



# IT Capital Planning & Investment Control Guide



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## **IT Capital Planning and Investment Control Guide Overview**

This version of the General Services Administration's (GSA) Information Technology (IT) Capital Planning and Investment Control Guide (Guide) includes:

- ❑ Detailed explanation of each of the phases of the IT Capital Planning and Investment Control process;
- ❑ New guidance on how the IT Capital Planning and Investment Control process is linked with other GSA planning processes;
- ❑ Clearly defined IT Governance Structure, as well as requirements for completing each phase, and moving towards the next phase;
- ❑ Additional information on the May 2002 Office of Management and Budget (OMB) Exhibit 300 template and guidance; and
- ❑ Other updates based on governmentwide guidelines and best practices from both the government and the private sector.

The purpose of this Guide is to provide a central source of IT capital planning information. This Guide provides guidance and templates that may be used to assist in the completion of specific IT Capital Planning and Investment Control documentation, and to assist project managers (PMs) in executing and monitoring their projects more closely.

Chapters 1 and 2 provide an overview of IT Capital Planning and Investment Control and related processes and the IT Governance Structure.

Chapters 3, 4, and 5 provide more detailed guidance, methodologies, worksheets, timelines for each phase, and required documentation for each phase. This guidance is aimed at the PM and others responsible for IT projects.

Appendix A provides a listing of related IT Capital Planning and Investment Control terms and definitions.

Appendix B provides a risk assessment and reporting worksheets for use during the select and control phases to identify, report, and monitor risks.

Appendix C provides a sample Monthly Summary Project Control Report.

Appendix D includes a sample security document detailing life cycle security costs for an initiative.

Appendix E includes a sample Information Technology Resources Board Charter.

GSA uses the Information Technology Investment Portfolio System (I-TIPS) as a tool to document the selection, control, and evaluation of IT projects. Although I-TIPS provides a web accessible method of documenting and reporting IT

projects, other tools may be used with the process. The I-TIPS User Guide is provided for GSA users and others who use I-TIPS to perform IT Capital Planning and Investment Control on the Office of the CIO Home Page at:

<http://www.gsa.gov/gsacio>

Throughout this Guide, there will be mention of the I-TIPS Resource Library where most of the IT Capital Planning and Investment Control documentation resides. To alert the reader when documentation or templates should be included in the Resource Library, the following icon will appear:



Additionally, specific tables of information that must be included in the Exhibit 300 will be highlighted with the following icon:



## Chapter One

### ***I. The GSA Information Technology Capital Planning and Investment Control Process***

#### Introduction

Over the past few years, the government has seen a legislative revolution aimed at improving mission performance through more effective strategic, financial, and acquisition management. One significant piece of legislation is the Clinger-Cohen Act of 1996, which seeks to improve mission performance by requiring agencies to clearly define and implement an IT Capital Planning and Investment Control process for selecting, controlling, and assessing IT investments. The Clinger-Cohen Act has introduced a new level of rigor as to how agencies approach the selection and management of IT initiatives, and has forced agencies to rethink how they do business.

A well crafted IT Capital Planning and Investment Control process helps ensure that the GSA will achieve its mission and goals, and comply with appropriate laws and regulations. Additionally, it ensures that the IT investments made by GSA are based on objective criteria and support the mission and goals, rather than drive the business.

#### Legislation

The enactment of new legislation and regulations has forced management to establish accountability, reduce spending, eliminate wasteful management, and maximize the value of IT investments. Agencies are directed to incorporate thorough planning, risk management, full funding, portfolio analysis, and cost effective life cycle management into their IT Capital Planning and Investment Control process and IT investments. The legislation encourages agencies to integrate the IT Capital Planning and Investment Control process with the processes for making budget, financial, and program management decisions. This legislation includes the:

- ❑ Chief Financial Officers Act of 1990;
- ❑ Clinger Cohen Act of 1996;
- ❑ Federal Acquisition Streamlining Act of 1994;
- ❑ Federal Managers' Financial Integrity Act of 1982;
- ❑ Government Information Security Reform Act;
- ❑ Government Paperwork Elimination Act of 1998;
- ❑ Government Performance and Results Act of 1993;

- ❑ Paperwork Reduction Act of 1995;
- ❑ Executive Order 13011;
- ❑ OMB Circular A-130;
- ❑ OMB Circular A-11; and
- ❑ OMB Circular A-109.

A brief description of each of the pieces of legislation is included in Table 1.

### IT Capital Planning and Investment Control Legislation

Legislation and Regulations	Description
<b>Chief Financial Officer's (CFO) Act of 1990</b>	<i>The Chief Financial Officer Act of 1990 emphasizes improved financial management through designation of a CFO in each executive department, and through advocating the overarching philosophy of a systems-oriented approach to financial management.</i>
<b>Clinger-Cohen Act (CCA) of 1996</b>	<i>The Clinger Cohen Act of 1996 was enacted to address many of the problems related to Federal IT management. The purpose of the CCA is to improve the productivity, efficiency, and effectiveness of Federal programs through improved acquisition, use, and disposal of IT resources.</i>
<b>Federal Acquisition Streamlining Act (FASA) of 1994</b>	<i>The Federal Acquisition Streamlining Act of 1994 requires agencies to define cost, schedule, and performance goals for Federal acquisition projects, and to monitor these projects to ensure that they remain within prescribed tolerances. If a project falls out of tolerance (failure to meet 90 percent of cost, schedule, or performance goals), FASA gives the Agency head the authority to review, and if necessary, terminate the project.</i>
<b>Federal Managers' Financial Integrity Act (FMFIA) of 1982</b>	<i>The Federal Managers' Financial Integrity Act of 1982 establishes a framework for continual assessment of an Agency's processes for internal accounting and administrative control.</i>
<b>Government Information Security Reform Act (GISRA)</b>	<i>The Government Information Security Reform Act focuses on the project management, implementation, and evaluation of systems security. It requires Federal agencies to assess the information security control techniques of their systems. Specifically, agencies must support the cost-effective security of Federal information systems by promoting security as an integral component of each Agency's business operations.</i>
<b>Government Paperwork Elimination Act (GPEA) of 1998</b>	<i>The Government Paperwork Elimination Act of 1998 develops procedures for the use and acceptance of electronic signatures by executive agencies. Additionally, GPEA develops procedures to permit private employers to store and file forms electronically with executive agencies.</i>



Legislation and Regulations	Description
<b>Government Performance and Results Act (GPRA) of 1993</b>	<i>The Government Performance and Results Act of 1993 holds Federal agencies accountable for achieving program results and requires them to clarify their missions, set program goals, and measure (and report) performance related to meeting those goals.</i>
<b>Paperwork Reduction Act (PRA) of 1995</b>	<i>The Paperwork Reduction Act of 1995 requires an ongoing process to ensure IT operations and decisions are integrated into organizational planning, budget, financial management, human resources management, and program decisions.</i>
<b>Executive Order 13011: Federal Information Technology</b>	<i>Executive Order 13011 highlights the need for executive agencies to significantly improve the management of their information systems, including the acquisition of IT, by implementing the relevant provisions of the CCA, GPRA, and PRA. It directs agencies to refocus their IT management to directly support their strategic missions, implement an investment review process that drives budget formulation and execution for information systems, and rethink and restructure the way they perform their functions before investing in IT to support that work.</i>
<b>OMB Circular A-11 – Preparing and Submitting Budget Estimates</b>	<i>OMB Circular A-11 instructs agencies on the preparation of budget submissions.</i>
<b>OMB Circular A-109 – Major Systems Acquisitions</b>	<i>OMB Circular A-109 establishes policies for acquiring major systems. Major systems are defined as those programs that are critical to fulfilling an Agency mission, entail the allocation of relatively large resources, and warrant special management attention.</i>
<b>OMB Circular A-130 – Management of Federal Information Resources</b>	<i>Circular A-130 establishes policies for the management of Federal information resources to include procedural and analytical guidelines for implementing specific aspects of the circular.</i>

**Table 1**

## IT Capital Planning and Investment Control Objectives

IT Capital Planning and Investment Control is a systematic approach to managing the risks and returns of IT investments for a given mission. It is an integrated management process that provides for the continuous selection, control, life cycle management, and evaluation of IT investments. It is focused on achieving a desired business outcome.

IT Capital Planning and Investment Control requires discipline, executive management involvement, accountability, and focus on risks and returns using quantifiable measures. IT Capital Planning and Investment Control defines what success looks like and how to measure it. It is crucial to the successful management of high dollar value<sup>1</sup>, high risk, and complex IT projects.

The objective of the IT Capital Planning and Investment Control process is to deliver substantial business benefit to GSA and return on investment (ROI) for the taxpayer. Some specific objectives are:

- ❑ Achieve GSA's mission and goals;
- ❑ Balance potential benefits against costs and risks;
- ❑ Align proposed system investments with strategic and tactical goals;
- ❑ Measure performance and net benefit for dollars invested;
- ❑ Provide continuous feedback to help senior managers make decisions on new or ongoing investments; and
- ❑ Ensure that taxpayer dollars are spent effectively.

These objectives are achieved through the three phases, select, control, and evaluate, of the IT Capital Planning and Investment Control process described in the next section.

## IT Capital Planning and Investment Control Process Phases

GSA established an IT Capital Planning and Investment Control process in 1996. This process is based on the fundamental phases of an IT investment management process as described by OMB, General Accounting Office (GAO), and Federal Chief Information Officers (CIO) Council guidance. The guidance identifies that investment control processes must include three essential phases; Select, Control and Evaluate, as depicted in Figure 1. Each phase is conducted as part of a continual interdependent management effort aimed at moving from a fixation on project-by-project focus to a bigger perspective on investment trends, directions, and outcomes.

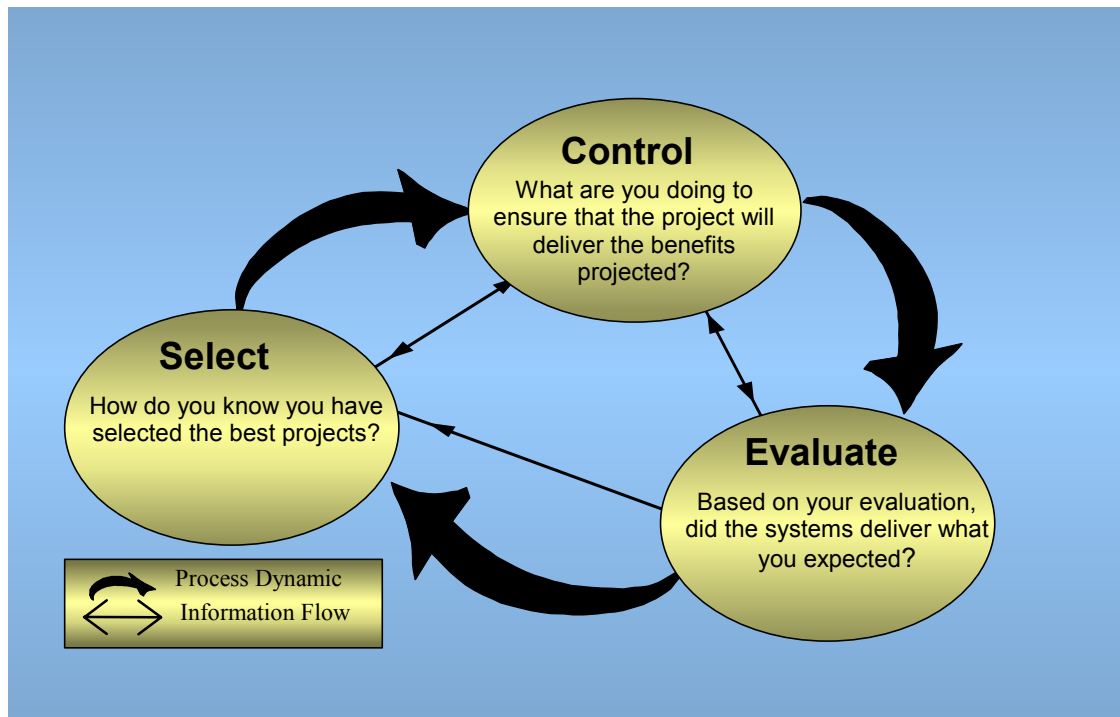
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<sup>1</sup> Generally, more than 1% of the GSA's total IT expenditures annually.

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**IT Capital Planning and Investment Control Process**

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**Figure 1**

An overview of each of these phases is included in the following sections.

**Select Phase**

The select phase requires the development of a business case for all proposed IT investments in accordance with the requirements included in OMB Circular A-11. During the select phase of each fiscal year, projects are classified as “Major” or “Small/Other” based on dollar thresholds and other criteria. All IT projects that meet the major project criteria described below are subject to the GSA IT Capital Planning and Investment Control process.

Major IT projects are investments that:

- ❑ Are estimated to cost more than \$10 million annually (\$500,000 for financial management mission area projects), or
- ❑ Are critical in the administration of Agency programs, finances, property, or other resources or have high internal visibility, or
- ❑ Have high visibility or priority outside of the Agency (e.g. supports the President’s Management Agenda, are E-Gov initiatives, or use e-business technologies), or
- ❑ Have development costs that exceed 25% of the overall annual total cost.

Projects that do not meet any of these criteria are classified as small or other projects.

Within the project categories above, there is a further categorization of the investments into steady state, mixed, and development. Steady state is the category of investments that have only operations and maintenance costs associated with them, and are not incurring development costs. The mixed category includes investments that have both maintenance and development/modernizations/enhancement costs. The development category includes investments that are new systems and have only development costs.

### **Control Phase**

The IT Capital Planning and Investment Control process includes the implementation of controls to ensure that project costs, schedule, performance goals and measures, benefits, and risks are monitored, managed, and mitigated. The objective of the control phase is to ensure the successful development, modernization, or enhancement of IT projects. Major IT projects that have been selected will be monitored and reported on throughout their life cycle as described in Chapter 4 of the Guide. During the control phase, portfolios should be monitored for cost reasonableness, schedule compliance, technical conformance, risk management, and benefits realization.

### **Evaluate Phase**

The evaluate phase compares the actual investment results against estimates to assess performance, and identifies areas where future decision-making can be improved. Post implementation reviews (PIRs) will be initiated three to six months after a new system becomes implemented. They are conducted to validate estimated and planned benefits and costs; ensure positive ROI; and to reassess the business case, technical compliance, and enterprise architecture (EA) compliance. Lessons learned from the review will be used to update IT Capital Planning and Investment Control process, EA, and IT security documents and processes, as needed. Chapter 5 of the Guide describes the PIR process and documentation required in more detail.

## IT Capital Planning and Investment Control and Other Management Processes

The IT Capital Planning and Investment Control process is linked to other Agency planning and management processes. Below is a summary of linkages between the GSA IT Capital Planning and Investment Control process and related management processes and events, listed in the sequence in which they normally occur during an annual cycle.

### **Strategic and Performance Planning**

GPRA requires all Federal agencies to develop strategic plans, develop annual performance plans that are tied to the Agency goals and budget allocation, and report the actual results against performance plans. GSA develops and maintains an Agencywide Strategic Plan that addresses Agency mission, goals and objectives, relationship of the goals and objectives to annual performance plans, and factors affecting achievement of business goals/objectives. The IT Capital Planning and Investment Control process links all IT investments to the strategic goals of the Agency. The business case for each IT investment must identify its linkage to the Agency's mission, goals and objectives, and address how it will enable and facilitate the achievement of the strategic goals and objectives. Investments that do not support a GSA goal or cannot be directly tied to a goal should be terminated.

A GSA Annual Performance Plan is developed to identify the major performance goals for the Agency. Each performance goal establishes a current baseline (a reference position) from which progress is measured consistent with the GSA strategic plan objectives. The plan includes a goal that measures the extent to which IT investments are maintained within 10% of their planned cost and schedule. The data to measure this performance is derived from the IT Capital Planning and Investment Control process. In effect, the Annual Performance Plan is the culmination of the results of the performance of GSA's capital investments as tied to the Strategic Plan.

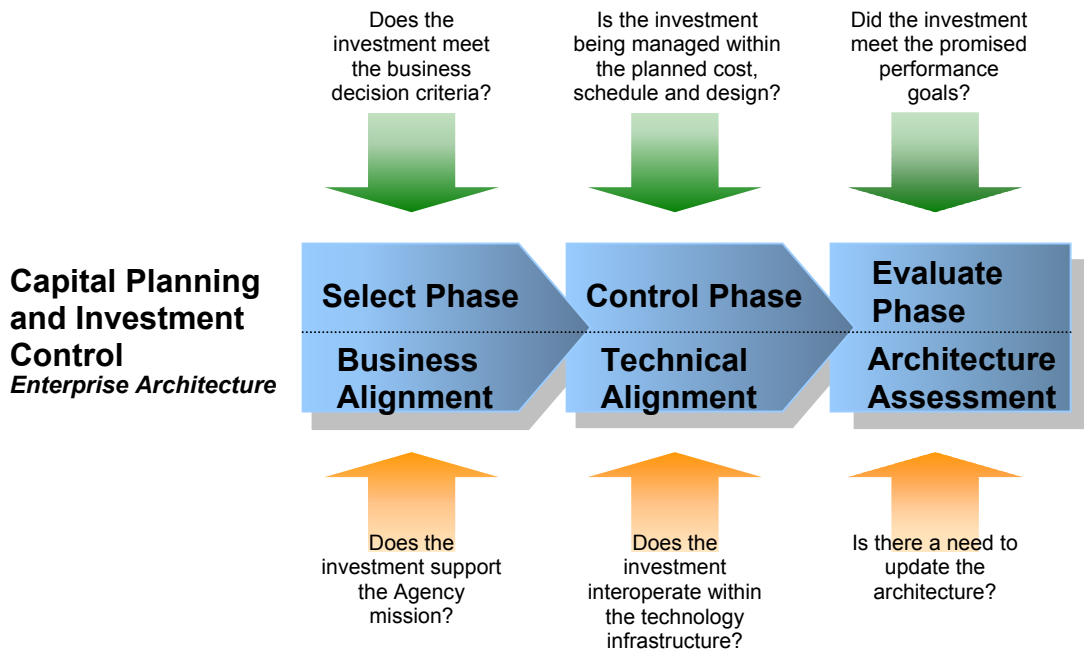
### **Enterprise Architecture**

Agencies are required to establish an integrated EA and develop an IT security program that is consistent with, and an integral part of GSA's EA. IT Investment Management, as illustrated in Figure 2, covers the three interrelated processes as required by Federal statutory requirements, regulations, and guidance for both IT Capital Planning and Investment Control process and EA.

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**IT Capital Planning and Investment Control/EA Alignment**


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**Figure 2**

GSA has developed a framework found within the GSA Enterprise Architecture Development, Management, and Use. An architecture framework is a logical structure for organizing complex information about an enterprise. This information includes the enterprise's business processes, participants, the hardware and software systems that support those processes and participants, and the rules and constraints under which the enterprise operates.

An architecture framework helps an enterprise organize and present aspects of its architecture in a way that is understandable by all participants in the enterprise and by those outside the enterprise with which they must interact.

The architecture can help the enterprise to:

- ❑ Analyze business processes;
- ❑ Ensure that automated systems optimally support the business processes;
- ❑ Acquire new systems;
- ❑ Streamline organizational structure and distribution of responsibilities across the enterprise;
- ❑ Facilitate IT Capital Planning and Investment Control; and
- ❑ Train employees in how the enterprise operates and how they fit into the enterprise.

The PM and Information Technology Resources Boards (ITRB) should review the EA framework and identify redundant information that exists between project information and the EA information. For example, the Federal Enterprise Architecture Framework (FEAF) requires a list of business goals and strategies, business plan (objectives and strategies), list of organizations important to the business, and workflow model (allocation of responsibilities). The IT Capital Planning and Investment Control process also requires similar information. If the existing IT Capital Planning and Investment Control information is insufficient for use by the EA, a process for capturing and incorporating the more robust EA information in I-TIPS without burdening PMs will be developed. EA is part of the business case criteria for the review and evaluation of investments through the IT Capital Planning and Investment Control process. The link between the IT Capital Planning and Investment Control process and the EA is described in more detail in Chapter 3.

### **IT Security**

IT security is an explicit part of the IT Capital Planning and Investment Control process. All IT investments must demonstrate that costs of appropriate IT security controls are explicitly incorporated into the life cycle planning of an overall system in a manner consistent with GISRA and OMB guidance for IT Capital Planning and Investment Control. Cost effective security of GSA information systems must be an integral component of business operations. IT security is part of the business case criteria for the review and evaluation of investments through the IT Capital Planning and Investment Control process.

### **Budget Formulation and Execution**

Annually, agencies are required to submit, in accordance with the requirements of OMB Circular A-11, IT investments as part of the Agency budget request. All IT investments are to be included in the Federal budget request whether they are existing projects and systems, incremental increases for existing projects and systems or new initiatives. During the budget process, the reasonableness of the cost estimates is examined and agencies are held accountable for meeting the cost goals. Alternative analyses are conducted for each IT investment. The selection of the best alternative is based on a Benefit Cost Analysis (BCA) that uses a systematic analysis of expected benefits and costs. Estimates of risk-adjusted costs and benefits show explicitly the performance, budget changes, and risks that result from undertaking the project.

GSA's IT Capital Planning and Investment Control process is closely aligned to the Agency's budget cycle processes. This includes reviews by the respective controllers of the IT related funding requests developed by the SSOs during the formal budget formulation process conducted by the controllers. All budget requests will be reviewed and prioritized based on projected budget requests. New projects are justified based on the need to fill a gap in the Agency's ability to meet strategic goals and objectives with the least life cycle costs of all the

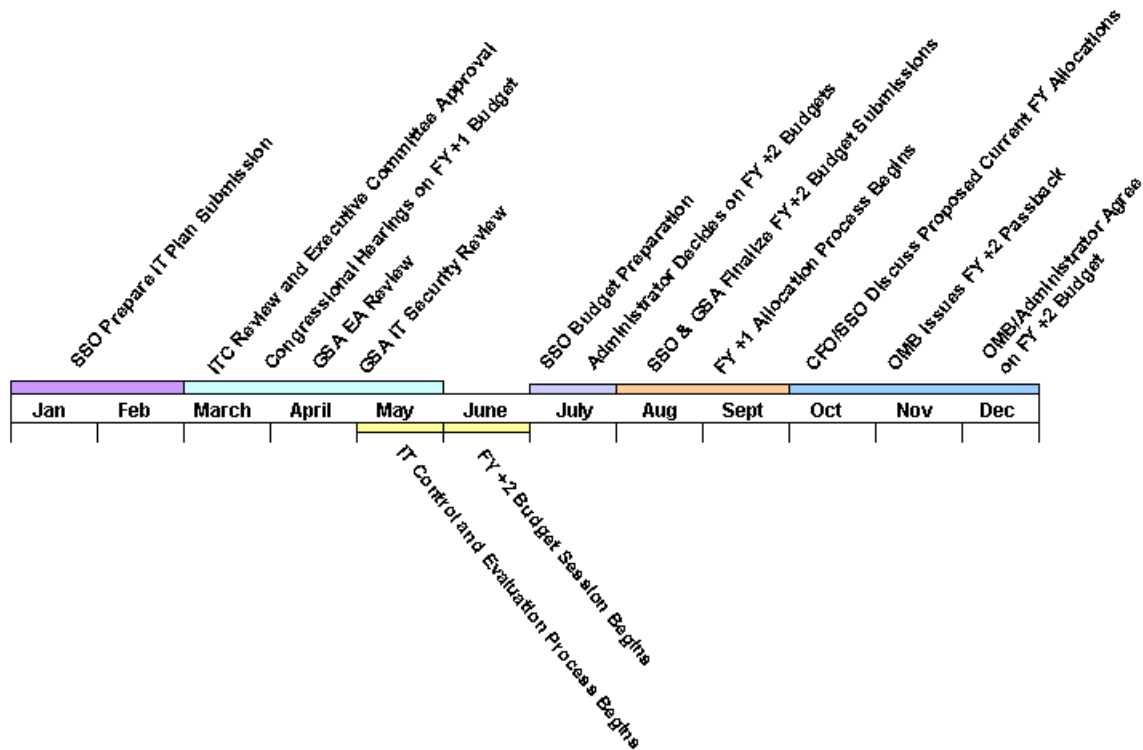
various possible solutions, and provide risk-adjusted cost and schedule goals and measurable performance benefits.

The budget estimates for each investment will be initially input into I-TIPS at the beginning of the planning cycle, normally in April of each year. These budget estimates must be updated when the final budget is ready for submission to OMB, normally in September. Once the OMB pass-back has been received and adjustments made, the budget estimates for investments must be updated again to reflect the amounts included in the President's Budget.

Once Agency budgets are approved through the Federal budget process, the funding for IT investments is finalized and provided to the program and project manager to execute. The budget for IT investments is executed throughout the life cycle of the project. Execution of the budget and the financial performance of the investment, as compared to the approved budget, is reviewed and evaluated throughout the control and evaluation phases of the IT Capital Planning and Investment Control process. GSA uses the I-TIPS system as a tool to assist in reporting on the investment. The budget estimates included in I-TIPS will be used to manage each IT investment. Figure 3 is a timeline that shows the times of various Agency budget events linked to or part of the GSA IT Capital Planning and Investment Control process.



## IT Capital Planning and Investment Control and Budget Milestones Timeline



**Figure 3**

Products and deliverables associated with each of the timeframes listed above are included in Table 2. The products and deliverables are listed in sequential order.

### IT Capital Planning and Investment Control and Budget process Deliverables

Time Period	Product/Deliverable
<b>January – February</b>	<p>SSOs prepare and submit to IPC draft IT Plan submissions including:</p> <ul style="list-style-type: none"> <li>— IT investment documentation;</li> <li>— IT performance measures;</li> <li>— IT information for OMB Circular A-11 Exhibits; and</li> <li>— IT strategic and operational plan documentation.</li> </ul> <p>SSO prepare detailed FY + 1 justifications.</p> <p>GSA submits FY + 1 President's Budget to Congress and Annual Accountability Report on actual performance goal achievement.</p>
<b>March – May</b>	<p>Agency CIO and SSOs finalize IT investment documentation and submit to ITC for review, and Executive Committee for approval.</p> <p>ITC selects IT investments to be funded for FY + 2 budget.</p> <p>SSOs finalize:</p> <ul style="list-style-type: none"> <li>— Performance goals and measures for selected investments; and</li> <li>— Remaining IT plan documentation.</li> </ul> <p>SSOs submit Budget GM&amp;A IT Technical Reviews.</p>
<b>May – June</b>	<p>SSOs, Agency CIO, and ITC conduct IT investment control/evaluation review as scheduled.</p> <p>CFO issues call for:</p> <ul style="list-style-type: none"> <li>— FY + 2 budget formulation;</li> <li>— Performance plans; and</li> <li>— GSA Strategic Plan updates.</li> </ul>
<b>July</b>	<p>Agency CIO finalizes new IT Plan to include IT performance goals and measures.</p> <p>SSOs submit budget summaries/issue papers to CFO.</p>
<b>August – September</b>	<p>CFO submits GSA FY + 2 Budget request to OMB (including OMB Circular A-11 Part 3 Exhibits) in early September.</p> <p>GSA Performance Plan is due to OMB.</p>



Time Period	Product/Deliverable
	<i>SSO Performance Plans are due to CFO.</i> <i>Agency CIO issues updated IT Strategic Plan.</i>
<b>October – December</b>	<i>CFO issues current FY (funding allocations if appropriations enacted).</i> <i>CFO issues internal call for FY + 2 congressional justification and for exhibits.</i> <i>CFO inputs data to OMB's systems and to OMB for other exhibits.</i> <i>Agency CIO issues call for new IT Plan to include:</i> <ul style="list-style-type: none"><li>— <i>New initiative information;</i></li><li>— <i>IT performance measure information; and</i></li><li>— <i>Exhibit information.</i></li></ul>

**Table 2**

The next chapter will discuss the IT Capital Planning and Investment Control Governance Structure and the roles and responsibilities for each of the various review boards.

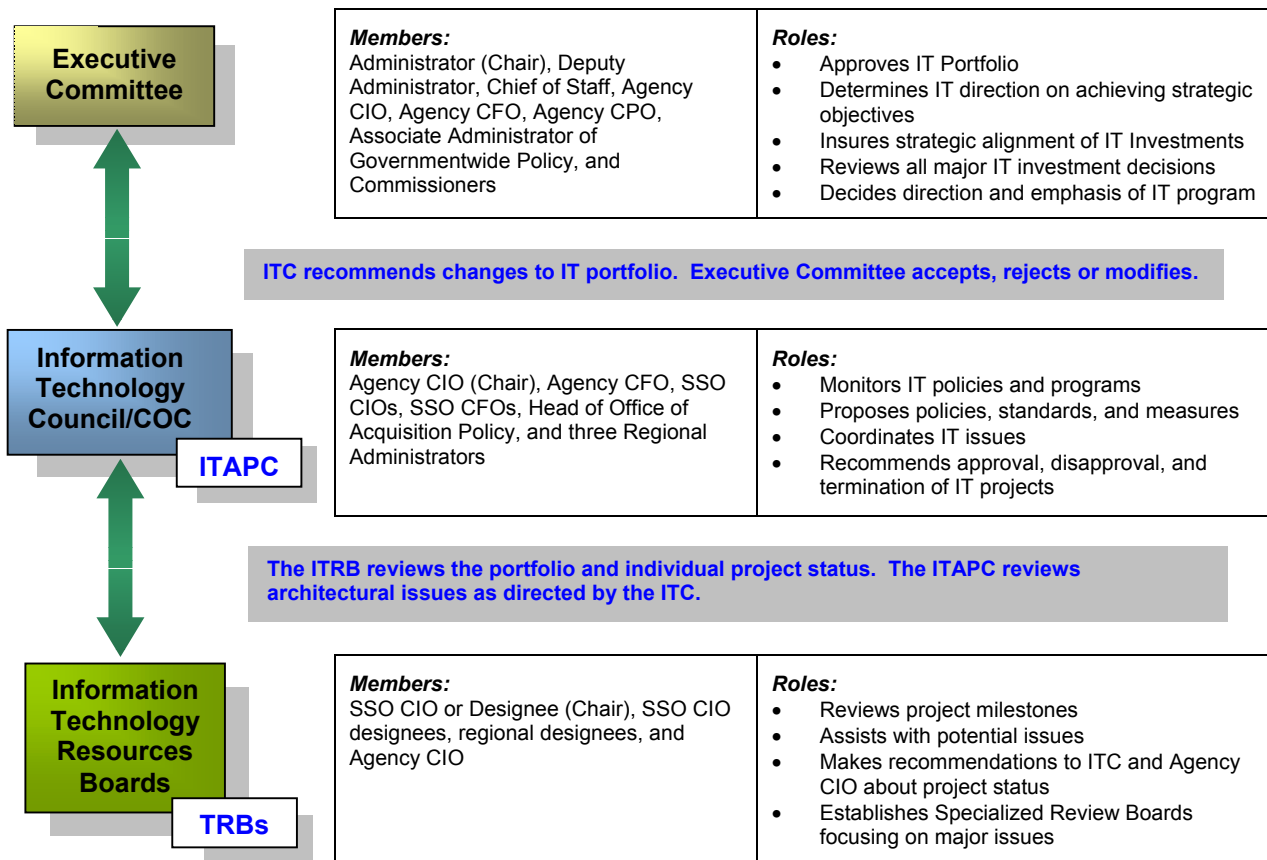
## Chapter Two

### II. IT Capital Planning and Investment Control Governance Structure

#### Overview

The GSA IT Capital Planning and Investment Control process has active technical and executive review and oversight through established committees, councils and boards. The various committees and roles are illustrated in Figure 4.

#### IT Governance Information Flow



**Figure 4**

The following sections detail the roles and responsibilities of each of these review boards.

## Executive Committee

The Executive Committee approves the IT strategy and IT Capital Plan, and acts on projects that significantly deviate from investment controls. Its membership includes the

- ❑ GSA Administrator (Chair);
- ❑ Deputy Administrator;
- ❑ GSA Chief of Staff;
- ❑ Commissioners of the Public Buildings Service (PBS), the Federal Supply Service (FSS), and the Federal Technology Service (FTS);
- ❑ Associate Administrator of the Office of Governmentwide Policy (OGP); and
- ❑ Heads of the Office of the CIO (OCIO), Office of the CFO (OCFO), and the Office of the Chief People Officer (CPO).

The Executive Committee reviews the IT portfolio and specific IT projects, as needed. The Executive Committee makes the decision for final approval of the investment portfolio. Special meetings may be held as required by the Chair.

## Information Technology Council

The Information Technology Council (ITC) proposes and monitors IT policies and programs ensuring their consistency throughout the Agency. Among its many functions, the ITC establishes the GSA IT Strategic Plan; assists the Agency CIO with advice and assistance; reviews and approves proposed policies, standards, performance measures, and benchmarks; monitors the implementation of policies, standards, and strategies; coordinates IT issues; and approves EA efforts and key IT security initiatives. A key role of the ITC is to review the management of IT investments for the Agency. The ITC provides comprehensive insight in identifying the spending and prioritization of IT investments and their appropriate compliance with legislation like GPEA. Members of the ITC are the CIOs of the various SSOs. The ITC meets monthly. Each quarter the ITC holds a joint meeting with the Council of Controllers (COC), made up of the SSO's CFOs, to review IT funding matters. The ITC and COC review the documentation prepared by the ITRB and provide recommendations. The documentation is then updated to incorporate ITC and COC recommendations prior to review by the Executive Committee.

## Information Technology Architecture Planning Committee

The Information Technology Architecture Planning Committee (ITAPC) assesses the current environment in specific technical areas identified by the ITC and makes recommendations for standards within the Agency's Enterprise

Infrastructure Operations. The ITAPC contains multiple subgroups, which are comprised of regional and multi-service representation. The ITAPC meets formally once a month prior to the ITC. ITAPC subcommittees may meet more frequently depending upon their task.

While there are many successes of the GSA's IT Governance program, as it exists today, the process is designed to strengthen it further. The goal is to ensure that project information contained in I-TIPS is always complete. GSA management reviews are designed to ensure that the information is presented in a form that is complete and adequate to make needed management decisions.

### Information Technology Resources Boards

The ITRB (or bodies that perform the functions of ITRBs) are established in each of the major Services. Each ITRB conducts assessments and business case reviews of IT investment portfolios for the organization they represent. ITRBs prioritize projects within their portfolios based on the business case, benefit cost analysis, and ROI. Special Review Boards (SRBs) may be initiated by an ITRB to focus on specific issues or problems within a particular project. For General Management and Administration (GM&A), an Information Technology Investment Board (ITIB) provides final approval of the GM&A portfolio after IT investments are prioritized by the GM&A ITRB.

The ITRBs have interlocking membership. The Agency CIO is a voting member on all ITRB boards, and one representative for the Services is a voting member on the GM&A ITRB on an annual rotating basis. Members of the GM&A ITRB determine which Service representative will participate in GM&A ITRB deliberations. For a body that performs the functions of an ITRB regardless of the name of that body, the Agency CIO is a voting member on all issues related to IT capital planning. All ITRBs are obligated to:

- ❑ Conduct business case reviews of the IT investment portfolios for the organization that they represent;
- ❑ Ensure that regulatory, statutory, and policy requirements are addressed and that projects continue to remain on a successful path;
- ❑ Review and assess select, control, and evaluation (post implementation reviews) for all major projects.
- ❑ Prioritize and select IT investments, ensuring success of IT projects, identifying best practices within the Agency, and assessing projects by business requirements and risk-adjusted ROI, to ensure that IT investments are made in business areas that have the highest functionalities and return;
- ❑ Provide capital planning information to the President's Management Council, General Accounting Office and the Office of Inspector General as requested; and

- ❑ Provide annual review of major projects with regard to the E-Government (E-Gov) business case required by Exhibit 300 of OMB Circular A-11.

Each ITRB must be chartered. The charter specifies the ITRB's purpose, mission, controlling officials, procedures, membership and any other topics that may be necessary. A sample charter is provided in Appendix E.

### Technical Review Boards

Technical Review Boards (TRB) conduct technical reviews to monitor and control SSO projects during the IT Capital Planning and Investment Control process. TRBs are established in each SSO. The TRBs are led by the SSO's CIO, and are tasked to ensure a project's success throughout its life cycle. The TRBs provide an integrated process for linking the IT Capital Planning and Investment Control process, EA, IT security, budget, and business. The Agency CIO is a voting member on all TRBs that address major programs and one representative from each of the Services, who is a subject matter expert, is a voting member on the GM&A TRBs. The TRB conducts technical assessments of the IT investment portfolio for the organization they represent. This includes at a minimum, reviews for enterprise architecture, IT security, and IT Capital Planning and Investment Control compliance.

### Office of the Chief Information Officer

The OCIO plays a key role ensuring that the IT Capital Planning and Investment Control process is carried out at GSA. The OCIO functions to:

- ❑ Ensure the development of IT investments support the GSA Strategic Plan and the missions, goals, strategies, and priorities of the Agency;
- ❑ Ensure Agency and Government-wide guidance and training are provided to assist SSOs in their implementation and documentation of the IT Capital Planning and Investment Control processes;
- ❑ Assist SSOs in carrying out the IT Capital Planning and Investment Control processes and conducting reviews of projects and processes;
- ❑ Prepare and update the IT Capital Planning and Investment Control Guide detailing guidelines and procedures for implementing IT capital planning;
- ❑ Appoint analysts from the OCIO to participate in SSO TRBs and assist each SSO in developing IT Capital Planning and Investment Control submissions and in monitoring and evaluating their projects;
- ❑ Provide staff support to the ITC, the IT Planning Committee, and participate in the CIO Council's Best Practices Committee;
- ❑ Assist each SSO in developing submissions to the IT Capital Plan;

- ❑ Review and analyze IT investment selection documentation, including coordination of ITC and Executive Committee Investment selection and control activities;
- ❑ Provide assistance and training to help SSOs complete and document IT Capital Planning and Investment Control and lifecycle management processes and analyses;
- ❑ Coordinate the development of OMB Circular A-11 Exhibit 53 (Agency Information Technology Investment Portfolio) and Part 3 (Planning, Budgeting, and Acquisition of Capital Assets) using the IT Capital Plan with the GSA Office of Budget;
- ❑ Ensure compliance with appropriate GSA orders and handbooks;
- ❑ Develop and publish IT plans, to include the GSA IT strategic, capital, and operational plans. Notify the SSOs and Regions when plans are published and make approved plans available electronically;
- ❑ Ensure that the IT Capital Planning and Investment Control process, EA, IT security, enterprise engineering and program management processes are properly synchronized and linked; and
- ❑ Appoint an IT capital planning analyst from the OCIO to assist each SSO in managing their projects, and keeping life cycle management and project status information up to date.

#### Office of the Chief Financial Officer

The CFO Act provides for the Agency CFO to oversee all financial management activities relating to the programs and operations of the Agency and to develop and maintain integrated Agency accounting and financial management systems, including financial reporting and internal controls. The OCFO plays an important role in the IT Capital Planning and Investment Control process. The OCFO functions to:

- ❑ Assist in the development of OMB Circular A-11 Exhibit 53 (Agency Information Technology Investment Portfolio) and Part 3 (Planning, Budgeting, and Acquisition of Capital Assets).
- ❑ Work with the OCIO to ensure that initial budgetary figures are consistent with the Agency budget submission.
- ❑ Ensure compliance with the CFO Act and FMFIA.

#### Service and Staff Offices

SSOs are responsible for the day-to-day execution of the IT Capital Planning and Investment Control process. Each SSO functions to:



- Ensure the appointment of TRB and ITRB to implement the IT Capital Planning and Investment Control process at the SSO level.
- Develop IT capital planning submissions in conformance with the GSA Strategic Plan, the SSO Performance Plan, the GSA IT Strategic Plan goals and objectives and the GSA IT Capital Planning and Investment Control Guide.
- Coordinate IT Capital Planning and Investment Control activities with the regions including:
  - Collecting input from regional offices on their IT requirements;
  - Providing feedback on final budgetary and management decisions pertaining to the regional IT Plan submissions;
  - Resolving differences with regions consistent with Agencywide policy;
  - Incorporating regional office requirements in the SSO IT capital planning submission, indicating where regional requirements are included; and
  - Providing copies of the IT Capital Plan and subsequent modifications to IT capital planning and investment control selection documentation to regional offices.
- Ensure accuracy of resource requests. Each SSO must consider the resources needed to support its IT activities. The SSO annual budget request must include the resources needed to support its IT projects consistent with the OMB Circular A-11 Exhibits 53 and 300 submissions, the IT investment selection process and the GSA IT Capital Plan.
- Develop IT performance goals and measures for its IT projects that support its business and mission and are consistent with the goals presented in the GSA and IT Strategic Plans and the SSO performance plans. Use performance measures to track expected project benefits.
- Manage IT projects and activities to ensure progress as scheduled and within the resources planned to realize expected benefits.
- Perform and document the requisite analyses to the life cycle phase of the project or acquisition and provide required life cycle, and acquisition management documentation to the OCIO, and the ITC upon request.
- Update IT capital planning selection documentation and project cost and schedule status information on all major IT projects.
- Submit IT Capital Planning and Investment Control documentation to the Agency CIO for review prior to presentation to the ITC and Executive Committee.

## IT Planning Committee

The SSO planning representative responsible for developing the SSO IT Capital Planning and Investment Control submission is a member of the IT Planning Committee. This committee, chaired by the Director of the IT Strategic and Capital Planning Division (IPC), ensures that the IT Plan accurately reflects the Agency's IT requirements. An initial meeting of the IT Planning Committee is held at the beginning of the planning year to discuss any new requirements levied upon the SSOs during the IT planning process. Additional meetings may be held throughout the fiscal year to clarify, answer questions, or to discuss issues regarding the planning process.

The next three chapters include a detailed discussion of each of the three phases of the IT Capital Planning and Investment Control Process and the documentation associated with each phase.

## Chapter Three

### ***III. The Select Phase***

#### Select Phase Overview

This chapter provides guidance to perform the initial planning and selection of IT investments. A major IT project starts once it is determined that an IT investment is needed. There are various reasons for making an IT investment. A new IT investment may be necessary when it is decided that IT should be used to meet a business need, or if an existing system must be upgraded and that upgrade constitutes a large expenditure.

#### Select Phase Investment Screening

SSOs should develop and implement internal IT Capital Planning and Investment Control procedures for selecting their IT portfolio and controlling and monitoring all their IT investments. All IT investments should be screened by the SSO TRB and ITRB prior to being submitted through the GSA IT Capital Planning and Investment Control process or included in SSO budget requests. The SSO TRBs assess the portfolio of investments, including enterprise architecture compliance and IT security compliance, and present the prioritized portfolio to the SSO ITRB for action. All recommended IT investments are required to be included in the I-TIPS tool used by GSA and other Federal agencies. Before including any project in budget requests or submitting it to the GSA IT investment selection phase, SSOs should ensure their projects:

- ❑ Support GSA core mission and business functions;
- ❑ Have completed project planning phase analyses listed in Table 3;
- ❑ Have a positive ROI;
- ❑ Have a project sponsor;
- ❑ Comply with GSA's IT EA and security requirements and guidelines;
- ❑ Have undergone an e-government strategy review as defined in OMB Circular A-11; and
- ❑ Have identified benefits, performance goals and measures, and risk management strategies.

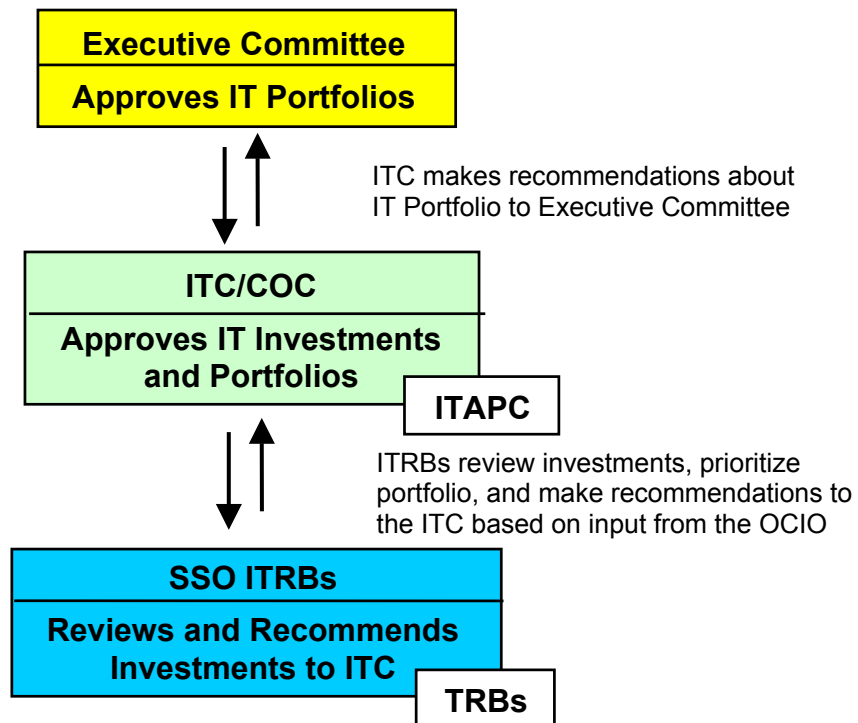
#### **Selection Process**

As part of their annual GSA IT Capital Plan submission, SSOs, with the assistance of the OCIO, complete and submit, to the ITC, appropriate IT Capital Planning and Investment Control documentation for each major IT investment. The IT Capital Planning and Investment Control outputs required for the selection process are summarized in Table 3. During the select phase, the TRB submit all

of the planning documentation to the ITRB for review. The ITRB makes objective recommendations, based on planning documentation, to the ITC and OCIO about funding, investment status, and portfolio prioritization. During this time, the OCIO assists SSOs to review information provided by the SSOs, and prepare an Agency-wide documentation package that includes summary, project risk, priority, and background documentation for the ITC. The portfolio will be submitted to the ITC, with recommendations from the ITRB.

Based on the planning documentation, the ITC coordinates all IT issues and recommends approval, disapproval, termination, and/or prioritization decisions for IT investments. The ITC submits the portfolio to the Executive Committee for approval, along with their recommendations. The Executive Committee only reviews individual investments when prompted by the ITC. The flow of information is summarized in Select Phase Information Flow Figure 5.

#### Select Phase Information Flow



**Figure 5**

Major projects are put through the entire investment selection process and submitted to the ITC, and Executive Committee for review as needed. For projects not meeting the screening criteria for major projects, SSOs must complete summary project description and life-cycle cost estimates. Information about non-major projects is presented to the ITC and Executive Committee in a summarized and consolidated manner, not screened individually.

## Select Phase Outputs

Table 3 lists the IT Capital Planning and Investment Control select phase outputs and a brief description of the purposes of each.

**Investment Planning Outputs**

<b>Investment Planning Output</b>	<b>Purpose</b>
<b><i>Preliminary Market Research/Gap Analyses</i></b>	<i>Used to seek preliminary information on alternatives available in the public or private sector and is completed before the development of any formal requirements documentation.</i>
<b><i>Functional Requirements Analyses</i></b>	<i>Involves determining the needs that the IT investment must meet to fill the performance gap in their programs.</i>
<b><i>Alternative Analyses</i></b>	<i>Identifies various solutions that satisfy the functional needs and achieve the same results.</i>
<b><i>Benefit-Cost/Cost Effectiveness Analyses</i></b>	<i>Assesses and evaluates the benefits and costs of the various alternatives approaches to determine whether an investment or project should be funded.</i>
<b><i>Risk Management Plan</i></b>	<i>Includes a comprehensive list of risk sources, as well as risk trigger points, and a mitigation plan.</i>
<b><i>IT Performance Goals and Measures</i></b>	<i>Establishes performance goals and measures that allow the PM to track the initiative's progress towards achieving its business objectives with relationships to the Agency's mission and goals.</i>
<b><i>Cost and Schedule/Project Management Plan</i></b>	<i>Describes established life cycle costs for the selected alternative, as well as detailed schedule with milestones, that enables the PM to track the cost and schedule performance of the initiative.</i>
<b><i>Acquisition Plan</i></b>	<i>Describes the requesting office's overall plan for satisfying the mission need of the investment in the most cost effective, economical, and timely manner.</i>
<b><i>Security Plan</i></b>	<i>Details a risk-based assessment that considers major IT security risk factors, and the effectiveness of current or proposed safeguards.</i>



Investment Planning Output	Purpose
<b><i>Alignment with EA</i></b>	<i>Identifies how the investment supports the IT Architecture and the Agency's EA.</i>
<b><i>Exhibit 300</i></b>	<i>Capital Asset Plan and Business Case Exhibit that is required by OMB Circular A-11. It is used by OMB, to determine IT investment funding.</i>

**Table 3**

The various review bodies described in Chapter III use these outputs to make decisions throughout the IT Capital Planning and Investment Control process. The following section includes a description for each of the required outputs of the select phase. The output descriptions are identified in the order in which they would be completed during the select phase of the process.

## Preliminary Market Research/Gap Analyses

SSOs establish program performance plans that include performance goals and establish a current baseline from which progress should be made consistent with the GSA's Strategic Plan mission, goals, and objectives, and the Annual Performance Plan. For some programs there may be a gap between the capabilities provided by existing resources (including IT resources, information systems, and human resources) and program objectives and performance goals. To rectify this situation, the SSOs should identify gaps with respect to specific program objectives and performance goals. Some performance gaps may be resolved by reengineering processes with or without the use of IT. If reengineering of a process is needed it should be done before determining what IT investments are needed to support the redesigned process. To avoid making IT investments in support of functions that are inefficient (need reengineering) or that should no longer be performed by GSA, the following three questions must be asked:

- Does/would the IT investment support mission functions that need to be performed by GSA?
  - If not, consideration of the investment should end, and the function should be outsourced, privatized, or eliminated.
- Does/would the IT investment be necessary if no alternative private sector or governmental source can efficiently support the function?
  - If not, consideration should be given to devolving the function to State or local governments, sharing resources within the Agency, with another Federal Agency, a university, not-for-profit organization, or outsourcing to the private sector; or
  - If an Agency is currently performing a function that could produce the requirement (e.g., an in-house software function), the decision to use in-house or contract resources must consider the requirements of OMB Circular A-76.
- Does/would the IT 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?
  - If not, SSOs in consultation with the Agency CIO, should reengineer the business processes, then search for alternatives, or the SSO may issue a very broad statement of requirements in a solicitation to the private sector and allow the private sector to do the reengineering in proposed solutions.
  - SSOs should also improve internal processes through “cutting red tape”, empowering employees, reuse or pooling of existing assets within the Agency or with other agencies resource re-deployment, or training.



The answers to these questions serve as the framework for the preliminary market research that indicates the need for an IT investment. If the answers to the three questions indicate that an IT investment is warranted, then the PM should continue to the functional requirements analysis as detailed in the next section.



## Functional Requirements Analyses

The functional requirements analysis involves determining the needs that the IT investment must meet to fill the performance gap in its program. The analysis should identify:

- ❑ The performance criteria, goal, purpose and ultimate output or product;
- ❑ A definition of the common uses (functions) of the IT investment;
- ❑ Identification of the requirements necessary to fulfill the stated functions; and
- ❑ A prioritization of the requirements in order of importance.

To allow flexibility in evaluating various solutions, functional requirements should not be described in equipment and software terms, but in terms of:

- ❑ Business outcome,
- ❑ Mission,
- ❑ Purpose,
- ❑ Capability,
- ❑ SSO program components involved,
- ❑ Schedule and cost objectives, and
- ❑ Operating constraints.

Wherever possible, requirements for IT systems should be stated using an open system architecture. An open architecture allows for the following characteristics:

- ❑ User applications that are not tied to a single hardware or system software manufacturer,
- ❑ New functionality can be added from different sources without significant contracting efforts,
- ❑ Other systems can be linked to the system without significant effort, and
- ❑ The system fits GSA EA.

Internal Agency users and external customers and stakeholders of the system should participate in the requirements definition process. Other agencies that may have acquired systems to accomplish similar goals should be identified, and management should look for cross-Agency or governmentwide economies to avoid duplication of effort, especially for projects involving large, complex systems.

Examples of the information that should be identified by an analysis of functional requirements for an IT project include:

- System functional description. Identify each major function that is needed. If prototyping is to be done, explain the potential benefit, such as development in phases to ensure success.
- Inputs/outputs. Specify the format, range of values, accuracy, volumes, development data and sources. All input and output requirements should be sufficiently defined to permit development of a design proposal. Input and output requirements that are not known in sufficient detail may be refined during the acquisition and development phase.
- Processes. Identify processes and data manipulations, including: formulas, mathematical processes, source of input, transfer of output, retention criteria, and interfaces with other processes and data. To assist in possible conversion analyses, identify processes that are functionally dependent and those that are machine or process dependent.
- Data characteristics. Describe individual and composite data elements, their related code representations, as well as relevant dictionaries, tables, and reference files. Estimate total storage requirements.
- Performance criteria. Performance criteria should include:
  - *Accuracy* - Mathematical, logical, legal, and transmission.
  - *Validation* - Approach to be taken. This is not the system acceptance and validation test; it is for functional requirements input/output and processing acceptance.
  - *Timing* - Response, processing, data transfer, and transmission throughput.
  - *Flexibility* - For changes in modes of operation, environment, interfaces, accuracy and validation, volumes, and enhancements.
  - *Interfaces* - Identify existing systems that must be interfaced; include hardware, data communications, and processing mandated by either manual or automated systems. Indicate the manner in which the interface is to be achieved if there are constraints.
  - *Failure contingencies* - Describe and justify failure, backup, and recovery requirements.
  - *Security specifications* - Identify IT system security requirements.



The Functional Requirements Analysis must be stored in the I-TIPS Resource Library after final approval.

## Alternative Identification



Once it is determined that there is sufficient market information on alternative solutions and, life cycle costs, the various alternatives should be compared. It is critical that cost estimates be realistic, and as accurate as possible.

Alternatives should be documented in the Exhibit 300 in the following format:

**Exhibit 300 Alternative Description**

Alternative	Description
<b>Alternative 1 -</b>	
<b>Alternative 2 -</b>	
<b>Alternative 3 -</b>	

**Table 4**

Many times, the PM will overlook the alternative that considers continuing the status quo. This may be a viable alternative if it is determined that it yields the greatest benefits at the lowest cost. This determination should not be made unless the BCA has been completed and documented. Some additional examples of IT related alternatives that should be considered are:

- ❑ Use of COTS package or purchase new software;
- ❑ Modify existing hardware/software;
- ❑ Develop new application; or
- ❑ Purchase services.

Each alternative will have its own mix of resources. Costs must be identified and itemized at a level of detail consistent with the budgeting process. Alternatives will also have different benefits realization periods, and some additional or direct benefits.

During the budget process, OMB will examine the credibility of the costs and agencies will be held accountable for meeting cost goals. Alternative solutions that are not affordable within potential budget availability should be dropped from consideration, but documented for comparison purposes.



The criteria used to determine if a proposed acquisition is affordable is based on three factors:

- Availability of potential funding,
- Agency goals and objectives the investment will help achieve, and
- Impact that the new investment has on funds available for other Agency mission objectives.

A full analysis of alternatives is not complete until a BCA has been completed for each alternative. A discussion of a BCA is included in the next section.

## Benefit Cost Analyses

The Clinger-Cohen Act requires agencies to develop a process that includes quantitatively expressed projected net, risk-adjusted ROI. Since benefit and cost estimates are typically uncertain, risk analysis should be used to identify where the relevant uncertainties exist or where work will be needed to resolve the uncertainties. Sensitivity analysis should be used to test the response of the investment's net present value (NPV) to changes in key assumptions.

The selection of the best alternative should be based on a systematic analysis of expected benefits and costs. The fundamental method for formal economic analysis is BCA. A BCA is used to help assess whether an investment or project should be undertaken and to evaluate alternative approaches. The objective of a BCA is to promote efficient resource allocation through well-informed decision-making that maximizes benefits while minimizing costs. Estimates of costs and benefits should show explicitly the performance and budget changes that result from undertaking the project.

In the conceptual stages of a project, some of the detailed information about benefits and costs associated with different alternatives may not be available. For this reason, BCA information should be updated and corrected, as necessary, as the project proceeds to later phases and more information becomes available. The analysis needs to be accurate. This allows a decision-making body to determine whether to fund at least the initial phases of the project and to proceed to the next phase.

The decision to undertake an IT investment or project is based on the assumption that the business improvements resulting from the investment (benefits) exceed the costs of modifying business operations and maintaining the current system (if it exists). A BCA makes explicit the assumed business rationale that justifies investments in IT investments. It has four major elements that are each described in detail later in this chapter:

- ❑ Total business and system costs with the IT investment;
- ❑ Total business costs without the IT Investment;
- ❑ Tangible benefits; and
- ❑ Intangible benefits.

The determination of costs and tangible benefits is based on five basic cost elements:

- ❑ Business costs with the IT investment - The total costs to carry out the business functions and processes to be automated by the IT investment.
- ❑ Business costs without the IT investment - The total costs that would be incurred to continue the business functions and processes with the current level of automation.
- ❑ Non-recurring costs of the new IT investment - One-time expenditures that will be incurred in the design, development or acquisition, and implementation of the new IT investment. These expenses will not be incurred after a system is operational.
- ❑ Recurring costs of the IT investment - Ongoing expenses that will continue throughout the investment's life cycle. Most of these costs will be incurred during the operational phase of the system.
- ❑ Costs to continue the current IT system (if there is one) - The expenditures that would be made by GSA if they continued to operate the existing system (these may include recurring and non-recurring costs).

Business costs are presented as a total budget projection for the business operations affected by the proposed IT investment. Analysis of business costs should consider the same factors that are applied in developing multi-year budget projections. The estimates for the BCA should be comparable to those produced in other budget exercises.

OMB guidance on BCA can be found in OMB Circular A-94, Guidelines and Discount Rates for Benefit Cost Analysis of Federal Programs. Circular A-94 recommends BCA as the technique to use in a formal economic analysis of Government investments (programs/projects). The BCA is a required document that is collected in the Resource Library for each Major project, and is a required element of the Exhibit 300. The following sections are intended to provide a "how-to" guide to assist the PM complete their BCA.

## **Identifying Costs**

Costs of an IT investment are the costs required to design, acquire, develop, implement, and operate the investment, not the business functions supported by the investment. This cost comparison of alternatives quantifies the financial impacts of a "go" or "no go" decision. The cost of operating the business without the IT investment highlights the investment that managers would be forced to make in maintaining current business practices and system operations. Total costs with the IT investment will, in most cases, be more than continuing current operations. Savings can accrue in the business operations that exceed the additional costs associated with design, development, acquisition, and

maintenance of the IT investment itself over a projected life cycle. A detailed listing of cost factors, as well as their definitions, is included in Table 5.

### Cost Factor Definitions

Cost Factor	Cost Factor Definition
<b>Communications – Non-recurring</b>	Total non-recurring expenditure of communications equipment and services to make the fully configured and installed system operable at its inception. Include in this category data communications equipment, such as modems and data encryption devices, as well as other communications cost, like local area networks.
<b>Communications – Recurring</b>	Yearly payments for communications costs. Include data communications equipment like modems and data encryption devices, as well as other communications costs, such as local area networks.
<b>Contracting</b>	Total expenditure of contracts for design, development, consulting, and implementation of the system.
<b>Conversion Costs</b>	For replacement or upgrade systems, the incremental costs incurred only from the costs to convert hardware (such as PCs, mainframes, disk drives, servers, printers) or software (such as database, batch programs, and expert systems) from one system to another. These costs are only incurred if the system under consideration is replacing another specific system. Examples are batch transfer programs, data re-entry, and hardware modification.
<b>Equipment</b>	Yearly costs allocated for the purchase, lease or rental of other equipment to support business operations excluding equipment associated with the IT investment.
<b>Equipment – Other</b>	Yearly costs allocated for the purchase, lease, or rental of other equipment in support of the IT investment. Include in this category photocopiers, file cabinets, fire safes, microfiche, optical storage facilities and other office products.
<b>Facility Space Occupancy</b>	Yearly payments for allocated rents and building user costs for business operations other than space allocated to the new system (excludes utilities).
<b>Hardware - Nonrecurring</b>	Total dollar expenditure, by year, of hardware to make the fully configured and installed system operable at its design inception. Include in this category mainframes, desktop, laptop, PCs, disk drives, tape drives, display monitors, keyboards, printers, and other peripheral equipment. This does not include possible conversion costs for upgrading from older systems.
<b>Hardware Lease or Rental – Recurring</b>	Yearly payments for system hardware lease or rental. Include in this category mainframes, desktop, laptop, PCs, disk drives, tape drives, display monitors, keyboards, printers, and other peripheral equipment.
<b>Incidentals</b>	Other minor costs associated with day-to-day business operations. Exclude incidental costs associated with the new system.
<b>InterAgency</b>	Yearly payments to (less credits received from) other agencies for



<b>Cost Factor</b>	<b>Cost Factor Definition</b>
	<i>shared facilities and services other than systems operations.</i>
<b>Maintenance</b>	<i>Yearly payments for maintenance of business operations. Exclude from this category all repair, maintenance, and emergency service support costs directly attributable to the system.</i>
<b>Parallel Operations</b>	<i>Expenditure needed for parallel operations or systems testing on a non-recurring basis.</i>
<b>Personnel Salaries and Fringe</b>	<i>Yearly allocated costs for personnel who perform Benefits functions to be supported by the new IT investment. This should include all organizational units and sites whose operations will change as a result of the system.</i>
<b>Residual Value</b>	<i>The salvage value of the entire system at the conclusion of its life cycle.</i>
<b>Security</b>	<i>Yearly costs to provide system security and integrity. Include in this category security monitoring systems, alarm systems, camera and voice recording and storage systems, lock and pass key systems, and security personnel costs.</i>
<b>Software – Non-recurring</b>	<i>Total dollar expenditure of software to make the fully configured and installed system operable at its inception. Include in this category all system software packages, COTS, site or network license, and all original software programming and development costs. Important: do not include software conversion or upgrade costs here; instead, include these in conversion costs.</i>
<b>Software Lease or Rental – Recurring</b>	<i>Yearly payments for system software lease or rental. Include in this category all system software packages, COTS, site or network license, and all original software maintenance costs.</i>
<b>Studies</b>	<i>Total expenditure for studies necessary to implement this system alternative.</i>
<b>Supplies</b>	<i>Yearly payments for supplies to operations other than those associated with the new system.</i>
<b>System Testing and Backup</b>	<i>Recurring costs to test reliability and integrity of system in operation, including costs for memory back-up. This does not include costs for non-recurring start-up and implementation testing.</i>
<b>Training</b>	<i>Recurring training costs associated with routine business operations, e.g., training aimed at improving supervisory skills. Exclude costs for training associated with the new system.</i>
<b>Travel</b>	<i>Yearly travel expenses incurred in the normal course of business operations. Exclude any travel costs that are associated with the new system. Include train, bus, taxi, and airline tickets, gas, mileage, and toll charges, and auto rental expenses.</i>
<b>Useful System</b>	<i>Forecast of the planned useful system life from the first month of</i>





Cost Factor	Cost Factor Definition
<b>Life</b>	<i>system implementation.</i>
<b>Utilities</b>	<i>Yearly payments for costs of utilities allocated to business operations other than the new system.</i>

**Table 5**

This section and those that follow present a discussion of the information collection requirements for the proposed BCA model. It is organized around identifying fully allocated current system costs and proposed project expenses. The model is expressed as simply as possible and is consistent with Federal guidelines governing the BCA. The BCA is supported by the development of worksheets to assist the PM to quantify and compare the benefits and costs. The following sections provide a brief overview of each worksheet and its contents. The worksheet should be completed for each of the feasible alternatives and should be used by the PM to identify the various alternatives' costs. Results from the worksheets are summarized in the Exhibit 300. Supporting worksheets should be posted in the I-TIPS Resource Library.

**Business Operation Costs**

This category of cost elements will identify total costs to carry out the business functions, first with the current level of automation, and then when they are automated by the new IT investment. Costs need to be calculated both with and without the proposed investment. Business operations are the activities and resources used to conduct the functions to be supported by the proposed IT investment. Costs related to current and proposed information systems are excluded from this worksheet. Business operation costs are defined by the following cost factors:

- ❑ Personnel salaries and fringe benefit;
- ❑ Supplies;
- ❑ Equipment;
- ❑ Facility space occupancy;
- ❑ Utilities;
- ❑ Maintenance;
- ❑ Travel;
- ❑ Training;
- ❑ Incidentals;
- ❑ InterAgency; and
- ❑ Other identified costs.

Table 6 and Table 7 include a breakdown of business operation costs with and without the new investment for six out-years. Table 6 should be used to identify the operation costs with the new investment. Table 7 should identify the operations costs to continue the status quo. This table will be completed only once since the status quo will not change. Table 7 should be completed for each alternative.



### Business Operations Costs with the New IT Investment

COST FACTOR	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Personnel Salaries and Fringe Benefits							\$0
Supplies							\$0
Equipment							\$0
Facility Space Occupancy							\$0
Utilities							\$0
Maintenance							\$0
Travel							\$0
Training							\$0
Incidentals							\$0
Inter-Agency							\$0
Other							\$0
							\$0
							\$0
							\$0
							\$0
							\$0
							\$0
Total Business Operation Costs With IT Investment	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**Table 6**

### Business Operations Costs Without New IT Investment

COST FACTOR	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Personnel Salaries and Fringe Benefits							\$0
Supplies							\$0
Equipment							\$0
Facility Space Occupancy							\$0
Utilities							\$0
Maintenance							\$0
Travel							\$0
Training							\$0
Incidentals							\$0
Inter-Agency							\$0
Other							\$0
							\$0
							\$0
							\$0
							\$0
Total Business Operation Costs Without IT Investment	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**Table 7**

### Non-recurring Costs of the New IT Investment

This category of cost elements identifies the one-time expenditures that are incurred in the design, acquisition, development, and implementation of the new IT investment. Non-recurring costs of the new system are defined by the following cost factors:

- ❑ Conversion Costs - Replacement or Upgrade Systems Only;
- ❑ Hardware;
- ❑ Software;
- ❑ Communications;
- ❑ Contracting;
- ❑ Travel;
- ❑ Training;
- ❑ Studies;
- ❑ Parallel Operations;
- ❑ Incidental Expenses;
- ❑ Residual Value; and
- ❑ Other identified costs.



Table 8 includes a breakdown of non-recurring costs of the new IT investment for six out-years. Table 7 must be included in the I-TIPS Resource Library and should be completed for each alternative. Table 8 does not need to be completed for the status quo.

### Non-recurring Costs of New IT Investment

COST FACTOR	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Conversion Costs							\$0
Hardware							\$0
Software (Purchase)							\$0
Software Development							\$0
Communications							\$0
Contracting							\$0
Travel							\$0
Training							\$0
Studies							\$0
Parallel Operations and Testing							\$0
Incidental Expenses and Overhead							\$0
Residual Value of Old System							\$0
Residual Value of New System							\$0
Other							\$0
							\$0
							\$0
							\$0
							\$0
							\$0
Total Non-Recurring Costs of New IT/System	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Table 8

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**Recurring Costs of the New IT Investment**

This category of cost elements identifies the ongoing expenses that are incurred to maintain and operate the IT investment. Costs should be projected for the entire life cycle of the system.

- ❑ Parallel Operations;
- ❑ Hardware lease or rental;
- ❑ Software lease or rental;
- ❑ Communications;
- ❑ Other equipment;
- ❑ Facility space occupancy;
- ❑ Utilities;
- ❑ Maintenance;
- ❑ Supplies;
- ❑ Personnel salaries and benefits;
- ❑ Security;
- ❑ Travel;
- ❑ Training;
- ❑ System Testing and Back-up;
- ❑ Incidentals;
- ❑ InterAgency; and
- ❑ Other identified costs.

Table 9 includes a breakdown of recurring costs of the new IT investment. Table 9 should be completed for each alternative, but does not need to be completed for the status quo. Table 9 must be included in the I-TIPS Resource Library and should be completed for each alternative.



### Recurring Costs of the IT Investment

COST FACTOR	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Parallel Operations							\$0
Hardware Lease or Rental							\$0
Software Lease or Rental							\$0
Communications							\$0
Other Equipment							\$0
Facility Space Occupancy							\$0
Utilities							\$0
Maintenance							\$0
Supplies							\$0
Personnel Salaries and Fringe Benefits							\$0
Security							\$0
Travel							\$0
Training							\$0
System Testing and Back-up							\$0
Incidental Expenses							\$0
Inter-Agency Services							\$0
Other							\$0
							\$0
							\$0
							\$0
Total Recurring Costs of New IT Investment	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**Table 9**



### Costs of Continuing the Existing IT, Old System

This category of cost elements identifies the information system costs that would be incurred if the existing level of automation were continued instead of developing the new IT investment. The costs of continuing the current system are defined by the following cost factors:

- ❑ Hardware lease or rental;
- ❑ Software lease or rental;
- ❑ Communications;
- ❑ Other equipment;
- ❑ Facility space occupancy;
- ❑ Utilities;
- ❑ Maintenance;
- ❑ Supplies;
- ❑ Personnel salaries and benefits;
- ❑ Security;
- ❑ Travel;
- ❑ Training;
- ❑ System Testing and Back-up;
- ❑ Incidentals;
- ❑ InterAgency; and
- ❑ Other identified costs.

Table 10 includes a breakdown of costs of continuing the status quo. Table 10 should be completed only once for the status quo. Table 10 must be included in the I-TIPS Resource Library and should be used to assist in the completion of the BCA.



**Costs to Continue the Current IT System**

<b>COST FACTOR</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Total</b>
Hardware Lease or Rental							\$0
Software Lease or Rental							
Communications							\$0
Other Equipment							\$0
Facility Space Occupancy							\$0
Utilities							\$0
Maintenance							\$0
Supplies							\$0
Personnel Salaries and Fringe Benefits							\$0
Security							\$0
Travel							\$0
Training							\$0
System Testing and Back-up							\$0
Incidentals							\$0
Inter-Agency							\$0
Other							\$0
							\$0
							\$0
							\$0
Costs to Continue Old IT/System	\$0	\$0	\$0	\$0	\$0	\$0	\$0

**Table 10**



All of the costs, identified from Table 6 - Table 8, and Table 9, for each of the alternatives should be summarized in the Exhibit 300 as shown in Table 11.

**Exhibit 300 Life-Cycle Cost Analysis for Each Alternative**

Cost Element	Alternative 1	Alternative 2	Alternative 3
<i>Cost Element</i>			
<i>Cost Element</i>			
<i>Cost Element</i>			
<i>Cost Element</i>			
<i>Cost Element</i>			
<b>Total \$</b>			

**Table 11**

Once all costs have been identified and documented the PM must consider the benefits for each of the alternatives. A discussion of benefits follows.

### Identifying Benefits

Determining benefits is the most difficult part of the BCA because it is often difficult to identify all benefits and accurately quantify them with a dollar value. OMB Circular A-94 suggests the principle of willingness-to-pay to obtain a given benefit, and that market prices are a good place to start. Benefits should be expressed in quantifiable terms and clearly linked to the program goals and business and functional needs identified in planning stage. Most benefits will be in terms of improvements in effectiveness, efficiency, or customer satisfaction. Examples of areas of benefits include:

- ❑ Operating efficiency;
- ❑ Reliability/Maintainability;
- ❑ Accuracy;
- ❑ Manageability;
- ❑ Availability;
- ❑ Service life;
- ❑ Quality;
- ❑ Ecology;
- ❑ Economy;
- ❑ Morale;
- ❑ Safety;

- ❑ Security; and
- ❑ Regulatory compliance.

Examples of types of quantifiable benefits are:

- ❑ Reduced resource requirements (such as support services, supplies, personnel, training, lease, rental, maintenance, and computers);
- ❑ Improved data entry (resulting in reduced staff time, lowered error rates, and less duplication);
- ❑ Improved operational effectiveness (resulting in reduced error rates, improved timeliness, increased productivity, and better quality products); and
- ❑ Cost avoidance (by eliminating future staff growth, minimizing penalties for delays, and elimination of additional equipment requirements).

Tangible benefits can be measured as specific cost savings. They are the cost savings resulting from changes in business and system operations. Each item in the cost analysis that has a projected saving must be associated with an operational change that will produce the reduction in projected expenditures. For example, the cost of continuing operations without the IT investment may include the hiring of additional staff to manually process projected increases in workload. If the proposed IT investment was implemented, technology would replace these manual processes and no additional personnel would be hired, some of which may be able to be reallocated to other projects.

Intangible benefits are difficult to measure in financial terms. Although they are not quantifiable, they may be sufficient to justify the system, independent of cost. In the Federal environment, compliance with legal and regulatory requirements is an intangible benefit that can, on its own, justify the investment. Other examples of intangible benefits are improved customer satisfaction, increased service delivery, and increased employee satisfaction. Intangible benefits must be supported by a clear link to specific outcomes of system implementation.

New IT investments provide opportunities for a broad range of improvements to business operations. Not all benefits of automation will result in a tangible benefit that reduces costs. Intangible benefits can be an important factor in deciding to proceed with the development of an information system. Intangible benefits should be documented as part of the benefit-cost analysis and included in the narrative that describes the proposed system. Intangible benefits should be considered with the BCR for determining the rationale for continuing with the proposed system. In identifying tangible and intangible benefits of the new system, the following should be considered:

- ❑ Reliability Improvements - The benefits gained in reduced risk of system malfunction or failure, and reduced downtime for performing the same or equivalent tasks.
- ❑ Error Improvements - The benefits gained in process simplification and streamlining. Ease of entry, data input, and accuracy rates that reduce overall errors are reported here.
- ❑ Labor Productivity Improvements - The benefits gained in performing the same functions in fewer hours of personnel time. These improvements may allow staff to work on other activities, but do not result in an actual reduction in personnel.
- ❑ Grade of Service Productivity Improvements - The benefits gained in performing a service more efficiently or effectively to the direct benefit of the taxpayers who interact with the functions of the system.
- ❑ Compliance with Legal and Regulatory Requirements - The benefits gained by meeting procedural or performance guidelines specified in laws and regulations.
- ❑ Customer Satisfaction - The benefits in terms of a reduction in time spent responding to customer complaints or developing a larger customer base.

### **Assumptions and Constraints**

Assumptions are explicit statements used to describe the present and future environment upon which the BCA is based. The purpose of assumptions is to reduce complex situations to problems of manageable proportions. Additionally, assumptions can be used to define circumstances that are out of the control of the PM, such as dependencies with other systems for data.

OMB Circular A-94 requires analyses to be explicit about underlying assumptions to arrive at estimates of future benefits and costs. It requires agencies include a statement of the assumptions, the rationale behind them, and a review of their strengths and weaknesses. Examples of assumptions include estimated future workload, estimated useful life of an investment or system, and the period of time over which alternatives will be compared.

Constraints are factors external to the relevant environment that may limit alternatives to problem resolution. They may be physical, time related, financial, institutional/regulatory, and provide boundary limits for the alternative solutions to a particular problem.

### **Methods of Alternative Comparison**

Economic lives and lead times can vary among alternatives. The following guidelines are recommended for determining the comparison period.

- ❑ Same Economic Lives and Lead Time. If both the economic lives and lead times for all alternatives are the same, the comparison will be between the same project life.
- ❑ Same Economic Lives and Different Lead Times. In this case the first year that expenditures must be made for any one of the alternatives should be considered the base year or first year for all the alternatives.
- ❑ Different Economic Lives. One method is to let the economic life of the dominant asset prevail with subsidiary assets replaced as necessary. Another method is to use the shortest economic life and impute residual value in the asset with the longer life.

Because of the inherent uncertainties of making estimates in distant years, it may be necessary to set arbitrary limits on the planning horizon to be used in the analysis. This planning horizon can be shorter than the estimated economic life of the project. Six-year estimates, consistent with the GSA IT Plan and OMB Circular A-11 reporting requirements, is used in this guide's worksheets.

### **Calculated Values**

The culmination of costs and benefits can be easily compared through some calculated values. Tangible benefits are calculated by comparing the costs of continuing the status quo to the costs of developing the IT investment and modifying business operations. In order to compare costs and benefits at a point in time, present value tables are used in the model. OMB Circular A-94 defines the standard criterion for deciding whether an investment can be justified on economic principles as the NPV of benefits. NPV is the projected savings resulting from the initiative reduced by the net investment required to develop and implement the initiative. Figure 6 presents an overview of the calculations that are used to determine tangible benefits.

Using the costs of business operations and systems described above, five basic calculations are made to assess the benefits that will result from the new IT investment. These calculations are described below and in Figure 6.

- Business Savings - The difference between the cost of business operations with and without the new IT investment. The result of this calculation is the business savings of the new IT investment.
- Net System Costs - The difference between the cost to continue to operate the current system (if applicable) and the cost to design, acquire, develop, implement, and maintain the new IT investment. Net system costs are the additional investment made in the IT investment or, if the new IT investment is less costly, the system-related savings that will result from the new IT investment.
- Present Value Factor – Cost information is adjusted in the model using tables to multiply costs and benefits by discount factors consistent with OMB Circular A-94 guidance to determine the present value based on the year of occurrence. *(Note: OMB Circular A-94 is updated periodically. Those conducting a BCA should ensure that they are using the proper discount rates, consistent with the latest version of OMB Circular A-94, by checking the internet at <http://www.whitehouse.gov/WH/EOP/OMB/html/circulars/>.* Present value analysis is based on the principle that:
  - Benefits accruing in the future are worth less than the same level of benefits that accrue now, and;
  - Costs that occur in the future are less burdensome than the costs that occur now.
- NPV of Benefits - The business savings increased or decreased by the net systems costs.
  - If the new system reduces system costs, tangible benefits will be higher than business savings.
  - If the new system represents increased costs, tangible benefits will be less than the business savings of the new system.
  - If the NPV is positive, the financial return on the project is economically acceptable.
  - If the NPV is negative, the project is not acceptable on economic grounds. OMB Circular A-94 recommends that when a net present value cannot be calculated, agencies provide a comprehensive enumeration of the different types of quantify benefits and costs even though it may not be possible to provide a dollar value for them.
- Benefit-Cost Ratio (BCR) - The value of tangible benefits compared to the net systems costs. Benefits will generally exceed costs, and this ratio will almost always be greater than one. If a system has a BCR less than one,

it must be entirely justified by its intangible benefits. The BCR provides a measure of the benefits obtained per dollar spent. The higher the BCR, the larger the return. Whereas the NPV is an absolute measure that refers to a specific set of values, the BCR allows comparison of different projects. In selecting among alternatives the BCR shows which alternative provides the largest return relative to costs.

- ROI - This ratio is calculated by dividing the average annual operating cash inflow (benefit) by the annual net investment. This amount is calculated on an annual basis.



### Cost Elements

<b><i>Business Costs With New IT Investment</i></b>	<b><i>Business Costs Without New IT Investment</i></b>	<b><i>Costs of New IT Investment</i></b>	<b><i>Costs to Continue Old IT System</i></b>
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### Calculations (Annual)

CALCULATION	FORMULA				RESULT
<b><i>Business Savings</i></b>	Business Costs Without the New IT Investment	—	Business Costs With the New IT Investment	— Business Savings Factor X Present Value Factor	<b><i>Present Value of Business Savings</i></b>
<b><i>Net System Costs</i></b>	Costs of the New IT Investment	—	Costs of Continuing the Old System	— Net System Costs X Present Value Factor	<b><i>Present Value of Net Investment Costs</i></b>
<b><i>Benefits</i></b>	Present Value of Business Savings	—	Present Value of Net Investment Costs	—	<b><i>Net Present Value of Benefits</i></b>
<b><i>Benefit-Cost Ratio</i></b>	Net Present Value of Benefits	/	Present Value of Net Investment Costs	—	<b><i>Present Value Benefit-Cost Ratio</i></b>

Figure 6

Many times the costs of various alternatives will be equal and will yield similar benefits. In such cases, the PM should prepare a cost effectiveness analysis. This analysis is described in the next section.

### **Cost Effectiveness Analysis**

OMB Circular A-94 states that cost-effectiveness analysis is appropriate whenever it is unnecessary or impractical to consider the dollar value of the benefits provided by the alternatives under consideration. A program is cost effective if, on the basis of life cycle cost analysis of competing alternatives, it is determined to have the lowest costs expressed in present value terms for a given amount of benefits. Cost-effectiveness analysis is appropriate whenever:

- ❑ Each alternative has the same annual benefits expressed in monetary terms; or
- ❑ Each alternative has the same annual effects, but dollar values cannot be assigned to their benefits.

Cost-effectiveness analysis can also be used to compare programs with identical costs but differing benefits. In this case, the decision criterion is the discounted present value of benefits.

### **Non-Quantitative Evaluation Considerations**

There may be several economically acceptable projects but only limited financial resources. Qualitative evaluation considerations including non-quantifiable or monetizable benefits may override quantitative criteria in the ranking or acceptance of projects. Such considerations include:

- ❑ Relationship to business strategy;
- ❑ Organizational, schedule, and technical risks;
- ❑ Social benefits; and
- ❑ Legal/regulatory requirements.

Non-quantifiable considerations for evaluating alternatives should be identified in the BCA and addressed at the SSO and Agencywide level before the final IT investment portfolio decisions are made.

A BCA is not complete until the risks associated with each alternative are identified. A discussion of risk analysis is included in the next section.

## Risk Analysis

Identifying risks is an important component of the BCA. For alternatives with similar costs and benefits, the risk analysis may be the distinguishing factor. Implementing a strategy to mitigate the risk that is inherent in large IT investments is critical. This mitigation strategy includes risks that may not be security related. Security related risks should be addressed in the Security Plan. One of the greatest risk factors to the success of IT investments is the amount of development that is planned. Full-scale development is where the potential is greatest for significant cost and schedule overruns and lowered performance goals achievement. The types of risks in an IT project include:

- ❑ Strategic:
  - To what degree to which the investment's purpose is aligned with GSA's overall business strategy?
  - Are the expected investment outcomes clearly defined?
  - Have metrics been established to verify the successful completion of each investment phase?
  - To what extent are senior management committed to the investment and its outcomes?
- ❑ Financial:
  - What are the life cycle costs associated with the investment?
  - Are the benefits and costs clearly defined?
  - Is there a clearly defined payback for this investment?
  - To what degree have existing expenditures met budgeted amounts?
- ❑ Project Management:
  - Does the Project Management team have relevant experience?
  - To what extent has a project plan been developed for the entire project lifecycle?
  - To what degree have critical milestones been established?
- ❑ Technology:
  - How thoroughly have technical options been evaluated?
  - What is the knowledge of the proposed technology environment?
  - Do the key technologies appear to be the appropriate foundation given the system design?
  - What is the vendor's ability to implement the technology?
- ❑ Change Management:
  - Is the current Agency prepared to support the new investment?

- What will be the magnitude of change that the new investment will impose on the users?
- Will staff numbers be reduced as a result of implementing the investment?
- Will multiple business organization units be affected by the new investment?
- To what degree are changes to the current business processes being managed?

This listing is intended to be an example, not all projects will face all of these risks. However, some projects may have risks in areas that are not included in this list. The exact categories will depend upon the technology used, the complexity of the investment, and the program goals. The worksheet depicted in Figure 7 can be used to determine the overall risk average in each of the risk areas by scoring the answers to various questions in each of these areas. The risk average is then compared to the overall scale of one to four, where one is minimal/no risk, and four indicates high risk.

### Investment Risk Assessment Worksheet

Investment Selection Risk Assessment Worksheet		
Date: 2/20/1		
Project:		
Reviewed by:		
Results:	1.78	
Scale: 4= High Risk 3= Moderate Risk 2= Low Risk 1= Minimal to No Risk		
1.0 Strategic Risk		
1. To what degree is the investment purpose aligned with the USG's overall business strategy?	Score	Weight
Investment decision is consistent with the business strategy but the relationship has not been clearly documented	2.00	
2. Are the expected investment outcomes clearly defined?	1.00	
Expected outcomes are well defined.		
3. Have metrics been established to verify the successful completion of each investment phase?	3.00	
Metrics to determine the success of the total investment have been established but not specific to a phase.		
4. To what extent are senior management committed to the investment and its outcome?	1.00	
Senior management is fully committed and have openly endorsed the investment.		
5. How severely could late delivery impact the USG's business operation?	3.00	
Some disruption to critical, time-sensitive areas of the business.		
Strategic Risk Average	2.00	20%

Figure 7



The risk assessment worksheet can be found in the I-TIPS Resource Library, and is also included in Appendix B.

### Risk Management

Risk management is a fundamental part of project management. It is an organized method of identifying and measuring risk and developing, selecting,

and managing options for mitigating risk. It consists of four elements: risk assessment, risk analysis, risk treatment, and a risk management plan.

### Risk Assessment

This process identifies and assesses all potential risk areas, any parts of a project where there is uncertainty regarding future events that could have detrimental effect on meeting the program objectives and initiative goals. The worksheet in Figure 7 can be used to make this determination. Risk assessment continues throughout the life of the project as previous uncertainties become known and new ones arise.

### Risk Analysis

This process characterizes each risk as to the likelihood of its occurrence and the severity of its impact. Once risk categories are identified, specific risks can be documented. In analyzing specific risks, the following steps should be followed:

- ❑ Define the risk;
- ❑ Link risks to initiative goals;
- ❑ Assess the probability of the risk occurring; and
- ❑ Assess the potential impact of the risk if it occurs and impacts to business.



The Risk Tracking Sheet as show in Table 12 can be used to record information for each risk, along with the potential impact (high-moderate-low) and probability (high-moderate-low). This tracking sheet, or a summary of its findings, should be included in the Exhibit 300.

**Risk Tracking Sheet**

Identify			Analyze		Plan	Control
<i>Risk</i>	<i>Description</i>	<i>Goal Impacted</i>	<i>Impact</i>	<i>Probability</i>	<i>Mitigation Strategy</i>	<i>Status</i>

**Table 12**

Such a tracking method results in a watch list of potential areas of risk. Risk analysis also continues throughout the life of the project.

---

### Risk Treatment

After risk has been assessed and analyzed, a determination is made for how to mitigate the risk. Alternatives include:

- Transfer - risk may be transferred to a contractor or third party.
- Avoidance - it may be determined that the risks of any particular solution/alternative are too great and the alternative should be removed from further consideration.
- Reduction - necessary measures can be identified to minimize the likelihood of a risk occurring and/or to minimize the damage of its impact on program objectives, should it occur.
- Assumption - a decision may be made to assume a risk if effective control can be exercised, the probability of risk is small, or the potential damage is minimal.
- Sharing - if a risk cannot be appropriately transferred and should not be assumed, it can be shared with another department, Agency, or contractor.

### Risk Management Plan

A Risk Management Plan should be developed that includes information on:

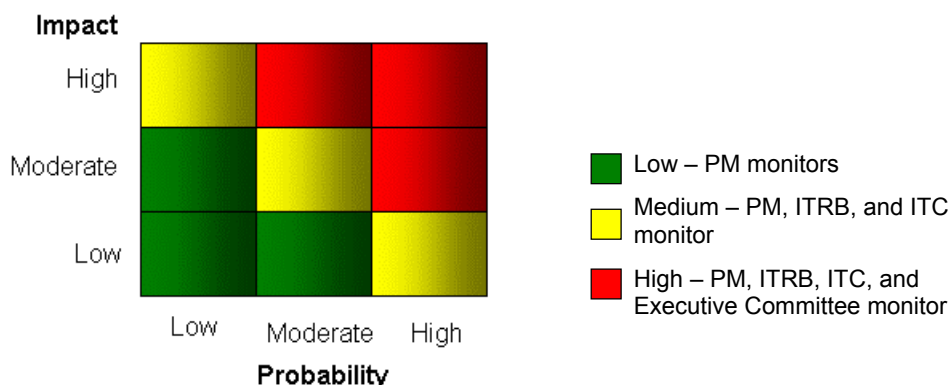
- The types, probability, and impact of risks pertinent to the IT project, including the risk that the funding request will not be approved or not approved in its entirety. Examples of risk include:
  - Project costs, size or resource requirements
  - Organization/Program management
  - Strategic/Business impact
  - Security
  - Management
  - Economic/Financial
  - Technical
  - Contract/Acquisition
  - Implementation
  - Change Management
  - Human element.
- Plans for how to treat and manage the risk, to include how to respond to lower funding.

The Risk Management Plan indicates what the response to each risk will be if the risk is “triggered”. Furthermore, risk can be assumed by requiring a higher return for projects determined to be of higher risk.

### Risk Control and Reporting

A disciplined risk management system requires that risk status is reported and that escalation procedures are developed and followed. One tool, depicted in Figure 8, is useful for summarizing risk status. Once a risk is identified, it can be plotted on the risk matrix by numerically identifying the impact and probability of the risk occurring. By plotting risks in this manner, management can allocate its time and attention to the risks that have the greatest potential impact to the investment.

**Risk Status**



**Figure 8**

A risk evaluation rating of Low indicates that there are no significant risks to the project affecting cost and schedule. Any minor risks are being mitigated and are being monitored by the PM.

A risk evaluation rating of Medium indicates that there are significant risks to the project affecting cost and schedule. All risks should be identified and tracked by the PM, ITRB, and ITC. Corrective actions may be necessary if the cost and schedule continue to increase.

A risk evaluation rating of High indicates that there are major significant risks to the project affecting cost and schedule. The cost and/or schedule are currently exceeding the limits set by OMB and will require special monitoring (PM, ITRB, ITC, and Executive Committee) and possible corrective action.



Risk indicated in this risk matrix should be consistent with that reported in the Monthly Summary Project Control Reports discussed in Chapter 4. Both Figure 7 and Figure 8 are included in the Risk Worksheet in the I-TIPS Resource Library and in Appendix B.





## **Sensitivity Analysis**

Sensitivity refers to the relative magnitude of change in one or more elements of an economic analysis that will cause a change in the ranking of alternatives. A sensitivity analysis is used for assessing the extent to which costs and benefits are responsive to changes in key factors. In a sensitivity analysis, if one particular factor or cost element can be varied over a wide range without affecting the ranking of alternatives, the analysis is said to be insensitive to uncertainties regarding the particular event. A sensitivity analysis can provide a range of costs and benefits that are likely to be a better guide than a single estimate.

If there is certainty and preference ranking establishes one alternative as markedly superior to the rest, a sensitivity analysis is probably unnecessary. However if there is uncertainty with some of the assumptions and the alternative of choice is not clearly preferable to the rest, then a sensitivity analysis would be valuable.

As part of the sensitivity analysis, major assumptions should be varied, and NPV and other outcomes recomputed to determine how responsive outcomes are to changes in the assumptions. Assumptions deserving the most attention will depend on the dominant benefit and cost elements and the areas of greatest uncertainty.

For each alternative, key high risk factors should be changed to a less favorable number to test sensitivity. Key elements to evaluate include:

- ❑ Length of project life;
- ❑ Volume, mix, or pattern of workload;
- ❑ Requirements;
- ❑ Configuration;
- ❑ Assumptions;
- ❑ Discount rates; and
- ❑ Cost and benefit estimates.

To conduct the sensitivity analysis, all parameters in the analysis are held constant except the factor being tested. The analysis is then reworked using different estimates for the factor under review. If this results in changes to the ranking of alternatives, the analysis is sensitive to that amount of change in the variable. Each parameter should be tested individually to determine its effect on the analysis.

## BCA Documentation Requirements

At a minimum the documented output from the BCA process should provide the following information:

- Assumptions, including constraints;
- Alternatives considered, including results of market research;
- Cost analysis for each alternative (including computations and methods used to develop estimates and encompassing planning, development/acquisition, operation and maintenance, and disposal costs);
- Benefit analysis (including a description of the benefits expressed in quantifiable terms wherever possible and methods used for quantifying and monetizing benefits);
- Risk analysis and Risk Management Plan that describes:
  - Types, probability and impact of risks pertinent to the project – including that funding requests will not be approved in their entirety, and
  - Plans for how to treat and manage the risk, to include how to respond to lower funding;
- Comparison of alternatives to include:
  - Results of quantitative and qualitative evaluation methodologies used and conclusions and recommendations; and
  - Recommended alternative and summary of rationale for selecting it (at a minimum quantitative evaluations should calculate the NPV and BCR of each alternative).



For the alternative selected, the quantitative information should be summarized in the Exhibit 300 format shown in Table 13.



**Exhibit 300 BCA Financial Summary**

	FY	FY	FY	FY	FY	FY	FY
NPV							
BCR							
ROI							
Payback Period							
Total Cost							
Total Benefit							

**Table 13**

Selecting an alternative without adequate analysis has resulted too often in large dollar acquisitions that have significantly overrun both cost and schedule, while falling short of expected performance. SSOs should hold off requesting funds for the acquisition until they establish firm goals, performance measures, and cost estimates that have a high probability of successful achievements as required by the select stage. Developing performance goals and measures is the topic of the next section.

## Developing IT Performance Goals and Measures

An investment's performance goals must relate to the goals and objectives in the GSA Strategic Plan. It is essential that this linkage be clear, whether addressing Agency, business, or IT goals. Goals in the GSA Strategic Plan and goals in SSOs' performance plans are defined in broad general statements relating to the mission and describing a desired outcome towards which the Agency or SSO directs their efforts. Specific program and IT project goals should be a clear, measurable specification about the end result that a project is to accomplish in a given period of time. Performance measurement deals with determining the extent to which a project has achieved its specific goals, met the needs of its customer, or met commonly accepted professional standards. Additionally the Exhibit 300 not only requires agencies to justify the investment by linking it to the Agency's strategic goals and objectives, but also to the strategic goals in the President's Management Agenda.

The Agency CIO, under the Clinger-Cohen Act, is required to "monitor the performance of IT programs of the Agency and evaluate the performance of those programs on the basis of the applicable performance measurements" In order to do this, the Agency CIO, in conjunction with the Agency CFO, provides guidance to the SSO, with regards to: performance measures for IT activities, how to determine the baseline for IT activities, and a methodology evaluation.

A performance measurement process is required so that the PM and SSO CIO can measure the selected investment's progress towards achieving the program objectives and GSA's senior executives can determine the success of GSA's IT portfolio towards achieving the Agency strategic goals. To be valid and useful, performance measures should meet a number of criteria. The questions listed below, as well as their related evaluative issues, do not need to be specifically identified in a performance measure. But effective performance measures should address key components of each question.

- Are we measuring the right thing? Does the performance measure:
  - Address improvement in performance of mission; goals and objectives;
  - Assess the "value-added" contribution made by the organization's overall investment in information management, individual programs, or applications;
  - Capture the requirements of internal and external customers;
  - Address the internal performance of the function;
  - Reflect improvements in organizational learning and innovation; and
  - Address costs, benefits, savings, risk, or ROI.
- Do we have the right measures? Is the performance measure:
  - Targeted to a clear outcome (results rather than inputs or outputs);

- 
- Linked to a specific and critical process in the organization;
  - Understood at all levels that have to evaluate and use the measures;
  - Effective in prompting action;
  - Credible and possible to communicate effectively to internal and external stakeholders;
  - Accurate, reliable, valid, and verifiable; and
  - Built on data that are available at reasonable cost, appropriate, and timely for the purpose.
- Are the measures used in the right ways? Is the performance measure(s) used:
- In strategic planning (for example, to identify baselines, gaps, goals, and strategic priorities);
  - To guide prioritization of project/program initiatives;
  - In resource allocation decisions;
  - In day-to-day management of tasks, dollars, and personnel; and
  - To communicate results to stakeholders.

The number of performance measures needed is dependent upon the value of what the measures are tracking. The larger or more important the project, the more measures should be used. Conversely, the smaller the project, the fewer measures are needed. It is better to have a few very effective measures than a number of ambiguous measures.

Existing or proposed performance measures should be evaluated according to the above criteria. In addition, the performance measures should be periodically reviewed to assure that they constitute a sound, workable mix addressing the program/project range of goals and allowing for changing management and program requirements.

Performance measures are identified by each PM in their Performance Plan for the investment. The Performance Plan is intended to link the strategic, capital planning, and the budget processes. In order to accomplish this, performance plans must:

- Link mission to goals and objectives,
- Link goals and objectives to strategies and IT initiatives,
- Monitor IT investments through performance measures, and
- Address whether projects are accomplishing objectives.



Performance goals and measures must be identified in the Exhibit 300 in a format that is consistent with the format depicted in Table 14.

**Exhibit 300 Performance Goals and Measures Table**

	<i>Strategic Goal(s) Supported</i>	<i>Existing Baseline</i>	<i>Planned Performance Improvement Goal</i>	<i>Actual Performance Improvement Results</i>	<i>Planned Performance Metric</i>	<i>Actual Performance Metric Results</i>
<i>FY02</i>						
<i>FY03</i>						
<i>FY04</i>						
<i>FY05</i>						
<i>FY06</i>						
<i>FY07</i>						

**Table 14**

### **GSA IT Performance Measurement Principles**

Performance measures will be a key aspect of GSA's IT program and an opportunity to demonstrate the contribution of IT to mission performance. In its implementation of an effective IT performance measurement program, the Agency must adhere to the following principles:

- ❑ The contributions of IT to mission performance are measured in terms of improved efficiency (cost reduction) and effectiveness (increased productivity).
- ❑ IT strategic goals support the Agency's strategic goals.
- ❑ Performance measures measure the efficiency and effectiveness improvements that IT contributes to Agency and program outcomes or outputs, and therefore support or are linked with program performance measures.
- ❑ A baseline for IT activities must be determined so that goals can be set and measured from a particular starting point.
- ❑ Clear and objective Agency goals and indicators are developed to measure contributions to mission performance.

- ❑ Program managers and IT managers accept joint responsibility for IT planning and measuring achievement of results.
- ❑ Performance measures address specific IT projects in support of specific programs, as well as the Agency-wide IT infrastructure.
- ❑ Measures are selected that show the projected versus actual results.
- ❑ Intermediate annual performance measures (milestones) are established, where needed, to demonstrate progress toward achieving long-term goals.
- ❑ Performance measures are used to learn and make changes based on the actual results, thereby benefiting GSA.

### Types of Performance Measures

There are several types of performance measures. Major types are included in Table 15.

**Types of Measures**

Type of Measure	Description
<b>Input measure</b>	<i>The amount of resources used, e.g., staff, materials, and computer time.</i>
<b>Output measure</b>	<i>The calculation or recording of activity that can be expressed in a quantitative or qualitative manner.</i>
<b>Outcome measure</b>	<i>The assessment of the results of a program activity compared to its intended purpose.</i>
<b>Internal measure</b>	<i>A performance measure that is used but not reported to external customers.</i>
<b>External measure</b>	<i>An input/output/outcome measure that is reported to external customers and stakeholders, (e.g., OMB and Congress).</i>

**Table 15**

### Baseline

The key in determining the success or failure of a project, program, or function is establishing its current state (a baseline) before any changes are considered or implemented. The baseline is used in a variety of areas. Gap analysis, for example, uses the baseline to show the difference between the existing state and the target goal or objective.

Once the baseline goals and performance measures are established, the PM must identify the costs and schedule for the investment.

## Developing IT Investment Costs and Schedule

In order to demonstrate effective control over a project and report periodic project performance, the PM must track the project costs and schedule. Given that project execution routinely varies from the schedule baseline, it is necessary to set interim milestones (with a duration not greater than three months) that aid the PM in keeping the project on track.



Additionally, investment schedules and milestones must be identified in the Exhibit 300, as depicted in Table 16. Each phase and milestone of the schedule should be included with start date, end date, duration, planned cost, and funding Agency. Funding Agency may only be relevant for cross-Agency initiatives.

**Exhibit 300 Project Schedule and Funding Plan**

	Cost and Schedule Goals				
Description	Schedule		Duration	Planned Cost	Funding Agency
	Start Date	End Date	Days		

**Table 16**

If cost and schedule goals deviate from the original baseline, then OMB must approve the updated cost and schedule goals. Updated cost and schedule goals are submitted by completing Table 16 with the updated information.

Preparing and executing a well-planned budget is imperative for proper project planning. In order for the Agency CIO to effectively maintain, track, and analyze a true IT investment portfolio, the budget format for IT investments should be consistent across all GSA projects. This is especially important for the accurate population and submission of the Exhibit 53 (Agency Information Technology Investment Portfolio) to the OMB. At a minimum, GSA investment budgets should contain a sufficient level of detail to roll up into the Exhibit 53.





OMB Circular A-11 directs agencies to plan their IT capital assets in the following three phases: Planning, Full Acquisition, and Maintenance. Budgets are required to include amounts for prior years, current year and five future years, and any additional out-years. A best practice in this area is



for the PM to work closely with members from the budget office to ensure that the Exhibit 300 submission to OMB is consistent with all budgetary submissions. After determining project phases and project schedule, the PM should use the information from the BCA to break out all necessary project costs, by phase, to determine funding levels. Investment funding is summarized in the Exhibit 300 in Table 17.



**Exhibit 300 Summary of Project Spending**

	Summary of Spending for Project Stages (In Millions)								
	<i>PY-1 and Earlier</i>	<i>PY 2002</i>	<i>CY 2003</i>	<i>BY 2004</i>	<i>BY +1 2005</i>	<i>BY +2 2006</i>	<i>BY +3 2007</i>	<i>BY +4 &amp; Beyond</i>	<i>Total</i>
<i>Planning:</i>									
<i>Budgetary Resources</i>									
<i>Outlays</i>									
<i>Full Acquisition:</i>									
<i>Budgetary Resources</i>									
<i>Outlays</i>									
<i>Total, Sum of Stages:</i>									
<i>Budgetary Resources</i>									
<i>Outlays</i>									
<i>Maintenance:</i>									
<i>Budgetary Resources</i>									
<i>Outlays</i>									
<i>Total, All Stages:</i>									
<i>Budgetary Resources</i>									
<i>Outlays</i>									

**Table 17**



In this table, budgetary resources represent the total planned budget, per year, for the investment, while outlays represent the amount that is actually spent during that budget year.

Once an alternative has been selected and cost and schedule are complete, the PM must complete an acquisition plan. The acquisition plan is described in the next section.

## Acquisition Strategy

Acquisition planning should begin as soon as the need is identified; well in advance of the fiscal year in which the contract award is necessary. Acquisition Planning:

- ❑ Develops the overall acquisition strategy;
- ❑ States the PMs needs;
- ❑ Identifies all essential acquisition actions, including milestones; and
- ❑ Identifies potential sources.

The PM, contracting, financial, and technical personnel should take part in the creation of the acquisition plan. An acquisition plan is necessary as soon as a need is identified. A written plan is required when it is expected that the acquisition will be over the \$100,000 threshold. Acquisition planning and market research should be conducted for all acquisitions as appropriate for the dollar value and the complexity.

In order to achieve the desired acquisition objectives, the required acquisition plan must identify those milestones at which decisions should be made. The plan shall address all technical, business, management, and other significant considerations that will control the acquisition. The specific content of the plans will vary, depending on the nature, circumstance, and state of the acquisition. In preparing the plan, SSOs should adhere to the outline contained in FAR 7.105, summarized below, together with the Agency's implementing procedures contained in GSAM Part 507, and GSA Order APD 2800.13B, Comprehensive Acquisition Planning. In addition, supplemental requirements for the acquisition of major systems are covered under FAR Part 34.

Two levels of acquisition planning exist within GSA - comprehensive and limited. Both types of plans should address the mission, technical, and management considerations that will control the acquisition. The actual content of the plans will differ depending on the expected systems life cycle cost, stage of acquisition, complexity, and risk. However, no solicitation, with a value of \$100,000 or more, may be issued until either a comprehensive or limited acquisition plan has been prepared, or the requirement waived under GSAR 507.104(d), or GSA Order, APD 2800.13A, paragraph 9a.

- ❑ Comprehensive Acquisition Plans are required for IT resource requirements with a systems life cycle cost of \$50 million or more. Comprehensive Acquisition Plans are normally prepared for contracts that contain requirements which are complex, critical, have high visibility, are unique, or are first time acquisitions with which the Agency has little experience; and/or will be supported by significantly changed methods.

- ❑ Limited Acquisition Plans are required for IT resource requirements with a systems life cycle cost of between \$100,000 and \$10 million dollars. Limited Acquisition Plans are normally used for simpler, lower visibility, or repetitive requirements. A contracting officer, in cooperation with the requesting office, shall be responsible for preparing a Limited Acquisition Plan. Information on the contents of a limited acquisition plan is contained in GSAM 507.105(c).

Written plans may be prepared on a system basis or contract basis, depending on the nature of the acquisition. Written acquisition plans should be included in the I-TIPS Resource Library and summarized in the Exhibit 300.



### **Acquisition Planning Waivers**

Heads of Services and Staff Offices may waive the acquisition planning requirements for programs and classes of contracts if they determine that the service or staff office already has a detailed acquisition planning system in place that generally meets the requirements of GSA Order APD 2800.13B, Comprehensive acquisition planning. In addition, the requirements for detailed plans may also be waived for acquisitions having compressed delivery or performance schedules based on urgency of need. Any waivers must be coordinated with the Office of Acquisition Policy.

### **Acquisition Plan Format and Contents**

All acquisition plans for IT resources will be prepared in two parts, and include the contents as specified in FAR Subpart 7.105. Part I of a plan shall be prepared and submitted as part of the required documentation for the IT investment selection process phase. Part II of an acquisition plan would only be submitted after approval and funding of the major project, as part of the procurement phase.

#### **IT Investment Selection Process**

As part of the selection process, requesting offices will provide all the information listed below for Part I of the acquisition plan. The information to be provided includes background, objectives, and the overall acquisition strategy. All SSOs with major projects that include procurements from existing contracts must complete the Acquisition Plan, Part I information, and submit it for review and approval as part of the IT investment selection process.

### Acquisition Plan - Part I

The information in this section of the plan constitutes the acquisition strategy and initial plans and includes:

- ❑ Statement of Need;
- ❑ Applicable conditions;
- ❑ Cost;
- ❑ Perspective sources;
- ❑ Contract type;
- ❑ Source selection procedures;
- ❑ Capability or performance;
- ❑ Delivery requirements;
- ❑ Trade-offs; and
- ❑ Risks.

**Procurement Phase.** The Procurement Phase begins after the Agency has determined, in the Select Phase, that a large expenditure (\$100,000 or more) for IT resources is necessary, and has received funding authorization. The Procurement Phase includes those actions necessary to complete the acquisition of the required IT resource including: the final determination/validation of requirements; market research; completion of Acquisition Plan - Part II, and ends with effective post-award contract administration. The requesting office will complete the following steps and develop the required supporting documentation.

**Validate requirements.** The SSO should begin by validating that the Planning Phase decision is still current, and a need still exists for the IT resources.

**Final Market Research.** A more in-depth, formal market research effort is now required as the first step in the Procurement Phase. It should build on the data collected in the initial market survey. This research is done for the purpose of collecting and analyzing information about market capabilities to satisfy Agency needs.

### Acquisition Plan - Part II

Part II of an acquisition plan is required before a procurement can be initiated. The information in Part II shall serve as the “plan of action”, and include:

- ❑ Sources;
- ❑ Competition;
- ❑ Source selection procedures;

- 
- ❑ Contracting considerations;
  - ❑ Budgeting and funding;
  - ❑ Product descriptions;
  - ❑ Priorities;
  - ❑ Contractor versus Government performance;
  - ❑ Management information/Performance management system;
  - ❑ Test and evaluation;
  - ❑ Logistics consideration;
  - ❑ Government-furnished property;
  - ❑ Government-furnished information;
  - ❑ Other considerations;
  - ❑ Whether the Statement of Work (SOW) is performance based;
  - ❑ A summary the performance goals in the contract as stated in the SOW;  
and
  - ❑ Identification of participants in the acquisition planning.

**Major Systems Acquisition.** In addition to the acquisition planning requirements that are imposed by FAR Part 7, supplemental policies and procedures must be followed for the acquisition of major systems, as defined in FAR Part 34 and OMB Circular A-109. Policies and procedures for use in acquiring IT are contained in FAR Part 39.

**Final Acquisition Plan Approval.** Upon completion of Acquisition Plan – Part II, the plan will be submitted for review and approval by Contracting Officer, the Head of Contracting Activity (HCA), chairs of the ITC and Executive Committee, Competition Advocate, Senior Program official, and technical team leader. Detailed information on acquisition planning can be found in the FAR Part 7.

## Security Plan

The Computer Security Act of 1987 (CSA), the Office of Management and Budget Circular A-130 (OMB A-130), Appendix III, “Security of Federal Automated Information Resources”, Presidential Decision Directive 63 (PDD-63), “Critical Infrastructure Protection”, and the Government Information Security Reform Act (GISRA) establish security requirements for federal information systems. Agency CIO Order 2100.1, GSA IT Security Policy, and the GSA IT Security Procedural Guides establish comprehensive security policies and procedures for all GSA information systems, outline certification and accreditation requirements, and establish risk management and mitigation practices. The GSA Security Procedural Guide requires the development of a security plan for each investment. Once evaluations are completed to determine or update information on an investment’s risks, threats, vulnerabilities and needed controls, security plans are developed or updated to implement the needed security controls. The purposes of the plan are to:

- ❑ Provide an overview of the security requirements of the system, and describe the controls in place or planned for meeting those requirements; and
- ❑ Delineate responsibilities of all individuals who operate or access the system.

Developing and updating security plans are primarily the responsibility of the Information System Security Officer (ISSO), assisted by the system owner, and members of the GSA IT Security Office. To be consistent with OMB Circular A-130, summaries of the plans will be incorporated in GSA’s IT Capital Plan and the Exhibit 300.

At a minimum, system security plans should address:

- ❑ Permissible behavior concerning the access and use of a system;
- ❑ Training on security responsibilities and controls of general support systems and applications;
- ❑ Personnel (permission) controls that screen individuals prior to giving them separation of duties and access privileges based on need-to-know;
- ❑ Incident response procedures to provide users with help when a security incident occurs;
- ❑ Continuity of operations and contingency planning that ensure continued availability of services, functions, and data;
- ❑ Technical security that ensures adequate and cost-effective security products and controls are acquired, developed, tested, and implemented;



- 
- Controls that establish policies and safeguards for system interconnections and information sharing; and
  - Controls for applications that permit public access.

All major applications and general support systems should be covered by individual security plans. Individual security plans may be required for other non-major systems, including sensitive applications. The security controls for non-major systems will be provided by the general support systems in which they operate, and addressed in the general support systems' security plans.

The frequency of security plan reviews and updates should align with the frequency of updated risk assessment, which is commensurate with the acceptable level of risk for the system. At a minimum, this should be every three years for major and general support systems, and more often if a change affects the system's security posture. Security Plans should be included in the I-TIPS Resource Library. The investment must also conform to the Agency EA as described in the next section.



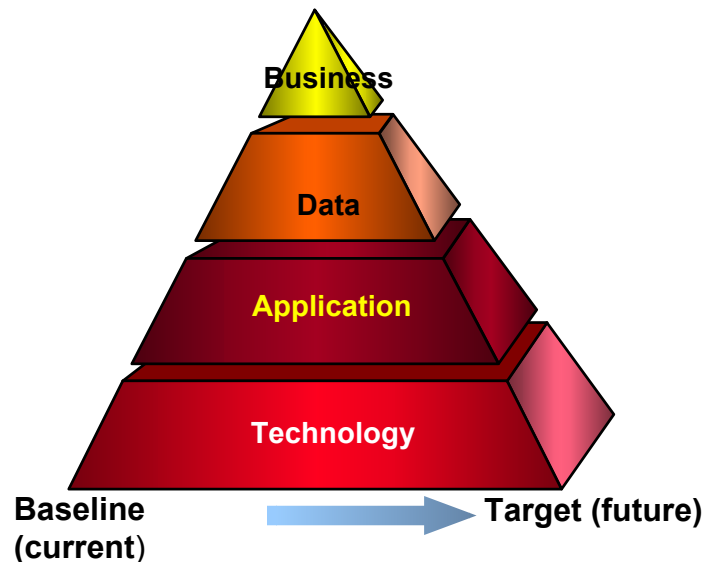
## Enterprise Architecture

An EA establishes the Agencywide roadmap to achieve an Agency's mission through optimal performance of its core business processes within an efficient IT environment. EAs are the “blueprints” for systematically and completely defining an organization's current or desired environment. EAs are essential for evolving information systems and developing new systems that optimize mission value.

OMB A-130 requires each Agency to use or create an EA Framework as part of their EA program. There are several existing models for developing an EA including the Zachman's framework, the FEEF, and the DoD C4ISR Framework.

Subsequent to the IT Capital Planning and Investment Control review being initiated, GSA also separately began an effort to develop an EA that moves beyond the established technical architecture level. This EA process, while less mature than the IT Capital Planning and Investment Control process, is being expanded to encompass the business, data and application levels within the overall framework and will model the CIO Council's Federal Enterprise Architecture Framework Model shown in Figure 9.

### Federal Enterprise Architecture Framework Model



**Figure 9**

The EA describes the “current architecture” and “target architecture” to include the rules and standards and systems life cycle information to optimize and maintain the environment which the Agency wishes to create and maintain by managing its IT portfolio. The EA provides a strategy that will enable the Agency to support its current state and also act as the roadmap for transition to its target environment. These transition processes will include IT Capital Planning and

Investment Control processes, EA planning processes, and systems life cycle methodologies.

The EA defines principles and goals and sets direction on such issues as the promotion of interoperability, open systems, public access, compliance with GPEA, end user satisfaction, and IT security. The Agency must support the EA with a complete inventory of Agency information resources, including personnel, equipment, and funds devoted to information resources management and information technology, at an appropriate level of detail.

The development of the GSA Enterprise Architecture Development, Management, and Use is an incremental and ongoing activity. The development plan will be documented in the GSA Enterprise Architecture Development, Management, and Use, and consists of the following parts:

- ❑ Enterprise Principles that state GSA's key goals and direction for the entire enterprise;
- ❑ EA Framework which is based from the FEAF matrix;
- ❑ Baseline EA which documents the existing business and technical operational environments;
- ❑ Target EA which defines a consistent, integrated vision of a desired future state of GSA's business processes and information systems;
- ❑ Standards Profile which contains vendor products, Federal, national, or international standards that have been approved for use across GSA; and
- ❑ Enterprise Transition Strategy which describes the general approach for improving GSA's business and technical practices over time to accomplish GSA's mission.

Further information regarding the GSA EA can be found in the GSA Enterprise Architecture Development, Management, and Use. If defined, maintained, and implemented effectively, the EA assists in optimizing the interdependencies and interrelationships among an organization's business operations and the underlying IT that support operations. When addressing the interdependencies between the EA and a particular investment, the following questions should be summarized in the Exhibit 300:



- ❑ Is the investment identified in the Agency's EA?
- ❑ What Lines of Business and Sub-Functions within the EA will be supported by the investment?
- ❑ How does the investment support various Lines of Business and Sub-Functions?
- ❑ Was the investment reviewed by the EA committee?



- What are the major process simplification/reengineering/design projects that are required as part of the investment?
- What are the major organization restructuring, training, and change management projects that are required?

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## Exhibit 300 – Capital Asset Plan and Business Case

The Exhibit 300 consists of two parts, each of which is designed to collect information that assists OMB during budget review. Agencies must review their portfolio of capital assets (Exhibit 53) each year to determine whether it continues to meet Agency mission needs reconciled with existing capabilities, priorities, and resources. Capital asset investments should be compared against one another (rated and ranked using decision criteria, such as investment size, complexity, technical risk, expected performance benefits or improvement) to create a prioritized portfolio.

Capital Asset Plans and Business Cases are products of a capital programming process and should be developed for all capital asset acquisitions. Major acquisitions are reported to OMB through an Exhibit 300. A Capital Asset Plan and Business Case for each new and on-going major acquisition should be included in each Agency's capital asset portfolio. A major project requires special management attention because of its:

- ❑ Importance to an Agency's mission;
- ❑ High development, operating, or maintenance costs;
- ❑ High risk;
- ❑ High return; or
- ❑ Significant role in the administration of an Agency's programs, finances, property, or other resources.

Major IT projects must have the concurrence of the Agency CIO (see OMB Circular A-11 section 53.3 for more information about major information technology projects).

The Exhibit 300 requires information that demonstrates compliance with the capital programming and IT Capital Planning and Investment Control processes, and justifies new or continued funding for major acquisitions by demonstrating a:

- ❑ Direct connection to an Agency's strategic plan;
- ❑ Positive ROI for the selected alternative;
- ❑ Sound acquisition (program and procurement) plan;
- ❑ Comprehensive risk mitigation and management plan;
- ❑ Realistic cost and schedule goals;
- ❑ Measurable performance benefits; and
- ❑ Direct link to the President's Management Agenda focusing on e-government initiatives.



Detailed information to substantiate the portfolio of major projects is included in the justification, and will be documented in accordance with the Agency's capital programming process. Information within the Exhibit 300 should not be re-created, but is a byproduct or summary of all of the planning information necessary to approve the capital investment.

#### IT Capital Plan Submission

At the end of the selection process, an IT Capital Plan is developed and submitted with the Agency budget. The IT Capital Plan includes all investments that have been approved through the select phase of the IT Capital Planning and Investment Control process, and is comprised of the Exhibit 300's for each investment. Recommendations for each of the SSO portfolios are made through the TRB, ITRB, ITC, and the Executive Committee, who has the ultimate responsibility of approving the IT investment portfolio.

Recognizing that business priorities may change and the rapid changes that occur in technology, updates to the IT Capital Plan may be necessary. If changes occur during the year, SSOs will submit IT investment selection documentation for any new IT investment, any enhancement, or modification to an existing operational system. The OCIO will assist the SSOs in the development of the necessary documentation. The SSOs will ensure that the changes are made in I-TIPS.

Once an investment is approved, it moves to the control phase as discussed in Chapter 4.

## Chapter Four

### ***IV. The Control Phase***

#### Control Phase Overview

The GSA IT Capital Planning and Investment Control process is a management, decision-making, and reporting process encompassing the Agency's IT investment program, from initial concept to subsequent retirement. The objectives of the GSA IT Capital Planning Control phase are to successfully develop, modernize, and enhance IT projects, to ensure that project risks and costs are managed, and goals and benefits are achieved. The Control phase allows GSA to ensure its investments are on schedule and identify any issues or deficiencies that may require corrective action.

In preparation for the Select phase, documentation and analyses are necessary to develop the essential information to request approval and funding. The information from the select phase serves as the baseline for the PM to measure and monitor the project throughout its life cycle as part of the Control and Evaluate phase.

Once the ITC and Executive Committee approve the project, it enters the Control phase where it is monitored throughout the system's life cycle. The TRB and ITRB review developmental systems on a monthly basis and steady state systems on a quarterly basis.

Project reviews have several purposes. First, a review measures the project's cost and schedule performance to ensure that variations are identified and adjustments are made. A review also compares significant project milestones against milestones of other projects within a service to identify cost savings and avoidance, or identify areas of conflicts that may hinder the project. The OCIO further analyzes project information from all the SSOs to identify global issues that exist between projects.

It is critical that PMs update the project status either monthly or quarterly depending on whether the system is developmental or steady state. This update will provide them an opportunity to analyze potential problem areas within their projects, and subsequently take appropriate corrective actions before deviations become significant. The OCIO will assist PMs in resolving any discrepancies that may occur in a project's status by coordinating a monthly analysis and summary of all IT investments with the PMs prior to submission to the ITC. Outputs of the control phase are discussed in the next section.

## Control Phase Outputs

The remainder of this chapter provides guidance on the completion of various control phase outputs including the GSA Monthly Summary Project Control Report, Risk Management Report, and OMB Earned Value Management tables. Each of these documents is summarized in Table 18 below.

**Investment Control Outputs**

Investment Control Output	Purpose
<b><i>Monthly Summary Project Control Report</i></b>	<i>Provide status on cost, schedule, and performance goals, through the use of “stop-lights”. This report brings poorly performing projects to management’s attention, and highlights projects that may need to be reviewed by the ITC or Executive Committee.</i>
<b><i>Risk Management Report</i></b>	<i>Provides status on each of the risks that was identified in the Risk Management Plan and outlines corrective actions, if necessary.</i>
<b><i>Earned Value Management</i></b>	<i>Earned Value Management is a project management technique that relates resources planning to cost, schedule and technical requirements.</i>

**Table 18**

A further description for each of the outputs, and “how-to” guidance for the completion of that element follows.



## Monthly Summary Project Control Report

On a monthly basis, PMs are required to complete Monthly Summary Project Control Reports, which provide project status in the areas of cost, schedule, and performance measures by assigning a green, yellow, or red grade. Commonly referred to as “stoplight reports”, the SSO CIOs will submit these reports on all major projects to the OCIO and ITC members. Costs should list projected fiscal year planning costs, what was planned and obligated for the month. An example of a stop light report is shown in Appendix 3, and is also included in the I-TIPS Resource Library.



If there are no changes to the stop light report, the SSOs may provide written notification in lieu of recreating the actual report. For any changes that indicate a yellow or red light, SSOs must submit an update that indicates the change in status, and an explanation for the change. Reports with red light changes must provide corrective action plans.

Major milestones from the stop light report should map to the Exhibit 300 submission and should identify at least one milestone to be achieved on a quarterly basis. Systems listed as development, modernization, or enhancement or are a mix of development and steady state systems should have unique quarterly milestones showing progression.

Performance measures should include, at a minimum, the two measures submitted to OMB in the Exhibit 53 so that they can be monitored. These measures should be quantitative and capable of being measured on a periodic basis. Other measures may be included as deemed necessary by the ITRB and ITC.

## Risk Management Report

A disciplined risk management system requires that risk status is reported and that escalation procedures are developed and followed. The PM should have identified potential risks in the Risk Management Plan. The Risk Management Plan indicates what the response to each risk will be if the risk is “triggered”. A trigger can be an event or measure that indicates that an action is required. For example, if the risk is that new technology may not easily integrate with legacy systems, the trigger event might be a one-week delay to implement due to integration challenges. The mitigation strategy should address what will be done to reduce the impact or “damage” of the event.

Identifying potential risks does not put the project in a less desirable proposition, but letting risks go unidentified and unmonitored can result in seriously negative impacts to project success. For this reason, it is essential that risks be continually monitored and reported on to the SSO CIO. The percent variance from the baseline determines the criticality of the risk and subsequent actions initiated. Some indicators of increased risk might be a high number of developmental change requests, reduced levels of stakeholder involvement and commitment, or significant deviation of architectural components from the Agency EA or security. One tool for reporting risks is the Risk Management Report included in Appendix B.

## Earned Value Management

Earned value is a management technique that relates resource planning to a schedule and technical performance requirements. Earned value analysis is a method for measuring project performance. It indicates how much of the budget should have been spent, in view of the amount of work done so far, and the baseline cost for the task, assignment, or resource. Earned value management (EVM) uses earned value as the tool for integrating cost, schedule, and technical performance, and risk management. The basic concepts of an EVM are:

- ❑ Plan all work scope for the project to completion;
- ❑ Integrate project work scope, schedule, and cost objectives into a baseline plan against which accomplishments will be measured;
- ❑ Objectively assess accomplishments at the work performance level;
- ❑ Analyze significant variances from the plan and forecast impacts; and
- ❑ Provide data to higher levels for management decision-making and implementation of management actions.

Earned value improves on the “normally used/previously budgeted” spend plan concept (budget versus actual incurred cost) by requiring the work in process to be quantified. Using the earned value process, members of management can readily compare how much work has actually been completed against the amount of work planned to be accomplished. Earned value requires the project manager to plan, budget, and schedule the authorized work scope in a time-phased plan. The time phased plan is the incremental “planned value” culminating into a performance measurement baseline. As work is accomplished, it is “earned” using the same selected budget term. Earned value compared with planned value provides work accomplished against planned. A variance to the plan is noted as a schedule or cost deviation.

Planned value, earned value, and actual cost data provides an objective measurement of performance, enabling trend analysis and evaluation of cost estimate at completion with multiple views of the project. The qualities and operating characteristics of earned value management systems are described in American National Standards Institute (ANSI/Electronic Industries Alliance (EIA) Standard 748-1998, *Earned Value Management Systems*.) OMB advocates the use of ANSI/EIA Standard 748 for integrating cost, schedule, and performance goals.

### Earned Value Management Terms

Three quantities, computed from the time phased summation of planned and actual costs associated with each initiative, form the basis for cost performance measurement using EVM. They are Budgeted Cost of Work Scheduled (BCWS)

or planned value, Budgeted Cost of Work Performed (BCWP) or earned value, and Actual Cost of Work Performed (ACWP) or actual cost of accomplished work. The above quantities are defined and illustrated in Figure 10.

### Earned Value Management Terms

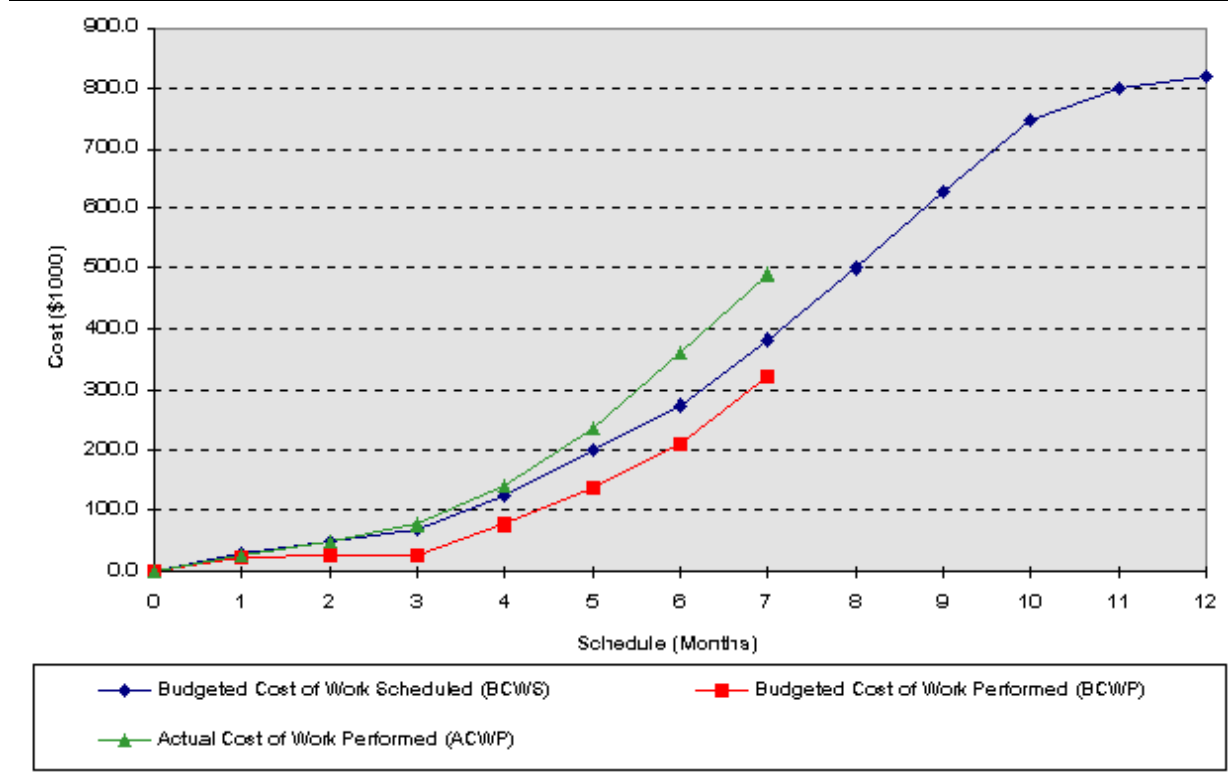


Figure 10

A further description of each of the terms is listed below.

- **Budgeted Cost of Work Scheduled (BCWS)** - The cumulative time-phased baseline costs up to the status date. It is used to view how much of the budget should have been spent in a particular timeframe.
  - **Example:** The baseline cost for an assignment is \$500, and is evenly distributed over its duration. The baseline start for the assignment is June 1 and the baseline finish is August 1. If today's date is July 1, then the BCWS is \$250. On June 1, the time-phased value is \$12.50, on June 2, the value is \$25.00, on June 3, the value is \$37.50, etc. The time-phased values are shown in this manner, distributed and accumulated across the month of June, until you see the total BCWS of \$250 on July 1.
  - **Best Uses:** Compare the BCWS to the BCWP (Budgeted Cost of Work Performed) to determine whether the task is behind or ahead of schedule in terms of cost.

- **Budgeted Cost of Work Performed (BCWP)** - The cumulative value of the tasks time-phased percentage of work complete multiplied by the assignment's time-phased baseline cost.
  - **Example:** It's Tuesday, and you need to report on time-phased BCWP for an assignment that has a baseline cost of \$400. The assigned resource has reported that the assignment is now 50 percent complete. If your status date is last Friday, and if the actual work represented by the 50 percent took place on Tuesday through Friday, then the time-phased BCWP shows as \$25, \$50, \$75, and \$100 on Tuesday through Friday, respectively.
  - **Best Use:** Compare the BCWP to the ACWP (actual cost of work performed) to determine whether the task is on track in terms of budget.
- **Actual Cost of Work Performed (ACWP)** - Time-phased costs incurred for work already performed by a resource on a task, up to the project status date. For equitable comparison, ACWP is only recorded for the work performed to date against tasks for which a BCWP is also reported.
  - **Example:** It's Friday, and you need to report on time-phased ACWP for an assignment that has a 5-day duration, scheduled from Monday through Friday of this week. The assigned resource is \$20 per hour, and the resource has reported 8 hours of actual work through Tuesday, and another 9 hours of work since then. The time-phased ACWP up through Tuesday is \$80 and \$160 (4 hours on Monday, and 4 hours on Tuesday, cumulative). If you used today's date as the status date, the time-phased ACWP would be \$80, \$160, \$220, \$280, and \$340 for Monday through Friday, respectively.
  - **Best Use:** View the resulting expense of a task based on actual work over time to see if the task is staying within budget. This information can be used after the tasks is completed, to help plan costs for future projects.

From these three quantities the PM can determine the total program budget, as well as make a determination of schedule and cost performance. It will also provide an estimated cost of the project at its completion that matches with Summary of Spending for Project Stages in the Exhibit 300. Five additional terms are defined to record cost and schedule performance and program budget include:

- **Budget at Completion (BAC)** - The sum of all of the budgets allocated to a project. There generally is an amount of management reserve, which is a portion of the total project budget not allocated to specific tasks and withheld for management control purposes. The BAC consists of all work performed plus all management reserves.
- **Schedule variance (SV)** - The difference between the work scheduled (BCWS) and the work actually performed (BCWP). The schedule

variance is calculated in terms of the difference in dollar value between the amount of work that should have been completed in a given time period and the work actually completed.

- **Cost variance (CV)** - The difference between the planned cost of work performed (BCWP) and actual cost incurred for the work (ACWP). This is the actual dollar value by which a project is either over-running or under-running its estimated cost.
- **Estimate at Completion (EAC)** - Actual costs incurred by the project to date plus an estimate of the costs for work remaining. At the start of the project BAC and EAC will be equal. Only as actual costs (ACWP) vary from planned costs (BCWP) will EAC vary from BAC.

Cost and schedule variance for the project may or may not reflect the actual cost and schedule position of the project. Some effort may be completed ahead of schedule or out of sequence, giving a false indicator of project well-being, particularly if the such effort represents a significant portion of the project effort. However, when tracking an individual milestone CV and SV can provide an indicator on how that milestone is performing relative to its plan. It is this indicator that serves as the basis for the use of EVM. The Exhibit 300 requires that earned value be tracked and reported through the use of the Table 19.



**Exhibit 300 EVM Table**

	<b>Planned</b>					<b>Actual</b>			
<i>Description</i>	<i>Schedule</i>		<i>Duration</i>	<i>Planned Cost</i>		<i>Schedule</i>		<i>Percent Complete</i>	<i>Actual Cost</i>
	<i>Start Date</i>	<i>End Date</i>	<i>Days</i>	<i>(000)</i>	<i>Funding Agency</i>	<i>Start Date</i>	<i>End Date</i>		

**Table 19**



OMB requires the PM to complete the calculated values described below. Table 20 should be used to complete the Exhibit 300 calculated values.

**Exhibit 300 EVM Project Summary**

Calculation	Project Summary
<i>Cost Variance = (BCWP – ACWP)</i>	
<i>Cost Variance % = (CV/BCWP x 100%)</i>	
<i>Cost Performance Index (CPI) = (BCWP/ACWP)</i>	
<i>Schedule Variance = (BCWP/BCWS)</i>	
<i>Schedule Variance % = (SV/BCWS x 100%)</i>	
<i>Schedule Performance Index (SPI) = (BCWP/BCWS)</i>	
<i>Estimate at Completion (EAC) = ACWPcum + PF(BAC – BCWPcum) where PF = 1/CPI, and (EAC) = CPI x SPI</i>	
<i>Variance at Completion (VAC) = (BAC – EAC)</i>	
<i>Variance at Completion % = (VAC/BAC x 100%)</i>	
<i>Expected \$ to Completion</i>	
<i>Expected Completion Date</i>	

**Table 20**

## Control Phase Investment Screening

The ITRB review and assessment areas will focus on cost/schedule issues, meeting OMB requirements, documentation, and performance measures. These reviews should answer the following questions:

- ❑ Has a business case been provided for the investment?
- ❑ Is the planned versus actual costs within a 10% variance? Is there a complete justification for any changes?
- ❑ Is the planned versus actual schedule within a 10% variance? Is there a complete justification for any changes?
- ❑ Do we have a benefit/cost analysis and did it accurately project the total life cycle costs and deliver the benefits?
- ❑ Are our performance measures significant to accurately measure the outcome of our system?
- ❑ Is the defined life cycle methodology being followed?
- ❑ Are we in compliance with Section 508, GPEA and other requirements?

Annually, major projects are required by OMB to review their systems and have an E-Government business case that is submitted through the Exhibit 300. The ITRBs should review the business case for cost reasonableness, technical conformance and benefit realization of any project prior to proceeding.

As requested, the OCIO will provide reports, generated from project information, to the ITRBs to assist them in their reviews. A sample “Security Document and Life Cycle Costs” report is shown in Appendix 4. The intent of such reports is to provide documentation to the ITRBs that identify the status of activity in a specific area and any areas that may deserve attention. For example, in the sample report, the completion of a security plan and risk assessment is identified by completion date and start date for next update. It further compares IT Security costs against life cycle costs for each project to determine if there is appropriate and adequate funding budgeted to accomplish these activities as required by OMB. This detailed information will be limited to the SSO ITRB Chairs and membership, as appropriate, and the GSA OCIO.

If the ITRB determines that a project must have closer review and monitoring, the ITRB will initiate an independent SRB. The SRB’s role is to focus on specific issues or problems within a particular project and to assist in getting the project back on track. Members should be specialists drawn from within or outside of the Service or Agency. The SRB works with the project manager until a solution is found and the project is considered to be stable. The SRB reports to the ITRB on all actions, decisions, and status of the project. The ITRB is required to document the results of the SRB and report their activities, findings, and





recommendations (if any) to the ITC. The ITRB will determine, with the approval of the ITC, when a SRB is no longer necessary.

All reports to the ITC, whether there is a SRB or not, will be provided monthly. Each CIO will provide a general high level report on the status of their IT project portfolio, but will provide detailed reports on any projects that are under review by a SRB. On a quarterly basis, the ITC/COC will be provided a detailed status on the entire portfolio. The SSO CIOs, or their designees, who will serve as their ITRB chair, will report their IT project status to the ITC/COC. The ITC/COC may request specific information about an IT project or program status. These questions will be documented and the SSO will provide a time of reporting back to the ITC.

OMB requires that the GSA's Office of Acquisition Policy review and approve IT projects. As such, the OCIO and Office of Acquisition Policy provide status information to the ITC on the overall IT program. The ITC/COC can request from the Agency CIO's office additional information that may be useful in assessing GSA's IT investments.

The focal point for ensuring SSOs ITRB reporting information is accurate and up to date is the responsibility of the Service Representatives. The Office of Policy and Plans will coordinate with the Service Representatives to ensure that accurate, timely and complete updates are made.

Communication is vital in linking GSA's ITRBs to the ITC/COC, the Agency CIO, and the Office of Acquisition Policy. Depending on the project and subject matter, one or more projects are reviewed per session. The ITRB reviews project status information to determine if the project has a potential for schedule and cost slippage, needs assistance in developing required documentation that may affect the project's outcome, or contains other potential areas that may require outside expertise. The involvement of SSOs from other organizations at each ITRB meeting will vary depending on the project and the subject matter being discussed.

Additionally, PMs are required to complete Monthly Summary Project Control Reports, on a monthly basis, that report project status in the areas of cost, schedule, and performance measures by assigning a green, yellow or red grade. The SSO CIOs will submit these "stop light reports" on all major projects to the Agency CIO.

## Security Reviews

For IT security the ITRB review and assessment areas should include development of security and risk assessment plans. These reviews should answer the following questions:

- ❑ Is there an up-to-date risk assessment and, if not, has it been funded?
- ❑ Is there an up-to-date security plan and, if not, has it been funded?
- ❑ Has an up-to-date certification and accreditation (C&A) statement been signed for this system, if not has a C&A been funded?
- ❑ Has an up-to-date contingency plan been developed, if not, has it been funded?
- ❑ Has someone been designated as responsible for ensuring adequate security controls are designed/developed/implemented/maintained? (i.e., is there an Information Systems Security Officer assigned to this system).

For EA the ITRB review and assessment areas will include a strong emphasis on the technical architecture. These reviews should answer the following questions, among others:

- ❑ Does the project meet established EA standards?
- ❑ Will new standards be required and has the case for the standards been presented to and approved by the TRB?
- ❑ What is the impact on the Agency-wide infrastructure?
- ❑ Will upgrades be required and, if so, what impact will this have on costs? risks?

The following Checklist depicts which review groups see which pieces of documentation during the Control Phase:

**Control Phase Documentation Review Checklist**

	<i>Executive Committee</i>	<i>ITC/COC</i>	<i>ITRB</i>	<i>TRB</i>	<i>SRB</i>	<i>OCIO</i>
<b>Monthly Summary Project Control Report</b>	<i>If Necessary</i>	<b>X</b>	<b>X</b>	<b>X</b>	<i>If Necessary</i>	<b>X</b>
<b>Risk Management Report</b>	<i>If Necessary</i>	<b>X</b>	<b>X</b>	<b>X</b>	<i>If Necessary</i>	<b>X</b>



<b>Earned Value Management Report</b>	<i>If Necessary</i>	<b>X</b>	<b>X</b>	<b>X</b>	<i>If Necessary</i>	<b>X</b>
<b>Security Reviews</b>	<i>If Necessary</i>	<b>X</b>	<b>X</b>	<b>X</b>	<i>If Necessary</i>	<b>X</b>

**Figure 11**

Items marked “If Necessary” will only require review if deemed appropriate by the ITC/COC or if an SRB is required. Generally these are investments that are significantly off track or are a high management priority.

## **Chapter Five**

### ***V. The Evaluate Phase***

#### **Evaluate Phase Overview**

The evaluate phase “closes the loop” on the IT development effort by comparing the actual results against estimates in order to assess performance and identify areas where future decision-making can be improved. Lessons that are learned during the Evaluation phase shall be incorporated into future Selection and Control decisions.

The information used to evaluate the system is gathered in a PIR, which should be conducted once the project has reached a final end point, e.g., the project is fully implemented or the project has been cancelled. The purpose of the review is to conduct an assessment of the implemented project and to forward the results to senior management.

Once the PIR has been completed, the head of services, staff offices, or regional administrator that owns the system will have an opportunity to review all information collected in the PIR. Subsequently the ITC will be briefed with the results of the review. The ITC, along with the system owner, then decides whether to continue, modify, or cancel the operational system and on any adjustments that must be made to the system. Adjustments should be carried out by the PM, while the ITRB monitors the progress of such adjustments.

The final activity of the Evaluate phase provides lessons learned back into the investment Selection and Control phases so that they may significantly improve the chances of success for future projects and improve the investment management process. The system is then passed into the Control phase as a steady state project.

#### **Evaluate Phase Outputs**

The remainder of this chapter provides guidance on the completion of various Evaluate phase outputs including the GSA PIR, User Satisfaction Survey's, and Lessons Learned. Each of these outputs is summarized in Table 21.



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### Evaluate Phase Outputs

Evaluate Phase Outputs	Purpose
<b><i>Post-Implementation Review</i></b>	<i>PIRs provide an implementation assessment of the system, including an evaluation of the development process, and indicate the extent to which GSA's IT Capital Planning and Investment Control phases are sustaining or improving the success rate of IT projects.</i>
<b><i>User Satisfaction Survey</i></b>	<i>Survey used to determine the level of user satisfaction or dissatisfaction with the product.</i>
<b><i>Lessons Learned</i></b>	<i>Solicits and documents feedback on the GSA IT Capital Planning and Investment Control process.</i>

**Table 21**

A further description for each of the outputs, and “how-to” guidance for the completion of that element follows.

## **Post Implementation Review**

Once the project is fully implemented; a PIR is to be conducted. This review will occur about three to six months after the system has become operational. It is highly recommended that the review be conducted by a group other than the project team, which has been responsible for the development of the system. This ensures that it is conducted independently and objectively. Subsequent PIRs are to be conducted every two years after the first PIR to ensure that the completed system is continuing to meet organizational and user needs.

Each PIR that is conducted has a dual focus. First, it provides an implementation assessment of the system, including an evaluation of the development process. Secondly, it indicates the extent to which the GSA's IT Capital Planning and Investment Control (Select and Control) phases are sustaining or improving the success rate of IT projects.

The following areas are to be evaluated as part of a complete PIR. Each topic must be documented with a summary of findings that support the conclusions and recommendations.

### **Mission**

An analytical approach is to be taken to determine whether the implemented system has achieved its proposed impact on the Agency's business. It is important that all Agency IT capital investments are aligned with the organization's mission and the Agency's program objectives. Materials related to mission and performance measures are reviewed such as:

- ❑ Agency Mission Statement;
- ❑ Statement of Project/System Purpose and Business Case;
- ❑ Agency Strategic Plan and IT Strategic Plan;
- ❑ Performance measures, indicators, or other metrics;
- ❑ Reports on progress toward meeting original baseline design goals or performance measures.

The following questions should be answered:

- ❑ How does the investment support or influence mission effectiveness?
- ❑ Do the performance measures reflect the effectiveness of the investment to achieve mission goals?
- ❑ How well were the original baseline performance measures identified?
- ❑ How well was progress in attaining target performance goals

IT capital investments are to be analyzed and evaluated in respect to the overall benefits for GSA business practices. The PIR team is obligated to determine the status of several project variables, including the delivery of services or products, estimation of cost savings, compliance with GSA's EA, and evaluations of the information product (e.g., accuracy, timeliness, adequacy, and appropriateness of information, identification of additional maintenance, and security).

### **Systems Description**

A specific description of the functions of the system should be documented. The tasks performed and the approach taken to accomplish each task and the resources used need to be outlined. All hardware, software, and applications software associated with the system should be documented as well. All personnel requirements and geographic locations that provide input, receive output, or assist in system processing should be identified. Finally, there should be an explanation of how the system contributes to the organization's mission.

### **Change Control**

The Change Control process and procedures for the system should be documented and evaluated for efficiency. A determination should be made of the number and severity of the changes to date and their impact on the stability of the system. An assessment should also be made describing the system's ability to respond to changing requirements.

### **Operation**

An analysis of the system operation, including hardware, system and application software should be conducted and compared against those projected. Finally, recommendations regarding system changes and redesign should be made based on projected comparisons and operation problems.

### **Security**

A security evaluation should be conducted to verify that the appropriate security requirements are documented and enforced. If problems are identified in this area, these should be outlined and corrective actions need to be identified. Any security or risk incidents need to be identified and analyzed for potential system weaknesses. An evaluation should be made of the cost effectiveness of system security measures and recommendations made where improvements can be made. Finally, the contingency plans need to be checked to ensure that they are current and are feasible to minimize loss from threats and equipment/software malfunctions.

### **Outputs**

The outputs of the new system (e.g., reports, data, or formats) need to be compared to those that were initially proposed. The impact of any changes on



the initial design, geographic locations, or telecommunications factors should also be evaluated and documented.

### **Documentation**

Any system documentation such as User's Guides or Operations Manuals should be reviewed for completeness, accuracy, and timeliness. A list of all required documentation should be developed and kept up to date.

### **Management**

A review of the support organization structure should be examined. The organizational structure and responsibilities as implemented should be compared against those documented during the project. The system ownership and individual authorities and responsibilities should be verified and updated, as required. Any areas where there is conflicting, unidentifiable or inappropriate management or supervision should be identified and corrected. Training issues should also be examined in this area to ensure that personnel (users and support) are properly trained. A checklist that details each of the PIR elements is included in Figure 12.



**Post Implementation Review Checklist****❑ Mission**

Determine whether the implemented system has achieved its proposed impact on the Agency's business. The status of the following criteria needs to be analyzed:

1. Delivery of services or products.
2. Estimation of cost savings.
3. Compliance with the information technology architecture.
4. Evaluations of the information product.
5. Identification of additional maintenance and security.

**❑ System Description**

A specific description of the functions of the system need to be documented and an explanation of how this system contributes to the organizational mission should be included. The following are criteria used to assess the functional and task oriented information that should be included in the PIR documentation:

1. Have all hardware, software and necessary applications been documented?
2. Have all personnel requirements and geographical locations that provide input, receive output, or assist in system processing been identified?
3. Has the system's contribution to the Agency mission been documented?

**❑ Change Control**

The change control process and procedures for the system should be documented and evaluated for efficiency. The following are criteria used to assess the change control information that should be included in the PIR documentation:

1. Has the number and severity of the changes made that have impact on the stability of the system been evaluated?
2. Has an assessment been made in describing the system's ability to respond to changing requirements?

**❑ Operation**

An analysis of the system operation, including hardware, and system and application software should be conducted and compared against those projected. Also, recommendations regarding system changes and redesign based on projected comparisons and operational problems needs to be documented. The following are criteria used to assess the operational information that should be included in the PIR documentation:

1. Has an analysis of the system operation, including hardware, and system application software been conducted and compared against those projected?
2. Have recommendations regarding system changes and redesign based on projected comparisons and operation problems been documented?

**❑ Security**

A security evaluation should be conducted to verify that the appropriate security requirements are documented and enforced. If problems are identified in this area, these should be outlined and corrective actions need to be identified. The following are criteria used to assess the security information that should be included in the PIR documentation:

1. Has a security evaluation been conducted and have the all security issues been identified and enforced?
2. Has there been an evaluation conducted to measure cost effectiveness?
3. Has there been an evaluation conducted to measure systems security measures?
4. Has there been an evaluation conducted to determine the effectiveness of PIR recommendations?
5. Have contingency plans been checked to ensure they are current, feasible and designed to mitigate loss?

**Figure 12**

The PIR should be made available in the I-TIPS Resource Library. In addition to the items reviewed in the PIR, the following areas need to be evaluated and assessed and may be added to the PIR:

### **Technical Capability**

The technical capabilities of the project, both current and future, should be reviewed and evaluated. Factors such as the competency of the workforce to use the new system and employee satisfaction or retention, the extent to which advanced technology was used, and the methodological expertise of the development team should be considered.

### **Measurements of Actual Versus Projected Performance**

The project's actual results should be compared to planned estimates in terms of cost, schedule, performance, and mission improvement outcomes. An attempt should also be made to determine the causes of major differences between the planned and final results.

### **Evaluation of Outstanding Issues**

If the PIR reveals issues that still require attention, these issues need to be identified and documented. The issues should clearly document the estimates of cost and time, the risks for not addressing the issue, any tradeoffs or alternatives, and provide a recommendation from the PIR review team. The issues should then be sent to senior management for evaluation and a final decision on the actions to be taken.

Once the actual final financial and performance measurement information for the initiative has been gathered, it should be compared against the planned results. This will allow a determination to be made as to the success of the initiative and to determine the causes of any differences between planned and actual results. The following five areas should be evaluated in this process:

- ❑ Evaluation of Cost Information – compares the actual versus planned life cycle costs for the initiative;
- ❑ Evaluation of Financial Return Information – compares the actual versus planned results for financial performance measures;
- ❑ Evaluation of Non-Financial Return Information – compares the actual versus planned results for non-financial performance measures;
- ❑ Evaluation of Acquisition and Procurement Information – compares the actual versus planned results for contract and contractor information; and
- ❑ Evaluation of Budget and Financing Information – compares the actual versus planned results for funding source and general budget and financing information.



If I-TIPS is being used, the system will pull up the planned results on the screen and allow the actual results to be entered by the PM. The variances for each of the areas are then calculated automatically and displayed on the same screen.

## User Satisfaction Survey

The ultimate success of the project depends on the customer/user's satisfaction with the end product. Customers and users need to be surveyed to determine the level of satisfaction or dissatisfaction with the product. The survey should focus on whether the project has delivered the planned performance and benefits projected at the beginning of the project. The original performance goals and measures need to be compared against the final performance results quantitatively to see how successful the project was in meeting its goals. Intangible benefits that were identified at the outset also need to be surveyed as to the customers and end users assessment of using the final product. These include ease of use of the new system, system performance, system documentation and training, and user support. If deficiencies or problem areas are uncovered as a result of the survey, corrective actions need to be identified and implemented. The



User Satisfaction Survey must be included in the I-TIPS Resource Library.

Even after a project has been implemented, decisions should be made on a regular basis about the status of the project. Senior managers should regularly question whether 1) the current system meets organizational needs, 2) the system should be modified to better meet these needs, 3) a new system is needed to best meet these needs, or 4) the needs could best be met by outsourcing the work. The information assembled during the Control phase will assist the managers in making decisions for implemented projects.

## Lessons Learned

All of the PIR information gained in the Evaluate phase should be collected and maintained along with all other project information gathered during the Select and Control phases. Feedback regarding the IT Capital Planning and Investment Control process should be solicited and captured. Once this information has been acquired it must be readmitted into the IT Capital Planning and Investment Control process and documented as lessons learned for future IT investments. In order for this type of documentation to be used effectively, it is necessary the documented lessons learned be stored in the I-TIPS Resource Library.



Additionally, project documentation used by PMs, stored in the Resource Library, should be treated as lessons learned documentation as it should be used and replicated by other PMs. The refinement of the phases will help to augment project-monitoring procedures and improve the subsequent results of prospective IT Capital Investments.

## Evaluate Phase Investment Screening

The PIR provides senior management with a snapshot view of a system that has recently become operational. The intent is to provide an assessment of the implemented project and identify areas where future decision-making on other projects can be improved. The PIR is designed to signal potential problems in seven areas that are deemed important by OMB, GAO and GSA. These areas are performance goals, business improvement, user support, user training, user documentation, outstanding issues, and process improvement. Items that are identified as potential trouble areas may receive special attention by senior management.

Completing PIR Reports will provide a reference point measurement for other projects and will provide senior management the ability to identify trends within a project and within the IT Capital Planning and Investment Control process. If one project shows a consistent red under cost, senior management can then drill down into the information and take corrective action. Multiple projects that show a consistent red under cost may indicate a process problem (e.g., more training is required to help PMs better estimate IT costs).

Using the PIR and User Satisfaction Survey, the capital planning analysts develop the PIR Report for briefing senior management at the ITC and the Executive Committee, as necessary. The ITC then decides whether to continue, modify, or cancel the operational system and will decide on any adjustments that must be made to the system. Adjustments should be carried out by the PM, and the progress monitored by the ITRB for the ITC.

The PIR along with the User Satisfaction Surveys should then be used to develop best practices and lessons learned that would improve the IT Capital Planning and Investment Control process. Best Practices and Lessons Learned from each PIR will be placed on the I-TIPS Resource Library by the CIO capital planning analysts so that each PM can learn from them.



## Evaluate Phase Decisions

Some key decisions will be made during the Evaluation phase, including:

- ❑ Assessment of how well the project met its intended objectives.
- ❑ Determination of any changes or modifications to the project, which are still needed.
- ❑ Identification of ways to modify or improve the overall investment management process to better maximize results and minimize risks.



The results and recommendations that arise out of the PIRs, combined with other project information, are critical input for senior decision-makers to use to assess the project's impact on mission performance. In making this assessment, senior managers will need to be provided the answers to a number of questions about the project, including the following:

- ❑ How effective was the project in meeting the original objectives? Are these objectives still valid?
- ❑ Were the original business assumptions used to justify the project?
- ❑ What is the current status of the system?
- ❑ Are further changes necessary?

#### Completion of Evaluate Phase

Once all of the activities of the Evaluate phase have been completed, the project then goes into control phase to be controlled and monitored as a steady state project. Any of the modifications or actions recommended in the Evaluate phase decisions should be monitored and tracked as part of the normal steady state review process. Additional PIRs should be conducted every two years following the first PIR to ensure that the operational system is continuing to meet organizational needs.

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# IT Capital Planning & Investment Control Guide Appendices



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<b>Appendix A: GSA IT Capital Planning and Investment Control Glossary</b>	<b>Appendix A-1</b>
<b>Appendix B: GSA Investment Selection Risk Assessment Worksheet ...</b>	<b>Appendix B-1</b>
<b>Appendix C: Monthly Summary Project Control Report .....</b>	<b>Appendix C-1</b>
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# Appendix A: GSA IT Capital Planning and Investment Control Glossary

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## GSA IT Capital Planning and Investment Control Glossary

Term	Definition	Source
Acquisition	The acquiring by contract with appropriated funds of supplies or services for the use of Federal Government through purchase or lease, whether the supplies or services are already in existence or must be created, developed, demonstrated, and evaluated.	GAO/AIMD-10.1.23 May, 2000, pg.141
Agency IT Capital Plan	A document that identifies existing and proposed IT capital assets and that provides justification for new capital funding. Included in the IT capital plan should be a statement of the agency's strategic plan, a description of assets already owned by the agency or in procurement, an analysis detailing the performance gap between existing capabilities and the goals and objectives highlighted in the strategic plan, justification for new capital acquisitions proposed for funding, and other related information.	GAO/AIMD-10.1.13 February, 1997, pg.104
Alignment	The degree of agreement, conformance, and consistency among organizational purpose, vision and values; structures, systems, and processes; and individual skills and behaviors.	GAO/AIMD-10.1.13 February, 1997, pg.104
Annual Performance Plan	A document, covering each program activity identified in an agency's budget, that describes the actions and goals that the organization will undertake during the year to work towards the long-term goals established in the organization's strategic plan. Specifically, the annual performance plan establishes the agency's performance goals for the year, describes strategies the agency will use to meet these goals, and identifies performance measures to measure or assess the relevant service levels, outcomes, or outputs that are to be achieved and to compare actual program results with the established performance goals	GAO/AIMD-10.1.13 February, 1997, pg.104
Annual Program Performance Report	A report submitted with an agency's budget submission that compares actual agency performance to annual goals established in an agency's annual performance plan.	GAO/AIMD-10.1.13 February, 1997, pg.104
Appropriations	An appropriation provides budget authority that permits Government officials to incur obligations that result in immediate or future outlays of Government funds.	OMB Circular A-11, Supplement 1, pg.57
Benchmarking	A structured approach for identifying the best practices from industry and government, and comparing and adapting them to the organization's	GAO/AIMD-10.1.13 February, 1997, pg.104



Term	Definition	Source
	operations. Such an approach is aimed at identifying more efficient and effective processes for achieving intended results, and suggesting ambitious goals for program output, product/service quality, and process improvement.	
Benefit	A term used to indicate an advantage, profit, or gain attained by an individual or organization.	GAO/AIMD-10.1.13 February, 1997, pg.105
Benefit/Cost Analysis	A technique used to compare the various costs associated with an investment with the benefits that it proposes to return. Both tangible and intangible factors should be addressed and accounted for.	GAO/AIMD-10.1.13 February, 1997, pg.105
Best Practices	The processes, practices, or systems identified in public and private organizations that performed exceptionally well and are widely recognized as improving a organization's performance and efficiency in specific areas. Successfully identifying and applying best practices can reduce business expenses and improve organizational efficiency.	GAO/AIMD-10.1.13 February, 1997, pg.105
Budget Authority	Budget authority is the authority provided by Federal law to incur financial obligations that will result in outlays. Most budget authority for acquisitions is in the form of appropriations; other types are contract authority, authority to borrow, and spending authority from offsetting collections.	OMB Circular A-11, Supplement 1, pg. 84
Business Case	A 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 a risk-adjusted cost-benefit analysis.	GAO/AIMD-10.1.13 February, 1997, pg.105
Capital Project	The total capital project, or acquisition of a capital asset, includes useful segments that are either planning segments or useful assets.	OMB Circular A-11, Supplement 1, pg.84
Commercially Available Off-The-Shelf (COTS) Item.	Any item, other than real property, that is of a type customarily used by the general public for non-governmental purposes, and that has been sold, leased, or licensed to the general public; is sold, leased, or licensed in substantial quantities in the commercial marketplace; and is offered to the Government, without modification, in the same form in which it is sold, leased, or licensed in the commercial marketplace.	OMB Circular A-11, Supplement 1, pg.85





Term	Definition	Source
Cost	Defined in SFFAC No. 1, Objectives of Federal Financial Reporting, as the monetary value of resources used. Defined more specifically in SFFAS No. 4, Managerial Cost Accounting Concepts and Standards for the Federal Government, as the monetary value of resources used or sacrificed or liabilities incurred to achieve an objective, such as to acquire or produce a good or to perform an activity or service. Depending on the nature of the transaction, cost may be charged to operations immediately (i.e., recognized as an expense of the period) or to an asset account for recognition as an expense of subsequent periods. In most contexts within SFFAS No. 7, Accounting for Revenue and Other Financing Sources, "cost" is used synonymously with expense. See also, "Full Cost."	OMB Circular A-11, Supplement 1, pg.85
Cost, Full	All direct and indirect costs to any part of the Federal Government of providing goods, resources, and services (OMB Circular A-25). The total amount of resources used to produce the output. More specifically, the full cost of an output produced by a responsibility segment is the sum of: 1) the costs of resources consumed by the responsibility segment that directly or indirectly contribute to the output; and 2) the costs of identifiable supporting services provided by other responsibility segments within the reporting entity and by other reporting entities (SFFAS No. 4, Managerial Cost Accounting Concepts and Standards for the Federal Government).	OMB Circular A-11, Supplement 1, pg.85
Costs, Life-cycle	Life-cycle costs of an asset are all direct and indirect initial costs, including planning and other costs or procurement; all periodic or continuing costs of operation and maintenance; and costs of decommissioning and disposal.	OMB Circular A-11, Supplement 1, pg.87
Cycle Time	The time that elapses from the beginning to the end of a process or sub-process.	GAO/AIMD-10.1.13 February, 1997, pg.105
Decision Criteria	Documented set of factors that are used to examine and compare the costs, risks, and benefits of various IT projects and systems. These decision criteria consist of 1) screening criteria, which are used to identify whether new projects meet initial acceptance requirements and ensure that the project is reviewed at the most appropriate organizational level, and 2) criteria for assessing and ranking all projects. These ranking criteria weigh the relative costs, risks, and benefits of each project against all other projects.	GAO/AIMD-10.1.13 February, 1997, pg.106



Term	Definition	Source
Development/ Modernization/ Enhancement	The program cost for new systems, changes or modifications to existing systems that improve the capability or performance, changes mandated by Congress or agency leadership, personnel costs for project management, and direct support	OMB Circular A-11, pg.114
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 date of initiation for the program or policy until the given future year.	GAO/AIMD-10.1.13 February, 1997, pg.106
Discount Rate	The interest rate used in calculating the present value of expected yearly benefits and costs.	GAO/AIMD-10.1.13 February, 1997, pg.106
Earned value	A management technique that relates resource planning to schedules and to technical, cost, and schedules requirements. All work is planned, budgeted, and scheduled in time-phased "planned value" increments constituting a cost and schedule measurement baseline. There are two major objectives of an earned value system are to encourage contractors to use effective internal cost and schedule management control systems and to permit the government to be able to rely on timely data produced by those systems for determining product-oriented contract status.	OMB Circular A-11, Supplement 1, pg.57
Enterprise Architecture	A strategic information asset base, which defines the mission, information necessary to perform the mission and the technologies necessary to perform the mission and the transitional processes for implementing new technologies in response to the changing mission needs.	CIO Council Federal Enterprise Architecture, February 2001.
Exhibit 300	Designed to coordinate OMB's collection of agency information for its report to the Congress as required by the FASA and Clinger Cohen Act of 1996.	OMB Circular A-11 update June 2002.
Financial Management Systems	A system that consists of financial systems and the financial portions of mixed systems necessary to support financial management.	Exhibit 53.2
Financial System	An information system comprised of one of more applications, that is used for any of the following: Collecting, processing, maintaining, transmitting, and reporting data about financial events. Supporting financial planning or budgeting activities. Accumulating and reporting cost information. Supporting the preparation of financial statements. A financial system supports the financial functions	OMB Circular A-11, pg.112



Term	Definition	Source
	required to track financial events and provides financial information significant to the financial management of the agency and/or required for the preparation of financial statements.	
Funding Source	The direct appropriation or other specific budget authority an agency receives to pay for a particular project or service.	OMB Circular A-11, pg.114
Funding, Full	Full funding means that appropriations—regular appropriations or advance appropriations—are enacted that are sufficient in total to complete a useful segment of a capital project before any obligations may be incurred for that segment. Full funding for an entire capital project is required if the project cannot be divided into more than one useful segment. If the asset can be divided into more than one useful segment, full funding for a project may be desirable, but is not required to constitute full funding.	OMB Circular A-11, Supplement 1, pg.86
Funding, Incremental (partial)	Incremental (partial) funding means that appropriations—regular appropriations or advance appropriations—are enacted for just part of a useful segment of a capital project, if the project has useful segments, or for part of the capital project as a whole, if it is not divisible into useful segments. Under incremental funding for a capital asset, which is not permitted, the funds could be obligated to start the segment (or project) despite the fact that they are insufficient to complete a useful segment or project.	OMB Circular A-11, Supplement 1, pg.86
Goals, Baseline	Baseline cost, schedule, and performance goals will be the standard against which actual work is measured. They will be the basis for the annual report to the Congress required by FASA Title V on variances of 10 percent or more from cost and schedule goals and any deviation from performance goals. OMB must approve the goals, and any changes to the goals.	OMB Circular A-11, Supplement 1
Goals, Cost and Schedule	The baseline cost and schedule goals should be realistic projections of total cost, total time to complete the project, and interim cost and schedule goals. The interim cost and schedule goals should be based on the value of work performed or a comparable concept.	OMB Circular A-11, Supplement 1, pg.83
Goals, Performance	The performance goals should be realistic assessments of what the acquisition is intended to accomplish, expressed in quantitative terms if possible. For example, an illustrative performance	OMB Circular A-11, Supplement 1, pg.84



Term	Definition	Source
	goal may be that the asset will allow the agency to process, on average, 1,000 units of work per month.	
Information System	A discrete set of information technology, data, and related resources, such as personnel, hardware, software, and associated information technology services organized for the collection, processing, maintenance, use, sharing, dissemination or disposition of information. Information systems include non-financial, financial, and mixed systems.	OMB Circular A-11, pg.112
Information Technology	The term 'information technology', with respect to an executive agency means any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the executive agency.	Clinger Cohen Act
Information Technology Architecture	An integrated framework for evolving or maintaining existing IT and acquiring new IT to achieve the agency's strategic and IRM goals. A complete IT architecture should consist of both logical and technical components. The logical architecture provides the high-level description of the agency's mission, functional requirements, information requirements, system components, and information flows among the components. The technical architecture defines the specific IT standards and rules that will be used to implement the logical architecture.	GAO/AIMD-10.1.13 February, 1997, pg.107
Intangible Benefit	Benefits produced by an investment that is not immediately obvious and/or measurable.	GAO/AIMD-10.1.13 February, 1997, pg.107
IT Capital Planning and Investment Control	A decision making process for ensuring that IT investments integrate strategic planning, budgeting, procurement, and the management of IT in support of agency missions and business needs.	OMB Circular A-11 update May, 2002.
IT Investment Management Approach	An analytical framework for linking IT investment decisions to an organization's strategic objectives and business plans. The investment management approach consists of three phases—select, control and evaluate. Among other things, this management approach requires discipline, executive management involvement, accountability, and a focus on risks and returns using quantifiable measures.	GAO/AIMD-10.1.13 February, 1997, pg.107



Term	Definition	Source
IT Investment Portfolio	The combination of all IT assets, resources, and investments owned or planned by an organization in order to achieve IT strategic goals, objectives, and mission.	GAO/AIMD-10.1.23 May, 2000, pg.144
Life-cycle 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 for operation and maintenance.	GAO/AIMD-10.1.13 February, 1997, pg.107
Major IT system	A system that requires special management attention because of its importance to an agency mission; its high development, operating, or maintenance costs; or its significant role in the administration of agency programs, finances, property, or other resources.	OMB Circular A-11, pg.11
Milestones, Illustrative major	Illustrative major milestones in establishing or proposing revised baseline goals could be: agency mission analysis, process design, and requirements development; agency submission and justification to OMB; approval for inclusion in the Administration's budget proposal to Congress; enactment of appropriations; before and after the contract or contracts are signed; and other times after the contracts are signed, depending on circumstances.	OMB Circular A-11, Supplement 1, pg.84
Mixed Systems	An information system that supports both financial and non-financial functions of the Federal Government to components thereof.	Exhibit 53.2
Model	A representation of a set of components of a process, system, or subject area. A model is generally developed for understanding, analysis, improvement, and/or replacement of the process.	GAO/AIMD-10.1.13 February, 1997, pg.107
Net Present Value (NPV)	The future stream of benefits and costs converted into equivalent values today. This is done by assigning monetary values to benefits and costs, discounting future benefits and costs using an appropriate discount rate, and subtracting the sum total of discounted costs from the sum total of discounted benefits.	GAO/AIMD-10.1.13 February, 1997, pg.108
Non-Financial System	An information system that supports non-financial functions of the Federal Government or components thereof and any financial data included in the system are insignificant to agency financial management and/or are not required for the preparation of financial statements.	Exhibit 53.2



Term	Definition	Source
Outcome	The ultimate, long-term, resulting effect—both expected and unexpected—of the customer's use or application of the organization's outputs.	GAO/AIMD-10.1.13 February, 1997, pg.108
Outcome Measure	An assessment of the results of a program activity compared to its intended purpose.	OMB Circular A-11, Supplement 1, pg.87
Outlay	The issuance of checks, disbursement of cash, or electronic transfer of funds made to liquidate a federal obligation. Outlays also occur when interest on the Treasury debt held by the public accrues and when the Government issues bonds, notes, debentures, monetary credits, or other cash-equivalent instruments in order to liquidate obligations. Also, under credit reform, the credit subsidy cost is recorded as an outlay when a direct or guaranteed loan is disbursed.	OMB Circular A-11, Supplement 1, pg.87
Output Measure	A tabulation, calculation, or recording of activity or effort that can be expressed in a quantitative or qualitative manner. They shall have two key characteristics: 1) they shall be periodically or systematically captured through an accounting or management information system; and 2) there shall be a logical connection between the reported measures and the program's mission, goals, and objectives.	OMB Circular A-11, Supplement 1, pg.87
Performance Gap	The gap between what customers and stakeholders expect and what each process and related sub-processes produces in terms of quality, quantity, time, and cost of services and products.	GAO/AIMD-10.1.13 February, 1997, pg.108
Performance Measurement	A means of evaluating efficiency, effectiveness, and results. Performance measurement should include program accomplishments in terms of outputs (quantity of products or services provided) and outcomes (results of providing outputs in terms of effectively meeting intended agency mission objectives).	OMB Circular A-11, Supplement 1, pg.87
Planning Segments	A planning segment of a capital project provides information that allows the agency to develop the design; assess the benefits, costs, and risks; and establish realistic baseline cost, schedule, and performance goals before proceeding to full acquisition of the useful asset (or canceling the acquisition). This information comes from activities, or planning segments, that include but are not limited to market research of available solutions, architectural drawings, geological studies, engineering and design	OMB Circular A-11, Supplement 1, pg.84





Term	Definition	Source
	studies, and prototypes. The process of gathering information for a capital project may consist of one or more planning segments, depending on the nature of the asset. If the project includes a prototype that is a capital asset, the prototype may itself be one segment or may be divisible into more than one segment.	
Post-implementation Review (PIR)	An evaluation tool that compares the conditions prior to the implementation of a project (as identified in the business case) with the actual results achieved by the project.	GAO/AIMD-10.1.13: February, 1997, pg.108
Project Manager (PM)	The individual with business responsibility for an entire project.	GAO/AIMD-10.1.23 May, 2000, pg.141
Return on Investment (ROI)	A figure of merit used to help make capital investment decisions. ROI is calculated by considering the annual benefit divided by the investment amount.	GAO/AIMD-10.1.13 February, 1997, pg.108
Risk Analysis	A technique to identify and assess factors that may jeopardize the success of a project or achievement of a goal. This technique also helps define preventive measures to reduce the probability of these factors from occurring and identify countermeasures to successfully deal with these constraints when they develop.	GAO/AIMD-10.1.13 February, 1997, pg.108
Sensitivity Analysis	Analysis of how sensitive outcomes are to changes in the assumptions. The assumptions that deserve the most attention should depend largely on the dominant benefit and cost elements and the areas of greatest uncertainty of the program or process being analyzed.	GAO/AIMD-10.1.13 February, 1997, pg.108
Stakeholder	An individual or group with an interest in the success of an organization in delivering intended results and maintaining the viability of the organization's products and services. Stakeholders influence programs, products, and services. Examples include congressional members and staff of relevant appropriations, authorizing, and oversight committees; representatives of central management and oversight entities such as OMB and GAO; and representatives of key interest groups, including those groups that represent the organization's customers and interested members of the public.	GAO/AIMD-10.1.13 February, 1997, pg.108
Steady State	Maintenance and operations costs at current capability and performance level including costs for personnel, maintenance or existing information	OMB Circular A-11, pg.114



Term	Definition	Source
	systems, corrective software maintenance, voice and data communications maintenance, and replacement of broken IT equipment.	
Strategic Plan	A document used by an organization to align its organization and budget structure with organizational priorities, missions, and objectives. According to requirements of GPRA, a strategic plan should include a mission statement, a description of the agency's long-term goals and objectives, and strategies or means the agency plans to use to achieve these general goals and objectives. The strategic plan may also identify external factors that could affect achievement of long-term goals.	GAO/AIMD-10.1.13 February, 1997, pg.109
Strategic Planning	A systematic method used by an organization to anticipate and adapt to expected changes. The IRM portion of strategic planning sets broad direction and goals for managing information and supporting delivery of services to customers and the public and identifies the major IRM activities to be undertaken to accomplish desired agency mission and goals.	GAO/AIMD-10.1.13 February, 1997, pg.109
Sunk Cost	A cost incurred in the past that will not be affected by any present or future decision. Sunk costs should be ignored in determining whether a new investment is worthwhile.	GAO/AIMD-10.1.13 February, 1997, pg.109
Support Costs	Costs of activities not directly associated with production. Typical examples are the costs of automation support, communications, postage, process engineering, and purchasing.	OMB Circular A-11, Supplement 1, pg.87
Tangible Benefit	A benefit produced by an investment that is immediately obvious and measurable.	GAO/AIMD-10.1.13 February, 1997, pg.109
Vision	A description of what senior management wants to achieve with the organization in the future. A vision usually refers to the medium to long term and is often expressed in terms of a series of objectives.	GAO/AIMD-10.1.13 February, 1997, pg.105





# Appendix B: GSA Investment Selection Risk Assessment Worksheet

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### GSA Investment Selection Risk Assessment Worksheet

Rev

Results:

2.50

Scale:

4 = High Risk  
3 = Moderate Risk  
2 = Low Risk  
1 = Minimal to No Risk

#### 1.0 Strategic Risk Weight

Score

1. To what degree is the investment's purpose aligned with the GSA's overall business strategy?

Select from drop down menu

2.50

2. Are the expected investment outcomes clearly defined?

Select from drop down menu

2.50

**3. Have metrics been established to verify the successful completion of each investment phase?**

Select from drop down menu

2.50

**4. To what extent are senior management committed to the investment and its outcomes?**

Select from drop down menu

2.50

**5. How severely would late delivery impact the GSA's business operations?**

Select from drop down menu

2.50

**Strategic Risk Average**

**2.50**

**20%**

#### 2.0 Financial Risk

1. What are the life cycle costs associated with this investment?

Select from drop down menu

2.50

2. Are the benefit-costs clearly defined?

Select from drop down menu

2.50

3. Is there a clearly defined payback for this investment?

Select from drop down menu

2.50



4. What is the payback time for the project?

Select from drop down menu 2.50

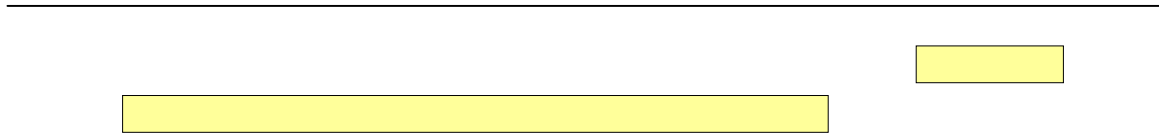
5. To what degree have existing expenditures met budgeted amounts?

Select from drop down menu 2.50

**6. Is the vendor(s) well established in the business community with a strong financial background?**

Select from drop down menu 2.50

**Financial Risk Average 2.50 20%**



### 3.0 Project Management Risk

**Score Weight**

1. Does the project management team have relevant experience?

Select from drop down menu 2.50

**2. To what extent has a project plan been developed for the entire project lifecycle?**

Select from drop down menu 2.50

**3. To what degree have critical milestones been established for this investment?**

Select from drop down menu 2.50

4. What is the total elapsed time of the investment from start to finish?

Select from drop down menu 2.50

**5. Have scope changes occurred which appear to exert pressure on schedule demands?**

Select from drop down menu 2.50

**Project Management Risk Average 2.50 20%**

### 4.0 Technology Risk

1. Is there a plan for ensuring that deliverables meet the need of the users?

Select from drop down menu 2.50

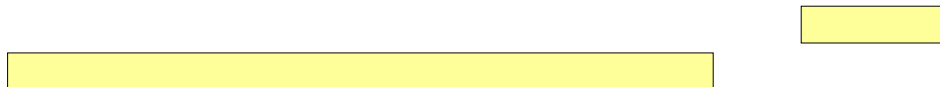
**2. Is there a system load test or other measures to ensure good system performance (i.e., measures to test response time, system efficiency, etc.)**

Select from drop down menu 2.50

3. How thoroughly have the technology options been evaluated?



Select from drop down menu	2.50	
4. What is the knowledge of the proposed technology environment?		
Select from drop down menu	2.50	
<b>5. Do the key technologies appear to be the appropriate foundation given the system design?</b>		
Select from drop down menu	2.50	
<b>6. How many existing computer systems must the project system interact with?</b>		
Select from drop down menu	2.50	
<b>7. To what extent will the new system enable de-installation of the existing system?</b>		
Select from drop down menu	2.50	
8. What is the vendor's ability to implement the technology?		
Select from drop down menu	2.50	
<b>Technology Risk Average</b>	<b>2.50</b>	<b>20%</b>



<b>5.0 Change Management / Operational Risk</b>	<b>Score</b>	<b>Weight</b>
1. How is the acceptance testing plan being developed?		
Select from drop down menu	2.50	
<b>2. Is the current operations organization prepared to support the new system?</b>		
Select from drop down menu	2.50	
<b>3. Is the proposed hardware/software environment in production already within the organization? (i.e. mainframe, client server, middleware, etc.)</b>		
Select from drop down menu	2.50	
<b>4. How clearly defined are the system operating procedures (backups, restart/recovery, etc.)?</b>		
Select from drop down menu	2.50	
5. How severely would business be impacted by a system failure?		
Select from drop down menu	2.50	
<b>6. What will be the magnitude of change that the new system will impose upon the users?</b>		
Select from drop down menu	2.50	
7. Are Agency staff willing to accept this change?		
Select from drop down menu	2.50	



**8. Will staff numbers be reduced as a result of implementing the system?**

Select from drop down menu

2.50

**9. Will multiple business organization units be affected by the new system?**

Select from drop down menu

2.50

**10. To what degree are changes to the current business processes being managed?**

Select from drop down menu

2.50

11. What is the level of user involvement in the project?

Select from drop down menu

2.50

**Change Management / Operational Risk**

**2.50**

**20%**

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**Total Risk Management Score**

**2.50**

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**Other Known Risks:**



# Appendix C: Monthly Summary Project Control Report

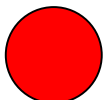
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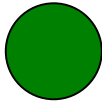
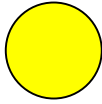


Monthly Summary Project Control Report

<b>Reporting Period:</b>		<b>CIO:</b>	
<b>Project Number:</b>		<b>Project Name:</b>	<b>Organization:</b>
Ass ess men t	<b>Costs</b>		
Ass ess men t	<b>Major Milestones and Schedule</b>		
Ass ess men t	<b>Performance Measures</b>		
Ove rall Ass ess men t			



The category or overall assessment will be noted as red if the



actual cost, milestones and schedule, and/or performance measures indicate significant variances from the planned for the reported period.
The category or overall assessment will be noted as yellow if the actual costs, milestones and schedule and/or performance measures indicate some minor variances or a trend of minor difficulties.
The category or overall assessment will be noted as green if the actual costs, milestones and schedule and/or performance measures indicate that the project is within costs, on schedule and has no performance problems or issues.



# Appendix D: Security Documents

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## Security Documents and Projected IT Security Spending

based on March 2001 Report

Completion Date of Last Security Plan	Start ate of Next Security Plan	Completion Date of Last Risk Assessment	Start Date of Projected IT Security Costs Next Risk Assessment	Projected IT Costs 2001	2002	2003	2001	2002	2003
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**SERVICE: XXX**

**PROJECT TYPE: MAJOR**

Project A

Project B

Project C

Project D

Project E

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# Appendix E: Information Technology Resources Board Charter

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*INFORMATION TECHNOLOGY RESOURCES BOARD CHARTER*

1. Name of Committee: Information Technology Resources Board (ITRB)
2. Date Established:
3. Date to be Terminated
4. Category and Type of Committee:
5. Purpose: To advise the [Service Name] Commissioner on the development and implementation of Information Technologies (IT) procedures and priorities. The ITRB will also review and evaluate the economic and disciplined use of IT systems as they relate to the capital planning process and IT portfolio management.
6. Mission:
  - a. Review the periodic updates to the IT Program Plan or like documentation and recommend its approval to the Commissioner.
  - b. Review the impact of new initiatives on its mission and investment portfolios.
  - c. Select, define, review, monitor, prioritize and assign information projects for development and implementation.
  - d. Review the standardized reporting inputs for alignment with Business Plan.
  - e. Be a proponent for policy changes and the application of new information technology in any area, which will improve the use and sharing of information.
  - f. Monitor progress of project development efforts. Review the milestone decision packages prior to submission to the Commissioner for approval.
  - g. Identify, review, and recommend the manpower requirements associated with the development and implementation of information projects, including preparation, development, implementation, training, periodic system reviews, maintenance, and enhancement.
7. Direction and Control: The SSO [Service Name] CIO or Designee will chair this body with the [Service Name].
8. General Procedure:
  - a. The ITRB will meet periodically and on-call of the Chair or Vice-Chairperson.



- b. Technical reviews will be conducted monthly or as needed.
  - c. Meetings will be attended by principals only.
  - d. A strawman agenda will be circulated at least 10 workdays prior to each meeting and finalized before the meeting.
  - e. The Chairs will coordinate meetings, prepare agendas, and prepare and distribute minutes of all meetings to members and other participants.
  - f. The committee can appoint special task groups, made up of individuals outside the committee, as necessary to investigate and report on specific issues. Official appointments will be properly coordinated for appropriate supervisory approvals.
9. Organization: The membership of the ITRB will be composed of ...
- (a) SSO Chief Information Officer or SSO CIO Designee(Chairperson)
  - (b) CIO/Service Acquisition representative;
  - (c) CIO/Service Enterprise Architecture representative;
  - (d) CIO/Service Information System Security Manager (ISSM) and/or Information System Security Officer (ISSO)
  - (e) CIO Capital Planning representative;
  - (f) Project manager;
  - (g) SSO Service Representative; and
  - (h) Others as designated (e.g., procurement, budget, quality assurance, legal, regional representatives).