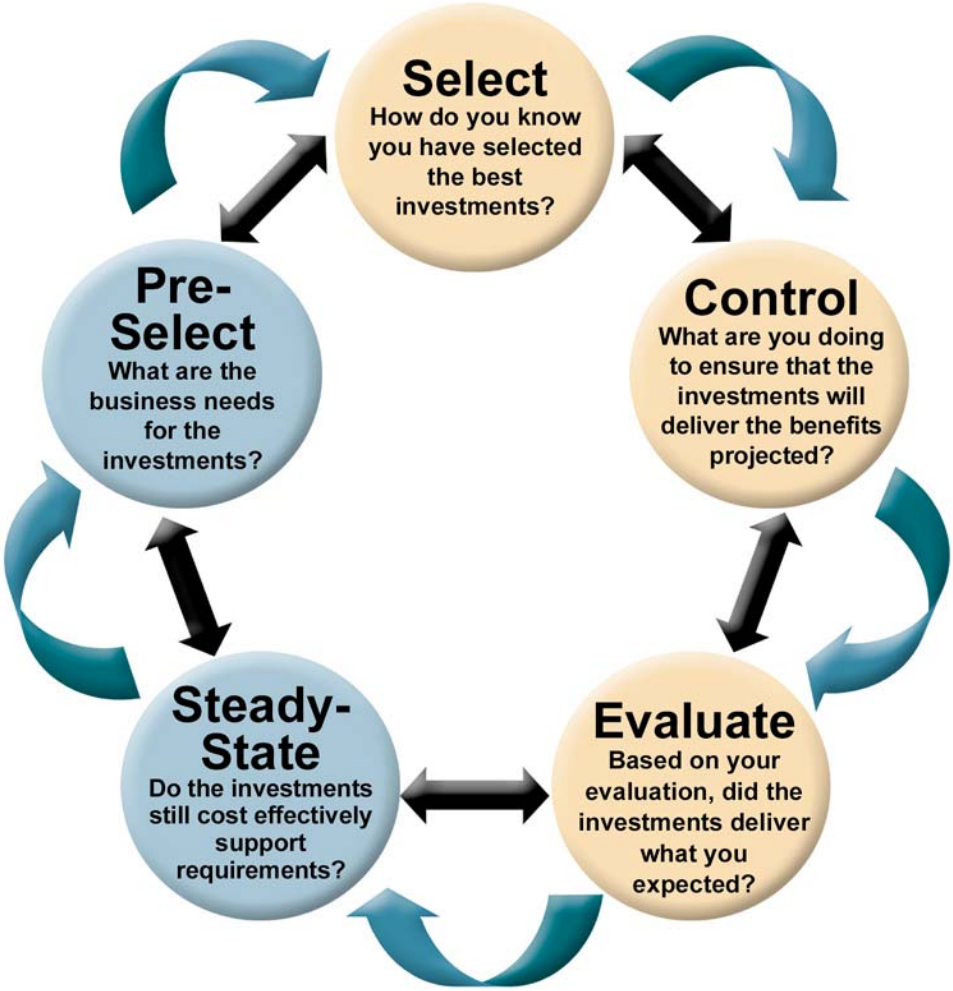
UNITED STATES DEPARTMENT OF AGRICULTURE

INFORMATION TECHNOLOGY

CAPITAL PLANNING AND INVESTMENT CONTROL

GUIDE FOR FISCAL YEAR 2008



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UNITED STATES DEPARTMENT OF AGRICULTURE

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EXECUTIVE SUMMARY

In 2007, the United States Department of Agriculture (USDA) plans to invest over $2 billion in information technology (IT) assets and services. The success of these IT investments directly influences the ability of organizations within USDA to execute business plans and fulfill missions. For example:

- All current eGovernment plans and initiatives are all heavily dependent upon their underlying IT investments.
- The Food and Nutrition Service is heavily dependent upon Electronic Benefit Transfer (EBT) to carry out its $15 billion Food Stamp Program. More than 75 percent of food stamp benefits are currently being issued via EBT.
- The Risk Management Agency uses computers to help identify patterns of fraud, waste and abuse in crop insurance activity that can be very difficult to discern with the human eye alone.
- The Rural Development mission area is highly dependent upon its information systems to manage its $60 billion loan portfolio.

The Key Components

Recognizing both the importance of IT investments to the organization and its role in supporting the success of these investments, the Office of the Chief Information Officer (OCIO) is engaged in an ongoing effort to establish, maintain, and support an IT investment analysis and decision-making environment. This environment consists of three key components: executive decision-makers, supporting tools, and repeatable processes. Each is described below:

- **Executive decision-makers**—Consists primarily of an executive review board (E-Board) that oversees the process and is a stakeholder in the success of USDA.
- **Tools**—USDA uses a variety of tools to manage its IT investments. However, the primary tool to be used during this FY cycle will be Métier's WorkLenz. WorkLenz is a Web-based project and portfolio management tool that can be used to support both USDA investment decision-making and OMB investment submissions. The OCIO maintains and supports WorkLenz.[1]
- **Processes**—Capital Planning and Investment Control (CPIC) is USDA's primary process for (1) making decisions about which initiatives and systems USDA should invest in and (2) creating and analyzing the associated rationale for these investments. As summarized below, this guide describes the CPIC process in detail.

This Guide

The *USDA Information Technology Capital Planning and Investment Control Guide* identifies the processes and activities necessary to ensure that USDA's investments in IT are well thought out, cost-effective, and support the missions and business goals of the organization. It is based on guidance from both the Office of Management and Budget (OMB) and the Government Accounting Office (GAO). It also incorporates "lessons learned" from USDA's iterations through the process over the last three years.

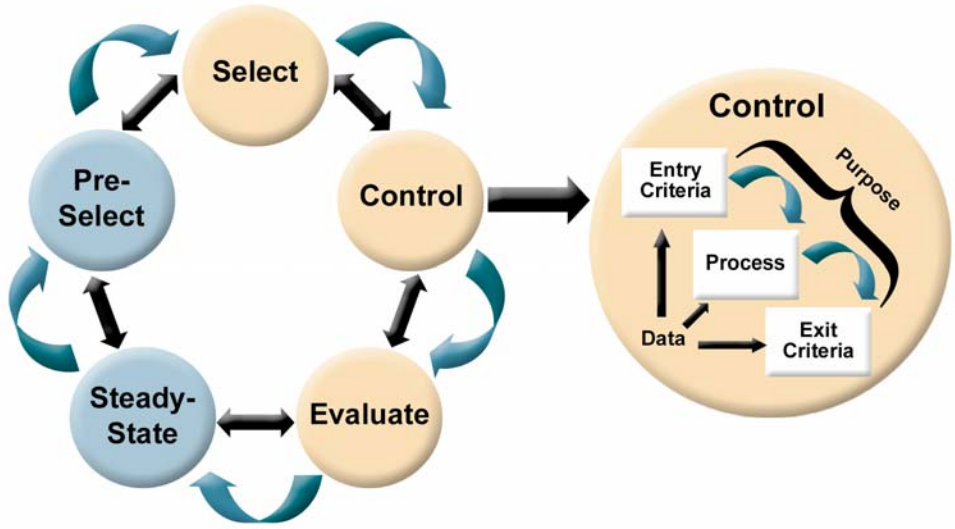
At the highest level, the CPIC process is a circular flow of USDA's IT investments through five sequential phases. As shown in Figure ES-1, these phases are:

[1] More information about WorkLenz can be found at http://www.ocio.usda.gov/cpic/usda_cpic_material.html

- **Pre-Select phase**—Executive decision-makers assess each proposed investment's support of USDA's strategic and mission needs. Project managers compile the information necessary for supporting a detailed proposal assessment.
- **Select phase**—Investment analyses are conducted and the E-Board chooses the IT projects that best support the mission of the organization, support USDA's approach to enterprise architecture, and are prepared for success.
- **Control phase**—USDA ensures, through timely oversight, quality control, and executive review, that IT initiatives are executed or developed in a disciplined, well-managed, and consistent manner.
- **Evaluate phase**—Actual results of the implemented projects are compared to expectations to assess investment performance. This is done to assess the project's impact on mission performance, identify any project changes or modifications that may be needed, and revise the investment management process based on lessons learned.
- **Steady-State phase**—Mature systems are assessed to ascertain their continued effectiveness in supporting mission requirements, evaluate the cost of continued maintenance support, assess potential technology opportunities, and consider retirement or replacement options.

Each of these five phases is structured in a similar manner using a set of common elements. These common elements provide a consistent and predictable flow and coordination of activities within each phase.

Figure ES-1. The Five CPIC Phases and the Common Elements Within Each Phase



Beyond the detailed CPIC process and activity description, this Guide also includes:

- A charter for the E-Board and the associated operating procedures necessary to conduct investment reviews
- A template for evaluating the mission need of a new IT investment proposal
- Guidance on how to:
  - Complete a Cost-Benefit Analysis (CBA)
  - Conduct a risk assessment for IT capital planning
  - Develop performance measures for IT projects

- Manage IT projects
- Conduct earned value analysis
- Conduct a Post-Implementation Review (PIR)

- The scoring criteria to be used by OCIO and the E-Board during investment reviews
- A glossary of terms and acronyms used throughout this document
- A list of references used to create this document.

For further information on IT investment management or USDA's CPIC process, please see the USDA CPIC Web site at http://www.ocio.usda.gov/cpic/index.html.

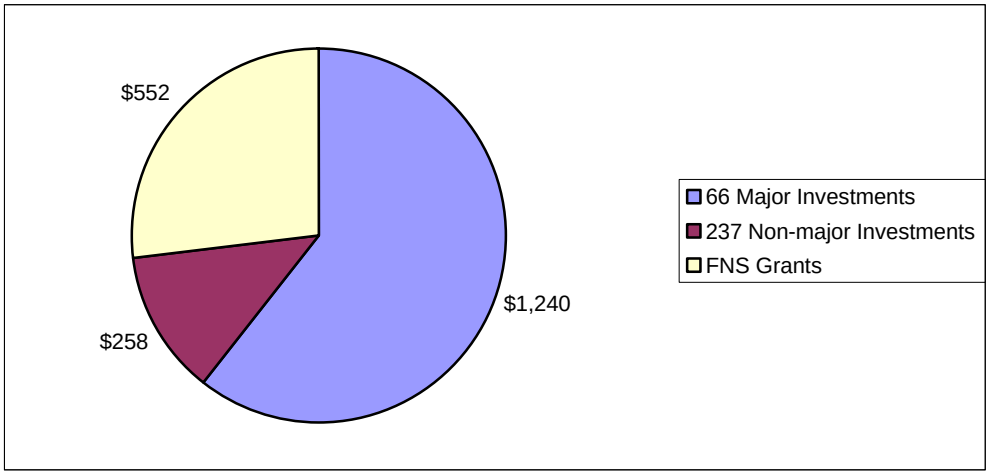
CHAPTER 1—INTRODUCTION

1.1 PURPOSE

This document describes the United States Department of Agriculture (USDA) Information Technology (IT) Capital Planning and Investment Control (CPIC) process. As such, it outlines a framework for USDA to manage its IT investment portfolio better. This investment management process allows USDA to optimize the benefits of scarce IT resources, address the strategic needs of USDA, and comply with applicable laws and guidance.

Major investments, while small in number, have significant impacts on the efficient and effective operation of USDA agencies and services. Figure 1-1 shows the size of the major systems budget relative to the entire IT budget for fiscal year (FY) 2007.

Figure 1-1. USDA FY 2007 IT Investment Budget
(in Millions of Dollars as of Aug. 4, 2005)



The CPIC is a structured, integrated approach to managing IT investments. It ensures that all IT investments align with the USDA mission and support business needs while minimizing risks and maximizing returns throughout the investment's lifecycle. The CPIC relies on a systematic pre-selection, selection, control, and on-going evaluation process to ensure each investment's objectives support the business and mission needs of the Department (see Figure 1-2).

Through sound management of these investments, the executive review board (E-Board) determines the IT direction for USDA, and ensures that agencies manage IT investments with the objective of maximizing return to the Department and achieving business goals.

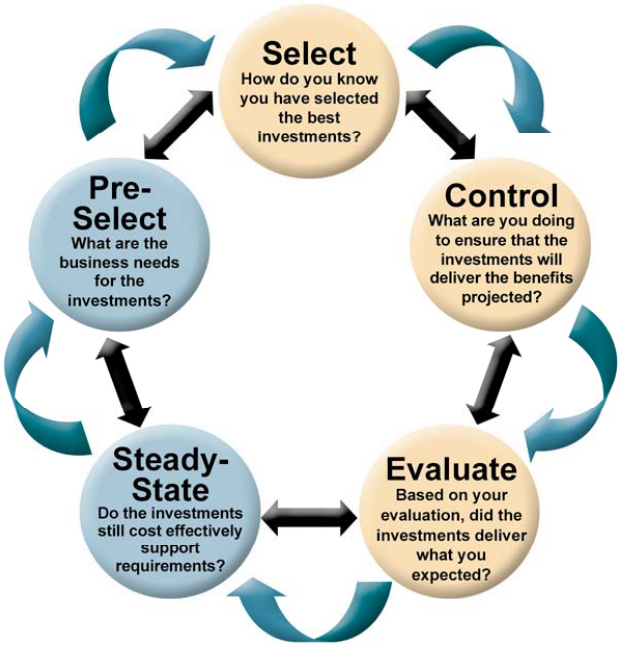
1.2 LEGISLATIVE BACKGROUND AND ASSOCIATED GUIDANCE

Recent statutes require federal agencies to revise their operational and management practices to achieve greater mission efficiency and effectiveness. These laws include:

- The Chief Financial Officer (CFO) Act of 1990

- The Government Performance and Results Act of 1993 (GPRA)
- The Federal Acquisition Streamlining Act of 1994 (FASA)
- The Paperwork Reduction Act of 1995 (PRA)
- The Clinger-Cohen Act of 1996 (CCA)
- The Government Paperwork Elimination Act of 1998 (GPEA)
- The Federal Information Security Management Act (FISMA)
- The E-government Act of 2002 (P.L. 107-347).

Figure 1-2. CPIC Information and Process Flow



This CPIC Guide is based upon the IT aspects of these laws, and focuses specifically on the CCA requirements. The CCA's objective is that senior managers use a CPIC process to systemically maximize the benefits of IT investments. The Act further describes CPIC as follows:

- "The Head of each executive agency shall design and implement in the executive agency a process for maximizing the value and assessing and managing the risk of the information technology acquisitions of the executive agency" and
- "The process shall:
  1. Provide for the selection of information technology investments to be made by the executive agency, the management of such investments, and the evaluation of the results of such investments;
  2. Be integrated with the processes for making budget, financial, and program management decisions within the executive agency;

3. Include minimum criteria to be applied in considering whether to undertake a particular investment in information systems, criteria related to the quantitatively expressed projected net risk-adjusted return on investment and specific quantitative and qualitative criteria for comparing and prioritizing alternative information systems investment projects;
4. Provide for identifying information systems investments that would result in shared benefits or costs for other Federal agencies of State or local governments;
5. Require identification of quantifiable measurements for determining the net benefits and risks of a proposal investment; and
6. Provide the means for senior management to obtain timely information regarding the progress of an investment, including a system of milestones for measuring progress, on an independently verifiable basis, in terms of cost, capability of the system to meet specified requirements, timeliness, and quality."

Beyond the legislative background, there is extensive guidance from the Federal Chief Information Officer (CIO) Council, the Office of Management and Budget (OMB), the General Accounting Office (GAO), and others in the area of IT investment management. A list of investment management reference guides and memos is identified in Appendix S. The policy and processes described in this Guide are consistent with this guidance.

1.3 Points of Contact

The CPIC process is primarily supported and maintained by the USDA Office of the Chief Information Officer (OCIO). For further information about this Guide or the CPIC process, please see the USDA CPIC Web site at http://www.ocio.usda.gov/cpic/index.html. Additional USDA mission area and agency points of contact can be found in Chapter 7.

1.4 Scope

All IT projects within USDA must comply with this CPIC guidance. Exemptions to this guidance are granted only in exceptional circumstances. However, not all IT projects must be reviewed by the E-Board. Only those IT projects that are considered to be "major" and strategic investments for the Department are required to be included in the E-Board executive portfolio. It is expected that each individual USDA agency will have a similar CPIC process, manage its own portfolio, and create associated thresholds. At a minimum, each agency is expected to use the CPIC process to manage its "significant" investments.

The thresholds for a project to be considered "major" are described in the following section.

1.5 Thresholds for Major IT Investments

Major IT investments are considered to be strategic for the Department and, thus have a greater documentation burden, including being individually reported to OMB on an Exhibit 300. They are also included in the E-Board executive portfolio. Major IT investments meet at least one of the following criteria[2]:

- Total lifecycle costs greater than $50 million or lifecycle Development/Modernization/Enhancement (D/M/E) funding of $20 million or more,
- Financial systems with costs greater than $500,000 per year in FY 2006 or later.
- Identified by the USDA CIO as critical. This may include systems that are
  - Mandated by legislation or executive order, or

[2] The term "major information system" means an information system that requires special management attention because of its importance to an agency mission (mission critical); its high development, operating, or maintenance costs; or its significant role in the administration of agency programs, finances, property, or other resources. All mission critical systems are, therefore, major systems.

- Require a common infrastructure investment, or
- Are considered strategic or mandatory-use systems, or
- Significantly differs from or impacts on the Department infrastructure, architecture, or standards guidelines, or
- Significant multiple-agency funding.

Per OMB guidance, USDA rolls all USDA IT infrastructure spending each year into a single Exh. 300 for reporting purposes. The individual infrastructure Exh. 300s that are created by the agencies are used 1) for internal USDA decision-making and 2) as a basis for the larger USDA-wide infrastructure Exh. 300. Thus, infrastructure investments must create an Exh. 300 if it has costs per year greater than $1.0 million in FY 2006 or later. All agencies are encouraged also to roll all of their infrastructure spending into a single agency-wide infrastructure investment. However, OCIO recognizes that this may not be feasible or desirable in all cases.

Investments that do not meet the above criteria are to be managed by the capital planning functions within each individual agency. As such, each managing agency is to have:

- Φ A process for proposing, reviewing, and monitoring its IT investments;
- Φ A investment review board responsible for making final investment decisions and overseeing the IT investment management process;
- Φ Relevant tools for supporting its IT investment management process; and
- Φ Supporting documentation showing the ongoing operations of the process.

1.6 Roles and Responsibilities

The following decision-making bodies and personnel have been assigned the responsibilities listed below.

- Φ **Key Decision-Making Bodies**—The governing and approval bodies responsible for ensuring that proposed investments meet USDA strategic, business, and technical objectives.
- Φ **E-Board**—Responsible for reviewing and approving strategic investments at USDA. It is staffed by the sub cabinet members and is chaired by the Deputy Secretary and vice-chaired by the CIO. (See Appendix A—Board Procedures for the E-Board Charter).
- Φ **OCIO**—Responsible for setting IT policy, reviewing investments, assessing how potential and existing major investments meet capital planning criteria, approving movement between CPIC phases and making recommendations to the E-Board.
- Φ **Key Agency Personnel**—The agency personnel responsible for investment management and successful completion of the CPIC:
- Φ **Agency head**—Responsible for signing CPIC documentation before submission to OCIO.
- Φ **Agency sponsor**—Responsible for providing executive sponsorship of the investment; should be a senior level executive within the applicable mission area or agency.
- Φ **Project sponsor/functional manager**—Responsible for the strategic business processes under development or enhancement and for ensuring their integrity; also serves as the primary user interface to the OCIO and the E-Board.
- Φ **Project manager**—Responsible for successful management and completion of one or more IT investments. Given the importance of this role, all major investments must be lead by qualified project managers.
- Φ **IT Manager**—Responsible for serving as the primary point of contact for technology issues.

- **Contracting Specialist**—Responsible for serving as the primary acquisition support for the investment and interface between the investment and the Office of Procurement and Property Management (OPPM).
- **Capital Planning Analyst (sometimes referred to the OCIO liaison)**—Responsible for serving as the primary interface for capital planning between the investment and OCIO.
- **Budget Analyst**—Responsible for serving as the primary interface between the investment and the Office of Budget and Program Analysis (OBPA).

1.7 Process Overview

The CPIC is a fluid, dynamic, and ongoing process in which proposed and ongoing projects are continually monitored throughout their lifecycle. Successful investments and those that are terminated or delayed are evaluated both to assess the impact on future proposals and to benefit from any lessons learned. The CPIC contains five phases (Pre-Select, Select, Control, Evaluate, and Steady-State). As detailed in this document, each phase contains the following common elements:

- **Purpose**—Describes the objective of the phase;
- **Entry Criteria**—Describes the phase requirements, and thresholds for entering the phase;
- **Process**—Describes the type of justification, planning, and review that will occur in the phase; and
- **Exit Criteria**—Describes the actions necessary for proceeding to the next phase.

Completing one phase is necessary before beginning a subsequent phase. This ensures that each investment receives the appropriate level of managerial review and that coordination and accountability exist. Exceptions to CPIC requirements must be identified in the IT investment's project plan.

USDA agencies and staff offices that have IT investment proposals meeting the major IT investment criteria should prepare an investment proposal according to the guidelines provided in this document. The proposal's length and level of detail should be commensurate with the system's size or impact. These proposals will enter the CPIC process. They will be analyzed by OCIO for quality and conformance to policies and guidelines and reviewed against the applicable strategic investment criteria. OCIO prepares a brief project summary, an investment analysis and a recommendation that is sent to the E-Board for review and approval/disapproval action. Approval, if granted, is an approval of concept, indicating that the agency or staff office has done the preparatory work necessary to fully justify the investment, and has the mechanisms in place to manage the investment through acquisition, development, implementation, and operation. The investment must still compete for funding through the agency budget process.

1.8 Process Coordination and Improvement

Investments that have been approved must move through processes to obtain investment funding. The agency is responsible for preparation of budget and/or Working Capital Fund requests for its investment submissions. The agency is also responsible for preparation and submission of IT acquisition moratorium waiver requests when acquisitions for a given investment exceed the current moratorium threshold.

The USDA Chief Information Officer has the authority to decide if an investment is ready to move to the next phase of the CPIC cycle. All major investments must submit a written request to the USDA CIO through the Associate CIO for IRM before they can move to the next phase. This change was made to create more flexibility for major investment managers who wish to move more quickly through CPIC process than is customary.

In an ongoing attempt to improve its IT capital planning process, USDA has occasionally compared its process to the IT capital planning processes in other federal organizations. Formally known as benchmarking, the purpose of this comparison is to learn from others so as to improve the USDA capital planning process. An opportunity arose in 2005 to conduct a benchmarking assessment relative to another

highly-regarded federal department as part of USDA's post-pilot review of WorkLenz. In the future, USDA will benchmark its IT capital planning process relative to other federal organizations at least once every three years.

1.9 Document Structure

This document is divided into seven chapters and 16 appendices as described below:

- **Chapter 1—Introduction.** Describes the CPIC purpose, scope, thresholds, roles, process, and document structure.
- **Chapter 2—Pre-Select phase.** Provides a process and mechanism to assess an investment's support of agency strategic and mission needs.
- **Chapter 3—Select phase.** Provides tools to ensure that IT investments are chosen that best support the agency's mission and that support USDA's approach to enterprise architecture.
- **Chapter 4—Control phase.** Provides guidance to ensure that IT initiatives are conducted in a disciplined, well-managed, and consistent manner, which promote the delivery of quality products and result in initiatives that are completed within scope, on time, and within budget.
- **Chapter 5—Evaluate phase.** Provides guidance on comparing actual to expected results once a project has been fully implemented.
- **Chapter 6—Steady-State phase.** Provides a means to assess mature systems to ascertain their continued effectiveness in supporting mission requirements and to evaluate the cost of continued support or potential retirement and replacement.
- **Chapter 7—Assessing Investment Proposals.** Describes the methods and criteria whereby the investments are assessed.

Appendices:

- **Board Procedures**—Provides the E-Board Charter that includes its roles and responsibilities.
- **CPIC Process Checklist**—Provides a checklist of the process steps investments must complete for each CPIC phase.
- **OMB Exhibit 300 Assessment**—The Exhibit 300 is a key document when for submitting the investment package. The 300 scoring criteria are included.
- **Operational Analysis Review**—Provides a form to use that defines the basic elements needed for an operational analysis review.
- **Cost-Benefit Analysis**—Provides guidance on completing a cost-benefit analysis (CBA)
- **Risk Assessment**—Provides guidance on conducting a risk assessment for IT capital planning.
- **Performance Measurement**—Provides guidance on developing performance measures for IT investments.
- **Project Management**—Provides guidance on managing IT investments.
- **Earned Value Management Analysis**—Provides guidance on conducting earned value management analysis.
- **Post-Implementation Reviews**—Provides guidance on conducting a Post-Implementation Review (PIR).
- **Mission Needs Statement**—Provides a template for evaluating the mission need(s) for a new IT investment.
- **eGovernment** – Provides guidance on eGovernment information to support the investment.
- **Enterprise Architecture** —To be added later.

- **Cyber Security Infrastructure Guide** - Provides guidance concerning cyber security information to support the investment.
- **Telecommunications Reference Manual** – Provides guidance on telecommunications information to support the investment.
- **OMB Requirements** —Provides a summary of the data required for OMB using WorkLenz.
- **Quarterly/Milestone Control Review Checklist**—Lists the critical areas the control review team discusses during each quarterly/milestone review.
- **Glossary of Terms and Acronyms**—Provides definitions for terms and acronyms used throughout this document.
- **References**—Provides a list of references used to develop this document.

CHAPTER 2—PRE-SELECT PHASE

2.1 PURPOSE

The Pre-Select phase provides a process to assess a current investment's support of agency strategic and mission needs and to provide initial information to further support investments. It is during this phase that the business/mission need is identified and relationships to the Department and/or agency strategic planning efforts are established. There are significant information requirements and a potential expenditure of funds in the preliminary planning phase to prepare for review and selection of IT investments. The Pre-Select phase provides an opportunity to focus efforts and further the development of the initiative's concept. It also allows project teams to begin the process of defining business requirements and associated system performance metrics, performance measures, benefits, and costs, as well as subsequent completion of a business case and project planning efforts in preparation for inclusion in the Department's investment portfolio.

2.2 ENTRY CRITERIA

Prior to entering the Pre-Select phase, investments must have a concept to address the mission need that is anticipated to include an IT component and meet at least one of the threshold criteria identified in section "1.5—Thresholds for Major IT Investments."

2.3 PROCESS

During the Pre-Select phase, mission analysis results in the identification of a mission need necessitating consideration of an IT alternative. The mission analysis and corresponding development of the mission needs statement (see Appendix K—Mission Needs Statement) are closely linked to the strategic planning process of the USDA and sponsoring agency. Following mission analysis, the functional manager further develops the proposed solution's concept. Objectives are established, evaluation criteria are defined, concept alternatives are identified, and an alternative analysis approach is documented as part of the concept management plan to support concept and mission need approval. A preliminary business case with budget estimates and associated CBA is also completed.

Table 2-1 provides a summary of the Pre-Select phase process, as well as the individual(s) and/or group(s) responsible for completing each process step. Each step is detailed following the table.

Table 2-1. Pre-Select phase Process Flow

Process Step	Responsible Individual(s) or Group(s)
Identify project sponsor.	Agency head
Conduct mission analysis.	Functional manager
Develop concept.	Functional manager
Prepare preliminary business case.	Functional manager
Prepare investment review submission package.	Project manager Functional manager Agency sponsor
Review/approve investment submission.	Agency head
Review initiative and recommend appropriate action.	OCIO
Make final investment decisions.	E-Board

1. Identify project sponsor

The agency head identifies a project sponsor for each accepted proposal. The project sponsor will normally be the same person as the functional manager but if the investment is crosscutting, strategic, or high visibility, the project sponsor may be different from the functional manager. The project sponsor should be a senior individual in the organization with requisite management, technical, and business skills to lead the investment or supervise a designated project manager. All USDA major investments must be lead by qualified project managers.

The project sponsor is the business leader responsible to the E-Board for the investment as it continues through the CPIC process. Commercial and government best practices show that IT investments championed by a business leader have the best chance for successful deployment. This commitment by the project sponsor to the E-Board represents accountability for the investment.

2. Conduct Mission Analysis

Mission analysis is a strong, forward-looking, and continuous analytical activity that evaluates the capacity of the Department's and/or agency's assets to satisfy existing and emerging demands for services. Mission analysis enables the Department and/or agency to determine and prioritize the most critical capability shortfalls and best technology opportunities for improving the USDA's overall security, capacity, efficiency, and effectiveness in providing services to customers.

Mission analysis is conducted within the framework of both the Department's and the sponsoring agency's enterprise architecture and long-range strategic goals. In turn, mission analysis contributes strongly to the evolution of strategic planning and USDA IT architecture development. (See Appendix K—Mission Needs Statement for a template on how to conduct mission analysis).

Consequently, mission analysis yields the identification of critical needs the Department should address. It estimates the resources the agency and/or Department will likely be able to commit to each mission need, in competition with other needs, within the constraint of a realistic projection of future agency budget authority. The resource estimate becomes a "placeholder" until the mission need is approved. More accurate resources quantification is conducted during the investment analysis if the investment is selected as part of the Department's portfolio. The resource estimate is a function of the benefit to the agency and the mission area, the cost of not addressing the need (e.g., poor customer responsiveness, increased maintenance cost, lost productivity, etc.), and the likely extent of required changes to the agency's infrastructure.

If the mission analysis reveals a non-IT solution (e.g., a rulemaking/policy change, operational procedural change, or transfer of systems between sites) that can satisfy a capability shortfall and can be achieved within approved budgets, it can be implemented without proceeding further in the CPIC process.

A mission analysis should identify the business drivers (i.e. agency mission, vision, goals, objectives, and tactical plans.) Business drivers often involve the need to assist customers in a particular service area such as farm loans.

Once the key business drivers have been identified, a business requirements analysis is conducted. The business requirements analysis identifies how personnel conduct business activities in order to fulfill mission requirements, meet objectives and perform their tactical plans.

All mission needs statements will emerge from a structured mission analysis. However, any individual or organization may propose a mission need based on a perceived capability shortfall or technological opportunity. Examples of potentially valid needs that could originate outside USDA lines of business include those related to socioeconomic and demographic trends, the environment, statutory requirements, or an industry-developed technological opportunity. These shortfalls and opportunities should be identified to

the appropriate functional manager who will determine how mission analysis should be conducted to validate, quantify, and prioritize the proposed need.

USDA lines of business conduct mission analysis within their areas of responsibility. The principal activities of mission analysis are:

- Identify and quantify projected demand for services based on input from diverse sources such as the agriculture/rural community; architecture and strategic planners for services needed in the future; and integrated project teams (IPTs) in the form of performance and supportability trends of fielded systems. Identify and quantify projected technological opportunities that will enable the USDA to perform its mission more efficiently and effectively.
- Identify and quantify existing and projected services based on information from field organizations, the enterprise architecture, and IT asset inventory that defines what is in place and what is approved for implementation.
- Identify, analyze, and quantify capability shortfalls (i.e., the difference between demand and supply) and technological opportunities to increase quality of service, efficiency, and effectiveness.
- Identify the user and customer base affected.
- Prepare a mission needs statement that summarizes the mission analysis for inclusion with the Pre-Select CPIC packet submission.

When mission analysis identifies a capability shortfall or technological opportunity, the results are summarized in a mission needs statement. The mission needs statement must clearly describe the capability shortfall and the impact of not satisfying the shortfall, or the technological opportunity and the increase in efficiency it will achieve. The mission needs statement also must assess the criticality and timeframe of the need, and roughly estimate the resources the agency should commit to resolving it based on worth, criticality, and the scope of likely changes to the agency's IT asset base. This information forms the basis for establishing the priority of this need in competition with all other agency and/or Department needs.

3. Develop Concept

Concept development provides the opportunity for further examination of a proposed solution. It focuses on an analysis of alternatives to meet the mission need and initial planning for entering into the Select phase. Key components include analysis of alternatives and an examination and redesign of business practices.

The following activities are conducted during concept development:

- Assess mission needs statement.
- Identify business objectives based on mission analysis and mission needs statement.
- Discuss the proposed investment in relation these questions:
  - Does the investment in major capital asset support core/priority mission functions that need to be performed by the federal government?
  - Does it have to be undertaken by the requesting agency because no alternative private sector or government source can more efficiently support the function?
  - Does the investment support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial-off-the-shelf (COTS) technology?
- Identify high-level performance measures. (Additional detailed performance measures will be developed as part of the Select phase.)
- Determine key selection criteria to evaluate concept alternatives that support high-level performance measures and business objectives.

- Ensure solution aligns with agency standards for enterprise architecture planning, security & privacy, and eGovernment planning.
- Identify alternatives that will be analyzed to support mission need and business objectives.
- Conduct preliminary planning and develop a concept management plan addressing Select phase preparation, alternative analysis approach, and business redesign/reengineering. Plans for redesign or business process reengineering (BPR) should be presented as part of the Pre-Select submission. Proposed IT investments should support work processes that 1) have been simplified or redesigned to reduce costs and improve effectiveness and 2) make maximum use of commercial-off-the-shelf (COTS) software.

4. Develop Preliminary Business Case

The business case provides the necessary information to build support and make funding decisions for an investment. While the primary emphasis of the Pre-Select phase is on mission and strategic needs analysis, it also requires the functional manager to begin identifying alternative solutions and developing an order of magnitude estimate of costs and benefits (both quantitative and qualitative) that may be realized by a given investment. Initial business case development activities include a preliminary budget estimate and preliminary CBA, as discussed below.

- **Prepare preliminary budget estimate**—The preliminary budget estimate should provide an estimate of costs necessary to support more detailed planning and concept development prior to investment selection, and provide an order of magnitude estimate of budget requirements to support a five-year budget plan and lifecycle costing.
  - As part of the preliminary budget estimate, a preliminary security and telecommunications infrastructure analysis should be performed to determine estimated baseline costs for these two cost elements. This information should be included with the investment's preliminary budget estimate. Detailed information concerning the preparation of a security and telecommunications infrastructure analysis can be found in Appendix N—Cyber Security Infrastructure Guide and Appendix O—Telecommunications Reference Manual
- **Prepare Preliminary CBA**—The preliminary CBA will provide initially anticipated costs and benefits of the proposed investment. Costs should be the same as those identified in the budget estimate and benefits should be aligned with the investment objectives and high-level performance measures.

5. Prepare Investment Review Submission Package

The project manager, functional manager, and agency sponsor prepare the Pre-Select submission package in preparation for USDA's annual investment review to include:

- OMB Exhibit 300
- Introduction and brief overview of mission need
- Mission Needs Statement
- Concept Management Plan
- Preliminary CBA and budget estimate
- Address eGov, EA, and Telecommunications scoring factors.

Note that projects that provide insufficient business case documentation will not be included in the IT investment portfolio or forwarded to OMB as part of USDA's IT request.

6. Review/Approve Investment Submission

The agency head reviews the investment submission and requests the functional manager and/or agency sponsor to update the package or make changes as needed. The agency head then approves the investment submission and forwards it to the OCIO.

7. Review Initiative and Recommend Appropriate Action

The OCIO reviews the package and provides any comments and/or questions to the agency. The agency addresses the issues and sends an updated package to the OCIO. OCIO assesses the investment with an emphasis on mission alignment and the proposed concept management plan. OCIO prepares an investment analysis and recommendation that is sent to the E-Board for the final decision.

8. Make Final Investment Decisions

The E-Board reviews the OCIO analysis and recommendation and makes the final investment decisions. If the E-Board approves the proposal, the agency sponsor moves forward with alternative analysis, detailed CBA, and risk assessment, and begins to prepare for the investment's portfolio selection.

2.4 EXIT CRITERIA

Prior to exiting the Pre-Select phase, investments must obtain OCIO approval for the mission need and concept.

CHAPTER 3—SELECT PHASE

3.1 PURPOSE

In the Select phase, USDA ensures the IT investments that best support the mission and USDA's approach to enterprise architecture, are chosen and prepared for success (i.e., have a qualified project manager, are analyzing risks, etc.). Individual investments are evaluated in terms of technical alignment with other IT systems and projected performance as measured by cost, schedule, benefit, and risk (CSBR). Milestones and review schedules are also established for each investment during the Select phase.

In this phase, USDA prioritizes each investment and decides which investments will be included in the portfolio. Investment submissions are assessed against a uniform set of evaluation criteria and thresholds. The investment's CSBR are then systematically scored using objective criteria and the investment is ranked and compared to other investments. Finally, the E-Board selects which investments will be included in the Department's portfolio.

3.2 ENTRY CRITERIA

Prior to entering the Select phase, investments must have obtained OCIO approval for the mission need and concept.

3.3 PROCESS

The Select phase begins with an investment concept (approved during the Pre-Select phase) and moves through the development of the business case, acquisition plan, risk analysis, performance measures, and a project plan. These plans lay a foundation for success in subsequent phases. The Select phase culminates in a decision whether to proceed with the investment.

Table 3-1 provides a summary of the Select phase process, as well as the individual(s) and/or group(s) responsible for completing each process step. Each step is detailed following the table.

Table 3-1. Select phase Process Flow

Process Step	Responsible Individual(s) or Group(s)
Review the mission needs statement and update if needed.	Functional manager
Approve integrated project team membership.	Project sponsor
Identify funding source and obtain agency approvals.	Project sponsor
Develop major investment supporting materials.	Project sponsor
Prepare IT investment review submission.	Project sponsor
Review/approve investment submission.	Agency head
Review initiative and recommend appropriate action.	OCIO
Make final investment decisions.	E-Board

1. Review the Mission Needs Statement and Update if Needed

The functional manager reviews the mission needs statement and other documentation completed during the Pre-Select phase and makes any necessary changes. Next, the functional manager develops quantifiable performance measures that focus on outcomes where possible (see Appendix G—Performance

Measurement). The functional manager also describes the qualitative improvements in measurable terms such as customer satisfaction. These performance measures will form a basis for judging investment success.

2. Approve Integrated Project Team Membership

The project sponsor and project manager approve the selection of the IPT members that will assist them in the initiative's development. The IPT brings together expertise from functional areas as required by the specifics of the initiative. A capital planning analyst from the OCIO Information Resource Management (IRM) office will work with and provide guidance to the IPT throughout the process.

Serving on the IPT will normally be an additional duty but initiative size or potential impact may increase commitment. The IPT should consist of functional experts in the following areas:

- Functional manager with program experience
- IT manager with experience in proposed technology
- Agency telecommunications specialist
- Agency cyber security specialist
- Agency budget Analyst
- Contracting specialist.

Additional staff may be added from other functional areas as needed.

3. Identify Funding Source and Obtain Approvals

The project sponsor identifies a potential funding source for the E-Board to continue investment support. The project sponsor then gets approval from the offices listed in Table 3-2, as needed, depending upon the investment's characteristics. The members of the IPT should assist in coordinating these actions within their respective functional areas.

Table 3-2. Approval Requirements

Office	Characteristic that triggers office approval request
OCIO	Investment exceeds agency threshold.
Office of Chief Financial Officer (OCFO)	Investment involves an appropriation, accounting, or financial system.
OPPM	IT acquisitions of more than $25 million ($50 million if the contracting organization is OPPM/Procurement Operations Division)
Contracting Officer	Determining acquisition strategy, i.e., capability to use the Office of Small and Disadvantaged Business Utilization programs for procurement.
Office of General Counsel	Legal review of solicitation documents more than $500,000.
OBPA	Ensure investment is included in budget submission.

4. Develop Major Investment Supporting Materials

The project sponsor ensures, that for each investment, the following studies are completed and the results are submitted to the OCIO:

- OMB Exhibit 300
- Business Profile:
  - Business case with performance measures (see Appendix G—Performance Measurement) and mission needs statement
  - Functional requirements
  - Feasibility study.
- Risk Profile:
  - Risk assessment and mitigation plan (see Appendix F—Risk Assessment)
  - Initiative pilot/prototype plans.
- Financial Profile:
  - Return on investment (ROI) and CBA (see Appendix E—Cost-Benefit Analysis)
  - Update lifecycle cost projections
  - Alternatives analysis
  - Funding source identification.
- Technological Profile:
  - Technical requirements
    - Security plan (see Appendix N – Cyber Security Infrastructure Guide for instructions on preparing security plan documentation)
  - Telecommunications plan (see Appendix O—Telecommunications Reference Manual for instructions on preparing telecommunications documentation)
  - Enterprise architecture plan
  - eGovernment plan
  - Relationship to existing systems (dependencies).
- Management and Planning Profile
  - Project plan, including a list of team members
  - Telecommunications risk and mitigation plan
  - Integrated logistics plan (if required)
  - Acquisition plan and strategy
  - Independent verification and validation (IV&V) documentation (if warranted).

- Ensure that earned value management (EVM) planning is incorporated into:
  - The contract(s) and orders for major IT investments (see the related AGAR Advisory at http://www.ocio.usda.gov/cpic/doc/agarad80.pdf), and
  - Project plans and resource requirements.

A concept of operations plan is developed to describe how the new system will work and satisfy business requirements. The concept of operations should also address the modularity of the investment (i.e., if the investment is stopped at any point along the way the components developed to date would still be useful to the organization).

Focus should be placed on the functional integration of Department-level IT enterprise architecture planning, telecommunications planning, and eGovernment planning.

5. Prepare IT Investment Review Submission

The project sponsor also prepares the submission package in preparation for USDA's annual investment review. Other supporting investment documentation to evaluate other key areas are located in the Appendix Section of this document and should be attached, as needed, to the Exhibit 300.

- Introduction and brief overview of the investment
- Mission Needs Statement
- Acquisition strategy
- Initial project plan with estimated costs listed for each work breakdown structure (WBS)
- CBA and budget estimate, including risk-adjusted ROI and net present value (NPV) calculations
- Risk
- Security (see Appendix N—Cyber Security Infrastructure Guide for instructions on preparing security plan documentation)
- Performance goals
- Architecture, including IT accessibility for persons with disabilities (Section 508)
- Telecommunications plan (see Appendix O—Telecommunications Reference Manual for instructions on preparing telecommunications plan documentation)

Note that projects that provide insufficient business case documentation will not be included in the IT investment portfolio or forwarded to the Office of Management and Budget as part of USDA's IT request.

6. Review/Approve Investment Submission

The agency head reviews the investment submission and requests the project sponsor, functional manager, and/or agency sponsor to update the package or make changes as needed. The agency head then approves the investment submission and forwards it to the OCIO.

7. Review Initiative and Recommend Appropriate Action

The OCIO reviews the investment based on the established criteria. The OCIO provides any comments and/or questions to the agency. The functional manager works with the OCIO to address the issues and furnish details as requested, and sends an updated package to the OCIO. OCIO prepares a brief project summary, an investment analysis and a recommendation for action to the E-Board.

8. Make Final Investment Decisions

The E-Board makes the final investment decisions. If the E-Board approves the investment, then the decision is implemented in concert with OCIO approval for the initiative to move to the Control phase.

3.4 PORTFOLIO MANAGEMENT

To support the Department's portfolio management efforts, assessors should note substantiating evidence for their investment evaluations and scores as much as possible. An acceptable ratio of high, medium, and low risk investments should be included in the portfolio to achieve organizational objectives and future needs. The balance between the various risks of the technical, operational, financial, and organizational components are part of portfolio selection. The E-Board should consider the ratio in different categories of investments—based on their functionality. Additionally, the E-Board should take a strategic view of their recommendations. This view should:

- Use a broad understanding of the environment and the Department's need in identifying which investments produce the maximum results per the CCA

- Consider public and Congressional interest in IT investment decisions
- Determine which investments are of particular interest to the Department (through its strategic goals and policies), administration, and Congress
- Consider enterprise architecture, eGovernment, and telecommunications frameworks when analyzing Department portfolios.
- Consider the results of not selecting the investment
- Evaluate mandatory investments in terms of the overall pool and whether the investment must be made now or in the future
- Consider whether the investment meets minimum legal requirements or goes beyond legal mandates, leading to unnecessary costs.

3.5 Exit Criteria

Prior to exiting the Select phase, investments must have:

- Established performance goals and quantifiable performance measures
- Developed a project plan which details quantifiable objectives including an acquisition schedule, project deliverables, and projected and actual costs
- Identified costs, schedule, benefits, and risks
- Established security, telecommunications, Section 508 (IT accessibility), and architecture goals and measures
- Obtained OCIO approval to enter the Control phase.

CHAPTER 4—CONTROL PHASE

4.1 PURPOSE

The objective of the Control phase is to ensure, through timely oversight, quality control, and executive review, that IT initiatives are conducted in a disciplined, well-managed, and consistent manner. Investments should be closely tracked against the various components identified in the risk assessment and mitigation plan developed in the Select phase. This phase also promotes the delivery of quality products and results in initiatives that are completed within scope, on time, and within budget. During this process, senior managers regularly monitor the progress/performance of ongoing IT investments against projected cost, schedule, performance, and delivered benefits.

Although USDA usually selects new investments annually, the Control phase is an ongoing activity. It requires the continuous monitoring of ongoing IT initiatives through the development or acquisition lifecycle. USDA reviews occur before the annual budget preparation process. Additionally, periodic summary reviews are completed based on the review schedule completed during the Select phase.

The Control phase is characterized by decisions to continue, modify, or terminate a program. Decisions are based on reviews at key milestones during the program's development lifecycle. The focus of these reviews changes and expands as the investments move from initial concept or design and pilot through full implementation and as projected investment costs and benefits change. The reviews focus on ensuring that projected benefits are being realized; cost, schedule and performance goals are being met; risks are minimized and managed; and the investment continues to meet strategic needs. Depending on the review's outcome, decisions may be made to suspend funding or make future funding releases conditional on corrective actions.

4.2 ENTRY CRITERIA

Prior to entering the Control phase, investments must have:

- Established performance goals and quantifiable performance measures
- Developed a project plan which details quantifiable objectives, including an acquisition schedule, project deliverables, and projected and actual costs
- Identified costs, schedule, benefits, and risks
- Established security, telecommunications, Section 508 (IT accessibility), and architecture goals and measures
- Established an E-Board investment review schedule for the Control phase
- Obtained OCIO approval to enter the Control phase.

Once the investment enters the Control phase, the IPT will monitor the investment throughout development and report investment status to the investment's sponsors and oversight groups.

4.3 PROCESS

During the Control phase, an investment progresses from requirements definition to implementation. Throughout the phase, agency CIOs provide the OCIO with investment reviews to assist them in monitoring all investments in the portfolio. Investment reviews provide an opportunity for project managers to raise issues concerning the IT developmental process, including security, telecommunications, enterprise architecture alignment, eGovernment, and Section 508 concerns.

The ability to adequately monitor IT initiatives relies heavily on the outputs from effective investment execution and management activities. The OCIO develops a master milestone review calendar for evaluation and approval by the E-Board. The OCIO maintains a control review schedule for all initiatives in the Department's IT investment portfolio and monitors investments quarterly. Appendix Q provides an outline of the items agencies must address in writing for each quarterly or milestone control review. The E-Board reviews investments at its discretion or if the cost, schedule, or performance varies more than 10 percent from expectations.

The E-Board reviews are based on factors including the strategic alignment, criticality, scope, cost, and risk associated with all initiatives. The project sponsor establishes milestones as part of the investment baseline against which performance will be measured throughout the Control phase. Agencies are expected to uphold these milestones; OMB will hold agencies responsible for meeting milestones as originally indicated in the baseline. After establishing the milestones, the project sponsor revises the project plan as required to meet the approved milestones. It is recommended that the project plan include a system pilot during the Control phase because piloting helps reduce risk and provides a better understanding of costs and benefits.

Table 4-1—provides a summary of the Control phase process, as well as the individual(s) and/or group(s) responsible for completing each process step. Each step is detailed following the table.

Table 4-1. Control phase Process Flow

Process Step	Responsible Individual(s) or Group(s)
Establish and maintain initiative and security costs, schedule, and technical baselines.	Project sponsor
Maintain current initiative and security costs, schedule, technical, and general status information.	Project sponsor
Assess initiative progress against performance measures using Earned Value Management Methodologies.	Project sponsor IPT Agency sponsor
Prepare annual investment review submission package.	Project sponsor
Review/approve investment submission.	Agency head
Review initiative and recommend appropriate action.	OCIO Functional manager
Make final investment decisions.	E-Board
Work with project sponsor to develop solutions.	OCIO Project sponsor

1. Establish and Maintain Initiative and Security Costs, Schedule, and Technical Baselines

The project sponsor establishes the project management and executive plans, procedures, and practices to support initiative monitoring activities. The project sponsor coordinates with the integrated project team (IPT) to identify any new or existing internal risks based upon review of the work breakdown structure (WBS), project plan, risk checklist, and stakeholder interviews. Financial, technical, operational, schedule, legal and contractual, and organizational risks should be identified and monitored. The project sponsor provides periodic updates to the OCIO on the investment's status and security costs, schedule, and technical baselines. The project sponsor ensures that the project has been planned realistically. Key personnel and subject matter experts (SME's) for functional areas should be identified and labor costs quanti-

fied. The project sponsor develops a project plan including project metrics, a WBS, and a schedule with firm milestones.

2. Maintain Current Initiative Cost and Security Costs, Schedule, Technical, and General Status Information

The project sponsor collects actual information on the resources allocated and expended throughout the Control phase. The project sponsor ensures that the investment still aligns with the agency mission, strategic planning, enterprise architecture planning, telecommunications planning, and eGovernment planning. The project sponsor compares the actual information collected to the estimated baselines developed during the Select phase and identifies root causes for any differences. The project sponsor reviews the security and telecommunications infrastructure analyses for accuracy and updates cost information based on actual acquisitions or additional items included since the Select phase (see Appendices for Telecom and Cyber Security Infrastructure Guide). The project sponsor also maintains a record of any changes to the initiative's technical components, including hardware, software, security, and communications equipment. Technical component changes may trigger a new architecture review.

3. Assess Initiative Progress Against Performance Measures using Earned Value Management Methodologies

As part of the periodic milestone reviews during the Control phase, the project sponsor and IPT determine whether there is still a business case to continue the initiative. The project sponsor and IPT determine if the project team is managing investment cost and schedule variance, mitigating future variances, and providing expectation of future performance based upon work accomplished to date. The project sponsor establishes whether current cost and schedule projections align with investment implementation (e.g., based upon an assumption of baseline actual costs 10 % greater than actuals, what are the expectations of future performance?). If the case continues to be valid, the project sponsor and the IPT re-screen the initiative to assess its progress against planned cost, schedule, and technical baselines. The primary purpose of this assessment is to ensure the initiative is on schedule and to help identify issues or deficiencies that require corrective action. In some instances, where the business case may no longer exist or be as strong, or if significant changes to the cost, schedule, and technical baselines are required, it may also be necessary to re-score the initiative.

To begin the control screening stage, the project sponsor updates the documentation set with data on planning and risk information and initiative performance, as detailed in Table 4-2.

Table 4-2. Control Screening Stage Data Requirements

Planning and Risk Information	Initiative Performance
Investment description	Requirements changes
Project organization	Risk and mitigation list
Security review	Current project organization
Risk assessment and mitigation plan	Current estimate to complete
Initiative budget estimates	Planned vs. actual costs, schedule, and staffing
Initiative timeframe	Current deliverable assignments
Key milestone schedule	Updated technical approach
Identified tasks	Updated architecture
Resource identification	Security risk and mitigation
Work product and deliverable requirements	Telecommunications risk and mitigation
Technical approach and architecture	Initiative action-items
Telecommunications plan	Quality assurance audits
Quality and configuration management activities.	Updated project plan
	Earned value analysis.

The project sponsor and the IPT next answer two basic questions for the OCIO and E-Board:

- Is there still a need for the initiative?
- Does the initiative meet and will it continue to meet its planned cost, schedule, technical, telecommunications, and security baselines?

In order to answer these questions, the project sponsor and agency IPT need apply the Department's control screening criteria. If the initiative cannot be assessed affirmatively against the control screening criteria, the initiative should be re-scored.

Using the control screening criteria to answer the questions on whether the initiative has met expectations will support the decision on whether to continue with the investment, and identify any deficiencies and corrective actions needed. Updated investment information is submitted to the OCIO. The OCIO expect the project sponsor to determine whether the investment is meeting expectations by addressing these questions quarterly and updating the baseline status prior to the scheduled milestone reviews. Additionally, each year the investment will undergo a comprehensive control review during the annual investment review. The results of these more detailed reviews are used by the E-Board during preparation of the Department's IT investment portfolio.

At the conclusion of control screening, the project sponsor and IPT determine whether the investment should be re-scored by considering the investment status (cost, benefit, schedule, risk) and the extent to which the investment is on target or varies from the planned baselines. The level of variance determines the criticality of re-scoring the investment. Re-scoring is strongly recommended for investments that vary more than 10 percent from the original baseline in cost or schedule or if the investment risks or architectural alignment has deviated from baseline assumptions. Indicators of increased risk or architectural complexity include a high number of development change requests, reduced levels of stakeholder involvement and commitment, or significant deviation of architectural components from the baseline or security architecture. Table 4-3 presents the framework that the project sponsor and IPT employ to recommend which IT initiatives should be re-scored.

Table 4-3. Re-Scoring Framework

	I High Variance (>10%)	II Medium Variance (5-10%)	III Low Variance (<5%)
Benefit			
Cost			
Schedule			
Risk (describe the type, level, impact, and probability of major risk factors)			
Architecture (describe the degree of consistency with the agency and Departmental baseline and planned EA IT accessibility and security architecture)			
Recommended Action	**Re-Scoring Strongly Recommended**	**Re-Scoring May Be Recommended**	**Re-Scoring Not Likely to Be Necessary**

The project sponsor and agency IPT should be judicious in determining whether an investment should be re-scored, since it can be a time-consuming and resource intensive activity. For example, an investment may vary dramatically from the original baseline in one category, but if the project manager has a sound plan to address the variance, re-scoring may not be needed. The OCIO should also consider the effect a dramatic variance in one category may have on another category but which may not be reflected in the assessment. For example, if an investment is deviating from original technical or architectural plans, a variance in the original cost is likely and should be reflected in the variance section of the control data sheet. Additionally, the requirement for the investment may have been overtaken by events (e.g., architectural changes or regulatory changes) and the OCIO may determine if it is appropriate to re-score the initiative to determine whether it is still viable.

Based on the initiative status and identified variances, the project sponsor, functional manager, or agency sponsor decides whether the initiative should be re-scored. If needed, the project sponsor, assisted by the agency IPT, re-scores the investment and submits a revised scorecard. The revised scorecard is reflected in an initiative Control Status Report, prepared by the project sponsor, functional manager, or agency sponsor, and includes recommended corrective actions for the OCIO to review. Re-scored initiatives may compete against other new initiatives as part of the Select phase. As in the Select phase, the scorecard and other factors will assist the E-Board in determining the investment's future status. It is expected that most initiatives will not need to be re-scored and will move forward for status review and decision.

4. Prepare Investment Review Submission Package

Each investment in the Control phase will be evaluated during the annual investment review. Key elements are listed below:

- Exhibit 300
- Introduction and brief overview of the investment
- Cost vs. baseline
- Schedule vs. baseline

- Performance vs. baseline
- Validated/updated CBA
- Risk
- Security (see Appendix N—Cyber Security Infrastructure Guide for instructions on preparing security plan documentation)
- Architecture, including IT accessibility for persons with disabilities (Section 508)
- Telecommunications Plan (see Appendix O – Telecommunications Reference Manual for instructions on preparing telecommunications plan documentation)

Note that projects that provide insufficient business case documentation will not be included in the IT investment portfolio or forwarded to the Office of Management and Budget as part of USDA's IT request.

5. Review/Approve Investment Submission

The agency head reviews the investment submission and requests the project sponsor, functional manager, and/or agency sponsor update the package or make changes as needed. The agency head then approves the investment submission and forwards it to the OCIO.

6. Review Initiative and Recommend Appropriate Action

The OCIO assesses the investment's progress using a methodology similar to the procedures used during the Select phase. The OCIO provides any comments and/or questions to the agency. The functional manager works with the OCIO to address the issues and furnish details as requested, and sends an updated package to the OCIO. The OCIO reviews the investment and determines whether the investment has experienced any of the following potential risk factors:

- A particular task is significantly behind schedule or over budget
- Requirements and work scope are constantly changing
- A particular task on the critical path was missed, with no work around
- A major milestone, decision, or work product was missed or will be significantly delayed
- The initiative's functionality does not adequately support the mission, business, or security functions
- A major technical problem with the selected technology has surfaced as part of the change control process, and the problem resolution
- Does not allow the investment to be developed as specified

The organizational environment has changed and the current IT initiative is not part of the solution for meeting the business needs.

OCIO determines whether to provide continued support to the investment and forwards its recommendations to the E-Board for the final decision.

Based upon the comments of the OCIO, the functional manager and IPT may be required to conduct an Alternatives Analysis for ongoing support, which should answer the following questions: Is the investment still feasible (i.e., is it still meeting its performance requirements?), Have performance gaps been identified and tracked, and has a mitigation plan been initiated to overcome the gaps?

7. Make Final Investment Decisions

Based on the decision of the E-Board the initiative continues in the Control phase or moves to the Evaluate phase, as required. If the E-Board does not reach a decision, the initiative may be moved back to the OCIO to be reassessed.

8. Work with project sponsor to Develop Solutions

Once the E-Board has approved an OCIO recommendation that the IT investment be accelerated, modified, or cancelled, the OCIO should work closely with the project sponsor to develop a solution to any problems or issues resulting from the decision. The project sponsor, in coordination with the OCIO, should address the results or changes of the project risk assessment for the initiative in its transition from Select to Control phase. Plans should be identified to eliminate, mitigate or manage identified risks (e.g., financial, acquisition and technical). The control scorecard should be the source for identifying the primary issues resulting from the decision. Once the OCIO and project sponsor have agreed to the corrective actions, they discuss and document the criteria that will be used to resume funding. This documentation is maintained as part of the investment's record and the results are evaluated during the next annual Control phase review or during the Evaluate phase. Prior to the next scheduled review date, the project sponsor updates the investment information and initiates another preliminary assessment. This formal monitoring of investment progress, and the determination of risks and returns, continues throughout the Control phase.

4.4 EXIT CRITERIA

Prior to exiting the Control phase, investments must have:

- Completed investment development
- Confirmed the PIR schedule
- Obtained OCIO approval to enter the Evaluate phase.

CHAPTER 5—EVALUATE PHASE

5.1 PURPOSE

The purpose of the Evaluate phase is to compare actual to expected results after an investment is fully implemented. This is done to assess the investment's impact on mission performance, identify any investment changes or modifications that may be needed, and revise the investment management process based on lessons learned. As noted in GAO's *Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-Making*, "the evaluation phase 'closes the loop' of the IT investment management process by comparing actuals against estimates in order to assess the performance and identify areas where decision-making can be improved."

The Evaluate phase focuses on outcomes:

- Determining whether the IT investment met its performance, cost, and schedule objectives
- Determining the extent to which the IT capital investment management process improved the outcome of the IT investment.

The outcomes are measured by collecting performance data, comparing actual to projected performance and conducting a post implementation review (PIR) to determine the system's efficiency and effectiveness in meeting performance and financial objectives. The PIR includes a methodical assessment of the investment's costs, performance, benefits, documentation, mission, and level of stakeholder and customer satisfaction. The PIR is conducted by the agency, and results are reported to the OCIO and E-Board to provide a better understanding of initiative performance and assist the project sponsor in directing any necessary initiative adjustments. Additionally, results from the Evaluate phase are fed back to the Pre-Select, Select, and Control phases as lessons learned.

5.2 ENTRY CRITERIA

The Evaluate phase begins once a system has been implemented and the system becomes operational or goes into production. Any investment cancelled prior to going into operation must also be evaluated. Prior to entering the Evaluate phase, investments must have:

- Completed investment development
- Confirmed the PIR schedule
- Obtained OCIO approval to enter the Evaluate phase.

5.3 PROCESS

In the Evaluate phase, investments move from implementation or termination to a PIR and the E-Board's approval or disapproval to continue the investment (with or without modifications). From the time of implementation, the system is continually monitored for performance, outages, maintenance activities, costs, resource allocation, defects, problems, and system changes. System stability is also periodically evaluated. During the PIR, actual performance collected is compared to performance projections made during the Select phase. Then lessons learned for both the investment and the CPIC process are collected and fed back to prior CPIC phases.

Table 5-1 provides a summary of the Evaluate phase process, as well as the individual(s) and/or group(s) responsible for completing each process step. Each step is detailed following the table.

Table 5-1. Evaluate phase Process Flow

Process Step	Responsible Individual(s) or Group(s)
Conduct PIR and present results.	Project sponsor
Prepare annual investment review submission package.	Project sponsor
Review/approve investment submission.	Agency head
Review initiative's PIR results and recommend appropriate action.	OCIO
Make final investment decisions.	E-Board
Evaluate IT capital investment management process.	Agency OCIO E-Board

1. Conduct PIR and Present Results

The PIR's timing is usually determined during the Control phase. The PIR for a newly deployed initiative generally should take place approximately six months after the system is operational. In the case of a terminated system, it should take place immediately because the review will help to define any "lessons learned" that can be factored into future IT investment decisions and activities. In either case, before starting the PIR, the project sponsor develops a PIR plan that details the roles, responsibilities, and investment start and end dates for all PIR tasks.

At the heart of the PIR is the IT investment evaluation in which the project sponsor looks at the impact the system has had on customers, the mission and program, and the technical capability. As a result of the PIR, the project sponsor provides an IT initiative evaluation data sheet to the OCIO (see Figure 5-1).

The IT investment evaluation focuses on three areas:

- **Impact to stakeholders**—The project sponsor typically measures the impact the system has on stakeholders through user surveys (formal or informal), interviews, and feedback studies. The evaluation data sheet highlights results.
- **Ability to deliver the IT performance measures (quantitative and qualitative)**—The system's impact to mission and program should be carefully evaluated to determine whether the system delivered expected results. This information should be compared to the investment's original performance goals. This evaluation and comparison should also include a review of the investment's security and telecommunications infrastructure performance measures.
- **Ability to meet baseline goals**—The following areas should be reviewed to determine whether the investment is meeting its baseline goals:
  - Cost—Present actual lifecycle costs to date;
  - Return—Present actual lifecycle returns to date.
  - Funding Sources—Present actual funds received from planned funding sources;
  - Schedule—Provide original baseline and actual initiative schedule;
  - Architectural Analysis—Determine whether the initiative supports the Department's approach to enterprise architecture standards or what modifications are required to ensure initiative compliance outside the original architectural baseline;
  - IT Accessibility Analysis—Determine whether the initiative addresses accessibility for persons with disabilities, how the requirements were managed, and impact on the architecture;

- σ Telecommunications Analysis—Determine whether the initiative adhered to the Department's telecommunications standards and performance measures or what modifications are required to ensure initiative compliance outside the original baseline (for more information see Appendix O—Telecommunications Reference Manual).
- σ Risk Analysis—Identify initiative risks and how they were managed or mitigated, as well as their effects, if any; and
- σ Systems Security Analysis—Identify initiative security risks and how they were managed or mitigated as well as security performance measures (for more information see Appendix N—Cyber Security Infrastructure Guide.

Figure 5-1. IT Initiative Evaluation Data Sheet

SAMPLE INITIATIVE EVALUATION SHEET				
General information				
Title:				
Description:				
project sponsor:				
OMB Code:				
PIR Conducted By:				
Date of PIR:				
Performance Measures				
Item	Baseline	Actual	Variance	Comments
Quantitative				
Financial				
Non-Financial				
Baseline Status				
Item	Baseline	Actual	Variance	Comments
Lifecycle Cost				
Lifecycle Return				
Schedule				
Architectural Analysis				
Architectural Assessment				
IT Accessibility Analysis				
IT Accessibility Assessment				
Telecommunications Analysis				
Telecommunications Assessment				
Risk Analysis				
Risk Assessment				
Security Analysis				
System security risk assessment/mitigation review. Additional mitigation strategies and counter measures (if needed).				
Stakeholder Assessment				
General Comments				
Lessons Learned				
Project Management Assessment				
Technical Assessment				

After the post-implementation data has been collected and reviewed, the project sponsor prepares and makes a formal PIR presentation to the OCIO. (For initiatives with a variance of greater than 10 % from the original baseline the initiative may need to be re-scored in light of changing business, organizational, financial, or technical conditions; these new scores are included in the PIR.) The presentation should summarize the initiative evaluation and provide a summary of recommendations for presentation to the E-Board.

2. Prepare Annual Investment Review Submission Package

Each investment in the Evaluate phase will be assessed during the annual investment review. To prepare for the annual investment reviews, the project sponsor develops a package of materials that address the PIR strategic investment criteria, the strategic investment criteria for security and infrastructure /architecture. The supporting investment documentation is:

- OMB Exhibit 300
- Introduction and brief overview of the investment
- PIR
- Validated/updated CBA
- Security (see Appendix N—Cyber Security Infrastructure Guide for instructions on preparing security plan documentation)
- Architecture, including IT accessibility for persons with disabilities (Section 508)
- Telecommunications Plan (see Appendix O—Telecommunications Reference Manual for instructions on preparing telecommunications plan documentation)

Note that projects that provide insufficient business case documentation will not be included in the IT investment portfolio or forwarded to the Office of Management and Budget as part of USDA's IT request.

3. Review/Approve Investment Submission

The agency head reviews the investment submission and requests the project sponsor, functional manager, and/or agency sponsor to update the package or make changes as needed. The agency head then approves the investment submission and forwards it to the OCIO.

4. Review Initiative's PIR Results and Recommend Appropriate Action

The OCIO reviews the PIR results and provides any comments and/or questions to the agency. The functional manager works with the OCIO to address the issues and furnish details as requested, and sends an updated package to the OCIO. The OCIO reviews the investment and makes a recommendation that the investment's project sponsor take one of the following actions:

- Continue the investment as planned
- Terminate the investment
- Modify the investment as recommended.

5. Make Final Investment Decisions

The E-Board reviews OCIO's recommendation and makes the final investment decision. The resulting decision is then relayed by letter to the Under/Assistant Secretary, agency head, and project sponsor.

6. Evaluate IT Capital Investment Management Process

OCIO may also want revise the CPIC process based on PIR results. A summary of the PIR activities and lessons learned are then presented by the OCIO to the E-Board.

Following the completion of each phase, the OCIO and agencies document the strengths and weaknesses of the CPIC process. The information gathered in this evaluation is used to improve the CPIC process, by maintaining and improving the factors associated with improved initiative success rates and revising or removing the non-value added steps. Agencies can use Table 5-2 to record observations and forward them to the OCIO as necessary. Agencies can add appropriate comments as deemed necessary. The following are examples of things agencies can consider when addressing each phase:

- Initiative Development
  - Documentation set
  - General/descriptive information
  - Financial information
  - Security/ISTA models.
- Screen
  - Viability criteria
  - Viability considerations
  - Initiative designation.
- Score
  - Mission criteria
  - Risk
  - ROI.
- Pre-Select
  - Agency process
  - OCIO review
  - E-Board endorsement.
- Select
  - Agency process
  - OCIO review
  - E-Board endorsement
  - Security review.
- Control
  - Milestone review format
  - OCIO/corrective actions
  - Security analysis.
- Evaluate
  - PIR content
  - PIR execution
  - PIR recommendations
  - Security performance.
- Steady-State
  - System assessment
  - Technology assessment
  - Operations and Maintenance (O&M) review.

To capture lessons learned, the project sponsor develops a management report and submits it to the OCIO. All failures and successes are collected and shared to ensure that future initiatives learn from past experiences. A high-level assessment of management techniques, including organizational approaches, budgeting, acquisition and contracting strategies, tools and techniques, and testing methodologies, is essential to establish realistic baselines and to ensure the future success of other IT initiatives. The management report, including lessons learned, follows the outline provided in Figure 5-2.

The OCIO schedules formal and informal sessions to review the management report and collect additional information about the overall effectiveness of the process. The OCIO works with the project sponsor and Agency Portfolio Managers to conduct trend analyses of the process, validate findings, and adjust the process accordingly. The OCIO also sponsors workshops and discussion groups to improve the CPIC process and ensure lessons learned are applied throughout the Department. The OCIO then works with the agency to develop, recommend, and implement modifications to improve the process.

5.4 Exit Criteria

Prior to exiting the Evaluate phase, investments must have:

- Conducted a PIR
- Established an Operations and Maintenance (O&M) and operational performance review schedule
- Obtained OCIO approval to enter the Steady-State phase.

Table 5-2. IT Process Evaluation Data Sheet

	Initiative Development	Screen	Score	Pre-Select	Select	Control	Evaluate	Steady-State
Was each phase conducted at the appropriate time in the process?								
Was the data content sufficient to move forward to the next phase in the process?								
Were there enough resources (i.e., people) allocated for each phase in the process? Were the right types of people and expertise involved?								
Was there an acceptable level of information flow?								
List suggested corrective actions for any phase in the								

process.								
Comments:								

Figure 5-2. Investment Management Report Data Sheet

INVESTMENT MANAGEMENT REPORT
Initiative Title:
project sponsor:
Date of PIR:
Background (Description of Project)
Management Approach
Organizational Structure
Resources
Acquisition Strategy
Contracting Strategy
Security Strategy
Documentation
Technical Approach
Architecture (description, adherence to ISTA, and IT accessibility requirements, security, telecommunications, and architecture standards)
Development (if applicable)
Testing
Lessons Learned
List of lessons learned
Recommended best practices

CHAPTER 6—STEADY-STATE PHASE

6.1 PURPOSE

The Steady-State phase provides the means to assess mature investments, ascertain their continued effectiveness in supporting mission requirements, evaluate the cost of continued maintenance support, assess technology opportunities, and consider potential retirement or replacement of the investment. The primary review focus during this phase is on the mission support, cost, and technological assessment. Process activities during the Steady-State phase provide the foundation to ensure mission alignment and support for system and technology succession management.

6.2 ENTRY CRITERIA

Prior to entering the Steady-State phase, investments must have:

- Conducted a PIR
- Established schedules for operations and maintenance (O&M), eGov strategy, and operational analysis reviews
- Obtained OCIO approval to enter the Steady-State phase.

6.3 PROCESS

During the Steady-State phase, mission analysis is used to determine whether mature systems are optimally continuing to support mission and user requirements. The sponsors should also conduct an operational analysis review every three years, or whenever there is a significant change to the system to ensure that they are taking operational advantage of any new IT assets being acquired (see Appendix D for more the form to complete when conducting an operational analysis review).

Table 6-1 provides a summary of the Steady-State phase process, as well as the individual(s) and/or group(s) responsible for completing each process step. Each step is detailed following the figure.

Table 6-1. Steady-State Process Flow

Process Step	Responsible Individual(s) or Group(s)
Analyze mission.	Project sponsor Agency sponsor
Assess user/customer satisfaction.	Project sponsor
Assess technology.	Project sponsor
Conduct O&M, eGov strategy, and operational analysis (as is necessary)	Project sponsor Agency sponsor
Prepare investment review submission package.	Project sponsor
Review/approve investment submission.	Agency head
Review initiative and recommend appropriate action.	OCIO
Make final investment decisions.	E-Board

1. Analyze Mission

The project sponsor and agency sponsor conduct a mission analysis to determine if the system is continuing to meet mission requirements and needs and supports the USDA's evolving strategic direction. The mission analysis process identified in the Pre-Select phase and the mission needs statement provide a framework to assist in the mission analysis for the Steady-State phase. This includes an analysis of performance measures accomplishment.

2. Assess User/Customer Satisfaction

The project sponsor assesses user and customer satisfaction with, and acceptance and support for, the existing system. There are several means to conduct the user/customer assessment, including conducting a user/customer survey, assessing comments and user/customer community inputs, or analyzing usage trends. Some or all of these activities may be beneficial in determining continued support for the system, additional user/customer need, or improvement opportunities. This information should be used to assess and update the investment's performance measures.

3. Assess Technology

The project sponsor assesses the continuing ability of the investment to meet the system's performance goals. The project sponsor also assesses the technology and determines potential opportunities to improve performance, reduce costs, support the USDA enterprise architecture, and to ensure alignment with USDA's strategic direction. The project sponsor monitors and maintains the existing technology and determines technology refresh schedules. An assessment of security and telecommunications should also be supplied.

4. Review O&M

The project sponsor and agency sponsor conduct an O&M review to assess the cost and extent of continued maintenance and upgrades. The O&M review should include a trend analysis of O&M costs and a quantification of maintenance releases. Costs for government full-time equivalents (FTEs) should be included in all cost estimates and analysis.

If not conducted to date, the project sponsor and agency sponsor conduct an eGov strategy review of the system to assess the extent to which the system should be modified or updated to address the eGov goals (see also Appendix L). An eGov strategy review should also be conducted at a minimum of every three years, or whenever there is a significant change to the system.

5. Prepare Investment Review Submission Package

In preparation for the annual investment review, the project sponsor updates actual costs and benefits for the investment and prepares the Steady-State submission package. The supporting investment documentation is:

- OMB Exhibit 300
- Introduction and brief overview of existing system
- Mission Analysis Summary
- User/Customer Assessment Summary
- Performance Measures Assessment
- Technology Assessment
- eGov Strategy Review or Operational Analysis Review
- Updated CBA.

Note that projects that provide insufficient business case documentation will not be included in the IT investment portfolio or forwarded to the Office of Management and Budget as part of USDA's IT request.

6. Review/Approve Investment Submission

The agency head reviews the investment submission and requests the project sponsor, functional manager, and/or agency sponsor update the package or make changes as needed. The agency head then approves the investment submission and forwards it to the OCIO.

7. Review Initiative and Recommend Appropriate Action

The OCIO reviews the investment submission with an emphasis on strategic mission alignment, cost, technology succession, and performance measures. The OCIO provides any comments and/or questions to the agency. The functional manager works with the OCIO to address the issues and furnish details as requested, and sends an updated package to the OCIO. The OCIO reviews the investment to determine whether it can optimally continue to support mission/user requirements and the Department's strategic direction. The OCIO determines whether the investment should continue in the Steady-State phase, return to a previous phase due to the extent of system modifications, be replaced, or be retired and then sends its assessment and recommendations to the E-Board.

8. Make Final Investment Decisions

The E-Board approves or disapproves the OCIO's recommendation and directs the project sponsor how to proceed.

6.4 Exit Criteria

Prior to exiting the Steady-State phase, investments must have obtained OCIO direction on whether to dispose, retire, or replace the system.

6.5 Special Cases: Development Activity in Steady-State Investments

Some agencies in the past have spent significant amounts of development money (i.e., Development/modernization/enhancement or DME funding) for enhancements and improvements to large Steady-State investments. While this is may be required to ensure that evolving business needs are met, all significant new investment activity is subject to the investment review process per this Guide. Indicators of significant new investment activity include Steady-state investments that have:

- 25% or more of their budget year (BY) funding request is DME; or
- 25% or more of their BY funding request is for new functionality; or
- Significant changes in their performance goals that would appear to require new IT support; or
- Had DME funding rising as a percent of their budget in the last few years; or
- New legislative requirements imposed upon them that will require significant development activity.

OCIO analysts will review Steady-State investments on an ongoing basis. Based on these reviews, the analysts may contact the agency portfolio and project managers about these investments. Based on the discussion with the agency officials and the analysts' review, OCIO may request that:

- The DME portion of the investment be spun off into a separate stand-alone major investment; or
- The DME portion of the investment be spun off into a separate stand-alone non-major investment; or
- The whole investment be sent back through the CPIC cycle; or
- There be no change.

CHAPTER 7—ASSESSING INVESTMENT PROPOSALS

The following pages provide a summary of the criteria to be used by OCIO and the E-Board during the annual investment review cycle. Per Figure 7.1, each IT investment will be scored based on two sets of criteria:

1) The OMB Exhibit 300 rating factors (see Appendix C), and
2) An analyst review of the submitted documentation per this guide. The USDA CPIC documents required for a given investment depend upon the CPIC phase of that investment. The chapters above describe the documentation requirements for each of the five USDA CPIC phases.

Figure 7-1 – CPIC Documentation Requirements

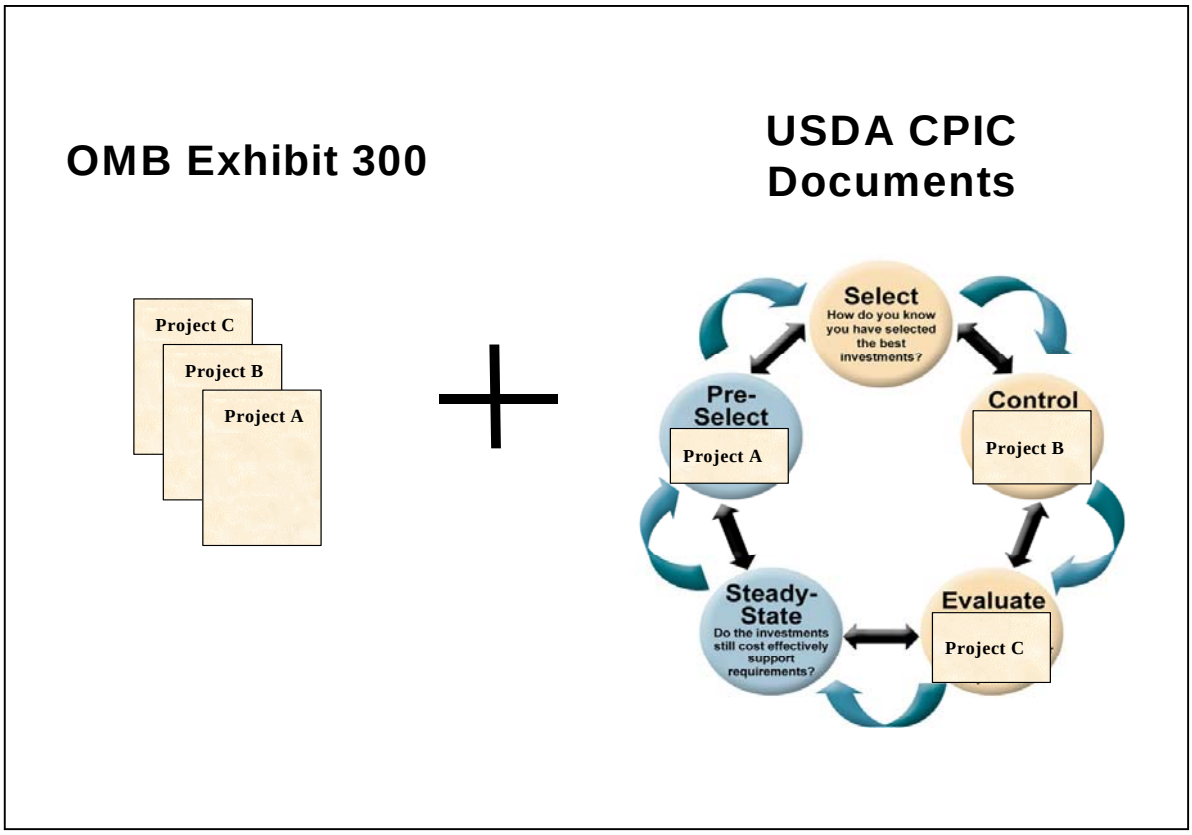


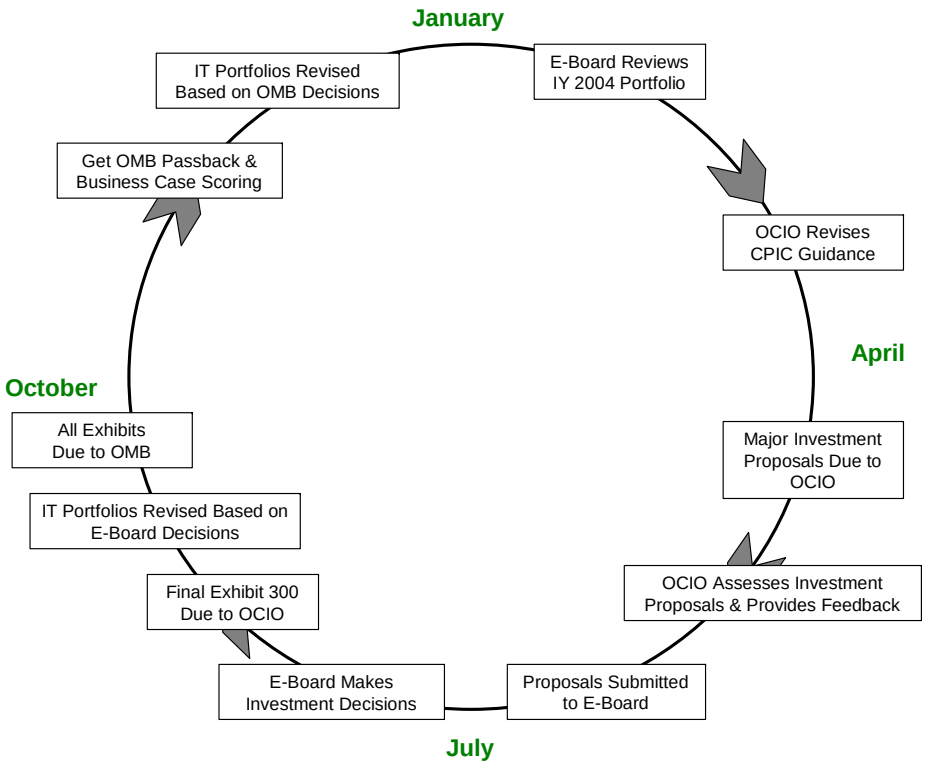
Table 7-2 identifies the OCIO analyst associated with each USDA mission area.

Figure 7-3 illustrates the typical annual USDA capital planning cycle.

Table 7-2 – OCIO CPIC Analysts

USDA Mission Area or Agency	OCIO Analyst (phone number)
Farm and Foreign Agricultural Service	John P. Rehberger (202-720-5223)
Food, Nutrition, and Consumer Service	Amy Snyder (202-720-0044)
Food Safety	Alesia Webster (202-720-6898)
Forest Service	Dawn Tucker (202-720-7265)
Natural Resources Conservation Service	Dawn Tucker (202-720-7265)
Research, Education and Economics	Hien-Hoa Nguyen (202-720-5786)
Rural Development	Dan Stoltz (202-720-9080)
Marketing and Regulatory Programs	Amy Snyder (202-720-0044)
Office of Civil Rights	Hien-Hoa Nguyen (202-720-5786)
Office of Chief Economist	Hien-Hoa Nguyen (202-720-5786)
DA and remaining staff offices	Eva Desiderio (202-720-8918)

Figure 7-3 – Typical Annual CPIC Cycle



APPENDICES

A. **Board Procedures**—Provides the E-Board charter that includes its roles and responsibilities.

B. **CPIC Process Checklist**—Provides a checklist of the process steps investments must complete for each CPIC phase.

C. **OMB Exhibit 300 Assessment**—Note: This is empty since OMB has not yet updated their scoring criteria for the new FY2008 Exh. 300.

D. **Operational Analysis Review**—Provides a form to use that defines the basic elements needed for an operational analysis review.

E. **Cost-Benefit Analysis**—Provides guidance on completing a cost-benefit analysis (CBA)

F. **Risk Assessment**—Provides guidance on conducting a risk assessment for IT capital planning.

G. **Performance Measurement**—Provides guidance on developing performance measures for IT investments.

H. **Project Management**—Provides guidance on managing IT investments.

I. **Earned Value Management**—Provides guidance on conducting earned value analysis.

J. **Post-Implementation Reviews**—Provides guidance on conducting a post-implementation review (PIR).

K. **Mission Needs Statement**—Provides a template for evaluating the mission need(s) for a new IT investment.

L. **eGovernment**—Provides guidance on eGovernment information to support the investment.

M. **Enterprise Architecture** —Provides guidance on matter related to the USDA enterprise architecture.

N. **Cyber Security Infrastructure Guide**—Provides guidance concerning cyber security information to support the investment.

O. **Telecommunications Reference Manual** – Provides guidance on telecommunications information to support the investment.

P. **OMB Requirements** —Provides a summary of the data required for OMB using WorkLenz.

Q. **Quarterly/Milestone Control Review Checklist**—Lists the critical areas the control review team discusses during each quarterly/milestone review.

R. **Glossary of Terms and Acronyms**—Provides definitions for terms and acronyms used throughout this document.

S. **References**—Provides a list of references used to develop this document.

APPENDIX A—BOARD PROCEDURES

The reviews by senior-level policy executive are integral to the success of USDA's CPIC process. The Boards ensure compliance with guidance from Congress, OMB, and GAO, as well as apply sound business practices to the planning, acquisition, and operation of large IT investments. The following sections contain the E- Board Charter.

E-BOARD CHARTER

I. Purpose

The purpose of this Charter is to define the authority, membership, roles and responsibilities of the Executive Information Technology Investment Review Board (E-Board), and its relationships to other internal and external bodies.

II. Background

The Clinger-Cohen Act dramatically changes the way Federal agencies must acquire and manage information technology (IT). The Act expands upon the requirement, initially introduced by the Government Performance and Results Act (GPRA), that agency IT investments be directly linked to, and supportive of, program objectives.

The Clinger-Cohen Act requires executive agencies to develop a capital planning and investment control process for making technology, budget, financial and program management decisions. While each phase of a sound investment process has its own requirements for successful implementation, there are some overall organizational attributes that are critical to successful investment evaluation:

- Senior management attention
- Overall mission focus
- A comprehensive, enterprise-wide approach to technology investment.

III. Authority

Pursuant to the requirements of the Clinger-Cohen Act, the Department of Agriculture has established the E-Board, made up of senior-level policy executives, to ensure that USDA IT investments are managed as strategic business resources. The deputy secretary oversees this process as part of his responsibility for day-to-day operations of the Department.

IV. Membership

The E-Board is comprised of the Department's senior-level policy executives, as follows:

- Deputy Secretary—Chair
- Chief Information Officer—Vice-Chair and Executive Secretary
- Chief Financial Officer
- General Counsel
- Director of the Office of Budget and Program Analysis
- Under Secretary for Farm and Foreign Agricultural Service
- Under Secretary for Food, Nutrition, and Consumer Service
- Under Secretary for Food Safety

- Under Secretary for Marketing and Regulatory Programs
- Under Secretary for Natural Resources and Environment
- Under Secretary for Research, Education, and Economics
- Under Secretary for Rural Development
- Assistant Secretary for Administration
- Assistant Secretary for Civil Rights.

At the Board's discretion, ex-officio members may be named to provide specialized expertise and advice.

V. Roles and Responsibilities

The E-Board will:

- Approve new IT investments and evaluate existing projects and operational systems to create a USDA IT investment portfolio which best supports the Department's missions and program delivery processes.
- Assemble and evaluate the portfolio using a standard set of criteria, developed by the OCIO and approved by the E-Board. Criteria will include a consideration of Departmental or Government-wide impact, visibility, cost, risk, eGovernment support, security and standards.
- Support and protect the USDA Enterprise Architecture.
- Assure that the Department's IRM Program remains in compliance with the requirements of the Clinger-Cohen Act, and other legislation that addresses IT issues.

In the scope of E-Board activities, an IT investment encompasses all investments involving IT and information resources as defined in the Clinger-Cohen Act. This includes equipment, IRM services, information or application system design, development, and maintenance, regardless of whether such work is performed by government employees or contractors.

VI. Meetings and Communications

Principals are expected to attend all meetings. Attendance may be in person or any other two-way, interactive communications means, such as conference call or video teleconference. If necessary, a member may be represented by a designated alternate.

Meetings will be held annually or more frequently subject to the call of the Chair.

The Executive Secretary will provide all communications functions for the E-Board. To include preparing an agenda for all meetings, providing the agenda and meeting notice to members prior to each meeting, recording and distributing an Executive Summary of all meetings, and performing other scheduling, correspondence, and communications functions as needed.

APPENDIX B—USDA CPIC PROCESS CHECKLIST

Pre-Select Phase—What are the business needs for the investments?

- The Agency Head identifies a Project Sponsor.
- The Functional Manager conducts a mission analysis.
- The Functional Manager develops the investment's concept.
- The Functional Manager prepares the preliminary business case.
- The Functional Manager and the Agency Sponsor prepare the annual investment review submission package.
- The Agency Head reviews and approves the investment submission.
- The OCIO reviews the initiative and recommends an appropriate action to the E-Board.
- The E-Board makes the final investment decisions.

Select Phase—How do you know you have selected the best investments?

- The Functional Manager reviews and updates the Mission Needs Statement.
- The Agency Head selects a qualified Project Manager (if not done in the pre-select phase).
- The Agency Head approves IPT membership.
- The Project Sponsor identifies the funding source(s) and obtains agency approvals.
- The Project Sponsor develops supporting materials for major investments.
- The Project Sponsor prepares the investment review submission.
- The Agency Head reviews and approves the investment submission.
- The OCIO reviews the initiative and recommends an appropriate action to the E-Board.
- The E-Board makes the final investment decisions.

Control Phase—What are you doing to ensure that the investments will deliver the benefits projected?

- The Project Sponsor establishes and maintains initiative and security costs, schedule, and technical baselines.
- The Project Sponsor maintains current initiative and security costs, schedule, technical, and general status information.
- The Project Sponsor, IPT, and Agency Sponsor assess the initiative's progress against performance measures.
- The Project Sponsor prepares the annual investment review submission package.
- The Agency Head reviews and approves the investment submission.
- The OCIO reviews the initiative and recommends an appropriate action to the E-Board.
- The OCIO monitors earned values management metrics to ensure that the project is on-budget and on-schedule.
- The E-Board makes final investment decisions.
- The OCIO works with the Project Sponsor to develop solutions to identified issues.

Evaluate Phase—Based on your evaluation, did the investments deliver what you expected?

- The Project Sponsor conducts a PIR and presents results to the OCIO and E-Board.
- The Project Sponsor prepares the annual investment review submission package.
- The Agency Head reviews and approves the investment submission.
- The OCIO reviews and assesses the PIR results and recommends an appropriate action to the E-Board.
- The E-Board makes final investment decisions.
- The agency, OCIO and E-Board evaluate the IT capital investment management process.

Steady State Phase—Do the investments still cost-effectively support requirements?

- The Project Sponsor and the Agency Sponsor analyze the mission.
- The Project Sponsor assesses user/customer satisfaction.
- The Project Sponsor conducts a technology assessment.
- The Project Sponsor and the Agency Sponsor review O&M costs.
- The Project Sponsor prepares the annual investment review submission package.
- The Agency Head reviews and approves the investment submission.
- The OCIO reviews the initiative and recommends an appropriate action to the E-Board.
- The E-Board makes final investment decisions.

APPENDIX C—OMB EXHIBIT 300 ASSESSMENT

Each year OCIO assesses the Exh 300s against the same assessment criteria that OMB uses to assess the 300s later in the year. Doing so has several benefits:

- It will allow OCIO staff to review and provide feedback on the 300 to the investment managers before the 300s are due to OMB later in the year;
- It will give the E-Board a general sense as to how they should expect the investments to score once they are reviewed by OMB; and
- It will enhance the credibility of the USDA CPIC process by demonstrating to OMB that USDA has documentation supporting the summary statements made in the 300.

However, as of the publication date for this document, OMB has not yet released the new scoring criteria for the new Exh. 300 for the FY 2008 budget cycle. This Appendix will be updated when OMB publishes the new criteria.

APPENDIX D— OPERATIONAL ANALYSIS REVIEW

Operational analysis is the comparison of the performance of an IT asset or system to an established baseline. At a minimum, performance measures should include 1) how well the asset supports its customers and stakeholders and 2) how well the asset is managed by the agency. The results of this analysis are recommendations to agency managers as to the asset's continued use, modification, or termination.

Below is a form that agencies can use to show that they have conducted an operational analysis on a Steady-State asset or system.

Operational Analysis Review Form

(For Steady-State Investments)

1. Administrative Information	
System Title	
Agency/Office	
Date of Operational Analysis	
System Manager	
System Sponsor	
Submission Date	

2. Project Description

Provide a brief summary describing the system (or asset) and a description of the business processes that the system supports.

3. Mission Analysis

3.a. For each Departmental strategic goal that the system supports, provide one paragraph explaining how the system is continuing to meet Departmental strategic goals.

3.b. Describe how the project supports the Department's eGovernment strategy. Provide one paragraph for each strategy where a linkage exists. If no linkage exists, provide justification and/or date of next eGovernment strategy review.

4. User / Customer Assessment

Briefly describe the system's users and the process (e.g., surveys, user group meetings, customer focus groups, reviews of help desk logs, etc.) used to assess user/customer satisfaction. Summarize the results of surveys or other user/customer inputs, and usage trends. Is the existing system providing customers the needed functionality and performance?

5. Gap Analysis

Identify the need for additional functionality and/or performance enhancements. Examine gaps in supporting the agency's and Department's strategic goals, technical performance limitations, and/or results from the user/customer survey.

6. Performance Goals and Measures

For the prior and current fiscal year, provide the OMB Exhibit 300 Performance Goals and Measures (Section 1, Part C) table(s) with prior year actual results and current year interim results, if known. Complete the tables below. If the project collects, manages or reports to other performance goals and measures, add rows to record those goals and measures.

Year	Strategic Goal(s) Supported	Existing Baseline	Planned Performance Improvement Goal	Actual Performance Improvement Results	Planned Performance Metric	Actual Performance Metric Results
Current - 2						
Current - 1						
Current						

Year	Measurement Area	Measurement Category	Measurement Indicator	Baseline	Planned Improvements to the Baseline	Actual Results
Current + 1						
Current + 2						
Current + 3						
Current + 4						

7. User/Customer Analysis

Based on your user/customer inputs, is actual performance consistent with user/customer expectations, or do the current performance goals reflect current user/customer functional or performance requirements? Has the system exceeded expectations, and the performance measures need to be re-baselined?

8. Project Summary

	OMB-Approved Baseline	Actual Outcome

Description of Milestone	Schedule			Planned Cost	Funding Agency	Schedule		Percent Complete	Actual Cost
	Start Date	End Date	Duration (in days)			Start Date	End Date		

Date this system was implemented:	

9. Budget (all sources)

PY-1 and Earlier	PY	CY	BY	BY+1	BY+2	BY+3	BY+4 and Beyond
$	**$**	**$**	**$**	**$**	**$**	**$**	**$**

Estimated total cost at completion:	$

10. Gap Analyses

Based on the customer /user requirements and performance analysis, discuss the root cause of a gap, and what, if any, additional functionality or performance is required.

11. Opportunities

Based on the gap analysis, identify opportunities to improve functionality and/or performance (effectiveness and/or efficiency). These opportunities may include investing in new technology, business process reengineering, and/or collaborating with another investments. If applicable, discuss how any of the government's eGov initiatives can be leveraged.

12. Plans

Describe your near-term (i.e., 1 – 2 year) plans for the system. If the system is to be enhanced or terminated in the near term, summarize the actions to be taken.

APPENDIX E—COST-BENEFIT ANALYSIS

PURPOSE

Current laws and regulations require agencies to conduct a cost/benefit analysis (CBA) prior to deciding whether to initiate, continue, or implement an IT investment. The level of detail required varies and should be commensurate with the size, complexity, and cost of the proposed investment. This appendix provides a layout of a CBA for a very large, complex, and costly IT investment. A scaled down version is appropriate for a smaller, less costly investment.

The CBA supports decision-making and helps ensure resources are effectively allocated to support mission requirements. The CBA should demonstrate that at least three alternatives (excluding the option of continuing current operations) were considered and the chosen alternative is the most cost-effective, within the context of budgetary and political considerations. Possible alternatives include:

- In-house development versus contractor development,
- In-house operation versus contractor operation,
- Current operational procedures versus new operational procedures, or
- One technical approach versus another technical approach.

The CBA should include comprehensive estimates of the projected benefits and costs for each alternative. Costs, tangible benefits, and intangible benefits (benefits which cannot be valued in dollars) should be included. Intangible benefits should be evaluated and assigned relative numeric values for comparison purposes. Sunk costs (costs incurred in the past) and realized benefits (savings or efficiencies already achieved) should not be considered since past experience is relevant only in helping estimate future benefits and costs. Investments should be initiated or continued only if the projected benefits exceed the projected costs.

A CBA should be performed for each investment alternative to enable the evaluation and comparison of alternatives. However, some mandatory systems will not provide net benefits to the government. In such cases, the lowest cost alternative should be selected. If functions are to be added to a mandatory system, though, the additional functions should provide benefits to the government.

PROCESS

A CBA should be completed or updated at the following lifecycle milestones:

- Proposal initiation (Pre-Select Phase)
- E-Board proposal consideration (Select Phase)
- E-Board initiative review (annually during the Control Phase)
- Initial fielding (Evaluation Phase)
- Post-Implementation Review (Evaluation Phase)
- Operations and Maintenance review (Steady-State Phase)
- Annually for “major system” CPIC review.

The Project Sponsor ensures the CBA is done. The Project Sponsor can obtain expertise from the IPT in systems development and operation, budget, finance, statistics, procurement, architecture, and work processes, as needed.

The CBA process can be broken down into the following steps:

1. Determine/define objectives
2. Document current process
3. Estimate future requirements
4. Collect cost data for alternatives
5. Choose at least three alternatives
6. Document CBA assumptions
7. Estimate costs
8. Estimate benefits
9. Discount costs and benefits
10. Evaluate alternatives
11. Perform sensitivity analysis
12. Compare investments.

Each of these steps is detailed in the following sections. The numerical examples provided are from a variety of sources and do not relate to one specific investment.

1. Determine/Define Objectives

The CBA should include a problem definition; pertinent background information such as staffing, system history, and customer satisfaction data; and a list of investment objectives that identify how the system will improve the work process and support the mission.

2. Document Current Process

The current process should be thoroughly documented and address these areas:

- Customer Service—Each customer's role and services required should be clearly documented and quantified, if possible (e.g., in an average month, a customer inputs two megabytes (MB) of data and spends 10 hours on database maintenance).
- System Capabilities—Resources required for peak demand should be listed. For example, 100 MBs of disk storage space and Help Desk personnel to support 50 users.
- System Architecture—The hardware, software, and physical facilities required should be documented, including information necessary for determining system costs, expected future utility of items, and the item owner/lessor (i.e., government or contractor). Table E-1—displays the information desired.
- System Costs—Current costs provide the CBA baseline. Figure E-2—Cost Elements for Systems addresses the cost elements for most systems. However, a particular system may not include all elements identified within a category and may include some activities not shown.

Table E-1. System Architecture Information Requirements

Hardware	Software	Physical Facilities
Manufacturer Make/Model/Year Cost Power requirements Expected life Maintenance requirements Operating characteristics (e.g., size, speed, capacity, etc.) Operating systems supported	Manufacturer Name Version number Year acquired License term Hardware requirements Cost (annual or purchase)	Location Size Capacity Structure type Availability Annual cost

Table E-2. Cost Elements for Systems

Cost Category	Cost Elements
Equipment, Leased or Purchased	Supercomputers, mainframes, minicomputers, microcomputers, disk drives, tape drives, printers, telecommunications, voice and data networks, terminals, modems, data encryption devices, and facsimile equipment.
Software, Leased or Purchased	Operating systems, utility programs, diagnostic programs, application programs, and commercial-off-the-shelf (COTS) software.
Commercial Services	Commercially-provided services, such as teleprocessing, local batch processing, on-line processing, Internet access, electronic mail, voice mail, centrex, cellular telephone, facsimile, and packet switching.
Support services (Contractor Personnel)	Commercially-provided services to support equipment, software, or services, such as maintenance, source data entry, training, planning, studies, facilities management, software development, system analysis and design, computer performance evaluation, and capacity management.
Supplies	Any consumable item designed specifically for use with equipment, software, services, or support services identified above.
Personnel (compensation and benefits)	Includes the salary (compensation) and benefits for government personnel who perform IT functions 51percent or more of their time. Functions include but are not limited to program management, policy, IT management, systems development, operations, telecommunications, computer security, contracting, and secretarial support. Personnel who simply use IT assets incidental to the performance of their primary functions are not included.
Intra-governmental services	All IT services within agencies, and between executive branch agencies, judicial and legislative branches, and State and local governments.

3. Estimate Future Requirements

Future customer requirements determine the system capabilities and architecture, and ultimately affect system costs and benefits. Two items to consider are:

- Lifecycle Time—Determine the system lifecycle, or when the system is terminated and replaced by a system with significant changes in processing, operational capabilities, resource requirements, or system outputs. Large, complex systems should have a lifecycle of at least five years, and no more than ten to 12 years.
- Lifecycle Demands—Identify the most appropriate demand measures and use the measures to determine previous year' demands, calculate the change in demand from year to year, average the demand change, and use the average to make predictions. In a complex situation, more sophisticated tools, such as time-series and regression analysis, may be needed to forecast the future.

4. Collect Cost Data

Data can be collected, from the following sources, to estimate the costs of each investment alternative:

- Historical Organization Data—If contracts were used to provide system support in the past, they can provide the estimated future cost of leasing and purchasing hardware and hourly rates for contractor personnel. Contracts for other system support services can provide comparable cost data for the development and operation of a new system.
- Current System Costs—Current system costs can be used to price similar alternatives.
- Market Research—Quotes from multiple sources, such as vendors, Gartner Group, IDC Government, and government-wide agency contracts (GWACS), can provide an average, realistic price.
- Publications—Trade journals usually conduct annual surveys that provide general cost data for IT personnel. Government cost sources include the General Services Administration (GSA) pricing schedule and the OMB Circular A-76, "Performance of Commercial Activities" supplemental listing of inflation and tax rates.
- Analyst Judgment—If data is not available to provide an adequate cost estimate, the CBA team members can use judgment and experience to estimate costs. To provide a check against the estimates, discuss estimated costs with other IT professionals.
- Special Studies—Special studies can be conducted to collect cost data for large IT investments. For example, the Federal Aviation Administration (FAA) used three different in-house studies to provide costs for software conversion, internal operations, and potential benefits. These data sources became the foundation for a CBA.

5. Choose at Least Three Alternatives

A CBA should present at least three viable alternatives. "Do nothing" or "Continue current operations" should not be considered as an alternative. Each viable technical approach should be included as an alternative. However, the number of technical approaches may be limited if only one or two are compatible with the architecture or if some approaches are not feasible for reasons other than costs and benefits.

6. Document CBA Assumptions

It is important to document all assumptions and, if possible, justify them on the basis of prior experiences or actual data. This can be an opportunity to explain why some alternatives are not included. If an alternative is eliminated because it is not feasible, the assumption should be clearly explained and justified.

7. Estimate Costs

Many factors should be considered during the process of estimating costs for alternatives. Full lifecycle costs for each competing alternative should be included, and the following factors should be addressed:

- Activities and Resources—Identify and estimate the costs associated with the initiation, design, development, operation, and maintenance of the IT system.
- Cost Categories—Identify costs in a way that relates to the budget and accounting processes. The cost categories should follow current USDA object class codes.
- Personnel Costs—Personnel costs are based on the guidance in OMB Circular A-76, "Supplemental Handbook, PART II—Preparing the Cost Comparison Estimates." Government personnel costs include current salary by location and grade, fringe benefit factors, indirect or overhead costs, and General and Administrative costs.
- Depreciation—The cost of each tangible capital asset should be spread over the asset's useful life (i.e., the number of years it will function as designed). OMB prefers that straight-line depreciation be used for capital assets.
- Annual Costs—All cost elements should be identified and estimated for each year of the system lifecycle. This is necessary for planning and budget considerations Table E-3—illustrates the cost estimates for an investment initiation activity.

Table E-3. Sample Cost Estimates for an Investment Initiation Activity

Activties/Cost Categories	Problem Definition	Work Process Evaluation	Requirements Definition	Security Plan	Performance Measures	Cost-Benefit Analysis	Total
Hardware							
Software							
Services							
Support Services		10,000	4,000	1,000	6,000	3,000	24,000
Supplies		100	100	0	100	100	400
Personnel	5,000	10,000	6,000	500	5,000	8,000	34,500
Inter-Agency Services							
Total	5,000	20,100	10,100	1,500	11,100	11,100	58,900

The costs for each year can be added to provide the estimated annual costs over the investment's life. For example, Table E-4—Sample System Lifecycle Cost Estimates provides the total estimated costs for a 10-year investment. In the first year, in-house staff and contractors define the problem, evaluate the work process, define processing requirements, prepare the CBA, develop a request for proposals (RFP), and issue a contract for the system development. In the second year, a contractor designs and implements the system. The next eight years reflect operational and maintenance costs for equipment, software, in-house personnel, and contractor personnel. Years five and six also reflect in-house acquisition costs for establishing a new five-year contract for system maintenance and help desk support.

Table E-4. Sample System Lifecycle Cost Estimates

Year	Startup	Acquisition	Development	Operation	Maintenance	Total
1	100,000	100,000				200,000
2			800,000			800,000
3				200,000	80,000	280,000
4				200,000	60,000	260,000
5		50,000		200,000	50,000	300,000
6		50,000		200,000	50,000	300,000
7				200,000	40,000	240,000
8				200,000	30,000	230,000
9				200,000	30,000	230,000
10				200,000	30,000	230,000
Total	100,000	200,000	800,000	1,600,000	370,000	3,070,000

8. Estimate Benefits

The following six activities are completed to identify and estimate the value of benefits:

Define Benefits—Benefits are the services, capabilities, and qualities of each alternative, and can be viewed as the return from an investment. The following questions will help define benefits for IT systems and enable alternative comparisons:

- *Accuracy*—Will the system improve accuracy by reducing data entry errors?
- *Availability*—How long will it take to develop and implement the system?
- *Compatibility*—How compatible is the proposed alternative with existing procedures?
- *Efficiency*—Will one alternative provide faster or more accurate processing?
- *Maintainability*—Will one alternative have lower maintenance costs?
- *Modularity*—Will one alternative have more modular software components?
- *Reliability*—Does one alternative provide greater hardware or software reliability?
- *Security*—Does one alternative provide better security to prevent fraud, waste, or abuse?

Identify Benefits—Every proposed IT system should have identifiable benefits for both the organization and its customers. Organizational benefits could include flexibility, organizational strategy, risk management and control, organizational changes, and staffing impacts. Customer benefits could include improvements to the current IT services and the addition of new services. Customers should help identify and determine how to measure and evaluate the benefits.

Establish Measurement Criteria—Establishing measurement criteria for benefits is crucial because the Government Performance and Results Act (GPRA) and the Clinger-Cohen Act (CCA) emphasize tangible measures of success (benefits) related to the organization's overall mission and goals. See Appendix G—Performance Measurement for guidance on how to develop performance measures.

Classify Benefits—Benefits that are "capable of being appraised at an actual or approximate value" are called tangible benefits. Benefits that cannot be assigned a dollar value are called intangible benefits.

Estimate Tangible Benefits—The dollar value of benefits can be estimated by determining the fair market value of the benefits. An important economic principle used in estimating public benefits is the market value concept. Market value is the price that a private sector organization would pay to purchase a product or service

Quantify Intangible Benefits—Intangible benefits can be quantified using a subjective, qualitative rating system. A qualitative rating system might evaluate potential benefits against the following:

- Provides Maximum Benefits (2 points)
- Provides Some Benefits (1 point)
- Provides No Benefits (0 points)
- Provides Some Negative Benefits (-1 point)
- Provides Maximum Negative Benefits (-2 points).

Once the rating system is selected, each benefit is evaluated for each alternative. This should be done by a group of three to five individuals familiar with the current IT system and the alternatives being evaluated. The numerical values assigned to the ratings then can be summed and averaged to obtain a score for each benefit. Table E-5—shows the scores for benefits A to D from four reviewers using a scale of 1 to 5.

Table E-5. Sample Reviewer Scores for Intangible Benefits

Benefit	Reviewer 1 Score	Reviewer 2 Score	Reviewer 3 Score	Reviewer 4 Score	Reviewer Average Score
A	5	4	3	5	4.25
B	4	2	3	4	3.25
C	3	2	5	4	3.50
D	4	3	2	2	2.75

An option that can be used in a qualitative assessment is to "weight" each benefit criteria with regard to importance. The more important the benefit, the higher the weight. The advantage of weighting is the more important benefits have a greater influence on the benefit analysis outcome. The weighting scale can vary between any two predetermined high and low weights. An example of calculating a weighted score is provided in Table E-6—and demonstrates using weighting factors makes Alternative 1 the clear winner.

9. Discount Costs and Benefits

After costs and benefits for each system lifecycle year have been identified, convert them to a common measurement unit by discounting future dollar values and transforming future benefits and costs to their "present value." Present values are calculated by multiplying the future value times the discount factors published in the OMB Circular A-94.

Table E-6. Sample Weighted Benefits Score

Benefit	Alternative 1 Raw Score	Alternative 2 Raw Score	Weighting Factor	Alternative 1 Weighted Score	Alternative 2 Weighted Score
A	4	2	10	40	20
B	3	2	9	27	18
C	4	3	8	32	24
D	2	3	6	12	18
E	3	4	5	15	20
Total	16	14		126	100

Table E-7—shows annual costs and benefits for a system lifecycle, along with the discount factor, the discounted costs and benefits (present values), and the discounted net present value [NPV]. The discounted costs and benefits are computed by multiplying costs and benefits by the discount factor. The net benefit without discounting is $380,000 ($3,200,000 minus $2,820,000) while the discounted NPV is less than $60,000 because the biggest costs are incurred in the first two years, while the benefits are not accrued until the third year. When evaluating costs and benefits, be cautious of returns that accrue late in the investment's lifecycle. Due to discounting, benefits that accrue in later years do not offset costs as much as earlier-year benefits. Also, these later-year benefits are less certain. Both the business and IT environments may experience significant changes before these later-year benefits are realized.

Table E-7. Sample Discounted Lifecycle Costs and Benefits

Year	Annual Cost (AC)	Annual Benefit (AB)	Discount Factor (DF)	Discounted Cost (DC) ACxDF	Discounted Benefit (DB) ABxDF	Discounted Net DB - DC
1	150,000		0.9667	145,005		(145,005)
2	600,000		0.9035	542,100		(542,100)
3	280,000	400,000	0.8444	236,432	337,760	101,328
4	260,000	400,000	0.7891	205,166	315,640	110,474
5	300,000	400,000	0.7375	221,250	295,000	73,750
6	300,000	400,000	0.6893	206,790	275,720	68,930
7	240,000	400,000	0.6442	154,608	257,680	103,072
8	230,000	400,000	0.6020	138,460	240,800	102,340
9	230,000	400,000	0.5626	129,398	225,040	95,642
10	230,000	400,000	0.5258	120,934	210,320	89,386
Total	2,820,000	3,200,000		2,100,143	2,157,960	57,817

10. Evaluate Alternatives

Many benefits cannot be quantified in dollar terms. As a result, evaluating alternatives cannot always be done using present values, but valid evaluations can be made using a combination of dollar values and quantified relative values (values that are numeric, but do not represent dollar values).

Evaluate All Dollar Values—Once all the costs and benefits for each competing alternative have been assigned dollar values and discounted, the NPV of the alternatives should be compared and ranked. When the alternative with the lowest discounted cost provides the highest discounted benefit, it is the clear winner, as shown in Table E-8.

Table E-8. Sample Investment Comparison
(Lowest Cost System Provides Highest Benefit)

Alternative	Discounted Cost (DC)	Discounted Benefit (DB)	Discounted Net (DB - DC)	Benefit-Cost Ratio (DB/DC)
1	1,800,000	2,200,000	400,000	1.22
2	1,850,000	1,750,000	(-100,000)	0.95
3	2,000,000	2,000,000	0	1.00
4	2,200,000	2,100,000	(-100,000)	0.95

Discounted Net—There will probably be very few cases where the alternative with the lowest discounted cost provides the highest discounted benefit. The next number to consider is the Discounted Net (Discounted Benefit minus Discounted Cost). If one alternative clearly has the highest Discounted Net, it is considered the best alternative; however, it is usually advisable to look at other factors.

Benefit-Cost Ratio—When the alternative with the highest discounted net is not a clear winner, the benefit-cost ratio or BCR (discounted benefit divided by discounted cost) may be used to differentiate between alternatives with very similar or equal Discounted Nets. In Table E-9— Alternative 4 would be the winner because it has a higher BCR than Alternative 5. Alternatives 4 and 5 are clearly superior to other alternatives because they have the highest discounted net.

Evaluate With Intangible Benefits—When all the benefits are intangible, evaluation will be based on quantifying relative benefits.

Table E-9. Sample Investment Comparison
(Other Than Lowest Cost System Provides Highest Benefit)

Alternative	Discounted Cost (DC)	Discounted Benefit (DB)	Discounted Net (DB-DC)	Benefit-Cost Ratio (DB/DC)
1	1,500,000	1,600,000	100,000	1.07
2	1,600,000	1,750,000	150,000	1.09
3	1,900,000	2,000,000	100,000	1.05
4	2,000,000	2,450,000	450,000	1.23
5	3,000,000	3,450,000	450,000	1.15

11. Perform Sensitivity Analysis

Sensitivity analysis tests the sensitivity of input parameters and the reliability of the CBA result. Sensitivity analysis should assure reviewers the CBA provides a sound basis for decisions. The sensitivity analysis process requires the following:

Identify Input Parameters—The assumptions documented earlier in the CBA are used to identify the model inputs to test for sensitivity. Good inputs to test are those that have significant (large) cost factors and a wide range of maximum and minimum estimated values. Some common parameters include:

- System requirement definition costs
- System development costs
- System operation costs
- Transition costs, especially software conversion
- System lifecycle
- Peak system demands.

Repeat the Cost Analysis—For each parameter identified, determine the minimum and maximum values. Then, choose either the minimum or maximum value as the new parameter value (the number selected should be the one that most differs from the value used in the original analysis). Repeat the CBA with the new parameter value and document the results. Prepare a table like Table E-10—to summarize the different outcomes and enable the results to be quickly evaluated.

TableE-10. Sample Sensitivity Analysis

Parameter	Parameter Value	Best Alternative
Development Cost ($)	1,500,000 2,000,000 2,500,000	A A B
Transition Costs ($)	100,000 200,000	A A
System Lifecycle (Years)	5 10 15	A B C
Benefits ($)	1,500,000 2,250,000 3,000,000	A A B

Evaluate Results—Compare the original set of inputs and the resulting outcomes to the outcomes obtained by varying the input parameters. In the previous table, the original values are the first value listed for each parameter. Sensitivity is measured by how much change in a parameter is required to change the alternative selected in the original analysis. The sensitivity guidelines include the following:

- A parameter is not considered sensitive if it requires a decrease of 50 percent or an increase of 100 percent to cause a change in the selected alternative.

- A parameter is considered sensitive if a change between 10 and 50 percent causes a change in the selected alternative.
- A parameter is considered very sensitive if a change of 10 percent or less causes a change in the selected alternative.

In the previous example, the analysis would appear to be somewhat sensitive to the development costs, but not sensitive to the transition costs and benefits.

12. Compare Investments

Even if the CBA shows that benefits will outweigh costs, using Payback Period and Return on Investment (ROI) analysis help demonstrate an investment is a better utilization of funds than other proposed investments.

Table E-11—illustrates that the money invested in the system's development, installation, and operation is not offset by the benefits until the 10th year. In other words, the payback period for the system is 10 years, which is generally unacceptable, making it difficult for this investment to obtain funding.

Table E-11. Sample Payback Period

Year	Annual Cost (AC)	Annual Benefit (AB)	Discount Factor (DF)	Discounted Cost (DC) ACxDF	Discounted Benefit (DB) ABxDF	Discounted Net DB - DC	Cumulative Discounted Net
1	150,000		0.9667	145,010	0	(145,010)	(145,010)
2	600,000		0.9035	542,095	0	(542,095)	(687,106)
3	280,000	400,000	0.8444	236,428	337,754	101,326	(585,779)
4	260,000	400,000	0.7891	205,178	315,658	110,480	(475,299)
5	300,000	400,000	0.7375	221,256	295,007	73,751	(401,547)
6	300,000	400,000	0.6893	206,781	275,708	68,927	(332,620)
7	240,000	400,000	0.6442	154,603	257,671	103,068	(229,552)
8	230,000	400,000	0.6020	138,468	240,814	102,346	(127,206)
9	230,000	400,000	0.5626	129,409	225,060	95,651	(31,556)
10	230,000	400,000	0.5258	120,943	210,336	89,393	57,837
Total	2,820,000	3,200,000		2,100,171	2,158,008	57,837	

Return on Investment—ROI is often used when comparing proposed investments. Total Discounted Net (Total Discounted Benefits minus the Total Discounted Costs) is often referred to as the return or profit from an investment. ROI is calculated by dividing the Total Discounted Net by the Total Discounted Cost. In the figure above, ROI is the Total Discounted Net ($57,837) divided by Total Discounted Costs ($2,100,171) and equals 0.0275. Since ROI is often cited as a percentage, multiplying by 100 converts the decimal rate to 2.75.

The ROI is really just another way to express the BCR. In the example above, the BCR is the Total Discounted Benefit ($2,158,008) divided by the Total Discounted Costs ($2,100,171) and equals 1.0275. The 1.0275 can also be expressed as 102.75 percent. This means that the benefits are 2.75 percent greater than the costs. Compute the ROI by subtracting 1 from the BCR.

The ROI must also be adjusted for risk. To adjust ROI for risk, use the process described for calculating the risk factor described in Appendix F.2. The “risk factor” for all risks should be totaled and added to the investment cost. Adjusting the ROI for risk will aid in comparing alternatives with different potential risk levels and will help ensure that returns for investments with higher risk potential are fully understood. (See Appendix F—Risk Assessment for a more detailed discussion on risk analysis.)

APPENDIX F—RISK ASSESSMENT

PURPOSE

Risk is part of any capital investment. Identifying and controlling risks during the Select Phase can have a significant impact on the investment's overall success. However, risk is not the only consideration for investment evaluations. Investments with high technical risk may be selected if the investment is deemed a strategic or operational necessity. Other investments may be selected simply because they have low risk and require few resources. Conducting a risk assessment and controlling risk is a continuing process throughout the investment lifecycle.

F.2 PROCESS

The risk evaluation process is composed of three steps:

1. Identify risks
2. Analyze risks
3. Control risks.

Each of these steps is detailed in the following sections.

1. Identify Risks

Risk identification consists of determining and documenting risks that will likely have an impact on the investment. The identification and associated analysis is a continuing process that should be done periodically throughout the investment lifecycle. Both internal and external risks should be identified. Internal risks are those that can be directly controlled within the project. There are several mechanisms available to assist in identifying risk areas that include historical information, work breakdown structure (WBS), project plans, risk checklist, and interviews. The following checklist is provided to assist in the risk identification. Risk assessments for all investments must include:

- Schedule (i.e., the degree to which the expected completion dates for all major investment activities meet organizational deadlines and constraints for effecting change);
- Initial costs (i.e., the feasibility of the being able to provide the initial funding outlay);
- Life-cycle costs (i.e., the confidence the stakeholders have in the accuracy of the life-cycle costs and ROI);
- Technical obsolescence (i.e., the likelihood that the technology supporting the investment will be made obsolete by follow-on technology);
- Feasibility (i.e., the overall likelihood of the investment succeeding);
- Reliability of systems (i.e., the degree to which users depend upon the systems);
- Dependencies and interoperability between this investment and others (i.e.,
- Surety (asset protection) considerations (i.e., the level to which the investment assets are protected from loss);
- Risk of creating a monopoly for future procurements (i.e., the probability that government action will give a contactor an unanticipated economic advantage over competitors in the future);
- Capability of agency to manage the investment (i.e., the extent to which a the agency has successfully managed similar investments in the past)
- Overall risk of investment failure (i.e., the chance that the investment will fail completely)

- Organizational and change management (i.e., risks associated with key stakeholders and their view of the investment);
- Business (i.e., the degree to which a proposed investment solves business problems or takes advantage of business opportunities);
- Data/info (i.e., the type, importance, and sensitivity of the data being collected);
- Technology (i.e., the type, maturity, user-level acceptance, and pervasiveness of the underlying technology expected to be used);
- Strategic (i.e., the long-term importance of the investment to the sponsoring organization);
- Security (i.e., the potential impact of an underlying system being compromised);
- Privacy (i.e., the extent to which data will be used that can individually identify people) and
- Project resources (i.e., the level and type of resources expected to be employed on the underlying project).

2. Analyze Risks

Each risk is analyzed based on an assessment of likelihood and impact. Numerous activities are used to analyze risks and obtain a complete risk assessment to aid in developing risk management and control strategies. The following provides a summary of activities to assist in risk analysis:

- Group similar and related risks into categories. This will assist in identifying related risks as well as identifying potential dependencies between risks.
- Determine risk drivers or variables that affect the probability and impact of identified risks.
- Determine the root cause or source of risk.
- Use risk analysis techniques and tools such as simulation or decision trees to assess trade-offs, interdependencies, and timing of identified risks.
- Estimate risk factor or risk exposure. Multiply probability of occurrence or likelihood with the consequence or impact (in financial terms) if the risk occurred.
- Determine risk severity. Risk severity is determined by assessing the risk factor with the relative risk timeframe for action. This provides a means to assist in prioritizing risks to better focus control strategies.
- Rank and prioritize risks.

In addition to prioritized risks, a primary output of the risk analysis is an overall “risk factor” that can be applied to each risk. To calculate the risk factor, determine the impact a particular risk (in financial terms) will have on the investment if it is realized, and the likelihood (probability in percentage terms) of this risk occurring. Then multiply these two numbers together. Calculate the risk factor for each identified investment risk and sum the risk factors to determine an overall risk rating for the investment. The overall risk rating should reflect the risk-adjusted ROI for the investment (see Appendix E: Cost-Benefit Analysis for a discussion on ROI and risk adjustment.)

To aid comparisons across investments, it is useful to also calculate a risk score. This is computed by dividing the investment’s overall risk rating by the number of identified risks. This encourages Project Managers to include all identified risks and provides a more accurate picture of the overall investment risk. For example, several low-impact, low-likelihood risks may be less risky than a single high-impact, high-likelihood risk.

The Risk Assessment Plan, submitted as part of the Select and Control Phases should, at a minimum, have the columns shown in Table F-1.

Table F-1. Example of Risk Assessment Table

Risk Priority	Risk Description	Probability of Risk Occurring (in %)	Cost if Risk Occurred	Risk Factor

3. Control Risks

The Project Manager establishes and executes a risk management plan to mitigate risks. The development of a risk management plan assists in addressing each risk and whether to accept, avoid, transfer, or reduce the impact of the risk. This includes determining risk controls based upon available resources and identifying responsible parties. Plans should include the identification of the appropriate risk control strategy, objectives, alternatives, mitigation approach, responsible parties, resources required, activities, actions taken to date, and results achieved. The risk management plan is an evolving strategy to assist the Project Manager and ensure a higher probability of success for the investment. The plan should be updated continually as risks change throughout the lifecycle. Risks, actions taken, and results should be tracked and included as part of periodic reviews.

Risks can rarely be completely eliminated, however they can be controlled. If the following controls or risk mitigation strategies are in place, the likelihood of risk decreases and the investment is more attractive:

Financial Controls

- Perform Cost-Benefit and economic analyses
- Implement a rigorous investment management program
- Utilize earned value, share in savings, use contracting approaches, etc. to help control costs
- Purchase liability insurance
- Establish clear benefits to be realized
- Use competitive bidding for each investment design increment.

Technical Controls

- Reengineer the process first
- Use development lifecycle methodology/ structure
- Use project planning/management software
- Use appropriately trained personnel
- Divide the investment into increments
- Isolate custom design portions of the investment
- Assign a Project Manager (preferably with Project Management Institute or similar organization certification) to be accountable for the investment
- Conduct an IV&V
- Conduct pilot test(s).

Operational Controls

- Use a strategic information management framework
- Establish clear requirements and objectives
- Use a change management program to minimize organizational disruption
- Adequately train organization and provide follow on support
- Establish performance metrics and monitor metrics using a reporting system
- Establish a communications plan.

Schedule Controls

- Use contractual incentives for quality or timeliness
- Use contractual penalties for missed deadlines
- Use contractual incentives for meeting or beating deadlines
- Use project management software
- Use an experienced/certified Project Manager and/or provide the necessary training to the Project Manager
- Set realistic expectations and manage those expectations
- Use outsourcing to augment scarce internal resources.

Legal and Contractual Controls

- Create a software license management program
- Review all applicable laws
- Apprise contracting personnel of potential legal concerns and contract disputes
- Maintain communication with contractors to minimize contract disputes
- Provide multiple termination opportunities within a contract.

Organizational Controls

- Obtain “buy-in” from top management early in planning stages
- Work closely with end-users to establish system requirements
- Maintain good communication with all stakeholders.

APPENDIX G—PERFORMANCE MEASUREMENT

PURPOSE

Performance measurement is the process whereby an organization establishes the parameters within which programs, investments, and acquisitions are reaching the desired results in support of mission goals. Performance measures are set during the Select Phase and assessed during subsequent phases. The focus of performance measurement is on outcomes, or how well the IT investment enables the program or agency to accomplish its primary mission. Consequently, performance measurement should look beyond measures of input (resource consumption), activities (milestones), and output (production numbers), which are more directly related to operational performance. This focus, however, does not imply that input, activity, and output measures are not useful. Indeed, internal measures are used to track resources and activities and make necessary adjustments since investments are only successful if hardware, software, and capabilities are delivered on time and meet specifications.

Performance is evaluated using two criteria—effectiveness and efficiency. Effectiveness demonstrates that an organization is doing the correct things, while efficiency demonstrates that an organization is doing things optimally. New acquisitions and upgrades should include a business case indicating the investment will result in effectiveness or efficiency improvements. For example, a new computer network might result in enhanced efficiency because work is processed faster, digital images are transferred among remote sites, or messages are transmitted more securely. Some questions that facilitate performance measure development include:

- What product will be produced, shared, or exchanged?
- Who will use the results?
- What decisions or actions will result from delivery of products from this system?

Answers to these questions will help Project Managers develop effective performance measures with the following characteristics:

- Strategically relevant
  - Directed to factors that matter and make a difference
  - Promote continuous and perpetual improvement
  - Focus on the customer
  - Agreed to by stakeholders.
- Short, clear, and understandable
  - Measurable/quantifiable
  - Meaningful.
- Realistic, appropriate to the organizational level, and capable of being measured.
- Valid
  - Link to activity and provide a clear relationship between cause and effect
  - Focus on managing resources and inputs, not simply costs
- Discarded when utility is lost or when new, more relevant measures are discovered.

PROCESS

Outcome-based performance measures are developed through a series of steps. It is important to understand that developing measures is only one part of the more comprehensive process. After measures are developed, baseline information is gathered if it does not already exist, and performance

information is collected, analyzed, interpreted, and used throughout the investment's life. These steps require a commitment of management attention and resources.

The following five steps are recommended to establish performance measures:

1. Analyze how the investment supports the mission goals and objectives and reduces performance gaps
2. Develop IT performance objectives and measures that characterize success
3. Develop collection plan and collect data
4. Evaluate, interpret, and report results
5. Review process to ensure it is relevant and useful.

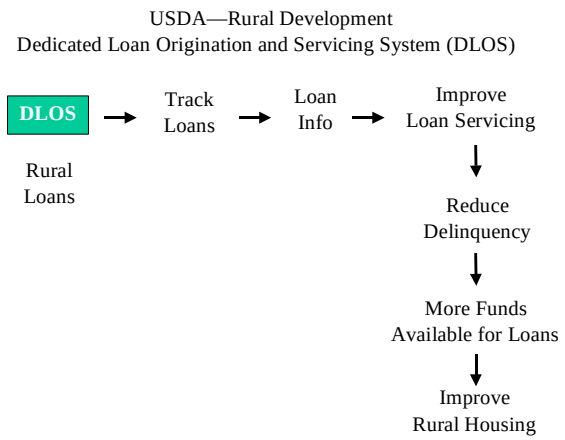
Steps one to three are completed during the Pre-Select and Select Phases. Steps four and five are completed during the Control Phase, with follow-up during the Evaluate and Steady-State Phases. Each of these process steps is defined in the following sections.

1. Analyze How the Investment Supports the Mission and Reduces Performance Gaps

Effective outcome-based performance measures are derived from the relationship between the new investment and how users will apply investment outputs. Specifically, the users' mission and critical success factors (those activities and outputs that must be accomplished if users are to achieve their mission) must be clearly understood. The critical element of this step is linking proposed and in-process IT investments and activities to the user mission and critical success factors.

This concept is often described as a method of strategically aligning programs and support functions with the agency's mission and strategic priorities. The first step in effectively developing outcome-based IT performance measures is to identify the organization's mission, the critical tasks necessary to achieve the mission, and the strategies that will be implemented to complete those tasks. One structured method of accomplishing this step is to develop a Logic Model linking the mission to IT performance measures. An example of a Logic Model is provided in Figure G-1—Example of Logic Model.

Figure G-1. Example of Logic Model[1]



1 DLOS model from the Rural Development's Rural Housing Service.

Answers to the following questions will aid logic model development:

- Identify the system or the left most box. What will the system do? What are major functions or features that the system will provide (i.e., what functionality or information)? Is this system a stand-alone system or is it used or integrated with another large system? What is the purpose of that system? How is it used?
- What aspects of the system, service, and information quality are needed for the system to perform optimally or acceptably?
- Identify who will use the system. What is the principal business task they perform? How will using the system help them with that task?
- How does completion of that task contribute to a business function?
- How does completion of the business function contribute to achievement of the program goals?
- How does completion of program goals contribute to organizational goals?
- How does completion of organizational goals contribute to Departmental goals?
- Determine whether there are related IT investments that impact the mission area and goal(s) selected. Understand the relationships between various IT investments that address the same or similar needs. This will help identify potential areas for consolidation.

Once the mission is clearly defined, a gap analysis is performed to understand how IT can improve mission performance. The analysis begins with the premise that IT will improve effectiveness, efficiency, or both. To accomplish this, requirements are defined and the following questions are answered:

- Why is this application needed?
- How will the added functionality help users accomplish the mission?
- How will the added functionality improve day-to-day operations and resource use?

The investment initiation and requirement documentation also describes gaps between the current and future mission and strategy in terms of how overall efficiency and effectiveness will be improved. Project managers assist users in developing a baseline measurement of the current IT use and in comparing the baseline to the business objective to identify gaps. This analysis defines the investment need as the basis for determining what success will look like (e.g., the investment is successful when the gap is reduced by "x" amount).

2. Develop IT Performance Measures that Characterize Success

Well-designed performance measures define success parameters for the IT initiative. The following questions should be asked for each performance measure and answered affirmatively before deploying the measure:

- Is it useful for monitoring progress and evaluating the degree of success?
- Is it focused on outcomes that stakeholders will clearly understand and appreciate?
- Is it practical? Does it help build a reliable baseline and cost-effectively collect performance data at periodic intervals?
- Can the performance measure be used to determine the level of investment risk and whether the investment will meet performance targets?

Answering these questions affirmatively results in an agreement that the IT investment, by supporting improvements identified earlier, will support organizational goals and objectives. Additionally, it will help limit the number of performance measures and focus management attention on the requirements that have the greatest priority or impact. After three to five major requirements have been identified, the following questions are asked:

- What are the performance indicators for each major requirement?
- How well will those outputs satisfy the major requirements?
- What additional steps must be taken to ensure outputs produce intended outcomes?
- How does this IT investment improve capabilities over the current method?

Once requirements to be measured are identified, determine when each requirement is met. Some requirements may need to be changed if they are too difficult to measure. Or, if the requirement has indirect rather than direct outcomes, it may be necessary to use “surrogate” performance measures that mirror actual outcomes. For example, it is difficult to measure the direct benefit of computer-based training (CBT) systems. In this case, a surrogate measure might be the percentage of staff achieving certifications through the CBT with implications that certified staff are more desirable than non-certified staff because they have demonstrated initiative and are more proficient.

Of the possible performance indicators, select one or more to report performance against each requirement. One performance indicator may provide information about more than one requirement. The objective is to select the fewest number of performance indicators that will provide adequate and complete information about progress.

Selecting the fewest performance indicators necessary is important because data collection and analysis can be costly. The cost is acceptable if the benefit of the information received is greater than the cost of performance measurement, and if the data collection does not hinder accomplishment of primary missions. Costs are calculated by adding the dollars and staff time and effort required to collect and analyze data. When calculating costs, consider whether they are largely confined to initial or up-front costs, or will occur throughout the IT lifecycle. For example, the cost of developing and populating a database may have a large initial cost impact but diminish significantly for later maintenance. Answers to the following questions will help to determine the cost of tracking a specific performance indicator:

- What data are required to calculate the performance measure?
- Who collects the data and when?
- What is the verification and validation strategy for the data collection?
- What is the method to ensure the quality of the information reported?

In addition to determining costs, it is also necessary to determine the baseline performance, target performance, and expected time to reach the target. The baseline value is the start point for future change. If performance measures are currently in use, the data collected can provide the baseline. Otherwise the manager must determine the baseline by a reasonable analysis method including the following:

- Benchmarks from other agencies and private organizations
- Initial requirements
- Internal historical data from existing systems
- Imposed standards and requirements.

To determine the target value, obtain stakeholder agreement regarding the quantifiable benefits of the new system. These targets may be plotted as a function over time, especially for IT investments that are being installed or upgraded or as environmental factors change. However, incremental improvement is not necessarily success. The targeted improvement from the baseline must be achieved within the designated timeframe to be counted as a success.

3. Develop Collection Plan and Collect Data

To ensure performance data is collected in a consistent, efficient, and effective manner, it is useful to develop and publish a collection plan so all participants know their responsibilities and can see their contributions. The collection plan details the following items:

- Activities to be performed
- Resources to be consumed
- Target completion and report presentation dates
- Decision authorities
- Individuals responsible for data collection.

In addition, the collection plan answers the following questions for each performance measure:

- How is the measurement taken?
- What constraints apply?
- Who will measure the performance?
- When and how often are the measurements taken?
- Where are the results sent and stored, and who maintains results?
- What is the cost of data collection?

While costs should have been considered during the previous step, the actual cost will be more evident at this stage. Excessively costly performance measures may require project managers to find a different, less costly mix of performance measures for the IT investment. Or it may be necessary to creatively collect the measures to reduce collection cost. For example, a sampling may produce sufficiently accurate results at significantly less cost than counting every occurrence, and some results can be automatically generated by the system and accessed through a standard report.

To ensure data is being collected in a cost-effective and efficient manner, it is important to ensure the data collectors are involved in developing performance measures. The collectors will do a much better job if they believe the performance measures are valid and useful, and they will have insight regarding the best way to collect the data.

4. Evaluate, Interpret, and Report Results

Performance measures are useful in monitoring the investment against expected benefits and costs. To evaluate performance, data is compiled and reported according to the collection plan that was previously constructed. The data is then evaluated and the following questions are answered regarding the collected data and the investment's performance:

- Did the investment exceed or fall short of expectations? By how much and why?
- If the data indicates targets are successfully reached or exceeded, does that match other situational perceptions?
- What were the unexpected benefits or negative impacts to the mission?

- What adjustments can and should be made to the measures, data, or baseline?
- What actions or changes would improve performance?

This evaluation reveals any needed adjustments to the IT investment or performance measures. It also helps surface any lessons learned that could be fed back to the investment management process.

5. Review Process to Ensure It Is Relevant and Useful

Performance measures provide feedback to managers and help them make informed decisions on future actions. To ensure that performance measures are still relevant and useful, answer the following questions:

- Are the measures still valid?
  - Have higher-level mission or IT investment goals, objectives, and critical success factors changed?
  - Are threshold and target levels appropriate in light of recent performance and changes in technology and requirements?
  - Can success be defined by these performance measures?
  - Can improvements in mission or operations efficiency be defined by the measures?
  - Have more relevant measures been discovered?
- Are the measures addressing the right things?
  - Are improvements in performance of mission, goals, and objectives addressed?
  - Are all objectives covered by at least one measure?
  - Do the measures address value-added contributions made by overall investment in IT and/or individual programs or applications?
  - Do the measures capture non-IT benefits and customer requirements?
  - Are costs, benefits, savings, risks, or ROI addressed?
  - Do the measures emphasize the critical aspects of the business?
- Are the measures the right ones to use?
  - Are measures targeted to a clear outcome (results rather than inputs or outputs)?
  - Are measures linked to a specific and critical organizational process?
  - Are measures understood at all levels that must evaluate and use them?
  - Do the measures support effective management decisions and communicate achievements to internal and external stakeholders?
  - Are measures consistent with individual motivations?
  - Are measures accurate, reliable, valid, and verifiable?
  - Are measures built on available data at reasonable costs and in an appropriate and timely manner for the purpose?
  - Are measures able to show interim progress?
- Are measures used in the right way?
  - Are measures used in strategic planning (e.g., to identify baselines, gaps, goals, and strategic priorities) or to guide prioritization of program initiatives?
  - Are measures used in resource allocation decisions and task, cost, and personnel management?
  - Are measures used to communicate results to stakeholders?

APPENDIX H—PROJECT MANAGEMENT

PURPOSE

Project Management is a crucial element for IT investment success. It involves executing the necessary skills and management practices to ensure successful investment development and implementation. This integrated skill set addresses such areas as project planning, scope management, cost, schedule, performance, risk, and organizational management. The Project Manager is ultimately responsible for the investment's success and ensuring the investment delivers the functionality and capabilities expected by stakeholders (i.e., users, customers, and senior leaders). Perhaps the greatest project management challenge is identifying risks and then executing management techniques that mitigate the risks to ensure timely and successful completion.

COMPONENTS

Project Managers should complete the following project management components to help ensure the investment's successful completion:

Project Planning—Project planning is a critical element of every successful investment. It provides a foundation on which to base anticipated efforts. Additionally, it helps identify investment components and illustrates these components in a project plan. Project planning includes:

- Scope definition
- Activity identification
- Activity duration estimation
- Activity sequencing
- Cost estimation
- Schedule development
- Project staffing/resourcing
- Project plan development.

Investments typically involve multiple components that may be complex or interface with other proposed/existing systems or data. Integrating these components can be challenging. To support improved integration and management, it is useful to develop a Work Breakdown Structure (WBS). A WBS provides a management framework by separating the investment lifecycle into distinct, manageable components related to various activities and interfaces. Each component is defined with appropriate sub-components and activities, such that one individual or team can implement each component. This enables the Project Manager to more effectively estimate the cost and schedule for completing individual components, supports sequencing activities and identification of interdependencies, and provides a basis to identify milestones and develop resource and schedule estimates. Table H-1—provides an example of a WBS.

Scope Management—The scope frames what is expected of the investment's ultimate capability and functionality. As such, it directly impacts functional and system requirements development. The Project Manager should obtain the Project Sponsor's concurrence on the investment's scope, and then effectively manage that scope and mitigate "scope creep" by maintaining requirements traceability throughout the project lifecycle and implementing configuration management procedures. It is important for the Project Sponsor to determine whether existing requirements have been redefined, new requirements have been identified, or existing requirements eliminated based upon events. The project scope should be based on the business requirements identified during the Pre-Select Phase and traced throughout the project lifecycle. All system features, functions, and capabilities should be linked to original customer

requirements throughout the entire planning, acquisition, design and implementation phases to ensure accurate system or network design.

Risk—Risk is inherent in every investment. To aid in effectively identifying, analyzing, and managing risk, Project Managers should develop a risk management plan early in the planning stages, ideally during the Select Phase. Project Managers should employ subject matter experts (SMEs) among the various functional areas of the investment to identify risk and provide mitigation strategy. Key risk areas may include technology, cost, schedule, and performance/quality. The risk management plan is continually updated throughout the investment's lifecycle and is part of annual and periodic reviews. Appendix F—Risk Assessment provides additional guidance on risk assessment and management.)

Cost and Schedule Management—Effective investment management entails establishing cost and schedule baselines. Actual information is continuously collected, analyzed, and compared to original projections and the current baseline. Variances are identified, and appropriate actions are taken to inform senior management and mitigate the impacts of increased costs and schedule slippages. The WBS, milestones, activities, and project plan assist the development and tracking of cost and schedule. Earned value techniques provide a means to more completely evaluate costs and schedule, and assist in early risk identification (see Appendix I—Earned Value Analysis).

Table H-1. Example of a Project Planning WBS

Plan Project	
100	Define Project
10	Determine Project Objectives
20	Define Project Scope
30	List Project Products
40	Determine Project Constraints
50	Select Project Approach
60	Determine Project Standards
70	Assess Project Risks
200	Make Project Plan
10	Define Work Breakdown Structure
20	Determine Activity Dependencies
30	Define Project Milestones
40	Determine Project Organization
50	Estimate Effort
60	Allocate Resources
70	Schedule Activities
80	Develop Budget
90	Assess Project Risks
300	Obtain Project Approval
10	Assemble Project Plan
20	Present Project Plan
30	Agree to Project Plan
MPMP1	Milestone PMP1

Performance—An investment's ultimate objective is to meet or exceed stakeholder performance expectations by ensuring the investment satisfies the mission need and business requirements. In the Pre-Select and Select Phases, performance planning includes defining performance measures and identifying activities required to ensure performance objectives will be met (see Appendix G—Performance Measurement). This may include benchmarking to establish a baseline and to further refine the investment's performance objectives. The Control Phase includes a continual monitoring of the performance baseline to potentially include quality reviews, tests, or pilot tests. In the Evaluate Phase, a PIR helps compare actual investment performance with expectations (see Appendix J—Post-Implementation Reviews). During the Steady-State Phase, performance measures are analyzed to determine whether investments are continuing to meet mission needs and performance expectations.

Organizational Management—Organizational management skills needed to manage an investment include project staffing, communications, and organizational understanding. Project Managers should be able to identify the needed skill sets and assign appropriate personnel to accomplish a given set of activities. Project Managers should also have the requisite interpersonal and leadership skills to communicate with both the project team and stakeholders. This includes possessing a vision for the investment and how to best meet stakeholder expectations, as well as ensuring the project team is able to focus on assigned tasks/activities. Additionally, Project Managers should be able to communicate and build consensus with key stakeholders, since this ultimately impacts the investment's success or failure.

APPENDIX I—EARNED VALUE MANAGEMENT

Earned Value Management (EVM) references:

- Departmental Regulation 3130-006 (12/21/05) Information Technology Earned Value Management (see link)

- USDA AGAR Advisory No. 80: Requirement for Use of an Earned Value Management System (see link)

- National Defense Industrial Association (NDIA) Program Management Systems Committee (PMSC) ANSI/EIA-748-A Standard for Earned Value Management Systems (EVMS) Intent Guide, created by the NDIA – PMSC to promote a clearer understanding of the American National Standards Institute/Electronic Industry Alliance (ANSI/EIA) standard 748. For each of the 32 earned value management guidelines this Guide provides: the value to management, an intent statement, typical attributes, and examples of objective evidence. (see link)

- National Defense Industrial Association (NDIA) Program Management Systems Committee (PMSC) Surveillance Guide, this guide was developed by the NDIA - PMSC and the Department of Defense for the implementation for EVMS surveillance in accordance with the American National Standards Institute/Electronic Industry Alliance (ANSI/EIA) standard 748. (see link)

- National Defense Industrial Association (NDIA) The PM Guide to IBR Process is the principal IBR reference and should be used to implement an integrated baseline discipline on an acquisition program. (see link)

  See also https://acc.dau.mil/simplify/ev_en.php?ID=52961_201&ID2=DO_TOPIC for more info on the three NDIA guides.

Definitions

Agency Head: Person designated in charge of a USDA agency; i.e. Agency Administrator, Chief, or Office Director.

ANSI/EIA-748-A: American National Standards Institute (ANSI)/Electronic Industries Alliance (EIA) Standard, Earned Value Management Systems (ANSI/EIA-748-A), Approved May 19, 1998 (Revised January 2002)

Certification of Earned Value Management System: Each USDA Agency Head with responsibility for a major IT investment(s) will provide a signed guarantee to OCIO that the agency has an EVM system that complies with ANSI/EIA-748-A.

Corrective Action Plan – A document in which the agency describes what steps will be taken to improve the cost and schedule performance of an investment.

Development, modernization, or enhancement (D/M/E): Cost for new investments, changes or modifications to existing systems that improve capability or performance, changes mandated by the Congress or agency leadership, personnel costs for project (investment) management, and direct support.

Earned Value (EV): The value of completed work expressed in terms of the approved budget assigned to that work for a schedule activity or work breakdown structure component. Also referred to as the budgeted cost of work performed (BCWP) (PMBOK 2003)

Earned Value Management (EVM): A management methodology for integrating scope, schedule, and resources, and for objectively measuring project performance and progress. Performance is measured by determining the budgeted cost of work performed (i.e. earned value) and comparing it to the actual cost of work performed (i.e. actual cost). Progress is measured by comparing the earned value to the planned value. (PMBOK 2003)

EVM System (EVMS): The set of policies, practices, tools, outputs, and people that together meet the requirements defined in ANSI/EIA-748-A.

Integrated Baseline Review (IBR): A review jointly conducted by the customer and the supplier Program Managers and selected staffs to effectively assess the PMB to ensure understanding of the scope of the program, and to better understand inherent risks. Generally conducted at the control account level, the review will examine the scope statement for the control account, the resources assigned, and the schedule parameters to ensure realistic planning and to identify risk.

Major Investment: A program or investment that requires the submission of an OMB Exhibit 300, or a combination of programs and/or investments that has been designated by OCIO to be major because of risk, external interest, or other factors used by OCIO for determination. The criteria for defining major investments are outlined in the USDA CPIC Guide.

Performance Measurement Baseline: The time-phased budget plan against which project performance is measured. It is the schedule for expenditure of the

resources allocated to accomplish program scope and schedule objectives. (ANSI/EIA-748-A)

Program: A combination of projects with one common set of objectives or any major investment as designated by USDA.

Project: An effort of finite duration and scope with cost/budget limitations.

Product Performance Measurement: A pre-defined practice that measures the effectiveness and efficiencies gained through the capability/product produced by the program or investment and defined within the context of Appendix G, USDA CPIC Guide to Information Technology.

Project Performance Measurement: A pre-defined practice that measures the progress and performance of an investment or program against a performance measurement baseline (PMB) and defined in an official document defined generically as a System Description.

WBS Dictionary: A companion document to the WBS that describes the scope for each and every WBS element. The WBS Dictionary covers the entire scope of the project including management and support activities performed as part of the project.

Work Breakdown Structure (WBS): A product-oriented hierarchical structure that defines the work to be accomplished in the project.

APPENDIX J—POST-IMPLEMENTATION REVIEWS

PURPOSE

Post-Implementation Reviews (PIRs) support the Evaluation Phase of the process (see Chapter 5—Evaluate Phase). PIRs help determine whether investments have achieved expected benefits, such as lowered cost, reduced cycle time, increased quality, or increased speed of service delivery.

The PIR has a dual focus:

- It provides an assessment of the implemented investment, including an evaluation of the development process.
- It indicates the extent to which the USDA's decision-making processes are sustaining or improving the success rate of IT investments.

The PIR usually occurs either after a system has been in operation for about six months or immediately following investment termination.

A team of agency and/or staff office personnel should conduct the PIR. However, in order to ensure the review is conducted independently and objectively, the PIR team should not include members from the investment under review. The PIR team should review the following investment elements:

- Mission alignment
- IT architecture and telecommunications infrastructure (including security and internal controls)
- Performance measures
- Project management
- Customer acceptance
- Business process support
- High performance workforce
- Cost versus anticipated savings.

As a minimum, the PIR team will evaluate stakeholder and customer/user satisfaction with the end product, mission/program impact, and technical capability, as well as provide decision-makers with lessons learned so they can improve investment decision-making processes.

The review will provide a baseline to decide whether to continue the system without adjustment, to modify the system to improve performance or, if necessary, to consider alternatives to the implemented system. Even with the best system development process, it is quite possible that a new system will have problems or even major flaws that must be rectified to obtain full investment benefits. The PIR should provide decision-makers with useful information on how best to modify a system, or to work around the flaws in a system, to improve performance and bring the system further in alignment with the identified business needs.

PROCESS

As detailed below, there are seven major steps to conducting a PIR:

1. Initiate PIR

The review team initiates a PIR by preparing and sending a memorandum to the Project Sponsor stating the review has begun. The memorandum should include a schedule for the planned review and indicate any areas that may receive special review emphasis.

2. Analyze Documentation

The review team attains any existing investment documentation and analyzes the information to understand the investment scope, generate interview and survey questions, prepare for system overview briefings, and plan the PIR. The review team also reviews any existing reports and memos from the Pre-Select, Select, and Control Phases to uncover any findings or outstanding issues.

3. Interview Key Players

The review team interviews all key IT and business process players. The interviews should help the team develop an understanding of the system's goals, objectives, benefits, and costs as described in the business case submitted during the Select Phase. Additionally, the interviews will help the team determine how efficiently and effectively the system's objectives, goals, performance measures, and benefits are being achieved, as well as identify system deficiencies and enhancement needs.

4. Measure Performance

The review team assesses the investment performance measures established during the Select Phase. These performance measures are compared to actual data generated during the operations/production stage. In the absence of certain statistics, the review team may perform onsite observations to measure specific criteria.

5. Perform User Surveys

The review team conducts qualitative surveys with users to determine user satisfaction with the system. Executing the survey includes designing questionnaires, distributing survey questionnaires to remote users' locations, receiving responses, analyzing results, and generating a survey results memorandum. The survey measures the system's efficiency and effectiveness in achieving its stated goals and benefits and in satisfying user needs.

6. Perform Analysis

The review team analyzes all documentation, survey results, and performance measurements to determine if the system efficiently and effectively achieved its objectives.

7. Issue Report

After comments are received from the Project Sponsor, the review team prepares the Final Report and submits it for OCIO and E-Board review. Report findings and recommendations must be clear and concise to avoid any misunderstandings.

APPENDIX K— MISSION NEED STATEMENT TEMPLATE

PURPOSE

The Mission Needs Statement (MNS) is to be completed during the Pre-Select Phase. It is a summary document that describes the operational problem and presents the major decision factors that OCIO and the E-Board should evaluate in considering the need and proposed investment.

The following section provides a template for preparing the Mission Need Statement. Detailed quantitative and analytical information should be included as attachments.

General Instructions for Completing the Mission Need Statement

The Mission Need Statement is created during the Pre-Select Phase. It must analytically justify: (1) the need for action to resolve a shortfall in the agency's ability to provide the services needed by its users or customers, or (2) the need to explore a technological opportunity for performing agency missions more effectively. The Mission Needs Statement must be derived from rigorous mission analysis (i.e., continuous analysis of current and forecasted mission capabilities in relationship to projected demand for services) and must contain sufficient quantitative information to establish and justify the need. Extensive performance analysis should be completed and capability shortfalls should be identified before preparing the Mission Need Statement.

1. Administrative Information

A. MNS Title:	
B. MNS Number:	
C. Originator:	
D. Originator's Organization:	
E. Originator's Phone Number:	
F. Sponsoring Line of Business:	
G. Sponsor's Focal Point:	
H. Sponsor's Focal Point Phone Number:	
I. Submission Date:	
J. Revision Number:	
K. Revision Date:	
Signature:	Agency Head Date

2. Impact on USDA Mission Areas

Briefly describe the impact of the capability shortfall or technological opportunity with respect to performance metrics, goals, or standards in USDA mission areas. Performance goals are delineated in the USDA and agency strategic plan, business plans, and annual performance plan prepared in compliance with GPRA (Public Law 103-62). This should be linked directly to the USDA strategic plan and the agency strategic plan.

3. Needed Capability

Describe the functional capability needed or technological opportunity. Describe needed capability in terms of functions to be performed or services to be provided. Cite any Congressional, Secretary, or other high-level direction, such as international agreements, to support the needed capability or any statutory or regulatory authority for the need. Provide validated growth projections based on operational analysis.

This is not a description of an acquisition program (i.e., this is not the details of a particular hardware or software solution). Do not describe needed capability in terms of a system or solution but rather focus on the business/mission aspects.

4. Current and Planned Capability

Describe quantitatively the capability of systems, facilities, equipment, or other assets currently deployed or presently planned and funded to meet the mission need. Where applicable, use tables to present the information. If this Mission Need Statement proposes to replace an existing investment, provide existing system name and OMB number. References should be made to the existing architecture and asset inventory. Provide back up data in attachments.

5. Capability Shortfall

Describe the capability shortfall and explain the performance analysis that was used to identify and quantify the extent of the shortfall over time. Define the ability of the current technology to meet the business requirements in support of the mission. Identify changes between current state and future state of technology, and provide recommendations for closing gaps between the two. Define, in detail, the specific limitations of current facilities, equipment, or service to meet projected demand and the needed capability. Explain the criteria used to measure performance. Include appropriate graphs, tables, and formulas to define the extent of the shortfall. Identify databases and other data sources upon which the analysis is based. Identify models and methodologies used to quantify the shortfall.

Alternately, describe the technological opportunity in terms of improved USDA productivity, facility availability, operational effectiveness, or improved efficiency. In attachments, explain the analysis used to quantify the magnitude of the opportunity, and identify and describe databases, models, and methodologies used to support the analysis.

Provide specific operational and performance analyses, quantitative projections, maintenance indicators, reports, recommendations, or other supporting data, as attachments.

6. Impact of Not Approving the Mission Need

Describe the impact if this capability shortfall is not resolved relative to the USDA's ability to perform mission responsibilities. Define the expected change in mission performance indicators if the capability shortfall is not resolved.

Include as attachments appropriate graphs, tables, and formulas used to quantify the impact on performance. Identify databases, other sources of data, models, and methodologies used to support the impact analysis. Explain performance analyses used to quantify the impact of not implementing the opportunity, and identify the external factors (such as validated growth projections) used to support the analysis.

7. Benefits

Summarize the mission analysis determination of benefits. Describe the benefits accrued by the needed capability or technological opportunity. Benefits may accrue from more efficient operations, improved responsiveness to customers, lower operational costs, or other savings.

The summary of accrued benefits should describe ground rules and assumptions, benefits, estimating methods, sources, and models. Include as attachments appropriate graphs, tables, and formulas used to quantify the benefits.

8. Timeframe

Identify when the capability shortfall will seriously affect the Department's ability to perform its mission if no action is taken. Establish when action must be taken to avoid the adverse impact on services that will result. Explain the performance analysis used to quantify the extent of the impact over time.

9. Criticality

State the priority of this mission need relative to other Departmental needs. First, define the priority of this need relative to other needs within the mission area, and then define the priority relative to needs across all mission areas. Characterize whether the mission need identifies internal USDA capability shortfalls or mainly shortfalls in servicing the customer community.

10. Long Range Resource Planning Estimate

Provide a rough estimate of the resources that will likely be committed to this mission need in competition with all others, within the constraint of realistic projections of future budget authority

APPENDIX L—EGOVERNMENT

L.1 USDA'S EGOVERNMENT ENVIRONMENT

eGovernment is the cornerstone of change and transformation expanding USDA's capabilities to deliver new and improved services to its customers, and reaching out to farmers, rural businesses, low-income families and agriculture-related companies throughout the world through innovative new channels. It offers extraordinary possibilities to deliver dynamic customer services, strengthen relationships with partners and stakeholders, and reduce operating costs resulting in "order of magnitude" improvements.

The eGovernment Act of 2002 codified the Federal Government's commitment to transforming its service delivery to its customers using modern electronic delivery channels. This Act provides USDA with the further impetus for transforming the delivery of programs, services and information to integrated services that are customer focused and achieving **USDA's eGovernment vision** of **"USDA, electronically available any place, any time."** It changes USDA's business models in relationship to people, process, information, and technology. These changes are accomplished through cross-agency business planning and integrated investment approaches that focus on cutting costs by delivering services collaboratively.

It is USDA policy to invest in only those information management and technology initiatives that provide value to USDA and its customers, stakeholders, and employees. All information management and technology projects within USDA must comply with USDA's eGovernment direction, current and future enterprise architecture, and capital planning and investment control processes. Exemptions are granted only in exceptional circumstances.

L.2 BACKGROUND

In October 2001, USDA, through the direction of the President's Management Agenda on eGovernment and its own strategic and tactical planning efforts, committed itself to provide products, services and information using electronic delivery channels. These Initiatives are enabling USDA to meet the goals of the President's Management Agenda and achieve USDA's eGovernment vision of **"USDA, Electronically Available Any Place, Any Time"** by transforming its program delivery. The E-Board and the Deputy Secretary and Secretary fully support the work performed in support of President's and USDA's eGovernment Initiatives.

In November 2004 the CIO released policies on Information & Technology Transformation, eAuthentication Service, and eLearning Services, Courseware & Content. These policies listed below, codified USDA's continuing transformation journey to make USDA's programs and services more customer centric:

- USDA Information & Technology Transformation - DR 3600-000
  http://www.ocio.usda.gov/directives/files/dr/DR3600-000.pdf
- USDA eAuthentication Service - DR 3610-001
  http://www.ocio.usda.gov/directives/files/dr/DR3610-001.pdf
- USDA eLearning Services, Courseware & Content - DR 3620-001
  http://www.ocio.usda.gov/directives/files/dr/DR3620-001.pdf
- USDA Enterprise Shared Services – DR 3630-XXX scheduled for publication 3rd Quarter FY 2005

L.3 PURPOSE

eGovernment is the exchange of value, through an electronic medium, and includes interactions and relationships between: Government and citizens; Government and public and private entities; and Government and employees and the enterprise. It is the use by the Government of web-based Internet applications and other digital technologies, combined with processes that implement these technologies to:

- Enhance the access to and delivery of Government information and services to the public, other agencies, and other Government entities; or
- Bring about improvements in Government operations that may include effectiveness, efficiency, service quality, or transformation

L.4 eGovernment Investment Framework

USDA's eGovernment investment approach requires both leveraged investments and customer-centric focus demanding a shift from working in independent agency- and project-specific silos to delivering information and services through integrated, enterprise-wide and interdepartmental solutions. Specifically, **all** information technology investments, must address (1) Collaborative and Blended Ventures vs. Single Agency Approaches; (2) Customer-Centered Government; and (3) Internal Pressures and Demands; and (4) alignment with USDA's current and future Enterprise Architecture direction.

All existing and proposed USDA information technology investments will be evaluated to ensure that Web-based and other electronic information, services and program delivery channels have been sufficiently considered. Investments must align with USDA business goals and objectives and the USDA eGovernment mission, vision, goals and objectives. They must further integrate with, and especially avoid overlapping with government-wide eGovernment initiatives. These initiatives are described below. Those initiatives with which an investment will integrate should be identified. (Instructions on how to document and account for the agency's participation in these initiatives will be provided in the WORKLENZ guidance memorandum. Agencies should

note that involvement in a Presidential Initiative is considered part of the agency's overall IT investment portfolio).

- **Presidential eGovernment Initiatives/President's Management Agenda.** ***"Expanding Electronic Government"*** is one of the five key elements in the President's Management Agenda. The key goals of this element are to improve IT planning through the budget process and champion citizen-centered electronic government that will result in a major improvement in the federal government's value to the citizen. A government-wide eGovernment task force was convened by the Office of Management and Budget (OMB) and the President's Management Council in July 2001 and developed 24 initiatives to support the President's Management Agenda. Initiatives have been and will be added as OMB identifies new areas for Government-wide collaboration. USDA is a significant participant in 25 of the 29 initiatives and is working to align overlapping Departmental projects with the eGovernment initiatives of the Administration. USDA is contributing $11 million in FY 2006 and a comparable amount is projected for FY 2007 and, in some cases, making in-kind contributions of personnel, to these initiatives. Table L-1 shows each initiative and agency participation.

- **USDA eGovernment Smart Choices.** USDA's eGovernment Strategic Plan serves as the Department's guide to transforming the development and delivery of USDA information and services. The plan identifies 24 cross-agency eGovernment opportunities that were approved by the Deputy Secretary and the EITIRB for subsequent business case development. These 21 opportunities have been categorized as either Strategic or Enabler initiatives. The 15 Strategic initiatives are programmatic in nature and directly impact how information, services, and products are delivered to USDA customers. The 6 Enabler initiatives provide the foundational architectural components that allow program delivery from an enterprise perspective and build USDA's future enterprise architecture direction. Table L-2 shows each initiative and agency participation.

  Specifically, **all** proposed IT investments must describe how they will align with and/or use a Smart Choice Strategic or Enabler Opportunity/Initiative. For those investments that have no alignment, a justification must be provided. Additional information regarding these initiatives can be found at www.egov.usda.gov or by contacting USDA's eGovernment Program at 202-690-2118.

- **Strategic Initiatives.** During USDA's eGovernment strategic planning process, agencies identified 15 Strategic Opportunities. These opportunities are:

  - Department-wide eProcurement
  - eGrants
  - eLoans

- Food Safety and Security Tools
- Online Trade Assistance
- Web-based Supply Chain Management
- eRulemaking
- eEligibility
- Nutrition/Dietary Guidelines/Food Safety Awareness
- eMaps
- ePermits/Certificates
- Financial Management Tools
- Human Resources Online
- Physical Asset Management
- Survey Capability

- **Enabling Initiatives.** During USDA's eGovernment strategic planning process, agencies identified Enabling Opportunities. These opportunities are:
    - eAuthentication
    - eLearning
    - Enterprise Shared Services (following components have been integrated into the Enterprise Shared Services initiative, previously know as eDeployment)
        - USDA Web Presence and Portal Strategy
        - Web Content Management Tools
        - Document/Records Management Tools
        - Common Employee Database
        - Collaboration Tools
    - Application Hosting
    - Citizen and Public/Private Organization Database
    - Service Center eEnablement and CRM

For Enterprise Shared Services information or questions, contact the Enterprise Shared Services Team at:

- Phone: (202) 720-6144
- Email: SharedServices@usda.gov
- Web: www.sharedservices.usda.gov

All proposed IT investments must describe how they will align with and/or use the Smart Choice Enabler Initiatives. Included in the description should be the technology components required to support the investment. Technology components examples:

Web page design or updates, search engines, portal products, content management tools or development of related processes including information architectures (taxonomy, meta data, etc.), document

management or workflow tools and related processes, electronic records management tools and related processes, data standards, databases, or data warehouses, authentication and/or authorization, i.e., single sign-on, PKI, etc., electronic training, distance learning, electronic content development, etc., and purchase of third-party electronic content (online journals, periodicals, databases, etc.) as well as web hosting of various components.

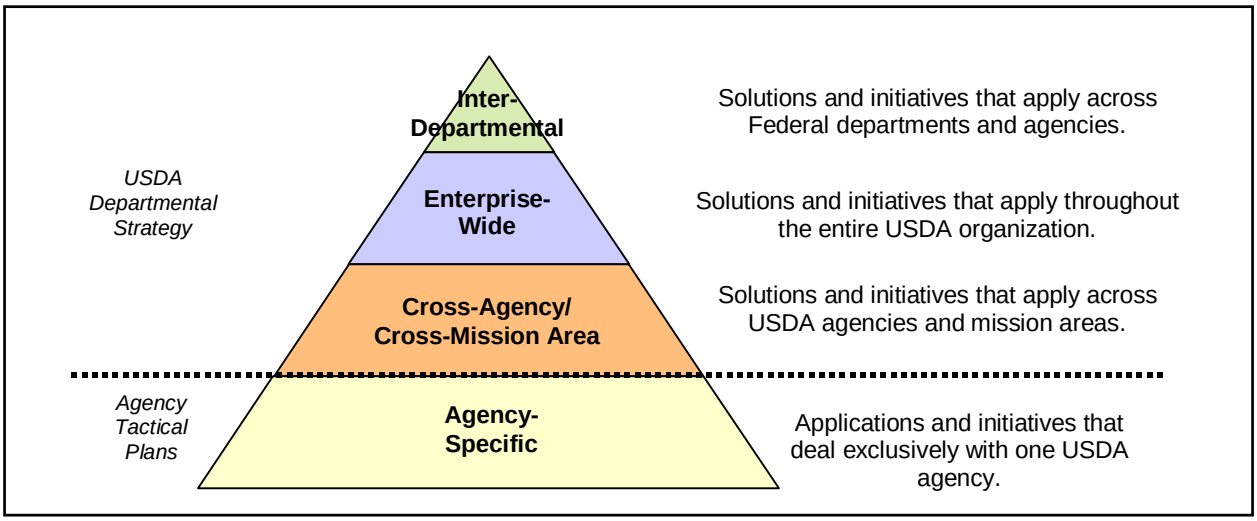
Instructions on how to document and account for the agency's participation on a USDA Strategic and Enabler eGovernment Initiative will be provided in the WorkLenz guidance memorandum. Agencies should note that Smart Choice Strategic Initiatives are considered part of the lead agencies' overall IT investment portfolio.

- **Agency eGovernment Tactical Plans**.
  To augment the Department's eGovernment Strategic Plan, each agency annually updates its Agency eGovernment Tactical Plan. The Agency eGovernment Tactical Plans describe how each organization will support and integrate with the USDA eGovernment Strategic Plan, the Presidential eGovernment Initiatives, and other eGovernment priorities that are critical to its business. Additionally, the plans provide an opportunity to further enhance the visibility and integration of eGovernment planning efforts across the Department and allow OCIO to better manage USDA's IT portfolio. To that end, each agency should submit, in its IT budget submission, an investment proposal for each initiative listed in its eGovernment Tactical Plan. Instruction on how to document these investments in agency IT investment portfolios will be provided in the WorkLenz memorandum guidance.

L.5 EVALUATION OF eGOVERNMENT

eGovernment at USDA is viewed holistically and encompasses an enterprise approach to delivering information, services and programs. This commitment brings USDA closer to achieving the USDA's eGovernment vision, including the development of the USDA Enterprise Architecture. It also addresses OMB's requirements to fully integrate the business, information management and IT planning processes. Specifically, **all** IT, not just eGovernment, investments must address:

- Electronic Information Collection and Dissemination Alternative(s)
- Collaborative and Blended Ventures vs. Single Agency Approach
- Leveraged Funding



L.5.1 Review the following materials related to eGovernment:

The agency should review the following materials during the planning, design, build, and implementation stages, and after implementing an information technology investment to ensure alignment with USDA's overall eGovernment strategies and direction:

- USDA and Agency current IT investment portfolio.
- USDA eGovernment Strategic plan.
- Agency eGovernment Tactical plan*.
- Agency Integrated eGovernment Report*.
- Business cases for the Smart Choice Initiatives.
- Business cases for relevant Presidential Initiatives (NOTE: USDA participates on 25 of the 29 initiatives).
- eGovernment Enterprise Architecture Guidance (Office of Management and Budget Common Reference Model).
- eGovernment website: www.egov.usda.gov.
- Enterprise Shared Services Support www.sharedservices.usda.gov.

Information may also be obtained by contacting your agency eGovernment Working Group Member, eGovernment Decision Maker, or the eGovernment Program at 202-690-2118.

*The IT investment scores for those agencies that did not submit an eGovernment Tactical Plan or Integrated eGovernment Report will be adjusted downward.

L.5.2 eGovernment: Considerations

The agency should ask itself the following questions prior to; while designing, building and implementing; and after implementing an information technology investment to ensure alignment with USDA's overall eGovernment strategies and direction. Since eGovernment and its requirements are pervasive, agencies should include the responses to these questions into the appropriate portions of the business case (Exhibit 300 or WorkLenz) for the initiative.

L.5.2.1 Overarching Criteria

USDA eGovernment Goals and Initiatives/Smart Choices (Strategic and/or Enabler)

- Demonstrate how the investment supports a USDA Smart Choice initiative(s) -- Strategic and/or Enabler -- outlined in the USDA eGovernment Strategic Plan. Identify the initiative name(s).
- Identify which eGovernment goal(s), and corresponding stakeholder group(s), the investment supports: Government to citizen; Government to public and private entities; Government to employees and the enterprise. State how the investments support these stakeholders.
- What level of changed service delivery is provided by the IT investment? Does it provide information only; enable two-way interaction with the customer; allow customers to transact business with USDA; or does it transform the way USDA provides a program or service?
- How does the investment reduce costs and/or increase efficiency and effectiveness?

USDA Business Goals and Legislative Drivers

- How does the investment support the President's Management Agenda – Expanding Electronic Government?
- How does the investment support one or more Presidential Initiatives? Identify the initiative name(s).
- How does the agency address mandates of the Government Paperwork Elimination Act (GPEA)? Information collections (i.e., information collections that impact the public and require an OMB clearance) and their supporting transactions must be identified in the Agency's Integrated eGovernment Report and supported by a project plan in the Agency eGovernment Tactical Plan.
- How does the proposed investment address legislative priorities, GAO-identified material weaknesses, OMB guidelines and/or IG findings?
- How does the proposed investment expand the reach and participation of USDA programs (i.e. increase the numbers of beneficiaries)? Does the proposed investment generate revenue, if applicable?
- How does the project make use of IT and its practical applications in transforming/re-engineering traditional government processes consistent with the

goals and objectives of USDA's departmental Strategic Plan and eGovernment Strategic Plan?

- Does the proposed investment describe the information and records to be created and the associated records management requirements from creation to disposition, such as records scheduling, migration, etc.?
- Does the proposed investment identify performance measurements associated with the eGovernment delivery channel?

Customer-Centered Focus:

- How does the proposed investment reduce the reporting burden on citizens, public and private entities and/or employees? For information collected from the public, does the proposed investment identify the information collection package control number and associated forms numbers and title and the level of the service provided, i.e., print, fill, save, submit, transmit?
- Has the readiness of the customer group(s) been determined? What is the current baseline of electronic services users? What is the projected user base 6, 12 and 18 months after implementation?
- Has the project identified specific performance measures and indicators that are geared to citizens' needs?
- How will the proposed investment utilize existing points of access, or create improved, easy-to-find point(s) of access, to USDA services? Will it use facilities such as FirstGov or USA Services?
- What is the marketing/communications plan to promote the products/services to the public? Other government agencies? Business Partners? Internally?

Collaboration:

- Does this project support one agency, multiple agencies, or the entire USDA enterprise?
- How does the proposed investment leverage existing or proposed IT investments?
- How does the proposed investment unify and simplify program delivery or eliminate redundancy in multi-agency system development and data collection efforts?
- Does the proposed investment use an eGovernment service delivery channel (provide examples)? If so, how will other delivery channels still be supported, and what is the scheduled phase out of these services, if applicable? If this investment is not using an eGovernment service delivery channel for any of its end-to-end processing, provide the justification/rationale for not doing so.
- Describe the end-to-end process(s), identify areas for improvement and show how electronically enabling them provides value to external customers and/or internal improvements in efficiency and effectiveness.

- How does the proposed investment enable sharing of information more quickly and conveniently between USDA employees and agencies and/or federal and state, local and tribal governments?

Process and Change Management:

- Has Transformation Activities/Business Process Re-engineering/Improvement been conducted? If so, how will business processes change as a result of this investment?
- Identify any projects/investments that were "turned off" or avoided because of this investment.
- Which industry best practices does the proposed investment identify, examine and employ, where appropriate?
- How does the proposed investment address the awareness and training requirements to effect change?
- Does the proposal include a change management component? Identify how the proposal considers governance, communications, training and other change management needs.

Budget/Finance:

- How does the investment reduce/eliminate redundant expenditures (intra and inter-Departmental)?
- How does the investment generate revenue (if applicable)?
- Can multiple agencies collaborate or pool resources?

Architecture/Infrastructure/Security:

- How does the proposed investment use the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning) to support strategic initiatives, enable agency and enterprise program delivery, leverage investments, and save costs? Describe the technology components required to support this investment.
- How does the proposed investment advance IT priorities in the areas of Enterprise Architecture, Telecommunication, and Information Management?
- How have security- and privacy- related components been addressed and coordinated?

L.5.2.2 Scoring Considerations – Overarching & Scoring

Below are questions specific to each phase of the CPIC process. The eGovernment Program will use the answers to these questions, based on the information contained in the Exhibit 300 and WORKLENZ to score the investment.

Pre-Select/Select

- How does the investment address information and services from the customer's perspective?
- How does this investment leverage existing or proposed investments across USDA agencies and other Federal departments?
- How does the proposed investment use the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services, and eLearning) to support strategic initiatives, enable agency and enterprise program delivery, leverage investments, and save costs? Describe the technology components required to support this investment.
- Does the system explore the end-to-end processing requirements and identify those components that can be developed using an eGovernment delivery channel?
- Is the investment consistent with the USDA eGovernment Strategic Plan and the eGovernment Tactical Plans of participating agencies?
- If the investment is **not** using an eGovernment channel, has the agency provided a justification why?
- What documentation/evidence has been provided?
- Are there other existing or proposed USDA systems that duplicate this investment? If so, what plans have been made to leverage existing or proposed systems

Pre-Select/Select - Scoring

5	Award this rating if customer requirements have been identified, eGovernment strategic goals and objectives have been met, the investment has been fully included in the agency's eGovernment tactical plan, a comprehensive analysis has been done, and supporting documentation/evidence is complete. In addition, the investment uses the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning) as an integral part of the investment and integrates with other applicable USDA eGovernment initiatives (Strategic or Enabling).
4	Award this rating if customer requirements have been identified, eGovernment strategic goals and objectives have been met, inclusion of the investment into the agency's eGovernment tactical plan is nearly complete with any outstanding issues documented, a comprehensive analysis has been done, and supporting documentation/evidence is complete. In addition, the investment uses the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning) as an integral part of the investment and integrates with other applicable USDA eGovernment initiatives (Strategic or Enabling).

3	Award this rating if customer requirements have been identified, eGovernment strategic goals and objectives have been reasonably met, the agency tactical plan is under development, an analysis is in process and some documentation is complete. In addition, the investment uses the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning) as an integral part of the investment and integrates with other applicable USDA eGovernment initiatives (Strategic or Enabling)
2	Award this rating if eGovernment strategic goals and objectives have been considered, the agency tactical plan is under development, an analysis has been started and limited documentation is available.
1	Award this rating if eGovernment strategic goals and objectives have not been considered, the agency tactical plan has not been started, an analysis is not in process and limited documentation is available.

Control

- Have customer service requirements been identified?
- Can the Requirements/Design be updated to meet eGovernment goals and objectives? If so, what changes are being made?
- If the investment is **not** using an eGovernment channel, has the agency provided a justification why?
- Will the system provide for multiple delivery channels?
- Does the proposed investment use the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning) to support strategic initiatives, enable agency and enterprise program delivery, leverage investments, and save costs? Describe the technology components required to support this investment.
- Does the system explore the end-to-end processing requirements and identify those components that can be developed using an eGovernment delivery channel?
- Have additional eGovernment need(s) for the investment been identified?
- Have the technological capacities and capabilities been identified?
- Are there other USDA systems that duplicate this investment? If so, what plans have been made to integrate these systems?

Control - Scoring

5	Award this rating if eGovernment initiative has exceeded customer service requirements, thoroughly assessed all interagency eGovernment initiatives, and is fully aligned with USDA's Enterprise Architecture, USDA's eGovernment Strategic Plan, and the Agency eGovernment Tactical Plan. In addition, the investment uses the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning, etc.) as an integral part of the investment and integrates with other applicable USDA eGovernment initiatives (Strategic or Enabling).
4	Award this rating if eGovernment initiative has met customer service requirements, assessed all interagency eGovernment initiatives, and is fully aligned with USDA's Enterprise Architecture, USDA's eGovernment Strategic Plan, and the Agency eGovernment Tactical Plan. In addition, the investment uses the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning, etc.) as an integral part of the investment and integrates with other applicable USDA eGovernment initiatives (Strategic or Enabling).
3	Award this rating if eGovernment initiative has met customer service requirements, assessed some interagency eGovernment initiatives, and is aligned with USDA's Enterprise Architecture, USDA's eGovernment Strategic Plan, and the Agency eGovernment Tactical Plan. In addition, the investment uses the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning, etc.) as an integral part of the investment and integrates with other applicable USDA eGovernment initiatives (Strategic or Enabling).
2	Award this rating if eGovernment initiative has marginally met customer service requirements, considered some interagency eGovernment initiatives, and is loosely aligned with USDA Enterprise Architecture.
1	Award this rating if eGovernment initiative has failed to meet customer service expectations, failed to consider interagency eGovernment initiatives, and is not aligned with USDA Enterprise Architecture.

Evaluate/Steady-State

- If this is a legacy investment, explain the plans for exploring an eGovernment delivery channel. If the investment is **not** using an eGovernment channel, has the agency provided a justification why? Is there a new initiative coming out that could replace and address eGovernment?
- If the initiative provides for an eGovernment delivery channel,
    - Are customers using and satisfied with the system?
    - Does the system provide sufficient capabilities and capacity for current growth? For future projected growth?
    - What types of enhancements are planned for this system?
- Are there other USDA systems that duplicate this investment? If so, what plans have been made to unify and or integrate these systems?

- Have you completed an eGovernment Strategy Review for this Steady-State investment? ∆

Evaluate/Steady State - Scoring

5	Award this rating if eGovernment initiative exceeded customer service expectations; proactively addressed all technology refresh options including the use of the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning) as an integral part of the investment and integrates with other applicable USDA eGovernment initiatives (Strategic or Enabling); fully aligns with USDA's Enterprise Architecture, USDA's eGovernment Strategic Plan, and the Agency eGovernment Tactical Plan.
4	Award this rating if eGovernment initiative met customer service expectations; proactively addressed all technology refresh options including the use of the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning) as an integral part of the investment and integrates with other applicable USDA eGovernment initiatives (Strategic or Enabling); fully aligns with USDA's Enterprise Architecture, USDA's eGovernment Strategic Plan, and the Agency eGovernment Tactical Plan.
3	Award this rating if eGovernment initiative met customer service expectations; addressed some technology refresh options including the use of the USDA suite of Enterprise Services (eAuthentication, Enterprise Shared Services and eLearning) as an integral part of the investment and integrates with other applicable USDA eGovernment initiatives (Strategic or Enabling); fully aligns with USDA's Enterprise Architecture, USDA's eGovernment Strategic Plan, and the Agency eGovernment Tactical Plan.
2	Award this rating if eGovernment initiative marginally met customer service expectations, reactively addressed some technology refresh options, and loosely aligned with USDA Enterprise Architecture.
1	Award this rating if eGovernment initiative failed to meet customer service expectations, failed to address technology refresh options, and was not aligned with Agency Enterprise Architecture.

L.6. eGovernment Strategy Review

USDA investments in the Steady-State phase of the CPIC cycle must undertake an eGovernment strategy review. The purpose of the eGovernment strategy review is to reassess the legacy investment with a focus toward using eGovernment delivery channels.

The review should:

- Determine whether the investment:
  - Meets agency mission and delivers expected performance at an acceptable level of maintenance cost;
  - Needs to be modernized and replaced.
  - Duplicates the
    a. Presidential Initiatives outlined in the President's Management Agenda,
    b. USDA's Enterprise Architecture vision, or
    c. USDA eGovernment Enabler Smart Choice Initiatives (Enterprise Shared Services, eAuthentication, and AgLearn) or USDA eGovernment Strategic Smart Choice Initiatives.

  USDA agencies must justify continuing investments that duplicate these services.
- Consider the investment in terms of performance goals:
  - Are its performance goals still being met? Are new or different performance goals expected to emerge in the near future?
  - Are current customers satisfied? Are there other potential customers that have not yet been reached?
- Answer the questions: Is this investment still the most cost-efficient method of delivering a solution? Are there other potentially more effective and cost-efficient means of delivery for the program, specifically Web and e-business services and tools?

All sections of the Exhibit 300 should be used for completing an eGovernment strategy review including:

- Justification – Is the current system still the most advantageous and cost-effective?
- Performance Goals – What are goals for investment as it stands today?
- Alternatives Analysis – In light of relatively new e-business tools (e.g., Web-based forms, electronic signatures), are there now alternatives available that were previously unavailable? If so, what are they?
- Performance management – Is the investment meeting current and anticipated cost, schedule, and performance goals?

Questions:

Is there a form that people can use when conducting an eGov strategy review?
There is no form for this review, however, the November 2004, USDA CIO released policies on Information & Technology Transformation, eAuthentication Service, and

eLearning Services, Courseware & Content represent an emerging review framework. These policies listed below, codified USDA's continuing transformation journey to make USDA's programs and services more customer centric:

- USDA Information & Technology Transformation - DR 3600-000 http://www.ocio.usda.gov/directives/files/dr/DR3600-000.pdf
- USDA eAuthentication Service - DR 3610-001 http://www.ocio.usda.gov/directives/files/dr/DR3610-001.pdf
- USDA eLearning Services, Courseware & Content - DR 3620-001 http://www.ocio.usda.gov/directives/files/dr/DR3620-001.pdf
- USDA Enterprise Shared Services – DR 3630-XXX scheduled for publication 3rd Quarter FY 2005

Is there a POC in eGovernment for this activity? The POC for this activity is Enterprise Planning, Project & Information Management, OCIO. EPP&IM can be contacted at 202-690-2118.

Table L-1 – Presidential Initiatives and Participating Agencies

Presidential Initiatives and Participating Agencies	Business Gateway	Disaster Management	eAuthentication	eLoans	Enterprise Human Resources management	ePayroll	eRecords Management	eTraining	eTravel	Federal Asset Sales	Grants.Gov	Geospatial Information One Stop	Govbenefits.gov	Integrated Acquisition Environment	International Trade Process Streamlining	Online Rulemaking	Safecom/Wireless	Recreation One Stop	Recruitment One Stop	USA Services
Farm and Foreign Agricultural Services (FFAS)																				
Farm Service Agency (FSA)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆		◆			◆	◆
Foreign Agricultural Service (FAS)	◆		◆		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			◆	◆
Risk Management Agency (RMA)	◆	◆	◆		◆	◆	◆	◆	◆	◆		◆		◆		◆			◆	◆
Food, Nutrition and Consumer Services (FNCS)																				
Food and Nutrition Service (FNS)		◆	◆		◆	◆	◆	◆	◆	◆	◆		◆	◆		◆			◆	◆
Center for Nutrition Policy and Promotion (CNPP)			◆		◆	◆	◆	◆	◆	◆				◆		◆			◆	◆
Food Safety (FS)										◆						◆				
Food Saftey and Inspection Service (FSIS)	◆	◆	◆		◆	◆	◆	◆	◆					◆		◆	◆		◆	◆
Marketing and Regulatory Programs (MRP)	◆																			
Agricultural Marketing Service (AMS)	◆		◆		◆	◆	◆	◆	◆	◆	◆			◆	◆	◆			◆	◆
Animal and Plant Health Inspection Service (APHIS)	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆		◆		◆	◆		◆	◆
Grain Inspection, Packers and Stockyards Administration (GIPSA)	◆	◆	◆		◆	◆	◆	◆	◆	◆				◆		◆			◆	◆
Natural Resources and Environment (NRE)																				
Forest Service (FS)	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆		◆		◆	◆	◆	◆	◆
Natural Resources Conservation Service (NRCS)	◆	◆	◆		◆	◆	◆	◆	◆	◆		◆	◆	◆		◆		◆	◆	◆
Research, Education and Economics (REE)																				
Agricultural Research Service (ARS)			◆		◆	◆	◆	◆	◆		◆	◆		◆					◆	◆
Cooperative State Research, Education, and Extension Service (CSREES)		◆	◆		◆	◆	◆	◆	◆		◆	◆		◆		◆			◆	◆
Economic Research Service (ERS)			◆		◆	◆	◆	◆	◆		◆	◆		◆					◆	◆
National Agricultural Statistics Service (NASS)			◆		◆	◆	◆	◆				◆		◆					◆	◆
Rural Development (RD)																				
Rural Business-Cooperative Service (RBS)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆			◆	◆
Rural Housing Service (RHS)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆			◆	◆
Rural Utilities Service (RUS)	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆			◆	◆
Departmental Administration & Staff Offices																				
DA		◆	◆		◆	◆	◆	◆	◆	◆	◆			◆		◆			◆	◆
NAD			◆		◆	◆	◆	◆	◆					◆					◆	◆
OBPA			◆		◆	◆	◆	◆	◆					◆		◆			◆	◆
OC			◆		◆	◆	◆	◆	◆					◆					◆	◆
OCE			◆		◆	◆	◆	◆	◆					◆		◆			◆	◆
OCFO			◆		◆	◆	◆	◆	◆	◆				◆					◆	◆
OCIO	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
OCR			◆		◆	◆	◆	◆	◆					◆					◆	◆
OGC			◆		◆	◆	◆	◆	◆					◆					◆	◆
OIG			◆		◆	◆	◆	◆	◆					◆					◆	◆
OSEC		◆	◆		◆	◆	◆	◆	◆					◆					◆	◆
SCMI			◆		◆	◆	◆	◆	◆	◆				◆					◆	◆

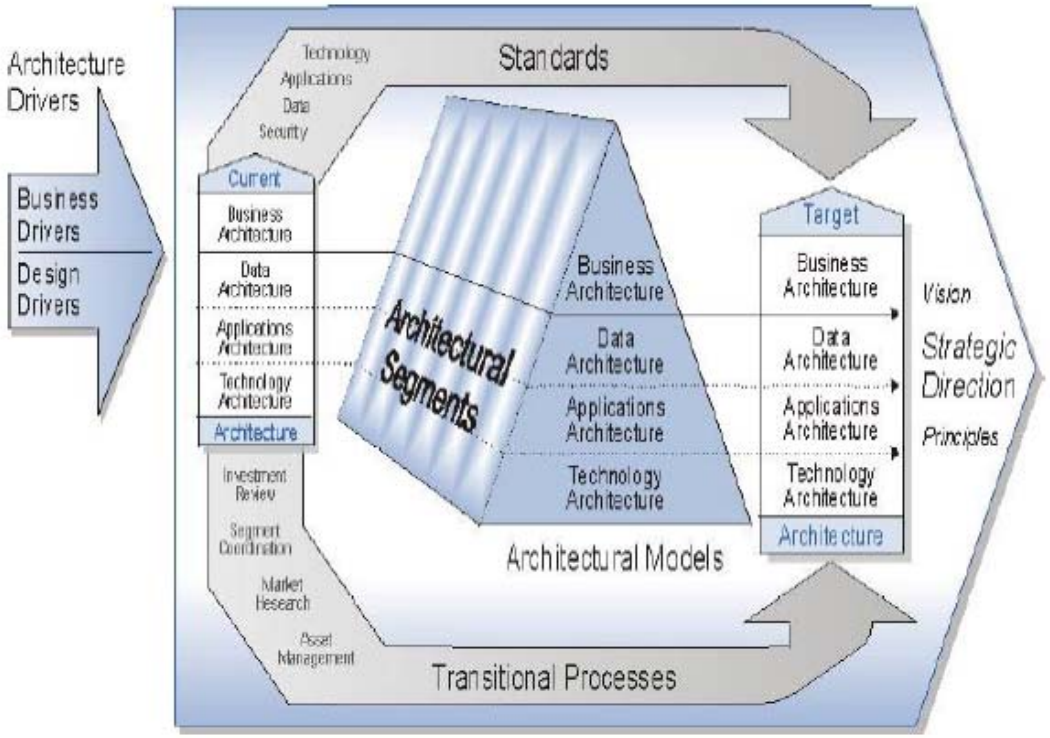
Table L-2 – Smart Choice Initiatives and Participating Agencies

eGovernment Initiatives and Opportunities and Participating Agencies	Smart Choice Initiatives									Smart Choice Opportunities											
	Enablers			Strategic						Enablers			Strategic								
	eLearning	eAuthentication	eDeployment	eGrants	eLoans	Web Based Supply Chain	Food Safety and Security Tools	Online Trade Assistance	Department-Wide eProcurement	Application Hosting	Public/Private Organization DB	Citizen and Service Center eEnablement and CRM	eRulemaking	Nutrition/Dietary Guidelines/Food Safety Awareness	eMaps	eEligibility	ePermits/Certificates	Financial Management Tools	Human Resources Online	Physical Assets Management	Survey Capability
Farm and Foreign Agricultural Services (FFAS)																					
Farm Service Agency (FSA)	◆	◆	◆		◆	◆			◆	◆	◆	◆	◆		◆	◆		◆	◆	◆	◆
Foreign Agricultural Service (FAS)	◆	◆	◆	◆		◆		◆	◆	◆	◆		◆		◆	◆	◆	◆	◆	◆	◆
Risk Management Agency (RMA)	◆	◆	◆						◆	◆	◆		◆		◆	◆		◆	◆	◆	◆
	◆																				
Food, Nutrition and Consumer Services (FNCS)																					
Food and Nutrition Service (FNS)	◆	◆	◆	◆		◆			◆	◆	◆		◆	◆		◆		◆	◆	◆	◆
Center for Nutrition Policy and Promotion (CNPP)	◆	◆	◆	◆		◆			◆	◆	◆		◆	◆				◆	◆	◆	◆
Food Safety (FS)																					
Food Safety and Inspection Service (FSIS)	◆	◆	◆				◆		◆	◆	◆		◆	◆			◆	◆	◆	◆	
Marketing and Regulatory Programs (MRP)																					
Agricultural Marketing Service (AMS)	◆	◆	◆	◆		◆		◆	◆	◆	◆		◆			◆	◆	◆	◆	◆	◆
Animal and Plant Health Inspection Service (APHIS)	◆	◆	◆	◆			◆		◆	◆	◆		◆			◆	◆	◆	◆	◆	◆
Grain Inspection, Packers and Stockyards Administration (GIPSA)	◆	◆	◆						◆	◆	◆		◆			◆	◆	◆	◆	◆	◆
Natural Resources and Environment (NRE)																					
Forest Service (FS)	◆	◆	◆	◆					◆	◆	◆		◆		◆		◆	◆	◆	◆	◆
Natural Resources Conservation Service (NRCS)	◆	◆	◆	◆					◆	◆	◆	◆	◆		◆	◆		◆	◆	◆	◆
Research, Education and Economics (REE)																					
Agricultural Research Service (ARS)	◆	◆	◆	◆					◆	◆	◆							◆	◆	◆	◆
Cooperative State Research, Education, and Extension Service (CSREES)	◆	◆	◆	◆					◆	◆	◆		◆					◆	◆	◆	◆
Economic Research Service (ERS)	◆	◆	◆	◆					◆	◆	◆							◆	◆	◆	◆
National Agricultural Statistics Service (NASS)	◆	◆	◆						◆	◆	◆							◆	◆	◆	◆
Rural Development (RD)																					
Rural Business-Cooperative Service (RBS)	◆	◆	◆	◆	◆				◆	◆	◆	◆	◆		◆	◆		◆	◆	◆	◆
Rural Housing Service (RHS)	◆	◆	◆	◆	◆				◆	◆	◆	◆	◆		◆	◆		◆	◆	◆	◆
Rural Utilities Service (RUS)	◆	◆	◆	◆	◆				◆	◆	◆	◆	◆		◆	◆		◆	◆	◆	◆
Departmental Administration & Staff Offices																					
DA	◆	◆	◆	◆					◆	◆			◆					◆	◆	◆	◆
NAD	◆	◆	◆						◆	◆								◆	◆	◆	◆
OBPA	◆	◆	◆						◆	◆			◆					◆	◆	◆	◆
OC	◆	◆	◆						◆	◆								◆	◆	◆	◆
OCE	◆	◆	◆						◆	◆								◆	◆	◆	◆
OCFO	◆	◆	◆	◆	◆				◆	◆								◆	◆	◆	◆
OCIO	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
OCR	◆	◆	◆						◆	◆								◆	◆	◆	◆
OGC	◆	◆	◆						◆	◆								◆	◆	◆	◆
OIG	◆	◆	◆						◆	◆								◆	◆	◆	◆
OSEC	◆	◆	◆						◆	◆								◆	◆	◆	◆
SCMI	◆	◆	◆						◆	◆	◆	◆			◆			◆	◆	◆	◆

THE USDA ENTERPRISE ARCHITECTURE FRAMEWORK

The USDA Enterprise Architecture is a living program developed collaboratively across the Department. It will be updated on a continuous basis, and as such the tools and repositories associated with it will capture only the information that can be updated or otherwise maintained on an ongoing basis.

The USDA Enterprise Architecture is based on the Federal Enterprise Architecture Framework (FEAF) [1]



The **architecture drivers** represent external stimuli for the architecture. The business drivers could be new legislation, new administration initiatives, budgetary priorities, and market forces. Design drivers include new and enhanced software and hardware, as well as combinations thereof.

The **strategic direction** guides the development of the target architecture and consists of a vision, principles, goals, and objectives.

The **current architecture** defines the "as is" enterprise architecture, and consists of two major elements – business and design architectures. The design architectures include Data, Applications, and Technology architectures.

The **target architecture** defines the "to-be" enterprise architecture, and also consists of the Business, Data, Applications, and Technology architectures. The target architecture represents

[1] Adapted from Chief Information Officers Council, *Federal Enterprise Architecture Framework,* Version 1.1 (September 1999).

future capabilities and technologies that result from design enhancements in order to support the evolving business needs of the Department.

The **transitional processes** support the migration of the USDA Enterprise Architecture from the current architecture to the target architecture. Critical transition processes include IT capital investment planning, migration planning, configuration management, and change management.

The **architectural segments** consist of focused architecture efforts either in major USDA business areas, or in an area that USDA has in common with State or Federal government entities. Each segment represents a major portion of the overall Enterprise Architecture. Some segments belong specifically to an agency, while others are considered to be "common enterprise" (i.e., segments that are shared by two or more agencies). It should be noted that segments are sometimes referred to as "domains".

The **architectural layers** are used to breakdown the segments into the following:

- Business Architecture containing items such as:
  - Lines of Business within the Federal government
  - Subfunctions supporting USDA mission
  - Processes and subprocesses performed under subfunctions
  - Stakeholders

- Data Architecture containing items such as:
  - Subject areas
  - Data objects and properties
  - Data models
  - Classification schemes
  - Data security and privacy requirements

- Applications Architecture containing items such as:
  - Description of applications and systems
  - Interfaces between applications and systems
  - System component documentation
  - Category of system such as major/non-major
  - Applications and systems security and privacy requirements

- Technology Architecture containing items such as:
  - Hardware types
  - Software inventory and versions
  - Telecommunications network diagrams
  - Category of service provided
  - Security and privacy issues associated with technology selected

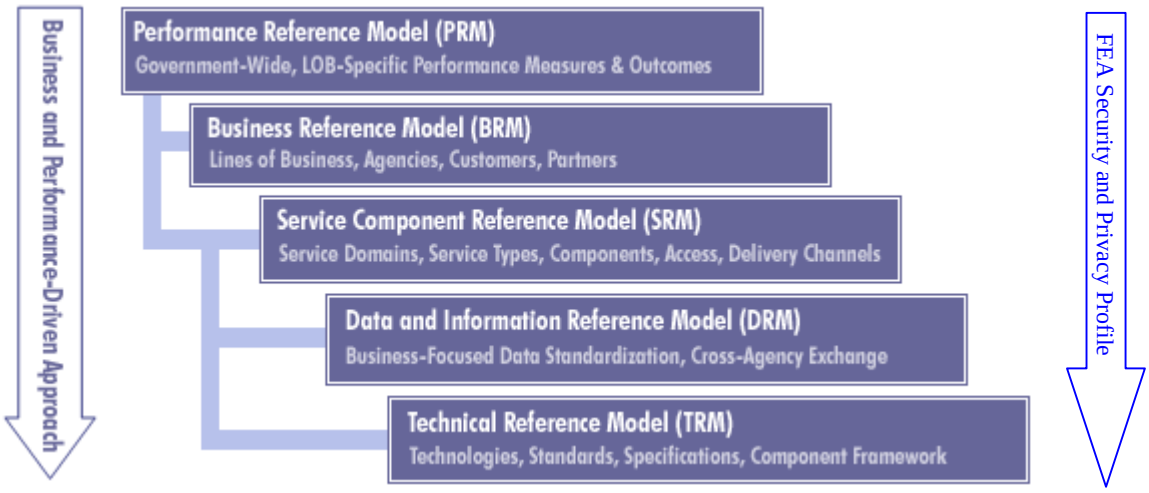
The **architectural models** are used within the layers to define the business and design models used by USDA. When appropriate, these can be reusable patterns.

Standards refer to all standards, guidelines, and best practices that are developed by USDA and used within the architecture either at USDA or elsewhere, or are developed elsewhere and used by USDA.

THE FEDERAL ENTERPRISE ARCHITECTURE (FEA) REFERENCE MODELS

The USDA Enterprise Architecture is developed and maintained with the Federal Enterprise Architecture (FEA) reference models in mind.[2] The FEA reference models are designed to facilitate cross-departmental analysis, as well as provide a means by which to identify duplicative investments, gaps, and opportunities for collaboration within and across Federal agencies.

The models of the FEA are organized as follows:



Performance Reference Model (PRM)

The PRM is designed to measure the performance of major IT investments, as well as their contribution to program performance. The PRM has three main purposes:

- Help produce enhanced performance information to improve strategic and daily decision-making
- Improve the alignment – and better articulate the contribution of – inputs to outputs and outcomes, thereby creating a clear "line of sight" to desired results
- Identify performance improvement opportunities that span traditional organizational structures and boundaries

The PRM leverages existing approaches to performance measurement in the public and private sectors, such as the Balanced Scorecard, Baldrige Criteria, Value Measurement Methodology, and others. It is expected that Federal agencies' use of the PRM will further populate the model over time.

Business Reference Model (BRM)

The BRM is a function-driven model for describing the business operations of the Federal Government, independent of the agencies that perform them. It provides an organized, hierarchical construct for describing the day-to-day business operations of the Federal government. The Lines of Business and Sub-functions that comprise the BRM represent a departure from previous models of the Federal government that use antiquated, stovepiped, Federal agency-oriented frameworks. The BRM presents

[2] Portions adapted from the FEA-PMO website (www.feapmo.gov).

the business of the government using a purely functionally-driven approach. OMB is currently working to extend the BRM to include methods for documenting processes and sub-processes.

Service Component Reference Model (SRM)

The SRM is a business and performance-driven, functional model that classifies Service Components with respect to how they support business and/or performance objectives. The SRM is intended to support the discovery of government-wide business and application components in IT investments and assets. Towards this end, the SRM is structured across horizontal and vertical service domains that – independent of the business functions – have the ability to provide a foundation to support the reuse of applications, application capabilities, components, and business services. The SRM is particularly important to the future of Federal architectures, as it provides the structure necessary to promote a component-based architecture. This, in turn, will allow reusable components to be shared across the Federal government.

Data Reference Model (DRM)

The DRM will describe[3] the data and information that supports program and business line operations. The model will aid in describing the types of interaction and exchanges that occur between the Federal government and its various customers, constituencies, and business partners. Moreover, the DRM will categorize the government's information along general content areas and describe each content area in detail. This serves to establish a commonly understood classification for Federal data that will enable the identification of duplicative data resources. Common metadata models will streamline the processes associated with information exchange both within the Federal government as well as between the government and its external partners. The DRM will allow federal agencies to share and exchange standards maintained in their data and XML schema registries.

Technical Reference Model (TRM)

The TRM is a component-driven, technical model used to identify and describe the standards, specifications, and technologies necessary to support the construction, delivery, and exchange of business and application components that may be used and leveraged in a component-based or service-orientated architecture. The TRM unifies existing Federal agency electronic Government (eGov) guidance by providing a foundation to advance the reuse of technology and component services within and across the Federal government.

Proposed Security and Privacy Profile

OMB is developing a security and privacy profile (or overlay) that will show where security architecture elements – such as those required by the National Institute for Standards and Technology (NIST) – are included in each of the reference models. The intent of the profile is to provide a methodology for determining the security that is necessary for an IT project; however, it does not provide details as to how the necessary security is achieved. The profile also assists in determining a project's risk exposure, as well as in selecting the controls for parts of the architecture that are appropriate to meet identified risks. Standards associated with controls will be available, so that appropriate products and techniques may be selected and priced.

For further information on the FEA-PMO reference models, visit www.feapmo.gov

[3] There is currently no date scheduled for release of the DRM.

WHY HAVE AN ENTERPRISE ARCHITECTURE?

The purpose of an Enterprise Architecture program at USDA is to inform and guide the business decisions that are made throughout the Department in support of the USDA mission.[4]

At a high level, an Enterprise Architecture at USDA provides the following:

- **Strategic Alignment**: Ensures that the business processes, technology, data, and applications are aligned with management's objectives
- **Facilitate Change**: Provides the vision and transition plans necessary to enable USDA to successfully move towards the future
- **Efficient Development:** Reduces systems development, applications generation, and modernization timeframes – as well as resource requirements – by enabling reuse of architectural components
- **Product Convergence**: Strives towards standard IT product portfolios and corporate contracting vehicles as appropriate
- **System Integration**: Makes certain that business rules are consistent across the Department, that data and its uses are appropriately documented, that interfaces and information flows are simplified, and that connectivity and interoperability are managed across the Department

The importance of developing, implementing, and maintaining an Enterprise Architecture is a basic tenet of both organizational transformation and IT management. Developed, implemented, and managed properly, an Enterprise Architecture can clarify and help optimize the interdependencies and relationships among an organization's business operations and the underlying IT infrastructure and applications that support these operations. Moreover, an Enterprise Architecture is essential for addressing the appropriate use of emerging technologies. E-Government will be enabled and promoted through the development and use of the USDA Enterprise Architecture.

Specifically, the architecture:

- Captures facts about the missions, functions, and business foundations in an understandable manner in order to promote better planning and decision making
- Promotes cross-agency information sharing
- Increases interoperability and decreases costs through the use of reusable components
- Supports the Capital Planning and Investment Control (CPIC) process by providing a tool for the assessment of benefits, impacts, and capital investment measurements, as well as supporting analyses of alternatives, risks, and tradeoffs
- Provides project managers and other decision-makers with a method for learning about the processes, applications, data, and technology in use across the Department

[4] Portions adapted from Chief Information Officers Council, *A Practical Guide to Federal Enterprise Architecture,* Version 1.0 (February 2001) and United States General Accounting Office, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management,* GAO-03-584G (Washington, DC: April 2003).

- Improves communication and collaboration among the business organizations and IT organizations within the Department through the use of common data sets and taxonomies
- Provides a validated, consistent source of information for Department-level reporting on USDA Information Technology
- Enables the identification of areas where there is a risk of developing duplicative systems that support similar business functions
- Provides a reference mechanism for collaboration with industry, USDA partners, and other governmental entities
- Helps identify similar legacy systems that can be combined into a single replacement system

EXHIBIT 300 EA GUIDANCE FOR INFORMATION TECHNOLOGY INVESTMENTS

For further information and guidance, contact Tracey Ambeau at 202-690-3649 and Tracey.Ambeau@usda.gov and Niles Hewlett at 202-205-3735 and Niles.Hewlett@usda.gov

OMB Framework And Reference Models

In order to answer the Enterprise Architecture (EA) questions of these sections, it is important to be familiar with the OMB Reference Models. To review the reference models in detail, link to www.feapmo.gov.

The Framework

Federal Enterprise Architecture (FEA) is a framework for describing the relationship between business functions and the technologies and information that support them. Major IT investments will be aligned with each reference model in the FEA framework. The reference models are briefly described below.

The Reference Models

Performance Reference Model (PRM) – The PRM is a standardized performance measurement framework to characterize performance in a common manner. The PRM will help agencies produce enhanced performance information; improve the alignment and better articulate the contribution of inputs, such as technology, to outputs and outcomes; and identify improvement opportunities that span traditional organizational boundaries.

Business Reference Model (BRM) – The BRM is a function-driven framework to describe the Lines of Business and Internal Functions performed by the federal government independent of the agencies that perform them. Major IT investments are mapped to the BRM to identify collaboration opportunities.

Service Component Reference Model (SRM) – The SRM provides a common framework and vocabulary for characterizing the IT and business components that collectively comprise an IT investment. The SRM will help agencies rapidly assemble IT solutions through the sharing and re-use of business and IT components. A Component is a self-contained process, service, or IT capability with pre-determined functionality that may be exposed through a business or technology interface.

Technical Reference Model (TRM) – The TRM provides a foundation to describe the standards, specifications, and technologies supporting the delivery, exchange, and construction of business

(or Service) components and e-Gov solutions. The TRM unifies existing Agency TRMs and electronic Government (e-Gov) -by providing a foundation to advance the re-use of technology and component services from a Government-wide perspective.

Data Reference Model (DRM) – Future

OMB Exhibit 300 Evaluation Criteria

These are the scoring criteria that OMB will use in evaluating EA in the Exhibit 300. Please note that where OMB refers to "Agency" we have substituted "USDA".

(Score of 5) This project is included in the USDA EA and CPIC process. Project is mapped to and supports the Federal Enterprise Architecture (FEA) and clearly links to the FEA Reference Models (PRM, BRM, SRM, and TRM). Business case (BC) demonstrates business, data, and application, and technology layers of the EA in relationship to this project.

(Score of 4) This project is included in the USDA EA and CPIC process. Project is mapped to and supports the Federal Enterprise Architecture, clearly links to the BRM and work is continuing to map to the PRM, SRM, and TRM. BC demonstrates weaknesses in the business, data, and application, and technology layers of the EA in relationship to this project.

(Score of 3) This project is not included in the USDA EA and CPIC process or was not approved by the agency EA committee and does not link to the FEA. BC demonstrates a lack of understanding on the layers of the EA (business, data, application, and technology).

(Score of 2) While the USDA has an EA Framework, it is not implemented in the component agency and does not include this project.

(Score of 1) There is no evidence of a comprehensive EA in the USDA.

OMB USE OF EXHIBIT 300

In addition to use for the FY-2005 budget process the information provided in response to Exhibit 300 EA questions will be loaded into the Federal Enterprise Architecture Management System (FEAMS) for use in Federal EA decision-making.

SPECIFIC GUIDANCE FOR UNIQUE PROJECT IDENTIFIER

The unique project identifier (UPI), a 23-digit number, must be created for all IT projects. The UPI is based, in part, on the sub-functions found in the Business Reference Model. It will be used on the specific 300 for the investment as well as the Exhibit 53. The table where it is entered in the Exhibit 300 is shown below.

Please note: OMB has released the sub-function codes needed to create the UPI. These codes may be referenced through the following URL: Additional Guidance on the FEA-Related Requirements

Exhibit 300: Part I: Capital Asset Plan and Business Case (All Assets)

Date of this Submission
Agency
Bureau
Location in the Budget
Account Title
Account Identification Code
Program Activity
Name of Project
Unique Project Identifier: (IT only) ***A UPI should be created for all IT projects.***
Project Initiation Date
Project Planned Completion Date
This Project is: Initial Concept____ Planning____ Full Acquisition____ Steady State____ Mixed Life Cycle____

Below is a description of the number coding sequence of the UPI:

Entry:	**Description:**
XXX-xx-xx-xx-xx-xxxx-xx-xxx-xxx	The first three digits are your agency (USDA) code (see Appendix C).
xxx-XX-xx-xx-xx-xxxx-xx-xxx-xxx	The next two digits are your bureau (USDA agency) code (see Appendix C). If this is a department only reporting, use 00 as your bureau code.
xxx-xx-XX-xx-xx-xxxx-xx-xxx-xxx	These two digits indicate the four parts of exhibit 53: • 01 = Part 1. IT Investments by Mission Area • 02 = Part 2. IT Investments for Infrastructure, Office Automation, and Telecommunications • 03 = Part 3. IT Investments for Enterprise Architecture and Planning • 04 = Part 4. IT Investments for Grants Management Systems •
xxx-xx-xx-XX-xx-xxxx-xx-xxx-xxx	These two digits indicate the mission area. Assign a unique code for each mission area reported.

Entry:	Description:
xxx-xx-xx-xx-XX-xxxx-xx-xxx-xxx	These two digits indicate your agency=s type of investment. Select one of the following two digit codes according to the type of investment you are reporting: • 01 = Major IT Investments (see definition in Section 53.3) • 02 = Non-major IT investments (see definition in Section 53.3) • 03= Non-major IT investments that are part of a larger asset and for which there is an existing business case for the overall asset. Description of the IT investment should indicate where the 300 for the major asset can be found. • 04 = Major IT Investment that represents a joint effort for more than one agency. Use the 04 indicator to identify projects where the business case for the major IT investment is reported in another agency's Exhibit 53. Description of the IT investment should indicate where the business case can be found.
xxx-xx-xx-xx-xx-XXXX-xx-xxx-xxx	This is a four digit identification number that identifies a specific IT investment. If a new project is added to exhibit 53, locate the area of exhibit 53 where you are going to report the IT investment and use the next sequential number as your four digit identification number.
xxx-xx-xx-xx-xx-xxxx-XX-xxx-xxx	These two digits identify which part of the investment you are reporting. Select one of the following two digit codes according to what you report on the title line: • 00 = Total investment title line, or the first time the agency is reporting this particular investment. If this is one of the PMC E-Gov initiatives or an individual agency's participation in one of the PMC E-Gov initiatives, this two-digit code should be "24". • 04 = Funding source or appropriation • 09 = Any subtotal
xxx-xx-xx-xx-xx-xxx-xx-XXX-xxx	These three digits identify the primary Business Area and Line of Business from the Federal Enterprise Architecture Business Reference Model that this IT investment supports (Major systems must identify all BRM mappings -- primary and non-primary -- in Section 300 part II). If you cannot identify a primary Line of Business (this is not common), you may identify the appropriate number (1 through 4) for the Business Area followed by two zeros. • 1XX: Primary mapping to the Services for Citizen layer • 2XX: Primary mapping to the Mode of Delivery layer • 3XX: Primary mapping to the Support Delivery of Services layer • 4XX: Primary mapping to the Management of Government Resources layer Two digit codes for each of the Lines of Business, as well as on how to determine your primary mapping can be found at http://feapmo.gov

Entry:	Description:
xxx-xx-xx-xx-xx-xxx-xx-xxx-XXX	The final three digits identify the primary Sub-Function within the Line of Business of the FEA BRM that this IT investment supports (Major systems must identify all BRM mappings -- primary and non-primary -- in Section 300 part II). For those limited circumstances where a primary mapping cannot be identified, please enter 999 as this entry. The code 999 indicates that a further review of the Sub-Functions must be performed.

Specific Guidance For The Performance Architecture

The performance architecture questions are located in Part I, Section C of the Exhibit 300 entitled "Performance Goals and Measures (All Assets)." In order to successfully address this area of the business case, performance goals must be linked to the USDA Strategic Plan for FY 2002- 2007 (http://www.usda.gov/ocfo/sp2002/sp2002.pdf), the Departmental Annual Performance Plan, and be accompanied by performance measures. The performance goals must map to a functional gap between existing IT investments and a desired future state where USDA's business needs will met through a new or better IT environment. The performance measures must be designed to show that the project when completed will fill a gap needed to support USDA's strategic goals and objectives that this project is designed to fill. Business cases should specify internal and/or external performance benefits that this project is expected to deliver to USDA (e.g., improve efficiency by 60%, increase citizen participation by 300% a year to achieve an overall citizen participation rate of 75% by FY 2___, etc.). The goals must state clearly measurable project outcomes, and if applicable, project outputs. Generally these are quantitative measures. Qualitative measures may be used, but sparingly. Please do not use terms such as significant, better, or improved without specifying how much change is expected to occur.

Agencies must use Table 1 for reporting performance goals and measures for projects started prior to 2004. "No Budget or No Funding" answers are unacceptable.

Table 1

Fiscal Year	Strategic Goal(s) Supported	Existing Baseline	Planned Perform-ance Improve-ment Goal	Actual Perform-ance Improve-ment Results	Planned Perform-ance Metric	Actual Perform-ance Metric Results
2003	Goal 1					
2003	Goal 2					
2004	Goal 1					
2004	Goal 2					

Table 2 must be used for all new development, modernization, and enhancement (DME) IT investments commencing in fiscal year 2005 and beyond. Federal agencies are required to use the FEA Performance Reference Model (PRM) for new DME investments. PRM Version 1.0 includes detailed information about incorporating appropriate PRM Indicators into the performance goals and measures table. USDA agencies must ensure that the performance information supports the strategic goals and objectives described in I.B.1. (How does this investment support USDA's mission and strategic goals and objectives?)

Table 2

Fiscal Year	Measurement Area	Measurement Category	Measurement Indicator	Baseline	Planned Improve-ments to the Baseline	Actual Results
2005	See examples	See examples	See examples	Actual or benchmark		
2005	See examples	See examples	See examples	Actual or benchmark		
2005	See examples	See examples	See examples	Actual or benchmark		
2005	See examples	See examples	See examples	Actual or benchmark		
2006	See examples	See examples	See examples	Actual or benchmark		
2006	See examples	See examples	See examples	Actual or benchmark		
2006	See examples	See examples	See examples	Actual or benchmark		
2006	See examples	See examples	See examples	Actual or benchmark		

For each fiscal year, agencies must identify performance information for their major IT investments in four Measurement Areas of the PRM:

(1) Mission and Business Results,
(2) Customer Results,
(3) Processes and Activities, and
(4) Technology.

Identifying this performance information is critical so that agencies and OMB can understand the full "line of sight" from the proposed IT to outputs and outcomes.

Within each of the four measurement areas required for FY 2005, agencies need to insert the measurement category and measurement indicator in the next two columns to the right. The measurement indicator must be a functional measurement indicator that fits the agency's specific environment. When available, Sections II and III of PRM 1.0 will provide more information on measurement indicators. If agencies believe their project can benefit from using an Indicator not identified in the PRM, they can use "Other" as needed. The FEA-PMO will review all "Other" Indicators during OMB passback review and refine the PRM as appropriate.

Also, when providing baseline information, OCIO recommends that agencies (1) use actual baseline information when possible, and (2) benchmark a similar agency's investment or the private sector in the event that actual baseline data is unavailable, and (3) use initial requirements. It is important to set a baseline for each PRM Indicator. This can be done using current data or previous data that coincides with when the initiative began.

Examples of IT Investments Using the PRM to Complete Section I.C, Table 2

Below are three examples of how IT investments could complete Section I.C of the Exhibit 300. Note that no baseline, planned improvement, or target data is provided. This is because these examples are designed to simply illustrate how the PRM structure can be applied to a variety of investments.

Example Table 2 for IRS Free Filing Initiative

Table 2

Fiscal Year	Measurement Area	Measurement Category	Measurement Indicator	Baseline	Planned Improvements to the Baseline	Actual Results
2005	Mission and Business Results	General Government	% of individual returns filed electronically			
2005	Customer Results	Service Coverage	# of citizens filing taxes electronically for the first time			
2005	Processes and Activities	Costs	$ to government per tax return processed			
2005	Technology	Effectiveness	# of internal users satisfied with IRS Free Filing			
2006	Mission and Business Results	General Government	% of individual returns filed electronically			
2006	Customer Results	Service Coverage	# of citizens filing taxes electronically for the first time			
2006	Processes and Activities	Costs	$ to government per tax return processed			
2006	Technology	Effectiveness	# of internal users satisfied with IRS Free Filing			

:ed as

Example Table 2 for Education Grant Initiative

Table 2

Fiscal Year	Measurement Area	Measurement Category	Measurement Indicator	Baseline	Planned Improvements to the Baseline	Actual Results
2005	Mission and Business Results	Education	Postsecondary education enrollment rates for all students			
2005	Customer Results	Service Quality	Percent of grant funding packages meeting customer requirements			
2005	Processes and Activities	Cycle Time & Timeliness	Time to evaluate grant applications and notify institutions of award decisions			
2005	Technology	Reliability	% of unplanned downtime for grants management software			

Example Table 3 for Enterprise Architecture Development Initiative

Table 2

Fiscal Year	Measurement Area	Measurement Category	Measurement Indicator	Baseline	Planned Improvements to the Baseline	Actual Results
2005	Mission and Business Results	Planning and Resource Allocation	Degree to which agency migrates to its IT Enterprise Architecture			
2005	Customer Results	Timeliness & Responsive-ness	% of Enterprise Architecture requirements, guidance, and deliverables provided to agency EA staff on schedule			
2005	Processes and Activities	Financial	Cost avoidance attributable to consolidations identified in Target EA			
2005	Technology	Effectiveness	% of internal users who report using the EA management system as intended			

Specific Guidance For The Business Architecture

The business architecture questions are located in Part II, Section A, Subsection 1 of the Exhibit 300 entitled "Business."

Note: Do not copy/paste help notes into the Exhibit 300. OMB will <u>not</u> accept any departmental "boiler plate" statements or generic notes such as the ones provided below for your information.

A. Is this investment identified in your agency's (USDA's) enterprise architecture? If not, why?

This question should be answered from the perspective of the investment's relationship to the evolving USDA Enterprise Architecture. Your response should include the intention of this investment to map to the Department's EA and the Federal Enterprise Architecture.

Note: USDA and its component agencies are currently in the process of developing the "As Is" architecture. The cooperative effort includes the resources of the EA Working Group, Department staff, Agency staff, and contractor. support. This architecture it targeted for completion by September 30, 2003.

A.1 Will this investment be consistent with your agency's (USDA) "to be" modernization blueprint?

This question should be answered from the perspective of the investment's relationship to the evolving USDA Enterprise Architecture. Your response should include the intention of this investment to be included in the Department's blueprint for modernization.

Note: USDA and its component agencies plan to complete the "To Be" architecture by January 2004.

B. Was this investment approved through the EA Review committee at your agency?

This question should be answered from the perspective of the investment's relationship to the evolving USDA Enterprise Architecture and EA governance policies currently being developed.

Note: USDA plans to establish an EA Change and Configuration Board (EACCB). Until the review process for the board are fully mature, the OCIO/Enterprise Architecture Division will review all investment submissions, and make recommendations regarding final approval.

C. What are the major process simplification/reengineering/design projects that are required as part of this IT investment?

Be sure to include any relationship this investment may have to the Presidential Initiatives, including expanding eGovernment. Answer specifically for this investment, including what is planned – no TBD answers.

D. What are the major organization restructuring, training, and change management projects that are required?

Answer specifically for this investment, including what is planned for organization changes, training, etc. – no TBD answers.

E. Please list the Lines of Business and Sub-Functions from the FEA Business Reference Model that this IT investment supports.

The primary BRM mapping for this initiative should be identified with the last six digits of the Unique Project Identifier. For a list of the BRM Lines of Business and Sub-Functions, as well as on mapping to the BRM, please see http://www.feapmo.gov/resources/fea_brm_release_document_rev_2.pdf

Note: From the four business categories: Services to Citizens, Mode of Delivery, Support Delivery of Services, & Management of Government Resources – the one primary Line of Business is identified in the Unique Project Identifier.

Questions to help in selecting one primary Line of Business used in developing the Unique Project ID:

- Does your IT investment DIRECTLY support the automation of key processes associated with the delivery of one of the Service for Citizen Lines of Business or Sub-Functions? Examples: (weather forecasting systems, criminal surveillance systems, air traffic monitoring systems, etc.)
- Does your IT investment INDIRECTLY support the delivery of one of the Service for Citizen Lines of Business or Sub-Functions by automating the processes associated with a Mode of Delivery or a MOD Sub-Function? Examples: (grant processing systems, permit issuance systems, engineering/construction support systems, etc.)
- Is your IT investment primarily associated with the automation of a Support Delivery of Services function? Examples: (EA and capital planning systems, rulemaking systems, etc.)
- Is your IT investment PRIMARY purpose the automation of a Management of Government resource function for an agency or a branch of an agency? Examples: (core accounting systems, IT infrastructure initiatives, procurement systems, HR systems, etc.)

After the Primary Line of Business has been established in the Unique Project Identifier (UPI), include any additional Lines of Business mappings related to this investment in the following table:

If you choose to re-state the investment's Primary Line of Business in this table, please identify it as "primary"; and then continue with the additional mappings.

Line of Business	Sub-function
*** Refer to the BRM 2.0 reference model. Align the investment to the appropriate additional lines of business and list in this table. See p. 1-23.*	*** Align the investment to the appropriate sub-functions and list in this table.*

Specific Guidance For The Data Architecture

The data architecture questions are located in Part II, Section A, Subsection 2 of the Exhibit 300 entitled "Data"

A. What types of data will be used in this project?

Examples of data types are health data, geospatial data, natural resource data, financial data, producer data, statistical date, program summary data, etc.

Answer specifically for this investment, including what is planned – no TBD answers.

B. Does the data needed for this project already exist at the Federal, State, or Local level? If so, what are your plans to gain access to that data?

If you are currently sharing data with another Department of agency through a Memorandum of Understanding, include this fact in the response.

Answer specifically for this investment, including what is planned – no TBD answers.

C. Are there legal reasons why this data cannot be transferred? If so, what are they and did you address them in the barriers and risk sections above?

If the information related to this investment has market-sensitive issues, privacy issues, or copyright issues, etc., include such information in the response.

Answer specifically for this investment, including what is planned – no TBD answers.

D. If this initiative processes spatial data, identify planned investments for spatial data and demonstrate how the agency ensures compliance with the Federal Geographic Data Committee standards required by OMB Circular A-16.

For further information refer to http://www.whitehouse.gov/omb/circulars/a016/a016_rev.html.

Answer specifically for this investment, including what is planned – no TBD answers.

E. If this activity involves the acquisition, handling or storage of information that will be disseminated to the public or used to support information that will be disseminated to the public, explain how it will comply with your agency's Information Quality guidelines (Section 515 requirements)?

For further information refer to http://www.whitehouse.gov/omb/fedreg/reproducible2.pdf. See also Attachment II for a list of OMB Section 515 information quality definitions.

Answer specifically for this investment, including what is planned – no TBD answers.

F. Managing business information means maintaining its authenticity, reliability, integrity, and usability and providing for its appropriate disposition. Address how the system will manage the business information (records) that it will contain throughout the information life cycle.

Check with your agency's records management specialist to determine how data and information associated with this investment will be managed.

Answer specifically for this investment, including what is planned – no TBD answers.

Specific Guidance For The Applications And Technology Architectures

The applications and technology architecture questions are located in Part II, Section A, Subsection 3 entitled: Applications, Components, and Technology

A. Discuss this major investment in relationship to the Service Component Reference Model Section of the FEA.

A "component" can be defined as a self-contained business process or service with predetermined functionality.
(See p.13 of the SRM Release Document for a detailed explanation.)

Include a discussion of the components included in this major IT investment (e.g., Knowledge Management, Content Management, Customer Relationship Management, etc). In order to answer this question for a specific investment, review the SRM, pgs. 13-30. This reference provides a basis for mapping the components of the investment to a service domain (area of customer service). It provides a listing of the service domains, types, and specific components.

For detailed regarding components, please refer to http://www.feapmo.gov/ and the SRM Release Document. See also http://www.feapmo.gov/resources/fea_srm_release_document_rev_1.pdf

B. Are all of the hardware, applications, components, and web technology requirements for this project included in the Agency EA Technical Reference Model? If not, please explain.

In order to answer this question for a specific investment, review the TRM, pgs. 20-62. This reference provides a basis for mapping the service areas of the investment to specific technologies and products.

For further information refer to http://www.feapmo.gov/resources/fea_trm_release_document_rev_1.pdf

C. Discuss this major IT investment in relationship to the Technical Reference Model Section of the FEA.

Identify each Service Area, Service Category, Service Standard, and Service Specification that collectively describes the technology supporting the major IT investment.

For detailed information regarding the FEA TRM, please refer to http://www.feapmo.gov/. In order to answer this question for a specific investment, review the TRM Release Document, pgs. 63-66.

D. Will the application leverage existing components and/or applications across the Government (i.e., First Gov, Pay.Gov, etc). If so, please describe.

From the perspective of the TRM, discuss the leverage/increased effectiveness of components shared.

E. Financial Management Systems and Projects, as indicated in Part One, must be mapped to the agency's financial management system inventory provided annually to OMB. Please identify the system name(s) and system acronym(s) as reported in the most recent systems inventory update required by Circular A-11 Section 52.4.

List financial systems and acronyms reported in the Exhibit 52.

For further information on the Circular A-11 Section 52.4 refer to http://www.whitehouse.gov/omb/circulars/a11/2002/S52.pdf

Attachment I: Notes On Exhibit 53, Part 3, EA And Planning

Exhibit 53, Part 3 is entitled "Enterprise Architecture and Planning." Report amounts for IT investments that support strategic management of IT operations (e.g., business process redesign efforts that are not part of an individual project or initiative, enterprise architecture development, capital planning and investment control processes, procurement management, and IT policy development and implementation). For further OMB Circular A-11 information, refer to: http://www.ocio.usda.gov/irm/cap_plan/index.html. This line item will be included in the combined USDA EA 300, and reported in the OCIO Exhibit 53.

Attachment II: OMB Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information – Section 515

V. Definitions.

1. "**Quality**" is an encompassing term comprising utility, objectivity, and integrity. Therefore, the guidelines sometimes refer to these four statutory terms, collectively, as "quality."

2. "**Utility**" refers to the usefulness of the information to its intended users, including the public. In assessing the usefulness of information that the agency disseminates to the public, the agency needs to consider the uses of the information not only from the perspective of the agency but also from the perspective of the public. As a result, when reproducibility and transparency of information are relevant for assessing the information's usefulness from the public's perspective, the agency must take care to ensure that reproducibility and transparency have been addressed in its review of the information.

3. "**Objectivity**" involves two distinct elements, presentation and substance.

A. "Objectivity" includes whether disseminated information is being presented in an accurate, clear, complete, and unbiased manner. This involves whether the information is presented within a proper context. Sometimes, in disseminating certain types of information to the public, other information must also be disseminated in order to ensure an accurate, clear, complete, and unbiased presentation. Also, the agency needs to identify the sources of the disseminated information (to the extent possible, consistent with confidentiality protections) and, in a scientific

or statistical context, the supporting data and models, so that the public can assess for itself whether there may be some reason to question the objectivity of the sources. Where appropriate, supporting data should have full, accurate, transparent documentation, and error sources affecting data quality should be identified and disclosed to users.

B. In addition, "objectivity" involves a focus on ensuring accurate, reliable, and unbiased information. In a scientific or statistical context, the original or supporting data shall be generated, and the analytical results shall be developed, using sound statistical and research methods.

- If the results have been subject to formal, independent, external peer review, the information can generally be considered of acceptable objectivity.
- In those situations involving influential scientific or statistical information, the results must be capable of being substantially reproduced, if the original or supporting data are independently analyzed using the same models. Reproducibility does not mean that the original or supporting data have to be capable of being replicated through new experiments, samples or tests.
- Making the data and models publicly available will assist in determining whether analytical results are capable of being substantially reproduced. However, these guidelines do not alter the otherwise applicable standards and procedures for determining when and how information is disclosed. Thus, the objectivity standard does not override other compelling interests, such as privacy, trade secret, and other confidentiality protections.

4. "**Integrity**" refers to the security of information -- protection of the information from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification.

5. "**Information**" means any communication or representation of knowledge such as facts or data, in any medium or form, including textual, numerical, graphic, cartographic, narrative, or audiovisual forms. This definition includes information that an agency disseminates from a web page, but does not include the provision of hyperlinks to information that others disseminate. This definition does not include opinions, where the agency's presentation makes it clear that what is being offered is someone's opinion rather than fact or the agency's views.

6. "**Government information**" means information created, collected, processed, disseminated, or disposed of by or for the Federal Government.

7. "**Information dissemination product**" means any book, paper, map, machine-readable material, audiovisual production, or other documentary material, regardless of physical form or characteristic, an agency disseminates to the public. This definition includes any electronic document, CD-ROM, or web page.

8. "**Dissemination**" means agency initiated or sponsored distribution of information to the public (see 5 C.F.R. 1320.3(d) (definition of "Conduct or Sponsor"). Dissemination does not include distribution limited to government employees or agency contractors or grantees; intra- or inter-agency use or sharing of government information; and responses to requests for agency records under the Freedom of Information Act, the Privacy Act, the Federal Advisory Committee Act or other similar law. This definition also does not include distribution limited to correspondence with individuals or persons, press releases, archival records, public filings, subpoenas or adjudicative processes.

9. "**Influential**" when used in the phrase "influential scientific or statistical information" means the agency expects that information in the form of analytical results will likely have an important effect on the development of domestic or international government or private sector policies or will likely have important consequences for specific technologies, substances, products or firms.

10. "**Capable of being substantially reproduced**" means that independent reanalysis of the original or supporting data using the same methods would generate similar analytical results, subject to an acceptable degree of imprecision.

Attachment III: OCIO Evaluation Criteria

Below are questions that will be used by OCIO to evaluate Exhibit 300 architecture responses prior to submission to OMB.

OVERALL ENTERPRISE ARCHITECTURE

1 Was the investment reviewed and approved by the EA Committee?

2 Is the investment part of USDA's modernization blueprint?

3 Does it discuss legal issues that may need to be addressed?

PERFORMANCE ARCHITECTURE

4 Is the investment related to a PART Review?

5 If so, does the business case address that this investment will help close an identified gap?

6 Does the project description identify a "Clear" problem the investment will address?

7 Does the investment clearly define linkage to the agency strategic goals and performance plans?

8 Does it discuss collaboration?

9 Is the collaboration within USDA or outside of USDA?

10 Does the collaboration clearly depict participation of the partners?

11 If it is even remotely related to an E-Gov initiative, does it clearly demonstrate communication and a strategy review to ensure that the investment is not or will not duplicate the E-Gov investment?

12 Does the PMA portion address any relationship to the 6 LOB review underway at OMB?

13 If the business case discusses reduced costs and improved efficiencies as a result of this investment is there a linkage to the performance goals and measures information and a linkage to the life-cycle costs in out-years?

14 If the investment will link to other systems or applications, have those investments been reengineered so that this investment can be as effective and efficient as possible in terms of its place in the information life-cycle?

15 Are performance goals and measures provided for all years for which there are planned spending identified?

16 For investments existing prior to FY2005, were there performance goals provided in the 2004 budget? If so, are actual results provided for those years?

17 Does the investment use the PRM for Table 2 for FY2005 and forward?

18 Is there a linkage between stated expectations, market research, and these performance goals?

19 Are the performance goals base-lined and functional?

BUSINESS ARCHITECTURE

20 Does the investment map to the BRM?

21 Does it provide the other than primary business line mapping?

APPLICATION ARCHITECTURE

22 Was the FEA consulted for alternatives?

23 Is the investment using COTS?

24 If not, does the BC provide enough detail that you understand the reason for no COTS product?

25 Does the BC describe the extent of modification and why?

26 Are financial systems and applications addressed where needed?

27 Does the agency attempt to use the SRM for information?

DATA ARCHITECTURE

28 Are the GIS (FGDC) standards addressed where appropriate to do so?

29 Are the data quality guidelines and issues addressed?

30 Does the investment discuss the types of data that will be included in the systems and applications?

TECHNOLOGY ARCHITECTURE

31 Does the BC ensure Section 508 compliance?

32 If the investment is in phases are they clearly segmented?

33 Does the EA description indicate this investment's particulars in terms of the EA?

34 Does the agency attempt to use the TRM for information?

APPENDIX N—CYBER SECURITY INFRASTRUCTURE GUIDE

INTRODUCTION

The Clinger-Cohen Act of 1996, the most significant IT reform of the last decade, requires that Federal agencies institute a disciplined approach to managing and controlling Information Technology (IT) investments. The Office of Management and Budget recently updated Circular A-130, "Management of Federal Information Resources" to reflect the disciplines of capital planning and information system security in order to reinforce the critical nature of Capital Planning and Investment Control (CPIC). This legislation combined with the newly enacted Federal Information Security Management Act (FISMA) that replaced GISRA, have now established a clear and convincing case for systematic capital planning and investment process. USDA is one of the leaders in implementing this process and intends to keep moving forward with this initiative.

For the past several years, OCIO, in response to the Office of Management and Budget, has pressed agencies and staff offices to take successive steps to demonstrate their ability to more clearly plan and articulate their Information Technology (IT) costs. A key element of IT planning is the costs associated with an effective Security Program and Infrastructure.

This guide is intended to be a reference document to be used in maintaining a comprehensive planning process for the security costs of information systems within each agency/mission area. The actual CPIC Spreadsheets output of this process remains unchanged, however we eliminated Figure 3, Physical Security Operations Resources Base/Budget Requirements Detailed Back Up Sheet. In addition, we added information for the Pre-Select Phase to include security requirements, definitions, and scoring. Recognizing that agencies have been actively engaged in the process for a while, we streamlined the information into subject areas and tables. We have not abolished the requirements to perform a comprehensive security analysis and plan/update detailed costs during the life cycle for both the overall agency program and each major investment.

Actions taken during the CPIC process will support and require the development of Security Plans, the FISMA/GISRA reporting and security administration within agencies and staff offices throughout the System Life Cycle. Each agency Chief Information Officer with their Information System Security Program Manager is requested to take this opportunity to actively engage in this process, develop realistic security costs and establish an active Certification and Accreditation program for their IT Investments. Implementation of an IT Capital Planning and Investment Control Process is required by law and is essential for making better investment and program decisions.

POINT OF CONTACT

This guide is supported and maintained by the USDA Office of the Chief Information Officer's (OCIO) Associate CIO for Cyber Security. For further information about this guide, please contact the Cyber Security Representative for your Agency, Cyber Security Liaison **or** Rick Perry on (202) 690-3230 or by E-mail at RL.Perry@USDA.GOV.

SECURITY INFRASTRUCTURE AND SECURITY OBJECTIVES

A security infrastructure is a model for integrating security services, mechanisms, objects and management functions, across multiple hardware and software platforms and networks. The infrastructure supports the strategy for providing end-to-end protection of applications and information within the Department.

The overall objectives of security that apply to all Capital Planning Phases are defined below:

- Use of new technologies to sustain, not erode, the privacy protections provided in statutes

- Protection of Federal computer resources commensurate with the risk of harm resulting from misuse of unauthorized access to such systems
- Security risks and incidents managed in a way that complements and does not unnecessarily impede agency business operations
- An overall strategy to manage security is essential and should be based on a cycle of risk management that identifies significant risks, clearly establishes responsibility for reducing them and ensures that risk management remains effective over time

FISMA requires that all systems be certified and accredited which means the Agency Certifying Official (CO) and Designated Approving Authority (DAA) have to sign and authorize all systems to process information in a secure infrastructure. All systems must conduct a Privacy Impact Assessment (PIA) to determine if one is required and document the required information as required by regulation.

SECURITY ANALYSIS

The first step in CPIC planning of Security Costs is to conduct a Security Analysis. To ensure success, an IT investment must include accurate, reliable, and up-to-date data on project costs, benefits and risks. This includes a determination on the criticality of the system and the value and sensitivity of the data. The security analysis should be performed by the business owner in coordination with the agency Information Systems Security Program Manager (ISSPM) and other security specialists to ensure that estimated costs are based on experience and market research. The ISSPM subsequently works in tandem with the agency Portfolio Manager to ensure detailed backup sheets are entered into WorkLenz. All data entered should be representative of the anticipated/actual costs for a program or initiative.

SECURITY STRATEGIC INVESTMENT CRITERIA

The Executive Information Technology Investment Review Board (E-Board) is responsible for the approval and management of the USDA IT Investments. Each investment is rigorously reviewed against approved strategic investment criteria. The strategic investment criteria for the evaluation of the Cyber Security Infrastructure have been outlined in the section below. Specifically, the factors applicable to each investment phase have been determined for the Pre-Select, Select, Control, Evaluate and Steady State phases. This process is used to ensure that the investment is sound and remains on target throughout its life cycle. OCIO has developed the following evaluation factors to be used in the Capital Planning and Investment Control (CPIC) cyber security infrastructure review and oversight process for new or existing investments in the USDA's Portfolio. The security criteria have been expressed in five CPIC phases as they are followed during the investment scrutiny process. The criteria below will be used to evaluate existing investments in the USDA Portfolio and all new investments received each fiscal year. <u>In addition, CS has included a Security Scoring Chart to further clarify scoring for investments in all phases. Investments must have a score of 4 or 5 to be recommended for movement to the next phase in the CPIC process.</u>

SECURITY SCORING CHART

Score	Color	Remarks
5	GREEN	All Security Requirements for Phase Met
4	GREEN	All Security Requirements for Phase Met, Approved Conditionally, 60-90 days to correct omissions
3	YELLOW	Borderline Investment, Major Sec. Omissions (Fix Before Proceeding to Next Phase)
2	RED	Did not meet Security Requirements – Recommend Remaining In Phase – Some attempt made to outline security

OMB Scoring for comparison from FY 2005, 300 Submissions Security and Privacy (SE) (Part II, Section II.B)

5 Security and privacy issues for the investment are addressed, all questions are answered, and a privacy impact assessment is provided in appropriate circumstances. Security/privacy detail is provided about the individual investment throughout the life cycle to include budgeting for SE. **(GREEN)**

4 Security and privacy information for the investment is provided but there are weaknesses in the information that need to be addressed. **(GREEN)**

3 Security and privacy information for the investment is provided but fails to address the minimum requirements. **(YELLOW)**

2 Security and privacy information points to an overall Agency Security Process with little or no detail at this investment level. **(RED)**

1 There is no security or privacy information provided for the investment. **(RED)**

Tips: No investment can score above 3 until it has completed certification and accreditation and C&A must be less than 3 years old. OMB does not recognize interim authority to operate. Agencies must respond to these questions in a way that demonstrates that they understand (and are working to meet) the security requirements of the investment specifically. General statements are not helpful. For example, if the data in a system is sensitive, the security section should demonstrate that the agency knows this and is securing the data appropriately. OMB is also focusing more attention on the need for Privacy Impact Assessments. It's possible that this will play a larger role in scoring in the future.

SECURITY INVESTMENT CRITERIA

Objective: To protect the availability, confidentially and integrity of system assets by maximizing security safeguards and performance, while controlling **vulnerabilities**.

Data Sensitivity High **Safeguards High**

Data Sensitivity Low **Safeguards Low**

Elements of a Security Protection

Pre-Select Phase:	Initial Security Plan (Draft) User Requirements Defined; Preliminary Risk Assessment performed Data Sensitivity Identified
Select Phase:	**Select** Security Analysis Completed Majority of Security Plan Completed Risk Assessment/Mitigation's done Privacy Impact Assessment completed
Control Phase:	**Control** Security Analysis Completed Security Cost and Performance Goals Reviewed Certified and Accredited System, ST&E done Disaster Recover Plan Completed
Evaluation Phase:	Security Post Implementation Review with IV&V **Evaluation** Security Analysis Completed Disaster Recovery Plan Tested
Steady State:	Upgrades/Patches, Maintenance/Production Record Certification and Accreditation Review Conducted Disaster Recovery Plan Tested Annually System Retirement and Disposal Activities Completed (Not scored)

Security Evaluation Factors

Pre-Select Phase:	Have Pre-Select security documents been prepared? Has a project plan been developed showing security target dates?
Select Phase:	Has a Select security analysis been conducted? Has a Security Plan been completed? Are security risks identified and mitigation strategies proposed? Has PIA been completed if one was required?
Control Phase:	Has a complete security analysis been conducted? Have estimated security costs been compared to actual costs? Have security goals and measures been established? Has a review of risks and mitigations been done? Has the System Investments been Certified and Accredited?

Evaluation Phase: Has an Evaluation security analysis been conducted?
Is the system security functioning as anticipated?
Are additional security countermeasures needed to protect assets?

Steady State: Has a Steady State security analysis been conducted?
Are system/application patches and upgrades being applied in a timely manner?
Are security controls being maintained?
Have retirement and disposal actions been taken, if necessary to protect sensitive data?

Rating Award Basis

Pre-Select Phase:

5 Pre-Select Security Analysis has been completed to include draft Security Plan, Data/User Requirements, Preliminary Risk Assessment, Data Sensitivity determined and security officer has been identified. **[Green]**

4 Pre-Select Analysis has been partially completed with omissions and submitted with CPIC package. Conditional approval granted; security omissions must be corrected within 60-90 days. **[Green]**

3 A project plan has been developed showing the due and completion dates of all Security Analysis required documents that accompanies CPIC submission. Major security omissions; must be corrected prior to proceeding to next phase. **[Yellow]**

2 Investment did not meet security requirements. Some attempt made to address security; remain in phase. **[Red]**

1 Investment did not meet security requirements. No attempt made to address security; remain in phase. **[Red]**

Select Phase:

5 Select Security Analysis completed to include information on all security analysis factors, Security Plan completed appropriate risks identified, mitigation strategies sound, a validated costs/benefit analysis for security performed with constraints/assumptions, a C&A strategy has been documented, funded, and security complements departmental architecture. A PIA must have been completed. **[Green]**

4 Select Analysis has been partially completed with omissions and submitted with CPIC package. Conditional approval granted; security omissions must be corrected within 60-90 days. **[Green]**

3 Select security analysis done and submitted with CPIC package. Major security omissions; must be corrected prior to proceeding to next phase. **[Yellow]**

2 Investment did not meet security requirements. Some attempt made to address security; remain in phase. **[Red]**

1 Investment did not meet security requirements. No attempt made to address security; remain in phase. **[Red]**

Control Phase:

5 Control Security Analysis completed; security costs are accurately accounted for, controlled, managed; original cost estimate is current; detailed performance goals/measures established; ST&E done; Certification and Accreditation of System done and Disaster Recover Plans completed. **[Green]**

4 Control Security Analysis has been partially completed with omissions and submitted with CPIC package. Conditional approval granted; security omissions must be corrected within 60-90 days. **[Green]**

3 Control security analysis done and submitted with CPIC package. Major security omissions; must be corrected prior to proceeding to next phase. **[Yellow]**

2 Investment did not meet security requirements. Some attempt made to address security; remain in phase. **[Red]**

1 Investment did not meet security requirements. No attempt made to address security; remain in phase. **[Red]**

Evaluation Phase:

5 Evaluation Security Analysis completed. Agency has done commendable job in conducting the post-implementation security reviews with an IV&V, DR Plan tested, reviews report attainment of the goals, benefits, and expectations that were originally envisioned for the project. **[Green]**

4 Evaluation Security Analysis has been completed with omissions and submitted with CPIC package. Conditional approval granted; security omissions must be corrected within 60-90 days. **[Green]**

3 Evaluation security analysis done and submitted with CPIC package. Major security omissions; must be corrected prior to proceeding to next phase. **[Yellow]**

2 Investment did not meet security requirements. Some attempt made to address security; remain in phase. **[Red]**

1 Investment did not meet security requirements. No attempt made to address security; remain in phase. **[Red]**

Steady State Phase:

5 Steady State Security Analysis completed. System/application upgrades and patches being applied, security controls being maintained and high/medium vulnerabilities promptly corrected, Annual review of the Security Controls, Certification and Accreditation of System and Disaster Recover Plan conducted for life of system.
[Green]

4 Steady State Security Analysis has been partially completed with omissions and submitted with CPIC package. Conditional approval granted; security omissions must be corrected within 60-90 days. **[Green]**

3 Steady State Security Analysis done and submitted with CPIC package. Major security omissions; must be corrected prior to proceeding to next phase. **[Yellow]**

2 Investment did not meet security requirements. Some attempt made to address security; remain in phase. **[Red]**

1 Investment did not meet security requirements. No attempt made to address security; remain in phase. **[Red]**

CPIC PHASE SECURITY REQUIREMENTS

The following are security requirements for all phases in the Capital Planning and Investment Control (CPIC) process.

Pre-Select Phase:

The Pre-Select Phase provides a process to assess a proposed investment's support of agency strategic and mission needs and to provide conceptual information to further support investment action. It is during this phase, that the business/mission needs are identified and relationships to the Department and/or agency strategic planning efforts are established. There are significant information requirements and a potential expenditure of funds in the preliminary planning phase to prepare for review and selection of IT investments. The Pre-Select Phase provides an opportunity to focus efforts on the initiative's concept. It also allows project teams to begin the process of defining security and business requirements and associated system performance metrics, performance measures, benefits, and costs, as well as subsequent completion of a business case and project planning efforts in preparation for inclusion in the Department's investment portfolio.

Entry Criteria

Prior to entering the Pre-Select Phase, investments must have a concept to address a mission need that is anticipated to include an IT component and meet at least one of the threshold criteria identified in the overall CPIC guidance.

Process

During the Pre-Select Phase, mission analysis results in the identification of a mission need necessitating consideration of an IT alternative. The mission analysis and corresponding development of the Mission Needs Statement (see **Appendix K—Mission Needs Statement**) are closely linked to the strategic planning process of the USDA and sponsoring agency. Following mission analysis, the Functional Manager further develops the proposed solution's concept. Objectives are established, evaluation criteria are defined, concept alternatives are identified, and an alternative analysis approach is documented as part of the concept management plan to support concept and mission need approval. A preliminary business case with budget estimates and associated CBA is also completed in addition to a Pre-Select Security Analysis.

The following Security Analysis steps are required in the Pre-Select phase:

User Requirements Definition The agency Information System Security Program Manager (ISSPM) will work with the business owner to fully define the security requirements. How important is the information protection to their mission? How many users will be accessing the system/application (internal, external, trusted partners, clients, public)? What are peak time periods of user activity? When does the customer need security to be operational?

System Security Plan (SSP) The agency ISSPM needs to work with the business owner to establish adequate security measures for each major investment, taking into account the security of all systems in which the new application/system will operate. The plan shall be consistent with guidance issued by NIST

800-18. A summary of the security plans shall be incorporated into the strategic IRM plan required by the Paperwork Reduction Act and each CPIC Investment Proposal. At this point, a skeleton Security Plan will be prepared with draft information available that will be refined and updated during the CPIC process.

Sensitivity of Information The agency business owner will take action to determine the sensitivity of the information. Sensitive information is defined as any information, the loss, or unauthorized access to or modification of which could adversely affect the national interest or conduct of federal/agency programs, or the privacy to which individuals are entitled under 5 U.S.C. Section 552a(the privacy Act), but that has not been specifically authorized under criteria established by an Executive Order or an Act of Congress to be kept secret in the interest of national defense or foreign policy. The Computer Security Act of 1987 (P.L. 100-235) was enacted to create "a means for establishing minimum acceptable security practices" for federal unclassified computer systems. The Act also emphasizes that federal information requires protection against unauthorized modification or destruction, as well as unauthorized disclosure. To distinguish systems covered by this law from those used to process national security information, the law uses the term "sensitive". Confusion over this term may have led some agencies to focus their limited computer security resources on determining which systems would be labeled "sensitive". Information owners should use a risk based approach to determine what harm may result if a system is inadequately protected.

The Security Protection Chart (Figure 1) below depicts the factors to be considered and levels of concern for information sensitivity. The higher the sensitivity of information and vulnerabilities identified the greater the need for Security Protection. The intent of the Computer Security Act is to assure adequate protection of all federal IT systems. NIST believes that all agency information requires some degree of protection to provide confidentiality, integrity or availability. Therefore each agency must determine the appropriate level of protection required for their systems including the rationale for identification of sensitive information.

Protecting sensitive information means providing security protection based on for one or more of the following:

- Confidentiality – The system contains information that requires protection from unauthorized disclosure.
- Integrity – The system contains information that must be protected from unauthorized, unanticipated or unintentional modification.
- Availability – The system contains information or provides services that must be available on a timely basis to meet mission requirements or to avoid substantial losses.

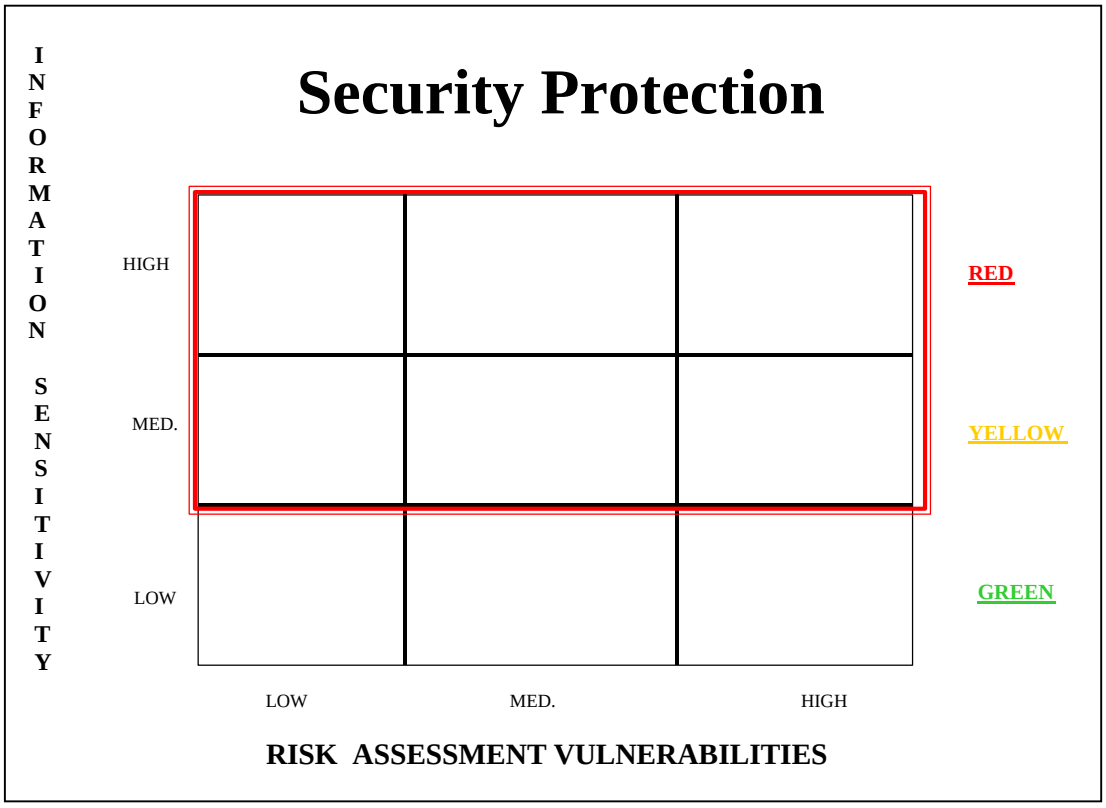


Figure 1

Preliminary Risk Assessment - The ISSPM needs to work with the business owner to assess risk and examine the sensitivity, criticality and value of the system. This process helps determine the need for both general and specialized security controls and provides input into the draft Security Plan.

Exit Criteria

Prior to exiting the Pre-Select Phase, investments must obtain CIO and Executive Information Technology Investment Review Board (E-Board) approval for the mission need and concept and a security analysis must be in progress. A
Pre-Select Security Analysis must have been completed, including the initiation of a Security Plan, determination of information sensitivity, Preliminary Risk Assessment**,** and selection of a Security Representative on the investment project team. Agency Records Officer has been appointed for the system in accordance with the Electronic Records Management Program.

Select Phase:

In the Select Phase, USDA ensures the IT investments that best support the mission and USDA's approach to enterprise architecture, are chosen and prepared for success (i.e., have a good project manager, are analyzing risks, etc.). Individual investments are evaluated in terms of technical alignment with other IT systems and projected performance as measured by Cost, Schedule, Benefit, and Risk (CSBR). Milestones and review schedules are also established for each investment during the Select Phase.

In this phase, USDA prioritizes each investment and decides which investments will be included in the portfolio. Investment submissions are assessed against a uniform set of evaluation criteria and thresholds. The investment's CSBR are then systematically scored using objective criteria and the investment is ranked and compared to other investments. Finally, the E-Board selects which investments will be included in the Department's portfolio.

Entry Criteria

Prior to entering the Select Phase, investments must have obtained E-Board approval for the mission need and concept. The Pre-Select Security Analysis must have been completed, including the initiation of a draft Security Plan, determination of information sensitivity, preliminary risk assessment and selection of a Security Representative on the project team.

Process

The Select Phase begins with an investment concept (approved during the Pre-Select Phase) and moves through the development of the business case, acquisition plan, risk analysis, performance measures, security plan, and a project plan. By this time, the need for a PIA should have been determined. A Project Plan for certifying and accrediting the systems identified in this IT investment should have been formulated. These plans lay a foundation for success in subsequent phases. The Select Phase culminates in a decision whether to proceed with the investment.

The following Security Analysis steps are required in the Select phase:

Responsibility for Security The agency ISSPM is responsible for assuring that security of each major system/application is assigned to a management official knowledgeable in the nature of the information. This individual should also understand the process supported by the system/application, and the management, personnel, operational, and technical controls used to protect it. The ISSPM will assure that security products and techniques are appropriately used in the system /application. The designated official will be contacted when a security incident occurs concerning the application. This representative may nor may not be the individual participating on the Project Team for Security, but will be responsible for coordinating with the team member to ensure appropriate security protection is proposed or in place for the new investment.

Security Risk Management: Risk management addresses risks that arise from an organization's use of information technology. Risk assessment, the process of analyzing and interpreting risk, is comprised of three basic steps: (1) determining the assessment's scope and methodology; (2) collecting and analyzing data; and (3) interpreting the risk analysis results. The agency ISSPM is responsible for developing the appropriate risk assessment and mitigation strategies for all major investments. This includes procedures for conducting a risk assessment, what approach is used or recommended, what type of documentation is maintained, and whether the assessments are based on specific components such as technical, operational and cyber security within a data center or based on the entire organization. Risk mitigation involves the selection and the implementation of security controls used to reduce risk to a level acceptable to management. The risk assessment should discuss the selection of safeguards and risk acceptance, and cost considerations within your security program. Identified risks in the system are considered when making determinations of information sensitivity. Preliminary risk assessments are conducted on a system once a final design has been identified, updated prior to implementation of the system and throughout the production/steady state phases as major changes are made.

Specialized Training Before allowing individuals access to the system, the agency ISSPM will ensure that all individuals receive specialized training focused on their responsibilities and the system rules. This may be in addition to the training required for access to a system. Such training may vary from a

notification at the time of access (e.g., for members of the public using an information retrieval system) to formal training (e.g., for an employee that works with a high-risk system.

Personnel Security The agency Information Systems Security Program Manager in coordination with the System Administrator will incorporate controls such as separation of duties, least privilege and individual accountability into the system and system rules as appropriate. In cases where such controls cannot adequately protect the system or information in it, they will ensure that individuals are screened commensurate with the risk and magnitude of the harm they could cause. Such screening shall be done prior to the individuals' being authorized to access the system and periodically thereafter.

Planning Process and Disposal of Records The agency ISSPM and business owner will work with the departmental Records Officer to ensure that procedures are established for adequate records keeping, especially in the case of electronic records. This includes proper system design and disposition requirements and a plan for maintenance of critical records.

Technical Controls The agency Information Systems Security Program Manager will ensure that appropriate security controls are specified, designed into, tested, and accepted in the system in accordance with appropriate guidance issued by NIST 800-18.

Information Sharing The agency ISSPM will ensure that information shared from the system is protected appropriately, comparable to the protection provided when information is within the application.

Public Access Controls Where an agency's system promotes or permits public access, additional security controls shall be added by the ISSPM and System Administrator to protect the integrity of the system and the confidence the public has in the system. Such controls shall include segregating information made directly accessible to the public from official agency records.

Security Architecture The ISSPM will ensure that the investment security architecture, which all participants trust, will include the logical and physical security controls to appropriately mitigate risks and address the five core information security requirements. These are authentication/identification, access control, data privacy, data integrity, and non-repudiation. The factors to be addressed are: Physical, Network, System, Application and Data Security. The architecture design must be based on a structured risk assessment to ensure implementation costs are commensurate with identified risks and vulnerabilities. In part, it consists of policy formulation to clearly establish operational security guidelines and define exactly what connections are allowed to pass on the network. This includes connections to other systems/applications and networks. The architecture is also composed of coordination of agency firewall implementations to facilitate interoperable encryption of data-flows; secure dial-in communication services from remote locations; and proper management of Internet and Intranet Services.

The Certification and Accreditation (C&A) This process has three phases: the Pre-certification Phase; the Certification and Accreditation Phase, and the Post-accreditation Phase. The Pre-certification Phase, has five steps: defining the scope of the C&A effort, identifying existing security controls, reviewing the SSP, reviewing the initial risk assessment, and negotiating with the Certification Team Participants. The Certification and Accreditation Phase, consists of five more steps: conducting the ST&E, updating the risk assessment with findings from the ST&E, updating the SSP, documenting certification findings; and forwarding the certification findings to the DAA for an accreditation decision. The Post-accreditation Phase consists of managing the configuration of the system and any subsequent re-accreditation activities.

Security Performance Measures In conjunction with the business owner and or developer, the ISSPM will establish system/application security performance measures that include at a minimum: redundancy, availability, data integrity, confidentiality and security plan effectiveness. The system must, wherever cost effective, operate with full redundancy to ensure no single point of failure could disable the system. The system must restrict disclosure of the information to designated parties, must be protected from errors or

unauthorized modification, and must be available within some given timeframe. In addition, the effectiveness of the Security Plan in defining the protections in place should be measured. These measures will include goals for performance in each category.

Cost/Benefit Analysis (CBA) In conjunction with the business owner and or developer, the ISSPM will conduct a cost/benefit analysis, identify and quantify benefits and costs, and prepare estimates for the security to support the investment. Benefits should describe how the investment security enhances the agency ability to meets its mission needs, and they should outline functionality or cost savings. Benefits are defined as a profit, advantage or gain attained by using the security. Cost refers to both the incurred expenses of an investment and its capitalized costs, and can be categorized as direct or indirect. Cost that are unidentified in the planning phase frequently account for a large number of IT project cost overruns. This Cost/Benefit Analysis can be part of the overall investment CBA. Include assumptions and constraints that were used to develop these figures. Ensure that costs have been validated either independently or using a self-assessment process. Costs developed must be captured for the projected Life Cycle and detailed in WorkLenz. Life Cycle costs include projected acquisition, installation, construction, operational and maintenance costs.

Special Requirements of the Project (Waiver, Technology Search)
Do the security requirements needed to support the investment require a security waiver from Cyber Security policies or Departmental Regulation 3140? At this phase in the CPIC Process, the security controls must be established. If a major change is made in system design after this phase a security waiver is required. Send security waiver requests to OCIO in accordance with established procedures.

Although an IT acquisition approval (acquisition waiver) request is normally separate from an IT investment package, approved investments still require acquisition waivers. An acquisition waiver should be requested early in the pre-acquisition process, preferably concurrent with the investment package, to allow sufficient review by the necessary offices within OCIO. The acquisition waiver package should clearly identify reason(s) for the request, include comprehensive cost comparisons, and contain a strong justification for waiver approval. It should be sent to the USDA Chief Information Officer. Information technology acquisition should only commence after written approval has been obtained from OCIO.

Technical Overview with Graphic Depiction The ISSPM will ensure that a technical overview of the entire security infrastructure for the system/application is included with the investment package. This depiction should detail the security hardware and software environment at all levels and their location. This can be included with the overall graphical depiction of the system/application. Explain in narrative how the security infrastructure will be deployed; the use of Commercial Off the Shelf (COTS) software; and planned technology refreshments. Discuss the security migration plan for the infrastructure from the existing to the proposed technology and major transition details that affect the provisioning.

Privacy Impact Assessment (PIA). This is a process designed to evaluate the impact on privacy in information systems. The process is designed to guide system owners and developers in assessing privacy through the early stages of system development. The process consists of privacy training, gathering data from a project on privacy issues, identifying and resolving the privacy risks, and approval by the CS Privacy Officer in the Office of the Chief Information Officer.

Exit Criteria

Prior to exiting the Select Phase, investments must have:

- Established performance goals and quantifiable performance measures;
- Developed a project plan which details quantifiable objectives including an acquisition schedule, project deliverables, and projected and actual costs;
- Identified costs (including security costs), schedule, benefits, and risks (review of mitigations based on final design);

- Completed a Select Security Analysis and prepared a Security Plan;
- Completed a PIA and a plan for C&A;
- Established security, telecommunications, Section 508 (IT accessibility), and architecture goals and measures;
- Established an E-Board investment review schedule for the Control Phase;
- Form for how the Official Records will be maintained throughout the SDLC developed;
- Process of capture, maintaining, and disposal of records identified; and
- Obtained CIO and E-Board approval to enter the Control Phase.

The Functional Manager may further develop IT investments not approved by the E-Board for inclusion at a subsequent review.

Control Phase:

The objective of the Control Phase is to ensure, through timely oversight, quality control, and executive review, that IT initiatives are conducted in a disciplined, well-managed, and consistent manner. Investments should be closely tracked against the various components identified in the Risk Assessment and Mitigation Plan developed in the Select Phase. This phase also promotes the delivery of secure quality products and results in initiatives that are completed within scope, on time, and within budget. During this process, senior managers regularly monitor the progress/performance of ongoing IT investments against projected cost, schedule, performance, and delivered benefits.

The Control Phase is characterized by decisions to continue, modify, or terminate an investment. Decisions are based on reviews at key milestones during the program's development lifecycle. The focus of these reviews changes and expands as the investments move from initial concept or design and pilot through full implementation and as projected investment costs and benefits change. The reviews focus on ensuring that projected benefits are being realized; cost, schedule and performance goals are being met; risks are minimized and managed; and the investment continues to meet strategic needs. Depending on the review's outcome, decisions may be made to suspend funding or make future funding releases conditional on corrective actions.

Entry Criteria

Prior to entering the Control Phase, investments must have:

- Established performance goals and quantifiable performance measures;
- Developed a project plan which details quantifiable objectives, including an acquisition schedule, project deliverables, and projected and actual costs;
- Identified costs (including security costs), schedule, benefits, and risks (review of mitigations based on final design);
- Completed a Select Security Analysis and prepared a completed Security Plan**;**
- Established security, telecommunications, Section 508 (IT accessibility), and architecture goals and measures;
- Established an E-Board investment review schedule for the Control Phase; and
- Obtained CIO and E-Board approval to enter the Control Phase.

Once the investment enters the Control Phase, the IPT will monitor the investment throughout development and report investment status to the investment's sponsors and oversight groups.

Process

During the Control Phase, an investment progresses from requirements definition to implementation. Throughout the Phase, the agency CIO provides the OCIO with investment reviews to assist them in monitoring all investments in the portfolio. Investment reviews provide an opportunity for Project

Managers to raise issues concerning the IT developmental process, including security, telecommunications, enterprise architecture alignment, E-government (GPEA compliance) and Section 508 concerns.

The ability to adequately monitor IT initiatives relies heavily on the outputs from effective investment execution and management activities. OCIO develops a master milestone review calendar for evaluation and approval by the E-Board. The OCIO maintains a control review schedule for all initiatives in the Department's IT investment portfolio and monitors investments quarterly. The E-Board reviews investments at their discretion or if the cost, schedule, or performance varies more than 10 percent from expectations.

The E-Board reviews are based on factors including the strategic alignment, criticality, scope, cost, and risk associated with all initiatives. The Project Sponsor establishes milestones as part of the investment baseline against which performance will be measured throughout the Control Phase. Agencies are expected to uphold these milestones; OMB will hold agencies responsible for meeting milestones as originally indicated in the baseline. After establishing the milestones, the Project Sponsor revises the project plan as required to meet the approved milestones. It is recommended that the project plan include a system pilot during the Control Phase because piloting helps reduce risk and provides a better understanding of costs and benefits.

The following Security Analysis steps are required in the Control phase:

Security Cost Review. OMB Circular A-130 states in part that agencies should conduct Benefit Cost Analysis for each information system to support management decisions making to ensure realization of expected benefits. When preparing benefit cost analyses to support investment in information technology, agencies should seek to quantify the improvements in agency performance results through measurement of program outputs. Proposed "major investment systems"…require detailed and rigorous analysis. While it is not necessary to create a new benefit cost analysis at each stage of the information system life cycle, it is useful to refresh this analysis with up-to-date information to ensure the continued viability of an information system prior to and during implementation. Appendix III, OMB Circular A-130 further specifies four controls: assigning responsibility for security, security planning, periodic review of security controls, and management authorization. Any Benefit Cost Analysis for IT Systems should include detailed security cost projections prepared in the SELECT phase. The security cost review in the Control Phase should compare the actual system security cost with those projected in the SELECT phase, the percentage of variance should be noted, and information included to support why the cost were different than those in the original projections.

Review of Security Risk Assessment/Mitigation Strategy A review of the risk mitigation strategies should be conducted by the Information Systems Security Program Manager to ensure that they have been included in the final design specifications of the system.

Comprehensive Information Systems/ Program Security Goals/Measures DM3140-1 requires that the Information Systems Security Program Manager (ISSPM) or their designate participate in the testing of security systems after installation. In order to adequately test security goals/measures must be developed and established during the control phase. Establish baseline performance measures for the security infrastructure that will be used to determine overall effectiveness and efficiency. These factors should be consistent with the levels of desired security formulated during the SELECT phase to ensure that system security benefits are realized by the system when it is operational during the post-implementation review.

System Rules The agency ISSPM and the System Administrator will establish a set of rules concerning use of and behavior within the application/system. The rules shall be as stringent as necessary to provide adequate security for the application/system and information in it. Such rules shall clearly delineate

responsibilities and expected behavior of all individual users with access to the application/system. In addition, the rules shall be clear about the consequences of behavior not consistent with the rules.

Security Operating Procedures (SOP) The agency ISSPM will develop documentation specifying procedures that are to be carried out by system users (to include System Administrators, Network Administrators and operators) to uphold all aspects of security.

Specialized Training Before allowing individuals access to the system, the agency ISSPM will ensure that all individuals receive specialized training focused on their responsibilities and the system rules. This may be in addition to the training required for access to a system. Such training may vary from a notification at the time of access (e.g., for members of the public using an information retrieval system) to formal training (e.g., for an employee that works with a high-risk system.

Personnel Security The agency Information Systems Security Program Manager in coordination with the System Administrator will incorporate controls such as separation of duties, least privilege and individual accountability into the system and system rules as appropriate. In cases where such controls cannot adequately protect the system or information in it, they will ensure that individuals are screened commensurate with the risk and magnitude of the harm they could cause. Such screening shall be done prior to the individuals' being authorized to access the system and periodically thereafter.

Special Requirements of the Project (Waiver, Technology Search)
Do the security requirements needed to support the investment require a waiver from Cyber Security policies or Departmental Regulation 3140? At this phase in the CPIC Process, the security controls should be established. If a major change is made in system design a security waiver is required. Send security waiver requests to OCIO in accordance with established procedures documenting efforts to ensure that the items in the prior phases have been reviewed and mitigations taken to limit risk.

Contingency Planning The agency ISSPM will establish a contingency plan in coordination with the system owner and IT Manager and periodically test the capability to perform the agency function supported by the system in accordance with appropriate guidance issued by NIST 800-18. Contingency planning includes development of Continuity of Operations Plan (COOP), Disaster Recovery and Business Resumption Plans, as appropriate, based on identification of sensitive information or business owner requirements.

Security Test and Evaluation (ST&E) must be performed for all systems. If an ST&E is not performed, an Independent Verification and Validation (IV&V) is performed on the system. The ST&E is an examination and analysis of safeguards required to protect an IT system, as they have been applied in an operational environment, to determine the security posture of that system. Ensure that costs for this testing have been included in the overall investment spreadsheet.

Authorize Processing The agency Information Systems Security Program Manager will ensure that a designated management official authorizes in writing use of the system/application by confirming that its security plan as implemented adequately secures the system. Results of the most recent review or audit of controls shall be a factor in management authorizations. The system/application must be authorized prior to operating and re-authorized at least every three years thereafter. Management authorization implies accepting the risk of each system/application.

Security Performance Measures In conjunction with the business owner and or developer, the ISSPM will establish system/application security performance measures that include at a minimum: redundancy, availability, data integrity, confidentiality and security plan effectiveness. The system must, wherever cost effective, operate with full redundancy to ensure no single point of failure could disable the system. The system must restrict disclosure of the information to designated parties, must be protected from errors or unauthorized modification, and must be available within some given timeframe. In addition, the

effectiveness of the Security Plan in defining the protections in place should be measured. These measures will include goals for performance in each category.

Certification and Accreditation The authorization of an IT system to process, store, or transmit information, granted by a management official, provides a form of quality control. Some agencies refer to this authorization as accreditation. Accreditation, which is required under OMB Circular A-130, should be based on an assessment of the management, operational, and technical controls associated with an IT system. Certification provides the necessary information to a management official to formally declare that an IT system is approved to operate at an acceptable level of risk. C&A costs should include the complete certification review and subsequent accreditation associated with the investment.

Disaster Recovery Plan Disaster Recovery Planning is a process of developing advance arrangements and procedures that enable an organization to respond to a disaster and resume the critical business functions within a predetermined period, minimize the amount of loss, and repair or replace necessary equipment or facilities. Disaster Recover Plan costs should include the complete costs to review the implemented system and develop the plan.

Exit Criteria

Prior to exiting the Control Phase, investments must have:

- Completed investment development;
- Confirmed the PIR schedule, Security Costs, Risk Assessment/Mitigations and Performance Measure
  Reviews;
- Completed the Security Test and Evaluation (ST&E) and development of the Disaster Recovery Plan
- Completed Contingency Plan and Certification/Accreditation of system; and
- Obtained CIO and E-Board approval to enter the Evaluate Phase.

Evaluation Phase:

The purpose of the Evaluate Phase is to compare actual to expected results after an investment is fully implemented. This is done to assess the investment's impact on mission performance, identify any investment changes or modifications that may be needed, and revise the investment management process based on lessons learned. As noted in GAO's *Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-Making*, "the Evaluation Phase 'closes the loop' of the IT investment management process by comparing actuals against estimates in order to assess the performance and identify areas where decision-making can be improved."

The Evaluate Phase focuses on outcomes:

- Determining whether the IT investment met its performance, cost, and schedule objectives; and
- Determining the extent to which the IT capital investment management process improved the outcome of the IT investment.

The outcomes are measured by collecting performance data, comparing actual to projected performance and conducting a Post Implementation Review (PIR) to determine the system's efficiency and effectiveness in meeting performance, financial and security objectives. The PIR includes a methodical assessment of the investment's costs,

performance, benefits, documentation, mission, security, and level of stakeholder and customer satisfaction. The PIR is conducted by the agency, and results are reported to the OCIO and E-Board to provide a better understanding of initiative performance and assist the Project Sponsor in directing any necessary initiative adjustments. Additionally, results from the Evaluate Phase are fed back to the Pre-

Select, Select, and Control Phases as lessons learned. Normally, investments stay in this phase for a period no longer than 6 months.

Entry Criteria

The Evaluate Phase begins once a system has been implemented and the system becomes operational or goes into production. Any investment cancelled prior to going into operation must also be evaluated. Prior to entering the Evaluate Phase, investments must have:

- Completed investment development;
- Perform the Independent Verification and Validation (IV&V) as part of the PIR;
- Completed Control Phase Security Analysis, Standard Operating Procedures and the DR Plan;
- Completed Contingency Plan and Certification/Accreditation of system;
- Completed PIA; and
- Obtained CIO and E-Board approval to enter the Evaluate Phase.

Process

In the Evaluate Phase, investments move from implementation or termination to a PIR and the E-Board's approval or disapproval to continue the investment (with or without modifications). From the time of implementation, the system is continually monitored for performance, outages, maintenance activities, costs, resource allocation, defects, problems, and system changes. System stability is also periodically evaluated. During the PIR, actual performance collected is compared to performance projections made during the Select Phase. Then lessons learned for both the investment and the CPIC process are collected and fed back to prior CPIC phases.

The following Security Analysis steps are required in the Evaluation phase:

Detailed Post Implementation Security Review of System NIST Special Publication 800-18, Guide for Developing Security Plans for Information Technology Systems, specifies that during the implementation phase, the system's security features will be tested. The ISSPM will ensure that the security for the system/application is tested, installed, and authorized for processing. A security design review and systems test should be performed prior to placing the system into operation to assure that it meets security requirements. In addition, if new security controls are added to the application or support system, additional acceptance tests of those new controls must be performed. Since the installation of new major systems generally occur well after the initial design phase, the post implementation review becomes more significant. Care should be exercised when conducting this review to document the results and determine if the system still meets the original security design. All design specifications for security should have been delivered and furnished to the new system administrator. Another review of the risk mitigation strategies should be done to ensure that they have been built into the system and are operational. If necessary, addition countermeasures should be identified and implemented to assure that the system will adequately protect the integrity, confidentiality, and availability of the data.

Specialized Training Before allowing individuals access to the system, the agency ISSPM will ensure that all individuals receive specialized training focused on their responsibilities and the system rules. This may be in addition to the training required for access to a system. Such training may vary from a notification at the time of access (e.g., for members of the public using an information retrieval system) to formal training (e.g., for an employee that works with a high-risk system.

Personnel Security The agency Information Systems Security Program Manager in coordination with the System Administrator will incorporate controls such as separation of duties, least privilege and individual accountability into the system and system rules as appropriate. In cases where such controls cannot adequately protect the system or information in it, they will ensure that individuals are screened

commensurate with the risk and magnitude of the harm they could cause. Such screening shall be done prior to the individuals' being authorized to access the system and periodically thereafter.

Special Requirements of the Project (Waiver, Technology Search)
Do the security requirements needed to support the investment require a waiver from Cyber Security policies or Departmental Regulation 3140? At this phase in the CPIC Process, the security controls should be established. If a major change is made in system design a security waiver is required. Send security waiver requests to OCIO in accordance with established procedures documenting efforts to ensure that the items in the prior phases have been reviewed and mitigations taken to limit risk.

Review of System Controls The agency ISSPM will have a process for (1) requesting, establishing, issuing, and closing user accounts (2) tracking users and their respective access authorizations; and (3) managing these functions. Mechanisms besides auditing and analysis of audit trails should be used to detect unauthorized and illegal acts.

Independent Verification and Validation (IV&V) will be performed as part of the PIR for purposes of CPIC to ensure the integrity of the system. Ensure that costs for this testing have been included in the overall investment cost.

Certification and Accreditation The authorization of an IT system to process, store, or transmit information, granted by a management official, provides a form of quality control. Some agencies refer to this authorization as accreditation. Accreditation, which is required under OMB Circular A-130, should be based on an assessment of the management, operational, and technical controls associated with an IT system. Certification provides the necessary information to a management official to formally declare that an IT system is approved to operate at an acceptable level of risk. C&A costs should include the complete certification review and subsequent accreditation associated with the investment.

Disaster Recovery Plan Disaster Recovery Planning is a process of developing advance arrangements and procedures that enable an organization to respond to a disaster and resume the critical business functions within a predetermined period, minimize the amount of loss, and repair or replace necessary equipment or facilities. Disaster Recover Plan costs should include the complete costs to review the implemented system, develop and test the plan.

Exit Criteria

Prior to exiting the Evaluate Phase, investments must have:

- Conducted a PIA, including a Security Review of the System (Costs, Risk Assessment/Mitigations and
  Performance Measures);
- Completed Evaluation Phase Security Analysis;
- Completed Independent Verification and Validation (IV&V) and testing of the DR Plan
- Established an Operations and Maintenance (O&M) and operational performance review schedule; and
- Obtained CIO and E-Board approval to enter the Steady-State Phase.

Steady State Phase:

The Steady-State Phase provides the means to assess mature investments, ascertain their continued effectiveness in supporting mission requirements, evaluate the cost of continued maintenance support, assess technology opportunities, and consider potential retirement or replacement of the investment. The primary review focus during this Phase is on the mission support, cost, and technological assessment. Process activities during the Steady-State

Phase provide the foundation to ensure mission alignment and support for system and technology succession management.

ENTRY CRITERIA

Prior to entering the Steady-State Phase, investments must have:

- Conducted a PIA, including a Security Review of the System (Costs, Risk Assessment/Mitigations and
  Performance Measures);
- Completed Independent Verification and Validation (IV&V)
- Completed Evaluation Security Analysis;
- Annual review of Certification and Accreditation for system
- Completed Testing of Disaster Recovery Plan
- Established an Operations and Maintenance (O&M) and operational performance review schedule; and
- Obtained CIO and E-Board approval to enter the Steady-State Phase.

PROCESS

During the Steady-State Phase, mission analysis is used to determine whether mature systems are optimally continuing to support mission and user requirements. An assessment of technology opportunities and an O&M Review are also conducted.

The following Security Analysis steps are required in the Steady State phase:

Upgrades, Updates & Patches Steady State is generally the longest phase of an investment and covers the maintenance and operation of the system/application in the production environment until disposal. In this phase system upgrades, updates, and patches are applied, all major system changes necessitate retesting of security controls, and overall security reviews are conducted periodically. Material reviewed in this phase includes the latest system/application review, agency responses to data calls for patch/upgrade information and the latest Summary Reports of Vulnerability Scans.

Specialized Training Before allowing individuals access to the system, the agency ISSPM will ensure that all individuals receive specialized training focused on their responsibilities and the system rules. This may be in addition to the training required for access to a system. Such training may vary from a notification at the time of access (e.g., for members of the public using an information retrieval system) to formal training (e.g., for an employee that works with a high-risk system.

Personnel Security The agency Information Systems Security Program Manager in coordination with the System Administrator will incorporate controls such as separation of duties, least privilege and individual accountability into the system and system rules as appropriate. In cases where such controls cannot adequately protect the system or information in it, they will ensure that individuals are screened commensurate with the risk and magnitude of the harm they could cause. Such screening shall be done prior to the individuals' being authorized to access the system and periodically thereafter.

Disposal/Disposition of system Describe how information is moved to another system, archived, discarded or destroyed. Has all electronic media and hardware been sanitized, cleared and purged from the system in accordance with departmental procedures on Classified and Sensitive But Unclassified Information? Include the costs for disposal and disposition of the system.

Review of Security Controls OMB A130, Appendix III, requires a review of security controls for all systems, including the risk assessment, every 3 years or when there is a major change. This is an

ongoing requirement during this phase and costs for the review should be planned accordingly as part of system maintenance.

Special Requirements of the Project (Waiver, Technology Search)
Do the security requirements needed to support the investment require a waiver from Cyber Security policies or Departmental Regulation 3140? At this phase in the CPIC Process, the security controls should be established. If a major change is made in system design a security waiver is required. Send security waiver requests to OCIO in accordance with established procedures documenting efforts to ensure that the items in the prior phases have been reviewed and mitigations taken to limit risk.

Certification and Accreditation The authorization of an IT system to process, store, or transmit information, granted by a management official, provides a form of quality control. Some agencies refer to this authorization as accreditation. Accreditation, which is required under OMB Circular A-130, should be based on an assessment of the management, operational, and technical controls associated with an IT system. Certification provides the necessary information to a management official to formally declare that an IT system is approved to operate at an acceptable level of risk. If there is a major change in the system, it must be re-certified and re-accredited. C&A costs should include the complete certification review and subsequent accreditation associated with the investment. Major changes should be factored into costs for the system.

Disaster Recovery Plan Disaster Recovery Planning is a process of developing advance arrangements and procedures that enable an organization to respond to a disaster and resume the critical business functions within a Pre-determined period, minimize the amount of loss, and repair or replace necessary equipment or facility. Disaster Recover Plan costs should include the complete costs to review the DR Plan on an annual basis.

EXIT CRITERIA

Prior to exiting the Steady-State Phase, investments must have obtained the CIO and E-Board's direction whether to dispose, retire, or replace the system. All systems being disposed of will undergo sanitation of electronic media (tapes, disks, etc) and other hardware. Preservation of official records must be done prior to disposal or other action on the system in accordance with DR 3080-1, DR 3040-1, DR 3090-1 and other departmental policy.

APPENDIX O—TELECOMMUNICATIONS REFERENCE MANUAL

INTRODUCTION

Appropriate telecommunications planning, management and control is critical to the success of IT projects. This document provides guidance on the planning, management and control of telecommunications equipment and services as required by the USDA Capital Planning and Investment Control (CPIC).

Although the emphasis of this document is on high-dollar, high-risk, and highly visible projects, recommendations presented throughout this document can be applied to *all* acquisitions of telecommunications equipment and services.

It is the goal of the Department to continuously improve telecommunications materials to support customers. This Telecommunications Reference Manual is a living document and will be periodically updated in coordination with major calls for (Capital Planning and Investment Control) CPIC updates. Updates will include improved methods, approaches, and processes, and include material on the most current products and services.

What Is Included

This Manual includes:

(1) Frequently Asked Questions
(2) How to prepare documentation for each phase of the USDA CPIC cycle.
(3) USDA Guide for Creating a Telecommunications Plan
(4) Telecommunications Cost Estimating Checklists (Attached towards the end of the Manual)

FREQUENTLY ASKED QUESTIONS

Question 1: What is the level of detail needed for planning and reporting telecommunications?

Answer: The level of detail should commensurate with the size and impact of project. For example, telecommunications technology assessment may not be needed for projects with costs of $250,000 or less. However, all proposals should provide sufficient supporting details. The details should include information on telecommunications requirements (number of users, locations, usage, etc.), telecommunications performance goals/measures, and calculation of related costs.

Question 2: What is the purpose of planning and reporting telecommunications separately from the overall project? It is difficult to break out telecommunications costs by application.

Answer: The USDA CPIC process has identified telecommunications as a separate investment evaluation factor. Separate planning and reporting of telecommunications is needed to accurately evaluate and report a project's progress. Delineation of telecommunications cost for a specific application may be difficult but pro-rated costs can be projected based on system usage. Often, the information required for the review is the same information that agencies provide to their network planners and implementers prior to implementing an application.

Question 3: The new OMB 300s do not have a specific section on telecommunications. How should telecommunications be reported in the 300s?

Answer: Telecommunications related information and costs could be reported to OCIO during the review process either as a supplement and/or in the Enterprise Architecture section of the 300s.

Contact Information

This manual is facilitated and maintained by the USDA Office of the Chief Information Officer's (OCIO) Associate CIO for Telecommunications Services and Operations, Telecommunications Management Division. Questions or comments may be directed to Rajiv Sharma at (202) 720-8109.

PRE-SELECT PHASE ACTIVITIES

The Pre-Select phase activities include a Gap Analysis and a Rough Order of Magnitude Lifecycle Cost Estimate. Below are details of the activities.

Gap Analysis: The focus here is on understanding user requirements, defining preliminary network objectives, and estimating the scope and size of changes and upgrades to the current network to meet the operational requirements of the system being implemented. The project team studies the customer problem and the context in which the problem occurs. A preliminary investigation should indicate whether any problems are related to existing performance, a need for different information or data, a need for improved cost control, security requirements, efficiency requirements, or customer service issues. Once the current environment and customer concerns are understood, it becomes possible to define the perceived business problems, as well as the causes and effects. Preliminary network improvement objectives are defined, and an analysis determines the size of the gap between the legacy network and requirements for change. Team members can identify what technology exists in the legacy network that performs functions associated with improvement objectives, and assess the current state of network performance relative to those objectives. In the early stages, it should be possible to determine whether the problems are too minor or great to solve, or whether next steps should be taken to initiate a project. The gap analysis should have sufficient detail to determine the scope of a project.

Scope defines how big the project is and how long it may take to accomplish the improvement objectives. USDA telecommunications technology experts such as network design engineers, network operations technicians or network transmission engineers should be able to review the current state of the network and estimate in general terms how much development is required to achieve the desired state, and how long it might take.

Rough Order of Magnitude System Development Lifecycle Costs: Gap analysis findings should define the general scope of the project including the current state of technology, the desired state of technology, and the delta between the two. Cost estimates for closing the gap between the current and desired state of network functionality helps evaluators determine the feasibility of moving forward. Costs may indicate that the problems are not worth solving, or that the team should continue to the next phase according to a reduced or expanded scope.

Depending on how much information exists about the current and desired state of the network, analysis during the Pre-Select Phase may involve varying levels of effort. The goal is to gather as much meaningful data as possible without moving into actual design analyses.

A telecommunications cost estimating checklist is included towards the end of this Telecommunications Reference Manual for calculating costs.

Minimally, the Pre-Select submission should answer the following:

- What is the scope of anticipated telecommunications requirements for the project? What changes to the current telecommunications capability do you anticipate in order to meet operational requirements?
- What obstacles might prevent the organization from meeting existing or anticipated business or technical requirements for telecommunications support?

- What is the current project budget for telecommunications? Anticipated budget for telecommunications?
- Based on a preliminary assessment of costs for anticipated telecommunications requirements, are ROM lifecycle costs feasible when considering the return on investment? Refer to the telecommunications cost estimating checklist provided towards the end of this manual.

SELECT PHASE ACTIVITIES

The first step in the Select Phase requires a Telecommunications Infrastructure Analysis leading to an Agency Telecommunications Plan. The following tasks describe specific activities that a project team may want to consider during the Select Phase that can help satisfy requirements for both an Infrastructure Analysis and a project Telecommunications Plan.

IMPORTANT: Please note that NOT all select phase activities need to be performed for all projects. Some of the select phase activities listed below can be skipped if the size and cost of telecommunications is insignificant. However, please state the reason for not performing an activity.

User Requirements Definition

Fully define the business requirements (needs) of the customer and describe how does the customer see the system/application working. Provide the projected number of users that will be accessing the system/application (internal, external, trusted partners, clients, public), number of concurrent users, peak usage including originating/destination traffic, peak time periods of user activity, telecommunications performance requirements (availability, etc), and telecommunications security requirements. Also indicate when does the customer need the telecommunications facilities/equipment to be operational. The development of annual projections by the customer for routine telecommunications and the wireless program is also an integral component. Consider any large purchases of cellular phones, pagers, or other personal communications systems by your customer.

Refined Gap Analysis/Impact Assessment

This is refining the gap analysis developed in the Pre-Select phase. In the Select phase, user requirements are refined, and as a result, the gap analysis should be refined to reflect the new requirements. Refer to the telecommunications cost estimating checklist provided towards the end of this manual.

Technology Assessment

Conduct and provide an analysis of best available technologies (ISDN, Frame Relay, Asynchronous Transfer Mode, Gigabit Ethernet) to meet the requirements based on cost, performance and government regulations. It is an assessment of the suitability of a technology for a given application. The activity does not need to be performed for small investments.

Cost-Benefit Analysis

This is a quantification and evaluation of cost, benefits and risks of various telecommunications alternatives considered for a project. This could include analysis of purchasing new equipment versus upgrading existing equipment. This activity may be skipped where the use of a certain contract may be mandatory. For example, the FTS2001 contract. However, life cycle costs should be calculated.

Conduct a cost-benefit analysis, identify and quantify benefits and costs, and prepare estimates for the telecommunications infrastructure supporting the system/initiative/project. Benefits should describe how the investment enhances the agency's ability to meets its mission needs, and should outline functionality or cost savings. Benefits are defined as a profit, advantage, or gain attained by using the investment.

Cost refers to both the initial investment and capitalized costs, and can be categorized as direct or indirect. Costs that are unidentified in the Select Phase frequently account for a large number of IT project cost overruns.

Provide a list of system components to be ordered, the price, and time for delivery/installation. Incorporate a plan to mitigate and manage identified risks in the business case justification. Additional information on the factors considered in a Cost-Benefit Analysis can be obtained from the Federal CIO Council web site (www.cio.gov) in the publication "ROI and the Value Puzzle." The program managers or representatives who are familiar with technology solutions and their benefits to organizations should develop the analysis.

Refer to the telecommunications cost estimating checklist provided towards the end of this manual.

Cost/Performance Trade-off

Sometimes, giving up small system performance may result in big cost savings. Agencies are encouraged to performance a cost/performance trade off analysis to see if what small performance sacrifices may result in a big cost savings. The sacrifices must be acceptable. For example, lowering performance threshold for circuit availability may result in a big savings. However, the lower threshold must be acceptable to the customer.

Guide for Creating a Telecommunications Plan

A telecommunications plan for a project should be prepared that reflects the design considerations and implementation requirements used in planning this project. This plan should include a detailed technical overview of the telecommunications services and equipment to be deployed for this project. In addition, the project's link to the objectives in the agency strategic or business plan should be included. In short, the plan is a narrative and presentation of all the activities performed. Click here for additional information and step-by-step instructions for developing a telecommunications plan. Please note that some of the information may not be required for smaller investments. Guidance regarding smaller investments can also be found in the Guide for Creating a Telecommunications Plan.

Department Enterprise Architecture

Describe how the telecommunications infrastructure design conforms to the Department's Enterprise Architecture Principles for interoperability, resources sharing, and use of COTS software/products. Information concerning the Enterprise Architecture (EA) can be obtained by accessing www.ocio.usda.gov/irm/e_arch/index.html, select the OCIO Staff Office, select IRM and Enterprise Architecture. General information on the considerations of EA can be found at the web site for the Federal CIO Council located at www.cio.gov/files/aaaq.pdf.

Special Requirements of the Project (Waiver, Technology Search)

Does the telecommunications infrastructure required to support the investment require a waiver from the government-wide acquisition vehicles (FTS2001, WITS2001, Metropolitan Area Acquisitions) prescribed in Departmental Regulation 3300-1? If so, contact the Associate CIO for Telecommunications Services and Operations for guidance on how to proceed.

Is a telecommunications acquisition moratorium waiver needed? The Office of the Chief Information Officer (OCIO) requires waiver approval for all telecommunications purchases regardless of the dollar amount. Although a waiver request is normally separate from an IT investment package, approved investments still require waivers for acquisitions. Planned data telecommunications acquisitions should be entered into the Department's Forecasting Inventory and Reporting (FIR) database. The FIR database is open twice a year for new entries and updates.

A waiver should be requested early in the pre-acquisition process, preferably concurrent with the investment package, to allow sufficient review by the necessary offices within OCIO. The waiver package should clearly identify reason(s) for the request, include comprehensive cost comparisons, and contain a strong justification for waiver approval. It should be sent to the USDA Chief Information Officer. IT acquisition should only commence after written approval has been obtained from OCIO.

Support from the OCIO, Telecommunications Services and Operations (Wide Area Network Support, Internet Access, Traffic Analysis)

The OCIO, Telecommunications Services and Operations (TSO), provides agency support on both a continuing and project basis for Internet access, data transmission and metropolitan area network (MAN) requirements using the USDA enterprise network. TSO performs network/application modeling, and also maintains, operates, and initiates orders for expansion of the enterprise network. Will the system/initiative/project require integration with the USDA enterprise network? If so, coordination with TSO can help project teams fully define telecommunications infrastructure requirements, anticipated data traffic, Internet or remote access, and interpretation of legislative implementation mandates.

Security Required, Identification of Data Sensitivity, Security Analysis

A Security Analysis is always required for any new IT initiative or project. This analysis should be conducted in conjunction with your agency Information Systems Security Program Manager (ISSPM). The results should be documented in a Security Analysis for the investment. A review of security should also be done for the ongoing telecommunications and wireless programs annually to ensure that any mission critical or sensitive data transmitted over wireless, satellite, or telecommunications facilities have the appropriate levels of encryption.

The Telecommunications Infrastructure is the full range of voice, data, and video services and equipment, including Internet, intranet, extranet, LAN, WAN, and wireless, toll-free network services, and calling card services. The telecommunications infrastructure has two components: (1) telecommunications equipment and (2) telecommunications service. Telecommunications equipment includes routers, switches, private branch exchanges (PBXs), cell phones, video cameras, etc., used for various modes of transmission, such as digital data, audio signals, image, and video signals. Telecommunications carriers provide telecommunications services to move data, voice, or video signals from one location to another, regardless of the type of media used.

A telecommunications plan for this system/initiative should be prepared that reflects the design considerations and implementation requirements used in planning this project. This plan should include a detailed technical overview of the telecommunications services and equipment to be deployed for this project. In addition, the project's link to the objective (s) in the agency strategic or business plan should be included.

CONTROL PHASE ACTIVITIES

The focus in the Control Phase is on the management and control of telecommunications cost and performance. The telecommunications cost baseline and performance goals established in the Select Phase are measured and monitored in this phase. The following should be submitted in the Control Phase:

Φ • Planned and actual telecommunications costs. This information should be easily available from the project and/or telecommunications plan. For additional information, see the Guide for Creating a Telecommunications Plan. For projects with telecommunications cost variance of 10% or more, the submission should include an explanation for the variance, corrective action, and revised cost estimates.

- Telecommunications performance objectives and a report of status. This is relevant if 50% or more of the investment is comprised of telecommunications products and services. For additional information, see the Guide for Creating a Telecommunications Plan. Projects that are not meeting the stated objectives should include an explanation and action plan for ensuring that performance objectives are met.

IMPORTANT*:* TSO recognizes that telecommunications cost baseline was never developed and established for some projects that were undertaken prior to the USDA CPIC process. It is recommended that pro-rated costs be developed and submitted for such projects.

EVALUATE PHASE ACTIVITIES

The Evaluate Phase activities include Post Implementation Reviews (PIR) to compare actual results to planned outcome and lessons learned.

- The PIRs include an assessment of telecommunications costs, benefits, performance, documentation, and customer satisfaction. Work results should be documented to serve as historical information for new projects.
- Lessons learned should document information such as cost and performance variances, explanations for variances, corrective actions and reasoning behind the corrective actions chosen. Lessons learned should also serve as historical information for new projects.

STEADY STATE PHASE ACTIVITIES

The activities conducted in the Steady State Phase are similar to the Evaluate Phase activities. The focus of the Steady State Phase activities is on the continued effectiveness of the telecommunications infrastructure. The business case submissions in this phase should provide information on the cost of continued maintenance and operations, assessment of new technologies and opportunities, and replacement of the current telecommunications technology. In some cases, the replacement may be required due to expiration of the current contract. Depending on the dollar amount and project requirements, a telecommunications plan may be required. For detailed instructions to create a telecommunications plan, please click here.

GLOSSARY OF TELECOMMUNICATIONS TERMS

Best Practices—Processes, practices, or systems used by public and private organizations that perform exceptionally well and are widely recognized as improving an organization's performance and efficiency in specific areas. Successfully identifying and applying best practices can reduce business expenses and improve an organization's efficiency.

Bridge—A network interconnectivity device that selectively determines the appropriate segment to which it should pass a signal. Through address filtering, bridges can divide busy networks into segments and reduce network traffic. (Or) Services provided by a carrier to connect three or more audio or video conferencing systems so they can all communicate.

Cost Benefit Analysis—A technique used to compare the various costs associated with an investment or project with the benefits it proposes to return. It should address both tangible and intangible benefits and use net present value figures.

Effectiveness—An assessment of the qualitative level of achievement of program goals and the intended results, as defined in strategic or other plans or documentation or in legislation.

Metropolitan Area Network—A data network covering an area larger than a local area network (LAN), but less than a wide area network (WAN). A metropolitan area network (MAN) typically interconnects two or more LANs. MANs may operate at a higher speed than LANs, may cross-administrative boundaries, and may use multiple access methods.

Performance Measures/Performance Measurement—The process of developing measurable indicators that can be systematically tracked to assess progress made in achieving predetermined performance goals and to benchmark an organization's performance against that of other organizations.

Post-Implementation Review—An review of an investment or project that compares the actual cost, schedule, performance, and other results achieved after an investment or project has been completed and is fully operational against the conditions that existed prior to the implementation of the investment or project, as indicated by baseline cost, schedule, and performance data, and against the planned cost, schedule, and performance goals established for the investment or project. A post implementation review can provide valuable "lessons learned" that can be applied to future investments or projects.

Private Branch Exchange (PBX)—a private telephone switching system usually located on a customer's premises with an attendant console. It may use traditional analog, ISDN, or data telecommunications protocols.

Router—An intelligent Internet work connectivity device that uses logical and physical addressing to connect two or more logically separate networks. Routers use algorithms to determine the best path by which to send a packet.

Security Analysis—A formal analysis conducted by the agency Information Systems Security Program Manager (ISSPM) or designee for the purpose of determining the importance of the information, assessing risks, formulating mitigation strategies, and other measures needed to safeguard the system/application.

Software—The detailed instructions to operate a computer or other type of equipment or hardware. The term was created to differentiate instructions (i.e., the program) from the hardware.

Telecommunications—For purposes of this questionnaire, telecommunications is the full range of voice, data, and video services and equipment, whether stand alone or connected, including Internet, intranet, and extranet services and equipment as well as wireless services and equipment (e.g., cellular and pager), toll-free network services, and calling card services. Also included are services that use multiple technologies, such as net conferencing with audio conferencing to facilitate group communications.

Telecommunications Equipment—Devices such as routers, switches, private branch exchanges (PBXs), cellular telephones, and video devices used in the transmission of voice or data.

Telecommunications Service—Any service provided by a telecommunications carrier. A specific set of user-information transfer capabilities provided to a group of users by a telecommunications system. The telecommunications service user is responsible for the information content of the message.

Video—An electrical signal containing timing (synchronization), luminance (intensity), and often chrominance (color) information that, when displayed on an appropriate device, gives a visual image. Video is very bandwidth intensive and requires specialized transmission equipment to transport true images from one type of media (e.g., television) to another (e.g., computers). Non-compatible video systems can be linked via bridge services offered by carriers.

Wide Area Network (WAN)—A network typically extending a local area network (LAN) or metropolitan area network (MAN) over telephone common carrier lines to link to other LANs or MANS. A WAN typically uses common-carrier leased lines, for example, from an analog phone line to a T-1 line. The jump between a LAN or MAN and a WAN can be made through a device called a bridge or a router.

Wireless—Wireless communication is anything that support communications between mobile, portable or fixed facilities through use of the electromagnetic spectrum. Examples are: AM and FM broadcasting, UHF and VHF television, satellite, microwave, land mobile radio, citizen's band, paging, cellular telephone, wireless LANs, wireless telephone PBXs and Personal Communications Services (PCS).

TELECOMMUNICATIONS COST ESTIMATING CHECK LISTS

The following section introduces checklists of telecommunications cost elements that project team members may want to include in budget plans.

The Cost Checklist for Telecommunications Labor includes recommended tasks that have telecommunications labor costs and are tied to evaluation criteria. It is important to consider what labor costs are likely to occur throughout the entire system development lifecycle and develop high-level estimates based on the general scope of the anticipated tasks. During the Pre-Select Phase, it is not necessary to go into a great level of detail calculating full-time-equivalent (FTE) hours, however.

Staffing costs make up a significant percentage of overall project costs because they are often recurring for key personnel throughout the life of the project. Conceptual checklists of personnel who may charge against a project include general administrative support staff responsible for tracking documentation, technical specialists knowledgeable about specific disciplines of telecommunications engineering, and managers at various levels of oversight. This list does not constitute an entire index of required personnel. It is intended to help CPIC authors think about multiple levels of staffing during various phases of a project. Personnel may include USDA internal staff, contractors, consultants, service providers, or a combination of each.

Beginning in the Pre-Select Phase, project costs should be captured in Universal Budget Object Class Codes that have been established by OMB for this purpose. Organizing costs according to this classification early in a project allows Project Managers to use a common frame of reference that is consistent throughout the entire project when discussing budgetary issues with team members and the E-Board. An agency's Chief Financial Officer, Comptroller, or Procurement Specialist should be able to help project managers organize costs according to the correct Budget Object Class Codes.

Cost Checklist for Telecommunications Labor

Cost Checklist for Telecommunications Labor Based on Fiscal Year 2002 Approved Evaluation Criteria		
Tasks	**Components**	**Personnel**
Agency Telecommunications Plan	Planning	Agency head, agency sponsor, project sponsor or functional manager, IT manager, system analyst, capital planning analyst, budget analyst, quality assurance manager, configuration management specialist, administrative
	Design	Project manager, IT manager, system analyst, network architecture engineer manager, traffic modeling engineer, systems integration engineer, test engineer, quality assurance manager, configuration management specialist
	Acquisition	Contracting specialist, project manager, IT manager, capital planning analyst,
	Installation	Project manager, on-site technicians, integration engineer, test engineer, administrative, logistics (inventory tracking, handling shipping), training, administrative
	Operations and Maintenance	Functional manager, training manager, help desk logistics (maintenance, repairs), technical engineering, support, administrative, quality assurance manager, configuration management specialist
Assessments, Evaluations,	Gap Analysis	Project sponsor or functional manager, project manager, IT manager, system analyst, network architecture engineer

Estimates		
	Rough order of magnitude lifecycle cost	Project sponsor or functional manager, project manager, IT manager, system analyst, network architecture engineer
	Telecommunications infrastructure analysis	Project manager, IT manager, system analyst, network architecture engineer, traffic modeling engineer, systems integration engineer, test engineer
	Cost Estimate	Project manager, IT manager, system analyst, network architecture engineer, traffic modeling engineer, systems integration engineer, test engineer
	Systems/service performance goals/measures	Project manager, IT manager, system analyst, network architecture engineer, traffic modeling engineer, systems integration engineer, test engineer, quality assurance manager, configuration management specialist
Reviews	Cost Estimate	Agency head, agency sponsor, project sponsor or functional manager, project manager, IT manager, system analyst, capital planning analyst, budget analyst, administrative
	Telecommunications infrastructure post-implementation	Project sponsor or functional manager, project manager, IT manager, system analyst, network architecture engineer, quality assurance manager, configuration management specialist
	Performance Goals/Measures	Project sponsor or functional manager, project manager, IT manager, system analyst, network architecture engineer, quality assurance manager, configuration management specialist
	Project Status	Project sponsor or functional manager, project manager, IT manager, system analyst, network architecture engineer

The Cost Checklist for Telecommunications Labor provides a checklist of additional telecommunications components that may be useful in developing a rough order of magnitude lifecycle cost estimate for the Pre-Select Phase. Only high-dollar elements, significant volumes of lower cost elements, or recurring lease costs over a significant period of time should be considered during the Pre-Select Phase. This may not be an all-inclusive list of telecommunications costs; however, it is intended to provide CPIC authors with a quick reference list of frequently purchased equipment and services, and to remind project managers of frequently overlooked costs such as facilities and real estate.

Facilities

- Office space for project management office telecommunications team members
- Logistics including equipment staging, warehousing (spares), training, repairs
- Cost of new construction for implementation
- Cost of modifications for implementation
- Land mobile radio shelters.

Real Estate

Property for telecommunications facilities or infrastructure.

Network Design, Development, and Management Software Tools

- Requirements management

- Diagramming
- Design
- Traffic modeling
- Simulation
- Prototyping
- Optimization
- Network management
- Configuration management
- Quality assurance
- Help desk
- Inventory tracking.

Cost Checklist for Telecommunications Elements

Application Software

- Purchased COTS applications
- Periodic COTS license fees.

Hardware/Equipment (purchase and lease costs)

End user:

- Plain old telephone service (POTS) Handsets
- Secure phones
- Secure faxes
- Secure cellular telephones
- Fixed telephony
- Pay telephones
- Pagers
- Cellular telephones
- PCS telephones
- Satellite telephones
- Enhanced specialized mobile radios (Nextel)
- Land mobile radios
- Videoconferencing equipment
- Satellite dishes.

Hardware/Equipment (purchase & lease costs)

Network Infrastructure

- Web Servers
- Communications hardware (hubs, routers, bridges, switches, PBXs)

- Power protection devices (UPS, line conditioning equipment)
- Backup generators
- Network cabling
- Network interface cards
- Lab or test equipment (percentage of use dedicated to specific project)
- Operations support servers (e.g., billing, inventory tracking, maintenance)
- Microwave equipment
- Radio towers
- Repeaters
- Wiring.

Services

- Local voice, video and data transmission services (includes frame relay, voice over the Internet protocol (VoIP), digital subscriber line (DSL), integrated services digital network (ISDN), asynchronous transfer mode (ATM), etc.)
- Domestic long distance voice, video, and data transmission services
- International voice, video, and data transmission services
- Secure voice, video, and data transmission services
- Toll free number services
- Commercial wireless transmission services
- Microwave frequency management
- Land-mobile radio frequency management
- Automated attendant
- Voice mail
- Teleconferencing
- Videoconferencing
- Internet access
- Access for the disadvantaged
- Call center support
- Help desk support
- Redundancy
- Emergency response
- Recovery
- Repairs
- Capacity planning
- Cost estimating
- Cost management
- Records management (call detail records)
- Design

- Integration
- Installation
- Testing
- Optimization
- Training.

APPENDIX P—OMB REPORTING REQUIREMENTS

WorkLenz will produce the following OMB Reports:

- Exhibit 53
- Exhibit 300 for major investment s – full version
- Exhibit 300 for non-major and infrastructure investments – brief version

Exhibit 53 is a summary exhibit and it includes the following information for each of the agency's initiatives:

- Unique Project Identifier (UPI) code
- Project name
- Mode of Delivery (Line of Business)
- Mode of Delivery (Sub-function)
- Project costs for 3 years (previous, current, budget)
- Project costs divided by (DME and SS)
- % Financial and % Security
- Funding Sources for majors
- Homeland Security (yes or no answers)
- System C&A status
- Project management qualification status

The full Exhibit 300 is a summary of the project's business case and must be completed for each major investment. It is required to have the following attributes:

- Must have documents to support it.
- Must support the CPIC guide for the project's phase in capital planning
- Must be evaluated by OCIO and other USDA reviewers.
- Must be submitted to OMB for review.
- Must be reviewed and scored by OMB.
- Must be scored for 10 criteria and funded accordingly by OMB.

Each year, OMB updates the requirements for these exhibits. The USDA exhibits are typically due to OMB in September.

APPENDIX Q—QUARTERLY/MILESTONE CONTROL REVIEW CHECKLIST

During CPIC control reviews, the following critical areas should be addressed:

1. Status of the critical path:
   - σ Where is the investment on the critical path?
   - σ If it is behind schedule, by how much?
   - σ Is there a strong plan for recovery, and what steps are being taken to recover?

2. Milestone hit rate:
   - σ What is the total number of milestones planned vs. the total number actually met?
   - σ What is the milestone hit rate since the last control review or since the most recent E-Board review?

3. Deliverables hit rate:
   - σ What is the number of deliverables provided to date vs. the number planned?

4. Issues:
   - σ Have there been issues that had a major effect on the investment?
   - σ Are issues logged and evaluated, and resolutions documented?

5. Actual cost-to-date vs. estimated cost-to-date:
   - σ What is the total cost-to-date vs. the estimated cost-to-date?
   - σ Is Earned Value Management used to measure actual resources expended against planned resources expended and to estimate future performance of projects?
   - σ Are causes of cost variances tracked and addressed?

6. Actual resources vs. planned resources:
   - σ Are there more or fewer FTEs working vs. number of FTEs planned?
   - σ Has there been significant, unplanned turnover among the core team, Project Manager or Sponsor?

7. Have high-probability and high-impact risks been tracked and adequately addressed?

8. Has contractor reporting been adequate?
   - σ Does the contractor report by WBS?
     - Task progress
     - Deliverables
     - Planned activities
     - Expenditures
   - σ Are the reports assessed and action taken?

APPENDIX R—GLOSSARY OF TERMS AND ACRONYMS

GLOSSARY OF TERMS

Acquisition Plan	A document used to facilitate acquisition planning. θ It must address all the technical, business, management, and other considerations that will control the acquisition. θ It must identify those milestones at which decisions should be made. θ Specific content will vary, depending on the nature, circumstances, and stage of the acquisition. θ Plans for service contracts must describe the strategies for implementing performance-based contracting methods or provide rationale for not using such methods.
Actual Cost of Work Performed	The costs actually incurred and recorded in accomplishing the work performed within a given time period.
Architectural Alignment	Degree to which the IT initiative is compliant with USDA's information technology architecture.
Architecture	An integrated framework for evolving or maintaining existing technologies and acquiring new technologies to support the mission(s).
Benefit	Quantifiable or non-quantifiable advantage, profit, or gain.
Benefit-Cost Ratio	The Total Discounted Benefits of an investment divided by the Total Discounted Costs of the investment. If the value of the Benefit-Cost Ratio is less than one, the investment should not be continued.
Budget at Completion	The sum of all budgets established for the contract.
Budgeted Cost for Work Performed	The sum of the budgets for completed work packages and completed portions of open work packages, plus the applicable portion of the budgets for level of effort and apportioned effort.
Budgeted Cost of Work Scheduled	The sum of all WBS element budgets that are planned or scheduled for completion.
Business Case	Structured proposal for business improvement that functions as a decision package for organizational decision-makers. A business case includes an analysis of business process performance and associated needs or problems, proposed alternative solutions, assumptions, constraints, and risk-adjusted cost-benefit analysis (CBA).
Business Process	A collection of related, structured activities or chain of events that produce a specific service or product for a particular customer or group of customers.
Business Process Reengineering	A systematic, disciplined approach to improving business processes that critically examines, rethinks, and redesigns mission delivery processes.
Capital Asset	Tangible property, including durable goods, equipment, buildings, installations, and land.
Contract Budget Base	The total cost of all budgeted activities necessary to complete a task.

Control Phase	Capital planning phase that requires ongoing monitoring of information technology investments against schedules, budgets, and performance measures.
Cost-Benefit Analysis	An evaluation of the costs and benefits of alternative approaches to a proposed activity to determine the best alternative.
Cost Performance Index	Earned value divided by the actual cost incurred for an investment.
Cost Variance	Earned value minus the actual cost incurred for an investment.
Customer	Groups or individuals who have a business relationship with the organization; those who receive or use or are directly affected by the products and services of the organization.
Data Documentation	Compilation of materials including data dictionary, decomposition diagrams, and data models.
Description of Initiative	Brief overview of initiative of no more than 100 words to include: θ Short summary of proposed initiative θ Statement of the business functions or processes the initiative supports θ Brief summary of benefits resulting from the initiative (tangible or intangible).
Design Documentation	Document that includes system design diagrams.
Development, modernization, or enhancement costs	Cost for new investments, changes or modifications to existing systems that improve capability or performance, changes mandated by the Congress or agency leadership, personnel costs for project (investment) management, and direct support.
Discount Factor	The factor that translates expected benefits or costs in any given future year into present value terms. The discount factor is equal to $1/(1 + i)t$ where i is the interest rate and t is the number of years from the initiation date for the program or policy until the given future year.
Discount Rate	The interest rate used in calculating the present value of expected yearly benefits and costs.
Earned Value Management (EVM)	A management methodology for integrating scope, schedule, and resources, and for objectively measuring project performance and progress. Performance is measured by determining the budgeted cost of work performed (i.e. earned value) and comparing it to the actual cost of work performed (i.e. actual cost). Progress is measured by comparing the earned value to the planned value.
Estimate at Completion	The actual costs incurred, plus the estimated costs for completing the remaining work.
Estimate to Complete	The cost necessary to complete all tasks from the actual cost of work performed end date through the investment's conclusion.
Evaluate Phase	Capital planning phase that requires information technology investments to be reviewed once they are operational to determine whether the investments meet expectations.
Expected Outcome	Projected end result of the initiative (e.g., system(s) being replaced or improved customer service) that is directly linked with performance measures.
Feasibility Study	Preliminary research performed to determine the viability of the proposed initiative by performing an alternatives analysis, including market research and extensive interviews with subject matter

	experts. Also includes a proposed technical approach and preliminary cost, scope, and schedule data.
Financial System	An information system used for any of the following: θ Collecting, processing, maintaining, transmitting, or reporting data about financial events θ Supporting financial planning or budgeting activities θ Accumulating and reporting cost information θ Supporting the preparation of financial statements.
Functional Requirements	A description of system capabilities or functions required to execute a required process such as a communication link between several locations and generating specific reports.
Hardware/Equipment	Includes any equipment used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information (e.g., computers and modems); capital and non-capital purchases or leases.
Independent Verification and Validation	An independent review conducted by persons separate from the management and operation of the investment or system.
Inflation	The proportionate rate of change in the general price level, as opposed to the proportionate increase in a specific price. Inflation is usually measured by a broad-based price index, such as the implicit deflator for Gross Domestic Product or the Consumer Price Index.
Information System	A discrete set of information resources organized for the collection, processing, maintenance, transmission, and dissemination of information in accordance with defined procedures, whether automated or manual.
Information System Lifecycle	The duration of the system life typically organized into four phases: initiation, development, operation, and disposal.
Information Technology	Any equipment or interconnected system or subsystems or equipment used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information.
Infrastructure	The IT operating environment (e.g., hardware, software, and communications).
Lifecycle Benefits	The overall estimated benefits for a particular program alternative over the time period corresponding to the life of the program including: θ Cost/expense reduction (productivity and headcount), θ Other expense reductions (operational), θ Cost/expense avoidance, and θ Revenue-related savings.
Lifecycle Cost	The overall estimated cost for a particular program alternative over the time period corresponding to the life of the program, including direct and indirect initial costs plus any periodic or continuing costs of operation and maintenance.
Major Information System	An information system that requires special management attention because of its importance to an agency mission

	(mission critical); its high development, operating, or maintenance costs; or its significant role in the administration of agency programs, finances, property, or other resources. All mission critical systems are, therefore, major systems.
Management Reserve	The amount of the total allocated budget withheld for management control purposes rather than designated for the accomplishment of a specific task or set of tasks; not part of the performance measurement.
Net Present Value	The difference between the discounted present value of benefits and the discounted present value of costs. Also referred to as the discounted net.
Opportunity Costs	Cost of not investing in the initiative or cost of a forgone option.
Payback Period	The number of years it takes for the cumulative dollar value of the benefits to exceed the cumulative costs of an investment.
Performance Indicator	Description of: θ What is to be measured, including the metric to be used (e.g., conformance, efficiency, effectiveness, costs, reaction, or customer satisfaction) θ Scale (e.g., dollars, hours, etc.) θ Formula to be applied (e.g., percent of "a" compared to "b," mean time between failures, annual costs of maintenance, etc.) θ Conditions under which the measurement will be taken (e.g., taken after system is operational for more than 12 hours, adjusted for constant dollars, etc.)
Performance Measurement Baseline	The time-phased budget plan against which investment performance is measured.
Performance Measures	Method used to determine the success of an initiative by assessing the investment contribution to predetermined strategic goals. Measures are quantitative (e.g., staff-hours saved, dollars saved, reduction in errors, etc.) or qualitative (e.g., quality of life, customer satisfaction, etc.).
Post-Implementation Review	Evaluation of the information technology investment after it has been fully implemented or terminated to determine whether the targeted outcome (e.g., performance measures) of the investment has been achieved.
Pre-Select Phase	Capital planning phase that provides a process to assess whether information technology investments support strategic and mission needs.
Project Plan	A document that describes the technical and management approach to carrying out a defined scope of work, including the project organization, resources, methods, and procedures and the project schedule.
Return	The difference between the value of the benefits and the costs of an investment. In a cost-benefit analysis it is computed by subtracting the Total Discounted Costs from the Total Discounted Benefits, and is called the Total Discounted Net.
Return on Investment	Calculated by dividing the Total Discounted Net by the Total Discounted Costs. To express it as a percentage, multiply by 100. It

	can also be expressed as (Total Discounted Benefits minus Total Discounted Costs) divided by Total Discounted Costs.
Risk	A combination of the probability that a threat will occur, the probability that a threat occurrence will result in an adverse impact, and the severity of the resulting impact.
Risk Assessment and Management Plan	A description of potential cost, schedule, and performance risks, and impact of the proposed system to the infrastructure. Includes a sensitivity analysis to articulate the effect different outcomes might have on diminishing or exacerbating risk. Provides an approach to managing all potential risks.
Risk Management	The process concerned with identifying, measuring, controlling, and minimizing risk.
Schedule Variance	Earned value minus the planned budget for the completed work.
Security	Measures and controls that ensure the confidentiality, integrity, availability, and accountability of the information processes stored by a computer.
Security Plan	Description of system security considerations such as access, physical or architectural modifications, and adherence to Federal and USDA security requirements.
Select Phase	Capital planning phase used to identify all new, ongoing, and operational investments for inclusion into the information technology portfolio.
Sensitivity Analysis	An analysis of how sensitive outcomes are to changes in assumptions. Assumptions about the dominant cost or benefits elements and the areas of greatest uncertainty deserve the most attention.
Software	Any software, including firmware, specifically designed to make use of and extend the capabilities of hardware/equipment.
Steady-State costs	Maintenance and operation costs at current capability and performance level including costs for personnel, maintenance of existing information systems, corrective software maintenance, voice and data communications maintenance, and replacement of broken IT equipment.
Steady-State Phase	Capital planning phase that provides the means to assess mature information technology investments to ensure they continue to support mission, cost, and technology requirements.
Sunk Cost	A cost incurred in the past that will not be affected by any present or future decisions. Sunk costs should be ignored in determining whether a new investment is worthwhile.
Technical Requirements	Description of hardware, software, and communications requirements associated with the initiative.
Variance at Completion	The difference between the total budget assigned to a contract, WBS element, organizational entity, or cost account and the estimate at completion; represents the amount of expected overrun or under run.

AB	Annual Benefit
AC	Annual Cost
ACWP	Actual Cost of Work Performed
AS	Agency Sponsor
BAC	Budget at Completion
BCR	Benefit-Cost Ratio
BCWP	Budgeted Cost for Work Performed
BCWS	Budgeted Cost of Work Scheduled
BPR	Business Process Reengineering
CBA	Cost-Benefit Analysis
CBB	Contract Budget Base
CCA	Clinger-Cohen Act
CFO	Chief Financial Officer
CIO	Chief Information Officer
COTS	Commercial-off-the-shelf
CPI	Cost Performance Index
CPIC	Capital Planning and Investment Control
CSBR	Cost, Schedule, Benefit, and Risk
CV	Cost Variance
DB	Discount Benefit
DC	Discount Cost
DF	Discount Factor
DME	Development/modernization/enhancement
EAC	Estimate at Completion
EBT	Electronic Benefit Transfer
E-Board	Executive Information Technology Investment Review Board
ETC	Estimate to Complete
EVM	Earned value management
FAA	Federal Aviation Administration
FASA	Federal Acquisition Streamlining Act
FM	Functional Manager
FTEs	Full-Time Equivalents
FY	Fiscal Year
GAO	General Accounting Office
GISRA	Government Information Security Act of 2000
GPEA	Government Paperwork Elimination Act of 1998
GPRA	Government Performance and Results Act
GSA	General Services Administration
GWACS	Government-wide Agency Contracts
IDS	Intrusion Detection System
IOC	Initial Operational Capability

IPT	Integrated Project Team
IRM	Information Resource Management
ISSPM	Information System Security Program Manager
ISTA	Information System Technology Architecture
IT	Information Technology
IV&V	Independent Verification and Validation
MB	Megabyte
MNS	Mission Needs Statement
MR	Management Reserve
NIST	National Institute of Standards and Technology
NPV	Net Present Value
O&M	Operations and Maintenance
OBPA	Office of Budget and Program Analysis
OCFO	Office of the Chief Financial Officer
OCIO	Office of the Chief Information Officer
OMB	Office of Management and Budget
OPPM	Office of Procurement and Property Management
PIR	Post-Implementation Review
PMB	Performance Measurement Baseline
PRA	Paperwork Reduction Act
RFP	Request for Proposals
ROI	Return on Investment
SPI	Schedule Performance Index
SS	Steady-state funding
SV	Schedule Variance
SME	Subject Matter Expert
USDA	United States Department of Agriculture
VAC	Variance at Completion
VPN	Virtual Private Network
WBS	Work Breakdown Structure

APPENDIX S—REFERENCES

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