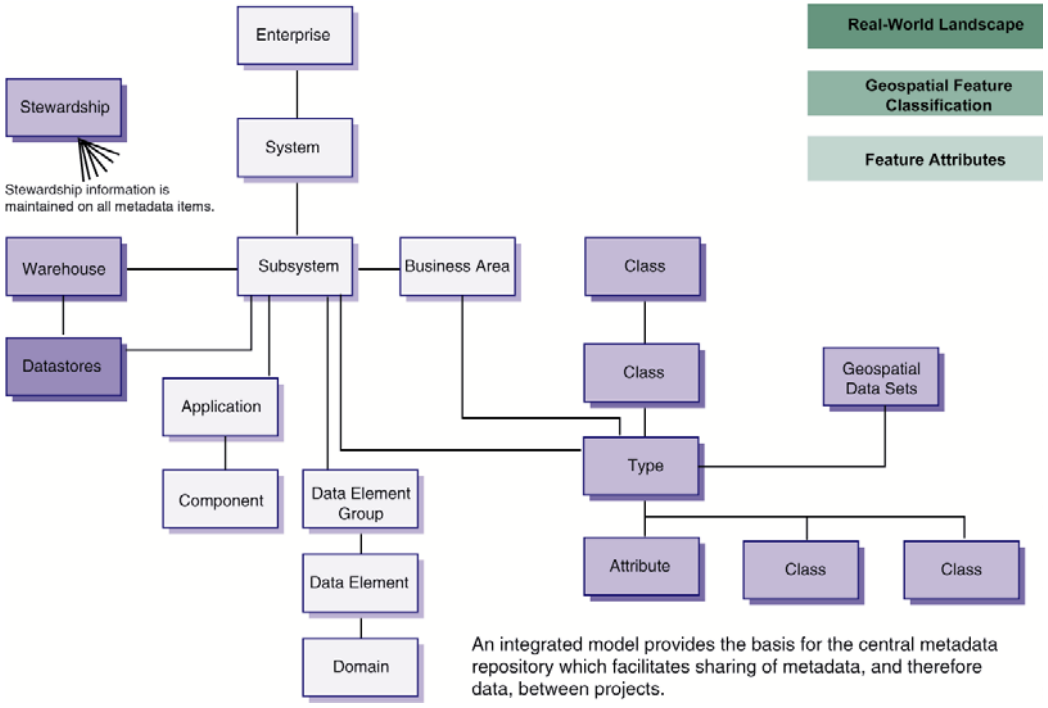


Figure 2.3-26. Integrated Metadata Model

2.3.3.6 Implement Data Stewardship Program

Service Center data and information is a valuable asset and must be managed with the same attention and priority as other agency assets. Authority and responsibility for all aspects of data management must be understood, supported, and implemented within the culture of partner agencies' business and IT organizations. Successful data management will result from a partnership between the business areas that are responsible for the data and the IT staff that is responsible for the data management process. This partnership is key to maintaining the focus on providing Service Centers with quality data and information.

The concept of data stewardship must be implemented within the business areas that collect and manage data and information. Data stewardship is the process of acquiring, validating, protecting, and using data to the advantage of the business mission. The data stewardship component of enterprise data management is a business area function.

Data management policy has been implemented that establishes two key stewardship roles. The policy states that the business area will assign an executive sponsor and a data steward for each database.

The executive sponsor, usually the head of a division or other organizational component, has ultimate responsibility for data management within the business area, as well as for managing resources (people and money) to collect and administer data and metadata.

The data steward is designated by the executive sponsor and is responsible for the content of a database. The data steward establishes definitions and domains for data elements; sets the procedures for collecting and certifying data and metadata; and manages the overall storage, maintenance, and distribution of the data and metadata. This person often acts as a conduit between the end user and IT communities. The data steward may have frequent contact with data administrators, application development teams, and database administrators supporting the business area.

The data team will provide training on data management policies, roles and responsibilities, processes, deliverables, and tools. The training will be available to both business and IT personnel, including managers, data stewards, project analysts, etc. A training plan will be developed to detail the training.

The new Support Service Bureau's (SSB's) information technology organization will assume the IT role of managing data. This new organization must provide the basic infrastructure for supporting data management. **Figure 2.3-26** identifies the minimum types of metadata that will be captured through the implementation of the data steward program.

2.3.3.7 Enterprise Physical Data

This component of enterprise data management is responsible for supporting the physical or real instances of data stored within a database management system (DBMS). Activities include initialization, operation, tuning, maintenance, backup and recovery, archiving, and configuration management of the database. Database administration supports end-user access to the data assets, so business activities can be accomplished. Database administrators implement security rules within the database management system, are integral to identification of new data management tools, and are responsible for the migration of data to new tools and environments. From the insight gained from managing day-to-day operations, database administration can provide valuable planning and feedback on issues relating to application performance, hardware

capacity, etc. Database administration personnel may provide support remotely to multiple agency field locations.

2.3.3.8 Physical Implementation of the Data Architecture

This objective will 1) define the physical architecture of the data, i.e., location of data across the network; 2) describe data and databases located on a central server, decentralized servers, and local clients; 3) make use of metrics to assess movement of data through the USDA network to maximize the functionality and responsiveness of software systems; 4) account for where and how often data is updated or refreshed; and 5) promote a high level of data sharing and data mobility to reduce program delivery costs.

The data team works with the CCE to reconcile the baseline inventory of applications to include the type of data used by the various applications within the three agencies. This information will be used to feed the simulation tools to assess the current and future data server and telecommunication infrastructure necessary to support Service Center applications. This assessment will maximize the usage of network and computer resources across organizational levels and locations of Service Center agencies, and forecast the impact of proposed new systems on these resources.

The placement of data will be dictated by both business needs and technical issues. Data used for national-level reporting, for example, may need to be stored and managed centrally. Data integrity and data sensitivity may likewise be determining factors.

Two underlying efforts upon which the data architecture is structured are the installation of a national telecommunications network (LAN/WAN/Voice) and the acquisition of computer systems for Service Centers and supporting offices. Remote access to data and the movement of data between computers will provide local offices with many new capabilities. The data management function supports forecasting of capacity needs for the data networks, and is developing an overall data architecture for placement of databases and other data stores to ensure rapid information retrieval.

The CCE project is tasked with setting requirements for the hardware and software tools to be installed in the Service Centers. The data management function includes specifying requirements for database management systems and determining data storage media, capacity, and tools needed to use and maintain special data types such as photographs, document images, and geospatial data. The data management team will refine the forecast for enterprise servers to support both legacy system migration and delivery of geospatial data. Implementation of the physical architecture will:

- Distribute data across servers in one or more locations to achieve optimal system response time.
- Establish an overall mapping of data interrelationships and integration points.
- Maintain an overall plan for seamless movement and sharing of data.
- Formulate a framework for the integrated storage and movement of spatial and tabular data.

2.3.3.9 Data Warehousing

The three partner agencies have embarked on an enterprise-wide data warehousing initiative, developing a common strategy for implementation of data marts and data warehouses. The strategy emphasizes the use of common tools for managing data and the implementation and management of common databases. The enterprise strategy outlines incremental fielding of business-driven data marts, e.g., a single

authoritative source for customer information across the three partner agencies, resulting in substantially greater business value. This includes establishing a common data warehousing architecture that encompasses a standard set of extraction and cleansing software, data repository, and business-user accessibility tools that provide a common resource for use by partner agencies.

2.3.3.10 Develop, Acquire, and Deliver Shared Geospatial Data

Integrating GIS technology into Service Center business operations is crucial for Service Centers to provide timely program delivery, reduce customer burdens, and remain cost effective. As customers increasingly apply GIS technology within their own operations, they expect USDA Service Centers to deliver products and services that take advantage of similar technology. Through the use of GIS and reengineered processes, Service Centers will be able to change business operations and deliver quality products and services.

Additionally, of all the program delivery BPR projects, GIS has the highest potential return on investment. More than 34 percent (or $168 million) of calculated BPR savings comes from GIS implementation. For example, it is estimated that $34.5 million in annual savings can be realized by using GIS for land eligibility determinations and $38.1 million in savings can be achieved by using GIS to manipulate spatial data. Final cost savings may be even higher because current calculations only consider redesign of some Service Center business processes.

Using GIS to conduct Service Center business is dependent on availability of accurate geospatial information. The GIS community has identified 19 themes, or data layers, that are common and desirable to successfully administer programs and service customers into the next century.

Four of these 19 themes have been identified by one or more Service Center agency as critical to support the Service Center mission. The following four data themes are the most important; without them, Service Center agencies cannot effectively use GIS technology to create products for customer, partner, or internal use:

- Orthoimagery.
- Common land unit.
- Soils.
- Cultural and demographic data.

Although the critical data themes are not scheduled to be completely implemented until the year 2007, incremental data and GIS capability will provide large business benefits to Service Centers and their customers. Some of these benefits have already been documented in the USDA Geospatial BPR Report dated August 29, 1997. These benefits will accrue immediately to those counties with GIS capabilities, even before full implementation, and include:

- Ability to use geospatial information to make informed business decisions.
- Access to current, accurate geospatial information 80 percent faster than traditional manual methods.
- Access to geospatial information by all agencies simultaneously.
- Access to a jointly managed common base map.
- Elimination of redundant work and data, resulting in reduced Service Center workload.
- Improved map quality.
- Service from any center.

Figure 2.3-27 shows projected completion of critical GIS themes, identifies the number of counties (out of 3,140 total) completed per fiscal year and the total costs to implement orthoimagery, common land unit, and soils. Cultural and demographic data has already been acquired by Rural Development and therefore is not included in the chart.

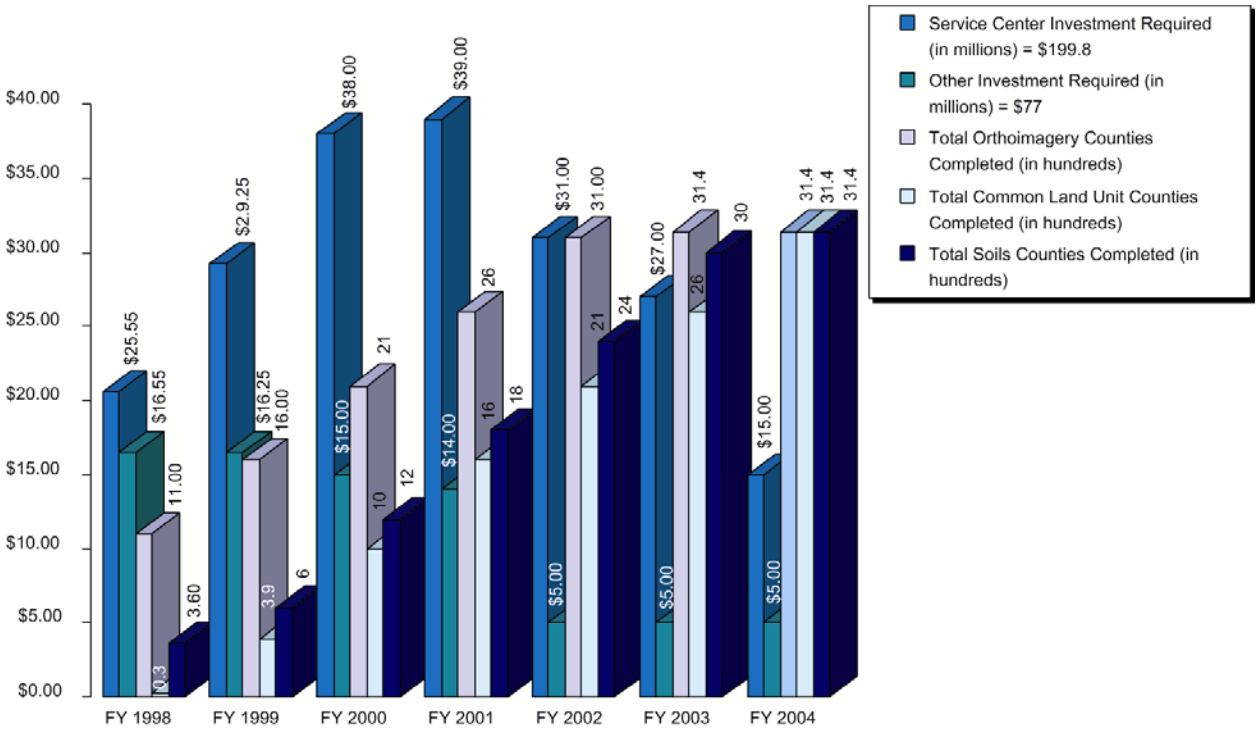


Figure 2.3-28. Projected Completion of Critical GIS Themes

The total investment required from USDA and other Federal, state, and local partners to implement the critical themes is as follows:

- USDA investment required = $199.8 million.
- Other Federal, state, and local investment required = $77 million.
- Total investment required = $276.8 million.

This translates into the following average USDA cost per county to implement these critical themes:

- Orthoimagery—$17,356.
- Common land unit—$18,885.
- Soils—$25,478.

2.3.4 Technical Architecture

Technology provides the physical attributes and components of the infrastructure required to support the processing of data into usable information. The technology components provide the capability to secure, prepare, transport, process, store, and retrieve business products and service requests to facilitate USDA's mission delivery.

The SCI goal is to have and use a common well-publicized partnership technical architecture for hardware, software, telecommunications, and data management. With this common/established architecture, compliant with the USDA technical architecture, applications and end users develop a common feel

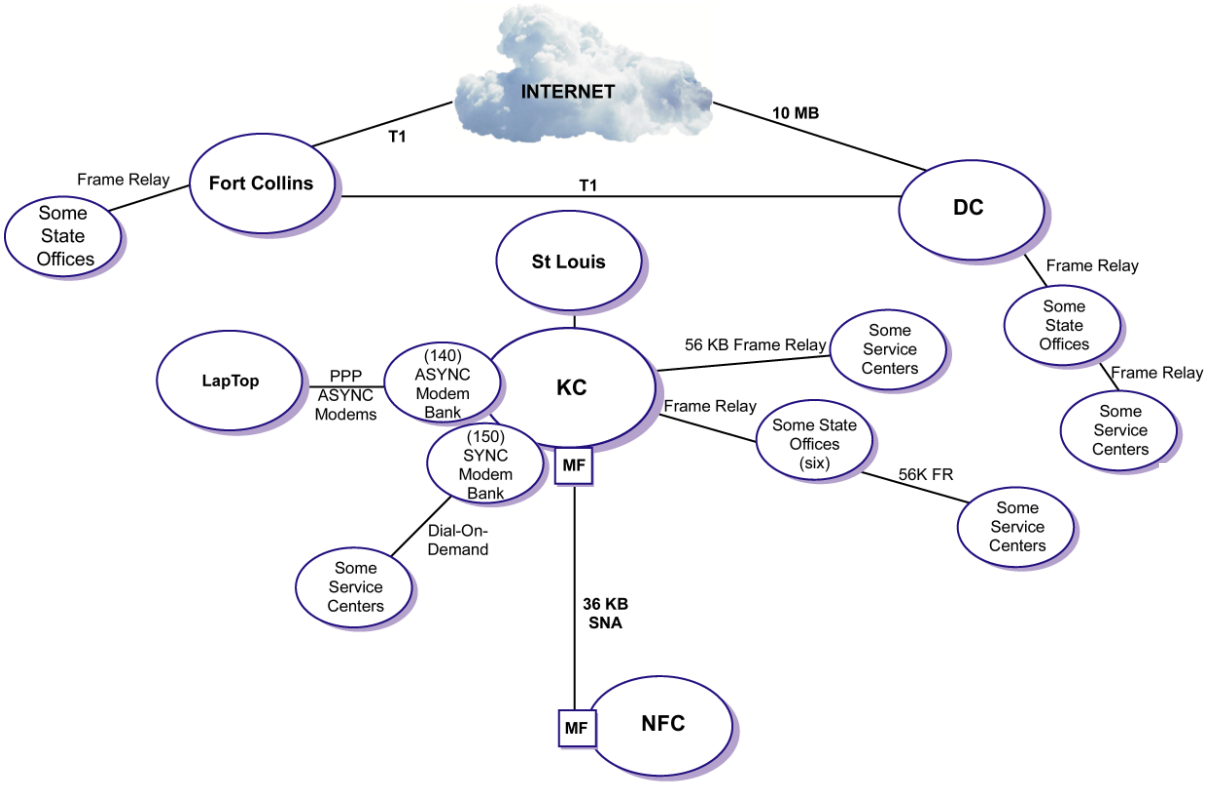
and use. This commonality supports interagency cooperation and helps to create an interagency environment.

The creation of the SCI technical architecture begins with a common communications environment. This encompasses modern data and voice systems, e.g., LAN/WAN/Voice. After the communications foundation is implemented, a common computing environment follows. The more agencies able to share facilities, the more efficient the architecture. Agencies can share office space, equipment, and technology as appropriate and reduce the cost of doing business from both an agency and a department perspective.

In order to realize and enable the fully reengineered future Service Center, the full architecture must be implemented. However, the architecture also is constructed to allow implementation in incremental steps that provide fully functional building blocks that help meet business priorities and goals. Overall, the SCI technical architecture must comply with and be supportive of further development of the USDA department-wide technical architecture.

2.3.4.1 LAN/WAN/Voice

The LAN/WAN/Voice technical architecture is a router-based hub and spoke data architecture and a separate voice switching system including key systems and PBXs. Office wiring is Category Level 5 and installations achieve the maximum capacity for device sharing. **Figure 2.3-28** depicts the LAN/WAN/Voice Technical Architecture.



LAN/WAN/VOICE feels that the backbone is an untrusted network.

Figure 2.3.-28. LAN/WAN/Voice Technical Architecture

2.3.4.1.1 Communications Networks

The LAN/WAN/Voice data communications network will be a router-based network that connects to the USDA backbone network and is supported through either a USDA enterprise network operations control center (ENOCC) or an agency-based network management center. Access and entry to the network is security bound through passwords and permissions.

Within an office, network servers would route all shared resource traffic and support security from both within and external to the office.

2.3.4.1.2 USDA Backbone

The LAN/WAN/Voice project team has worked with the USDA Office of the Chief Information Officer on LAN/WAN/Voice and USDA backbone technical architecture to ensure connectivity and continuity.

The network created by LAN/WAN/Voice is flexible enough to adapt to changes in the USDA telecommunication enterprise network, as well as the new FTS2001 contract.

2.3.4.2 Common Computing Environment

The CCE technical architecture, **Figure 2.3-29**, is the definition and interrelationship of all technology components that combine to provide the infrastructure for delivery of program and services in the reinvented Service Center. Each of the components is defined both by how they meet the needs of their individual function, as well as how they interact with other components of the architecture. The technical architecture provides the blueprint for implementation of the CCE and the dependencies that prescribe the sequencing necessary to ensure operational capability as each component is acquired.

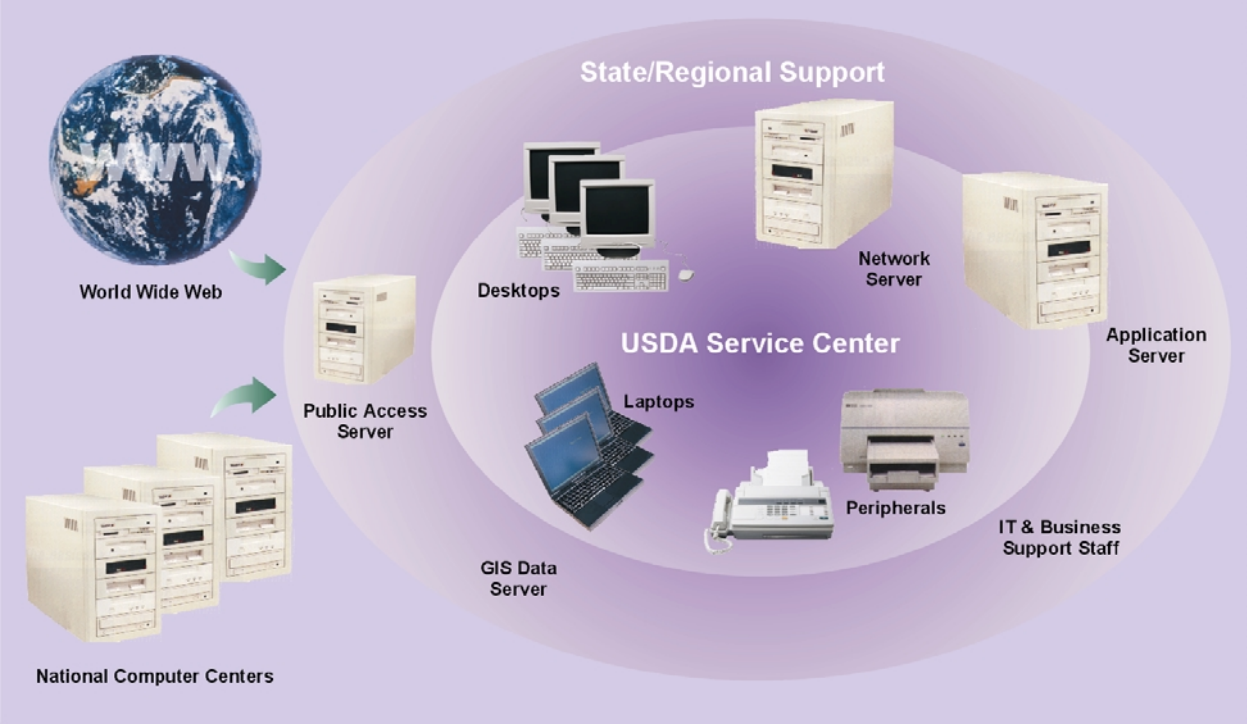


Figure 2.3-29. CCE Technical Architecture

2.3.4.2.1 Hardware

The Service Center technical architecture is composed of a variety of hardware, including:

- Workstations (Desktops and Laptops).
- Network and Communications Servers.
- Applications Servers.
- Public Access Servers.
- GIS Servers.
- Peripherals.
- Portable Computing Equipment.

Figure 2.3-30 depicts the hardware that has been procured for the technical architecture to date.

Workstation	Specifications	Vendors
Desktops	Compaq DeskPro EP: 400 MHz Pentium II with Ethernet NIC, 64 MB RAM, 6.4 GB IDE HDD, 17" monitor, 2X AGP graphics controller with 4 MB video memory, 14/32x CD-ROM, sound card, speakers, running Microsoft Windows NT operating system	MicroAge Federal, Native American Systems, Inc.—small business 8(a)
Laptops with Docking Station & Accessories	Dell Latitude Cpi266XT: 266 MHz Pentium II, 64 MB RAM, 13.3" active matrix LCD, 20X CD-ROM, 4.3 GB HDD, 56 KBS modem, docking station with: Ethernet NIC, serial, parallel, video, keyboard, and mouse ports, security lock, and monitor stand; 17" monitor, keyboard, and mouse, running Microsoft Windows NT operating system	Intelligent Decisions, Inc.—small business 8(a) World Wide Technology, Inc.—small business 8(a)

Figure 2.3-30. Hardware Procured to Date

All the hardware noted above is critical to the successful implementation of the technical architecture. Each one serves its own function, as described below:

Workstations (Desktops and Laptops)

- Personal workstations are the primary interface for all Service Center employees to the reengineered operational environment that will be implemented as a result of BPR. Combinations of desktop and laptop systems are planned to meet the different levels of service required by Service Center employees.
- Basic office automation desktop workstations will be provided for staff that primarily works in the Service Center office environment and requires access to common office automation applications, including electronic mail, word processing, spreadsheets, and presentation graphics.
- A high-end desktop workstation with increased processing capabilities will be provided for staff that primarily works in the Service Center office environment and makes use of advanced automated tools, including GIS and engineering applications.
- Portable laptop computers with docking station, monitor, keyboard, and mouse will be provided to staff that works outside the Service Center office and requires access to mobile-based applications, including common office automation applications and custom tools that allow data collection and services to be provided to customers while outside the Service Center.

Network and Communications Servers

Network and communications servers provide Service Center workstations' connectivity to the local and wide area networks. Network

services include security and access control, electronic mail, printer and peripheral access, file storage and backup, and management of local data and information for all employees in the Service Center. ***These servers may be located in core SCI offices and support functions in multiple satellite offices. (See discussion on page 3-2.)***

Application Servers

Application servers host and provide access to commercial and custom software used by Service Center employees to perform business activities and deliver service to customers. ***The application servers can be local within each Service Center or located in remote offices and available over the wide area network***. The configuration of these servers will be determined based on required performance, management, and support for applications. Interaction of the application environment with other components of the architecture, including network capacity and support staffing, will be a key determining factor for the final application server configuration.

Public Access Servers

Access to USDA program information and customer records over the Internet has been identified as a critical capability for Service Center implementation. These services need to be provided through specialized equipment that ensures security and manages access to this information in a way that protects the privacy of USDA customers. In addition, these services need to be provided in a manner that minimizes the workload required to implement and support these capabilities. The configuration of these servers will be developed to realize these goals while ensuring that timely and accurate information is made available to customers.

Data Servers

The three partner agencies will migrate the data from their 125-plus applications from disparate structures into relational databases. There is an enterprise-wide initiative to reduce the number of relational database vendors to a manageable number to minimize cost while maximizing efficiency. The various applications require differing types of relational database technology that support the traditional online transaction processing applications, the newly emerging GIS requirements, data warehousing, and document imaging requirements. Currently, no single vendor product line can meet all the requirements necessary to support the enterprise. It is envisioned that the data will be stored on different server types ranging from NT- and UNIX-based operating systems to mainframe-based relational database systems. The challenge will be to meet emerging business requirements by ensuring synchronization and replication of data across disparate operating systems.

GIS has been identified as a technology that will provide significant benefits to Service Center employees in implementing reengineered business processes. Data servers are intended to provide the infrastructure necessary to manage and deliver spatial and other data and applications to realize those benefits. The configuration of these servers will be determined based on the needs to manage this data and the support required to meet those needs. Also, the performance of GIS applications will be a critical factor in determining that configuration. Network capabilities will also be a determinant for the selected configuration, balancing the capability of delivering large GIS data files remotely against the cost and support required to provide that capability within each office.

Peripherals

Peripheral devices include printers, scanners, digital cameras, and other input and output equipment that increases Service Center employees' ability to provide products to their customers. These devices need to be shared and managed at the Service Center level over the local area network. In addition, lower-volume but higher-capability devices can be provided over the wide area network for those uses that do not support the costs of providing such equipment at each Service Center. This would include large format printers that are used for infrequent production of larger maps or graphical output.

Portable Computing Equipment

A mobile workforce has been identified as a key capability for implementing the reengineered business processes and applications of the future Service Center. In order to meet that need, mobile computing equipment will be required that enables data collection, remote information access from a local office or the wide area network, and providing products to customers outside the Service Center. These items, in addition to laptop workstations, include portable data accessories (PDAs), data recorders, Global Positioning Systems, portable printers, and cellular phones. The technologies available in this arena are changing rapidly and continued evaluation of new developments is necessary to meet the Service Center staff needs.

2.3.4.2.2 Shared Equipment

In addition to hardware, a technical architecture is also composed of various equipment that can be shared between users and agencies. Examples of shared equipment in the SCI include:

- Printers and plotters.
- Telephones (office and cellular).
- Facsimile machines.
- Cameras (standard and digital).
- Data recorders.
- GPS devices.
- Personal Data Assistants (PDAs).

Printers and Plotters

Printers are needed to provide products to Service Center customers both in the office and remotely. A range of printing devices will meet the combination of formats and capabilities required. Networked printers in the office will provide capabilities to produce high-volume, high-quality output. Portable printers will allow employees to print products while visiting customers' homes and farms. Color printers/plotters with the capability to output larger-than-normal documents will be needed for use with GIS and related technologies.

Telephones (Office and Cellular)

Common phone systems improve capability to manage customer contacts in the office environment. In addition, cellular phones extend that capability while an employee is operating remotely. This technology, in combination with laptop workstations, will meet the need for access to information that may be stored in the office (locally or on the wide area network) while delivering services to customers outside the office.

FAX Machines

Service Centers currently make use of FAX machines for improving internal communications and providing service to customers. The CCE will investigate the use of FAX server applications for eliminating the need for dedicated FAX machines and include the use of FAX documents within other automated applications.

Cameras (Standard and Digital)

Service Center staff currently use standard cameras to collect information and document activities while providing services to customers. Digital cameras will allow these records to be included within other electronic files and related applications.

Data Recorders

Electronic data recorders will enable collection of field information in electronic format while performing site surveys and evaluations. Once entered in the field, this information will be readily available to upload and use within other automated applications. This will reduce the workload associated with collecting and making use of this information within the reengineered Service Centers.

GPS Devices

The collection of spatial information via GPS offers the opportunity to automate the creation and management of information in a portable mode. Business needs for these devices have been identified and the appropriate solution is being evaluated and selected.

PDAs

Portable Data Assistants (PDAs) provide mobile capabilities for using reengineered applications to provide service to customers. There are two ranges of devices that will be evaluated for inclusion within the CCE, one for field employees and another for managers. The field employees will require capabilities of operating custom and commercial applications related to customer service delivery. Managers require scheduling, e-mail, and minimal office automation capabilities to operate away from their desk or outside the office.

2.3.4.2.3 Commercial Off-the-Shelf (COTS) Software

A standardized suite of software products is essential to a technical architecture. In order to keep up with rapidly advancing technology, most agencies are moving to commercially available software products as opposed to customized, “home-grown” software. This can reduce the cost to maintain the software, as no additional hours are required to continually update code to meet emerging requirements. COTS products are vendor maintained; agency staff is only required to load a disk that automatically implements any software updates.

Typical COTS products for implementation in the SCI architecture include:

- Office automation suite.
- Various personal productivity tools.
- Enterprise GIS solution.
- Relational Database Management System (RDBMS).
- Internet tools.
- Document management.
- GroupWare.

Office Automation Suite

The office automation suite provides basic information processing applications for all Service Center employees. These include word processing, spreadsheet, presentation graphics, personal database, and personal information manager applications commonly provided in commercially available office automation suites. Based on testing and evaluation of current products, Microsoft Office 97 Professional has been selected as the Service Center office automation suite solution. This product has been acquired as part of the initial workstations purchased in fiscal years 1998 and 1999.

Other Personal Productivity Tools

Additional personal productivity tools, including applications such as project scheduling, system utilities, graphics editors, desktop publishing, and other similar products, will be provided to enhance user capabilities. As business requirements that can be met by these tools are identified, the available products in the marketplace will be evaluated and appropriate solutions selected and implemented.

Enterprise GIS Solution

Geographic Information Systems will provide significant benefits to Service Center employees in implementing reengineered business processes. The enterprise GIS solution will provide the framework for managing and delivering spatial data and applications to the Service Centers. The goal is to acquire and deploy a comprehensive set of application tools that meet the identified business requirements for creating, storing, and managing the spatial and related attribute information. Evaluation testing of leading candidate products is ongoing, and a final solution will be recommended based on the results of that evaluation.

Relational Database Management System

The RDBMS provides the basic framework for the creation, storage, and management of tabular information needed for delivery of programs and services within the reengineered Service Centers. Custom applications building on the RDBMS will be developed to augment the capabilities of COTS applications. Commercial solutions also rely on the RDBMS capabilities for managing critical information, i.e., the Human Resources application using the Oracle RDBMS to manage agency human resource data. The capabilities of the network and other components of the technical architecture infrastructure will also be formed within the context of determining the RDBMS solution.

Internet Tools

Internet access is provided by browser software and related tools. These tools allow individuals to navigate the Internet to obtain information and meet business needs, including transmitting and receiving files. At this point, Netscape's browser and the OnNet suite of Internet tools have been selected and implemented to meet these needs for Service Center agencies.

Document Management

With the increased reliance upon automated applications and electronic records, document management will become a critical capability of the CCE solution. Current records management policies and processes will need to be adapted to the automated environment. Requirements for document management solutions will build on the current manual and hard-copy procedures to provide a comparable solution for the reengineered Service Center.

GroupWare

This family of applications provides collaboration capabilities that enable sharing, dissemination, and management of common information between individuals at same or different locations. E-mail is the basic component of these systems and is the key component for meeting the business needs associated with these products. Group scheduling, workflow management, and document control are other aspects of this application that will be included in the evaluation of possible solutions.

2.3.4.3 Model Service Center Facilities

Since 1995, the SCI has led efforts to streamline the field structure of the county-based

agencies. Based on the 1994 County Office Streamlining Plan, the goal is to consolidate the 3,727 county office locations in existence in 1994 into 2,565 Service Centers, with partner agencies collocated to meet customer needs from a single location. A Service Center is defined as any full-time office that delivers USDA farm, conservation, and rural development programs and services, with staff presence of at least one partner agency in the office. Most of the collocation effort has been completed; with the number of Service Centers reduced to 2,679 as of the end of fiscal year 1999. Collocations of county offices and streamlining of agency offices will continue during fiscal year 2000. In addition, as of the end of fiscal year 1999, nearly half the state Service Center agency offices have been collocated. State plans for collocation are under review, and additional collocations will be implemented in phases through fiscal year 2002.

In addition to sharing an office location, the Service Center staff is beginning to share equipment and a common network. Some offices share a single reception area and a common computer room. SCI pilots have taken advantage of sharing the same domain and improved technology in several ways—one Service Center sends requested information directly to a printer at the requesting site as an immediate response. During a recent hurricane watch, the Service Center FSA manager used the Internet to watch the storm's progress—he made a decision not to close the office since the storm stayed more than 100 miles away, while other Service Centers made decisions based on radio station updates.