CAPITAL PROGRAMMING GUIDE

V 3.0

SUPPLEMENT TO

OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A–11:

PLANNING, BUDGETING, AND ACQUISITION OF CAPITAL ASSETS

LIST OF ABBREVIATIONS

ACP	Agency Capital Plan
CI	Commercial Items
COTS	Commercial-off-the-shelf
ESPC	Energy Savings Performance Contract
EVM	Earned Value Management
FAR	Federal Acquisition Regulation
FARA	Federal Acquisition Reform Act (Clinger-Cohen Act) of 1996[1] (Division D of Pub. L. No. 104–106)
FASA	Federal Acquisition Streamlining Act of 1994 (Pub. L. No. 103–355)
FRPC	Federal Real Property Council
GAO	Government Accountability Office
GPRA	GPRA Modernization Act of 2010 (Pub. L. No. 111-352)
IPT	Integrated Project Team
ITMRA	Information Technology Management Reform Act (Clinger-Cohen Act) of 1996 Division E of Pub. L. No. 104–106)
NDI	Non-Developmental Item
O&M	Operations and Maintenance
OMB	Office of Management and Budget
OFPP	Office of Federal Procurement Policy, Office of Management and Budget
PIR	Post-implementation Review
RMO	Resource Management Office, Office of Management and Budget
SFFAC	Statement of Federal Financial Accounting Concepts
SFFAS	Statement of Federal Financial Accounting Standards
SIS	Share-in Savings
SSA	Source Selection Authority
SST	Source Selection Team
UESC	Utility Energy Savings Contract

[1] Together, the Information Technology Management Reform Act of 1996 (Division E of Pub. L. No. 104–106), with FARA (Division D of Pub. L. No. 104–106) are known as the Clinger-Cohen Act of 1996.

KEY INTERNET ADDRESSES

The Capital Programming Guide:
https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/assets/a11_current_year/capital_programming_guide.pdf

The Federal Acquisition Reform Act and the FAR Implementation of the Federal Acquisition Streamlining Act can be found at the reference library for Acquisition Reform (ARNET) at: https://www.acquisition.gov/.

GAO—Assessing Risk and Returns: A Guide for Evaluating Federal Agencies IT Investment Decision Making, February 1997 can be found at: http://www.gao.gov/archive/1998/ai98110.pdf

OMB Circulars can be found on the OMB Homepage at: https://www.whitehouse.gov/omb/information-for-agencies/circulars

Chief Financial Officers Council guidance documents can be found at: https://cfo.gov/

Federal Real Property Council guidance documents can be found on the OMB Asset Management website at: https://www.whitehouse.gov/omb/offices/offm/Asset-Management

The Government Accountability Office's (GAO) Information Technology Investment Management (ITIM) Stages of Maturity, as described in GAO's May 2000 Version 1 of the ITIM can be found at http://www.gao.gov/.

Clinger-Cohen Act, February 10, 1996
Issued By: Congress—Posted: February 10, 1996
http://www.gpo.gov/fdsys/pkg/PLAW-104publ106/pdf/PLAW-104publ106.pdf

Responsibilities and Information and Technology Governance at Leading Private Sector Companies
Issued By: GAO—Posted: September 9, 2005 http://www.gao.gov/assets/250/247718.pdf

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INTRODUCTION

The Guide's Purpose

The Capital Programming Guide was originally released in 1997 and this release, Version 3.0, is part of a continuing effort to more routinely update the Guide to remain consistent with new requirements and leading practices. This version reflects developments in capital planning since the publication of the original guide and provides updated base practices and lessons learned regarding more efficient project and acquisition management of capital assets. This guide does not establish new or alter existing policies articulated elsewhere (e.g. in OMB Circular A–11, Preparation, Submission and Execution of the Budget, or other OMB circulars). It does, however, expand the explanation of the concepts in the original guide that were not fully developed. An inter-agency Capital Programming Guide Working Group, consisting of various agency representatives, was convened to author updates and identify examples for the revision. Their invaluable additions, editing, and hard work are commended.

Agencies must have a disciplined capital programming process that addresses project prioritization between new assets and maintenance of existing assets, risk management and cost estimating to improve the accuracy of cost, schedule and performance provided to management, and the other difficult challenges proposed by asset management and acquisition. The purpose of the Capital Programming Guide, herein referred to as the Guide, is to provide professionals in the Federal Government guidance for a disciplined capital programming process, as well as techniques for planning and budgeting, acquisition, and management and disposition of capital assets. At the same time, agencies are provided flexibility in how they implement the key principles and concepts discussed. We expect the Guide to be revised as agencies continue to gain experience and develop improved best practices.

The Guide is intended to assist Federal Departments, Agencies and Administrations (herein collectively referred to as agencies) effectively plan, procure and use these assets to achieve the maximum return on investment. The guidance integrates the various Administration and statutory asset management initiatives (including the Government Performance and Results Act (GPRA) Modernization Act (Pub. L. No. 111-352), Divisions D and E of Pub. L. No. 104–106 (the Federal Acquisition Reform Act and the Information Technology Management Reform Act of 1996, as amended, popularly known as the Clinger-Cohen Act), the Federal Acquisition Streamlining Act of 1994 (Pub. L. No. 103–355), and others) into a single, integrated capital programming process to ensure that capital assets successfully contribute to the achievement of agency strategic goals and objectives.

Agencies should use this Guide to help establish a capital programming process within each component and across the organization. Effective capital programming uses long range planning and a disciplined, integrated budget process as the basis for managing a portfolio of capital assets to achieve performance goals with the lowest life-cycle costs and least risk. This process should provide agency management with accurate information on acquisition and life-cycle costs, schedules, and performance of current and proposed capital assets. The Federal Acquisition Streamlining Act of 1994 (Pub. L. No. 103–355) (FASA) requires that agency heads manage the agency portfolio of major acquisitions within 90 percent of the individual investment's cost, schedule and performance goals. Project managers when developing the cost, schedule, and performance goals on developmental projects with significant risk must, therefore, provide the agency Executive Review Committee (ERC) with risk-adjusted and most likely cost, schedule, and performance goals. Without the knowledge of the risks involved managers at all levels—agency, Office of Management and Budget (OMB) and the Congress—cannot make the best decisions for the allocation of resources among the competing investments.

Managing the stock of Federal capital assets and planning, budgeting, and acquiring assets is hard work, but it takes time and adequately trained personnel to do it successfully. Large sums of taxpayer funds are involved and the performance of the assets determines, to a large extent, how well the agencies are able to achieve their missions and provide service to the public.

Agencies have flexibility in how they implement the key principles and concepts of the Guide. They are expected to comply with existing statutes and guidance (cited in the text where appropriate) for planning and funding new assets; achieving cost, schedule, and performance goals; and managing the operation of assets to achieve the asset's performance and life-cycle cost goals. However, the key principles and importance of thorough planning, risk management, full funding, portfolio analysis, performance-based acquisition management, accountability for achieving the established goals, and cost-effective lifecycle management will not change. In general, OMB will only consider recommending for funding in the President's Budget priority capital asset investments that comply with good capital programming principles. This Guide does not discuss the entire strategic planning process, only that portion that pertains to the contribution of capital assets.

At each stage in the preparation of the Agency Capital Plan, the agency is encouraged to work with OMB's Resource Management Offices (RMOs). Early inclusion of RMO staff with the Integrated Project Teams, to be discussed further in section I.2.1, will facilitate a continuing review and dialogue regarding the agency's plan in order to avoid unexpected events. This is key in integrating the Planning and Budgeting Phases. The process of submission should be consistent with the annual guidance contained in the OMB Circular A–11, as well as with other current OMB guidance.

Definition of Capital Asset

Capital assets are land (including parklands), structures, equipment (including motor and aircraft fleets), and intellectual property (including software) which are used by the Federal Government and have an estimated useful life of two years or more. Capital assets exclude items acquired for resale in the ordinary course of operations or held for the purpose of physical consumption, such as operating materials and supplies. The cost of a capital asset is its full life-cycle cost, including all direct and indirect costs for planning, procurement (purchase price and all other costs incurred to bring it to a form and location suitable for its intended use), operations and maintenance (including service contracts), and disposal. Capital assets may or may not be capitalized (i.e., recorded on an entity's balance sheet) under Federal accounting standards. Appendix 1 defines capital assets more fully.

Threshold for Capital Programming

As defined in Circular A–11, Part 7, major acquisitions are capital assets that require special management attention because of their importance to the agency mission; high development, operating, or maintenance costs; high risk; high return; or their significant role in the administration of agency programs, finances, property, or other resources. Major acquisitions should be separately identified in the agency's budget. For small dollar investments relative to the agency's budget, the agency may wish to develop a less detailed programming process based on the basic tenets presented in this Guide. A stratified capital programming process involving more or less detail and review based on the size or strategic importance of proposed investments may be appropriate, particularly in large agencies. Agencies should have well documented thresholds clearly disseminated and implemented across the organization.

Capital Asset Management Infrastructure

A formal capital asset management infrastructure is a best practice used throughout industry and by many Government agencies to establish clear lines of authority, responsibility, and accountability for the management of capital assets. An ERC, acting for or with the agency head, should be responsible for

reviewing the agency's entire capital asset portfolio on a periodic basis and making decisions on the proper composition of agency assets needed to achieve strategic goals and objectives within the budget limits. This committee should be composed of the senior operations executives and the chief information, financial, budget, and procurement officers.

In addition to review by the ERC, each project requires an Integrated Project Team(s) (IPT) composed of a qualified program manager and necessary personnel from the user community, budget, accounting, procurement, value management, and other functions to be formed, as appropriate, to:

(1) establish a baseline inventory of existing capital assets;
(2) analyze and recommend alternative solutions;
(3) manage the acquisition if approved; and
(4) manage the asset once in use.

A sound financial management system is another key ingredient for sound decision making.

Agencies may choose to plan for capital assets agency-wide or by bureau or functional area. Many agencies have started to redesign their planning approach for information technology (IT) capital assets by establishing an IT capital asset infrastructure in accordance with the requirements of the Clinger-Cohen Act, Sec. 5122, Capital Planning and Investment Control.

In addition, Executive Order 13327 of February 4, 2004, Federal Real Property Asset Management, establishes the Federal Real Property Management Council (FRPC) that tasks Federal Real Property Officers with improving real property asset management within their agencies.

When one asset contributes to multiple programs, the linkage to each program should be described. In turn, the annual performance plan should include the performance goals for the procurement of the asset, as well as the program's performance, once the asset is operational. Separate documents are not required.

Organization of the Guide

This Guide is organized to reflect the three phases of the capital programming process:

- Planning and Budgeting, Acquisition, and Management-In-Use. Each phase is composed of a number of steps.

- Integration with guidance or source materials relevant to a particular phase and step, as well as a description of reporting requirements or formats, is also described.

- A Glossary and a list of Selected Capital Programming References are also included.

I. PLANNING AND BUDGETING PHASE

Introduction

The Government Performance and Results Act (GPRA) initiated program performance reform for greater service delivery and program effectiveness by encouraging greater accountability throughout the Federal Government, and was recently updated under the GPRA Modernization Act of 2010. It encourages collaboration between OMB and agencies to develop outcome oriented, program specific performance measures. Administrators must ask: Were program goals achieved within budgeted costs and established schedules? Does the program have baselines and ambitious targets for its annual measures?

This Guide stresses the importance of all phases in the capital asset life-cycle. By linking planning and budgeting to procurement to the management of capital assets, the resulting all-encompassing roadmap encourages agencies to develop an Agency Capital Plan that provides for the long-range planning of the capital asset portfolio in order to meet the goals and objectives in the strategic and annual plan.

In its 2004 report GAO-04-138, "Agency Implementation of Capital Planning Principles is Mixed," the Government Accountability Office evaluated the implementation of the Capital Planning Guide in several agencies across the Government. It recognized that the planning phase drives the remaining phases in the capital asset's life-cycle. It found that agencies generally link their capital planning to mission driven goals. It recommends that agencies complete a long-term capital plan to further guide them toward comprehensive investment goals.

The Annual Performance Plans, which describe an agency's incremental progress toward achieving its strategic goals and objectives, should also clearly demonstrate how capital assets will contribute to this progress. The program or project acquisition life-cycle starts with concept analysis, progressing through technology definition, requirements planning, acquisition, and finally through operations and maintenance. Although terminology may differ, government and industry use similar processes. These processes typically include decision points in which executive boards review and approve a program's entry to the next phase or stage, based on satisfactory completion of exit criteria from the prior phase or stage.

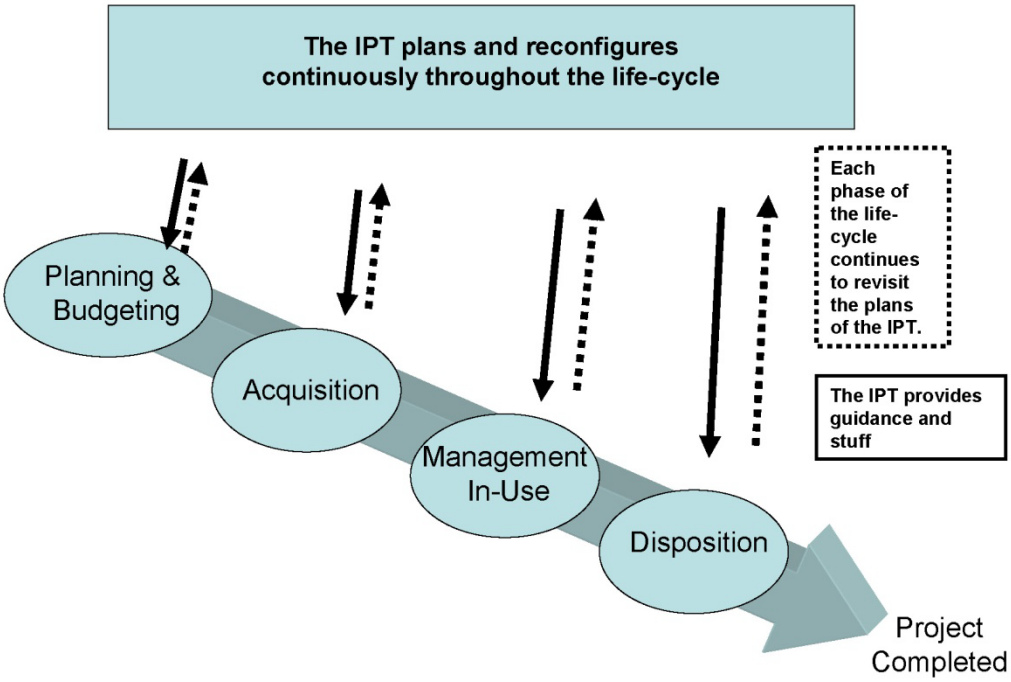

Figure 1. The Capital Planning Lifecycle

I.1) STRATEGIC AND PROGRAM PERFORMANCE LINKAGE

I.1.1) Strategic Planning

Capital programming, as guided by the GPRA Modernization Act of 2010, is an integral part of an agency's strategic planning process.

An effective strategic plan should anticipate changes in the agency's requirement for technological capabilities, identify major assets that are critical to implement the plan, and define the outcomes these assets will help realize. The plan should also be consistent with the level of future budgetary resources that will be available. See OMB Circular A–11, Part 6, Preparation and Submission of Strategic Plans, for detailed guidance on the requirements for strategic plans.

I.2) Enterprise Architecture (EA)

A complete Enterprise Architecture consists of a set of interrelated "reference models" designed to facilitate cross-agency analysis and identification of duplicate investments, gaps, and opportunities for collaboration within and across agencies. Collectively, the reference models comprise a framework for describing important elements of an EA in a common and consistent way. Through the use of this common framework and vocabulary, agencies can improve the way they manage IT or other portfolios.

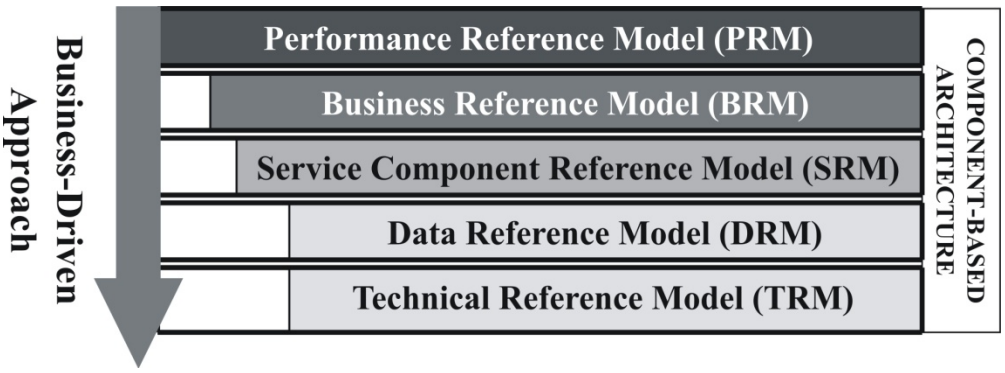

Figure 2. Component-Based Architecture

As agencies continue to utilize EA to model performance, business processes and services, decision makers must create clear line-of-sight relationships between investments in capital assets and specific components in the EA. For example, the business case for a capital asset must document the specific performance measures that are affected by the investment and how those measures are affected. The same clarity should exist for business processes, services delivered and data managed by a capital asset.

I.2.1) Integrated Project Team

Several acquisition disciplines are essential to planning and managing an acquisition through its life-cycle. The Integrated Project Team (IPT) is established to analyze the performance and capability of the portfolio of assets used by the program. The IPT will vary in size and acquisition disciplines depending on the phase of the program, but must always contain a qualified program manager and contracting officer. At initiation of a major acquisition, the team should consist of the individuals with skills in the following areas: Project Management (PM), Federal Contracting, Cost Estimating, Risk Management, Sustainability, Scheduling, Users, Budget, Technical Experts, Information Resource Management, Value Management, and Earned Value Management (EVM). Staff with other appropriate skill sets should also participate in the IPT. Agencies should strongly consider co-locating the IPT, especially the PM and contracting professional who must work closely throughout the project to ensure that the requirements are clearly articulated into a statement of work and that adequate oversight of the contracted work is accomplished. The members of the IPT are the key functional team leaders under the leadership provided by a program manager. The key to success is organization, planning, estimating and budgeting resources, and executing the plan. The IPT must also develop sound cost estimates based on the "Principles of Government Cost Estimating" in Appendix 8 and the GAO Cost-Estimating Guide.

Figure 3. Integrated Project Team

The program manager should be given a charter, whether the work is to be performed by contract or by in-house resources, defining the scope of authority, responsibility, and accountability for providing quality analysis to support senior management decision-making during all phases of capital programming. Such leadership by program offices is intended to ensure that capital assets will be designed and operated to improve the performance of the program staff who use them—a seemingly self-evident goal, but one many businesses and Government agencies have failed to reach. For example, information systems often are developed by technology or finance specialists alone, without the benefit of an agency-wide review of the system's requirements and capabilities. Appendix 2 discusses IPTs in more detail.

Earned Value Management (EVM) and risk management are management tools used successfully in both the public and private sectors to mitigate risks in developing capital assets. Agencies must develop a level of expertise with both tools that is appropriate to the size and nature of their capital asset portfolio. This expertise may take the form of a full scale EVM and risk program management office, a center of excellence, or a capability held by one or two focal points within the agency.

IPTs must devote the planning time needed to create an adequate Work Breakdown Structure (WBS) at program initiation and keep it current throughout the program execution. Program management use of EVM depends on a well-developed WBS to ensure that a program is completely defined. Program experts, in collaboration with experts in the areas of Cost-Estimating, Procurement, Risk Management, Scheduling, and EVM, need to develop a WBS as a common framework within a given program, but also among related programs and across an organization's portfolio.

Even if the preferred solution has not yet been determined, planning for a program WBS must begin promptly upon program initiation during the earliest stage of the Planning Phase. Organizations that manage similar programs often use a standard WBS template to assist in program definition. The WBS when complete is an integrated family tree that defines all the products and services comprising the program. While some WBS elements are unique to each program, many are common, such as training, data, and program management. The program WBS established during concept definition will provide the framework for estimating the program's cost and risk during the pre-systems acquisition planning and for

developing the program schedule. The cost estimate and program WBS provide the basis for suppliers to extend the Contract WBS to achieve integrated cost, schedule, and technical performance management using EVM during systems acquisitions.

I.3) FUNCTIONAL REQUIREMENTS

If current assets cannot bridge the gap between planned and actual performance, the IPT should define the gap in terms of performance requirements to be achieved. Depending on the depth of the analysis of program requirements during the first round of strategic planning, the IPT may wish to define more detailed requirements against which they can evaluate options for reducing the performance gap.

Functional requirements should not be defined in equipment or software terms, but in terms of the mission, purpose, capability, agency components involved, schedule and cost objectives, and operating constraints. Mission needs are independent of a particular capital asset or technological solution. A needs-based approach allows the agency the flexibility to evaluate a variety of solutions with an open mind. The key is not to limit potential solutions by too narrowly defining requirements.

When developing functional requirements, the capabilities of other assets or processes with which the function must interact are a major consideration. Functional requirements should include the following elements:

- The performance criteria of the function being acquired, developed, built, etc.;
- A definition of the common usages of the function;
- The ranking of each requirement in order of importance; and
- A decomposition of functional requirements into self-contained features (e.g., climate control for housing prisoners might have unique requirements that should be identified).

Internal agency users and external customers (e.g., airlines for air traffic control systems, veterans for new benefits processing systems) should participate in the requirements definition process. It is important to balance the internal user and operator needs with the requirements of the external customers. Other agencies that may have acquired assets to accomplish similar goals or objectives should be identified. Where feasible, large, complex acquisitions that are very difficult to manage should not be pursued on an individual agency basis. Instead, management should look for cross-agency or Government-wide economies to avoid duplication of effort. As part of the requirements definition process, agencies must look at Government-wide programs and systems to see if they will meet most or all agency requirements. To the degree a program or system does not meet agency requirements, agencies should consult with the program management office of the program or system involved to see if and how any unmet needs can be met. Agencies should also consult with any Government-wide Line of Business initiatives that may apply to their area of effort to coordinate planning with the Line of Business involved.

One acute danger during this phase is "specification creep," where requirements grow uncontrolled to meet future potential needs or to incorporate emerging technology that would be "nice" to have. Emphasis should be placed on core requirements needed to meet the mission needs. Once a solution meets the core requirements, additional functionality can be added in a later stage of the project, if cost-beneficial. These functional requirements should be documented in the strategic plan. Modular or spiral development acquisition should be pursued where possible to prevent "specification creep." Projects that are purchased in modules, where the scope is limited to what the market can provide quickly, rather than requiring significant new development efforts with uncertain cost, or delivery goals, can freeze the scope to provide an initial capability that improves the function, with subsequent modules providing for increased capability when the market is ready and scope, cost, and schedule can be more clearly defined.

I.4) ALTERNATIVES TO CAPITAL ASSETS

I.4.1) Answering the Three Critical Questions

With detailed requirements defined, management should answer the Three Critical Questions before planning to acquire capital assets. These questions are applicable to all major capital investments.

1. Does the investment in a major capital asset support core/priority mission functions that need to be performed by the Federal Government?

- If not, end consideration of the investment and eliminate or privatize the function.

- If so, is there a clear explanation of how the investment supports core/priority mission functions? Are performance measures provided that are included in the agency Strategic Plan, including baseline data and the expected improvement? Is there an explanation of how the investment will contribute towards meeting a goal?

- Are the functions inherently governmental functions? IPTs can consult the Office of Federal Procurement Policy letter addressing the performance and management of inherently governmental and critical functions at the following link: http://www.whitehouse.gov/omb/procurement_index_work_performance/. IPTs can also consult Subpart 7.5 of the Federal Acquisition Regulation and attachment A of OMB Circular A–76, Performance of Commercial Activities (May 29, 2003, as amended) to assist in deciding if a government activity is an inherently governmental function.

2. Does the investment need to be undertaken by the requesting agency because no alternative private sector or governmental source can better support the function?

- If not, consider devolving the function to State or local governments; sharing resources within the agency, with another Federal agency, a university, or a not-for-profit organization; or outsourcing to the private sector. For example, medical care can be provided through payments for care in non-profit or private hospitals, rather than directly by Federal agency hospitals.

- OMB Circular A–76 helps agencies decide through the use of public-private competition whether taxpayers are better served though the continued in-house performance of highly commercial activities (such as software development) or alternatively, by the best qualified contractor.

3. Does the investment support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial, off-the-shelf technology?

- If not, management should reengineer business processes first, then search for alternatives, or the agency may issue a very broad statement of the requirements in a solicitation to the private sector and allow the private sector to do the reengineering in proposed solutions.

- Management should also improve internal processes by cutting red tape, empowering employees, revising or pooling existing assets within the agency or with other agencies, redeploying resources, or offering training opportunities.

- GAO's Business Process Reengineering Assessment Guide, Version 3 (April 1997), outlines the issues and attributes on which agencies should focus when assessing and reengineering their current processes.

Analyzing Agency Programs and Investments

Consider the kind of capital assets needed and how they will be acquired.

Ask Yourself…	If the answer is "No" then…
Is the function of the program central to the agency's mission?	• Send to other Federal agency • Direct to the private sector • Send to State or local government • Terminate function
Can this agency accomplish this function better than the private sector or other Federal agency?	• Partner with State or local governments • Cross-service with other Federal agencies • Contract out to private sector
Have work processes been re-engineered to reduce costs to improve effectiveness?	• Introduce competition • Find efficiencies • Empower employees and put customers first

Figure 4. Decision Tree for Analyzing Agency Programs and Investments

If the answer to all Three Critical Questions is yes, management should still consider options other than new acquisitions to reduce the performance gap, such as:

- Meeting objectives through regulation or user fees;
- Using human capital rather than capital assets; and
- Applying grants or other means beyond direct service provision supported by capital assets.

I.4.2) Frequent Use of Benefit-Cost or Cost Effectiveness Analysis

At many key decision points in the capital programming process, a benefit-cost or cost-effectiveness analysis could be used by senior management to help decide whether the best way to reduce the performance gap is through acquiring a new capital asset, undertaking a major modification on an existing asset, or by some other method. This analysis should follow the guidance of OMB Circular A–94, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs" (October 29, 1992). Guidelines for pursuing alternatives other than a capital asset are not contained in the remainder of this Guide. However, if the alternative chosen is a service contract, many of the analytical techniques and processes suggested in the Guide would be appropriate (see Appendix 8 on Cost-estimating).

I.5) CHOOSING THE BEST CAPITAL ASSET

Agencies should not undertake planning before a project is funded merely for the sake of compliance. They should plan because it results in better use of scarce resources and improves implementation.

Once the decision to acquire a capital asset is made, comparison of the various available asset options is needed to ensure the acquisition of the best product for the job.

I.5.1) Evaluate Asset Options

With the decision to evaluate the feasibility of acquiring a capital asset, management should provide the IPT with an estimate of the range of budget resources that may be available for an asset. The IPT should conduct market research to determine the feasibility of various capital asset alternatives that are available in the market to satisfy the requirements. Emphasis should be placed on generating innovation and competition from private industry and on the use of commercial items and non-developmental items to meet the mission needs. The IPT should determine:

- **Availability**. Can the market provide capital assets that partially or fully meet program requirements? How much of the need can be fulfilled without the need for developing new technologies or incurring other significant risk?

- **Affordability**. Are the assets affordable within budget limits? If the full requirement is not affordable, can it be divided into separate modules that are affordable? New technology should be subject to Technical Readiness Level (TRL) and Degree of Difficulty (R&D3) reviews to help determine the risk and potential necessary reserves.

- **Costs & Benefits.** For those alternatives that are affordable within budget limits, which are the most cost-beneficial, and should be among the portfolio of proposed assets that the agency head, the President, and the Congress consider for funding? (Value management methodology can provide the "best value" alternatives to meet the functional requirements.)

- **Sustainable Design Principles.** How much have the sustainable design principles been incorporated into the requirements identified for the asset? Has sustainability been considered in all aspects of the asset's life-cycle?

- **Risk**. In addition to applying risk management to the development of a Risk-Adjusted Program Budget and Risk-Adjusted schedule, the agency must assess overall risk of an investment as it chooses the best capital assets to meet the agency's mission and strategic objectives. High risk should be accepted only if it can be justified by high expected returns, and only if a program failure can be absorbed by the agency without loss of service capability or significant effect on budget. Decision thresholds should be set for cost, schedule, and performance expectations of development projects beyond which the return on investment becomes so low that the project should be canceled. Agencies can apply a variety of risk mitigation techniques, including limiting scope, contract type selected, and aggressive program management.

The process of choosing the best capital asset starts with the development of a strategy to review the market and ends with the development of an acquisition plan that outlines the best approach to acquire the recommended asset. Plans for asset evaluation, operation and maintenance, and disposal should also be developed, with the execution costs included in the Feasibility Analysis. If funding for the proposed asset is approved at the end of the Budgeting Phase, these plans will be executed in the Acquisition and Management-In-Use Phases.

I.5.1.1) Asset Availability

The establishment and use of a structured vehicle allocation methodology (VAM) by Federal agencies ensures that the agency vehicle fleets are not over-costly and both correctly sized in terms of numbers and appropriate for accomplishing agency missions. A VAM provides managers with a standard way to document the objective criteria of a vehicle fleet for a specific entity within an agency and make informed decisions in fleet acquisition, management, and disposition.

A program manager supported by thorough market analysis is an educated consumer, and is more likely to complete a program successfully. Availability is assessed by market surveillance and market research, ultimately producing a list of investment alternatives, accompanied with data necessary to assess affordability, benefits, and costs.

Market surveillance is an on-going process, one that is not driven by a specific planned acquisition. The IPT technical staff should keep abreast of the latest capabilities and performance through trade journals, advertisements, sales brochures, etc. Market research is undertaken with respect to a specific planned acquisition; it is the proactive part of market analysis. In market research, the IPT seeks information through research of published information, talking to other agencies that have conducted similar market research, and/or going directly to the market for information.

I.5.1.2) Market Research Strategy

Agencies should encourage contractors to provide any solution they believe will meet the agency's needs. The key is to not restrict potential offers by specifying requirements too narrowly.

Once a clear agency need has been identified, the IPT should begin with a plan to conduct both market surveillance and market research to ensure that as many alternative solutions as possible are identified for consideration. The plan should define the use of broad area announcements, requests for information, or requests for proposals to solicit information on alternative concepts from a broad base of qualified firms. When these documents are issued, contractors should be provided with mission performance criteria, life-cycle cost, and any other factors that the agency will use in the evaluation and selection of the solutions. Emphasis should be placed on solutions that are currently available (i.e., do not require significant development) with little risk in cost, schedule, performance, and technical obsolescence. This means commercial items (CI) or non-developmental items (NDI) where little or no development effort is required are preferred. However, contractors should be encouraged to provide any solution they believe will meet the agency's needs, including providing the capability contemplated through a service contract or lease. The key is to not restrict potential offers by specifying requirements too narrowly.

Agencies can, through market analysis, seek preliminary information on alternatives available in the commercial sector. If the information does not provide a clear indication that acceptable solutions are available, it may be necessary to award contracts to explore alternative design concepts. These contracts should be of relatively short duration and within defined dollar levels. When market capability is not sufficient to fulfill the agency's entire performance gap, the IPT should carefully weigh the extent of increased capability that can be obtained quickly within budget limits against the delay in capability improvement, risk of failure, and costs of a development effort to achieve the desired capability. In many cases, evolutionary changes in capability over time are the most cost-effective approach. Timely technical reviews should be made of the alternatives to ensure the orderly elimination of those that are least attractive.

There may be instances in which several alternatives offer essentially the same benefits and costs. In those instances, it may be necessary to conduct comparative demonstrations, where the different alternatives are actually tested in the operational environment for a period of time, to determine the best product.

The IPT should engage potential suppliers in an advisory process in which the Government provides a general description of the scope or purpose of the acquisition (such as a Request for Information, which could include a Statement of Objectives) and invites potential offerors to submit information that allows the Government to advise the offerors about their potential to be viable competitors. By doing this, the Government enables potential vendors to more wisely use their internal resources, such as bid and proposal money or independent research and development funds, to come up with the best solutions for the Government's needs. This process also enables the Government to refine its acquisition strategy by identifying in advance the extent of competition that can be expected for the acquisition.

I.5.2) Develop a Program Baseline

The program's (investment's) risk-adjusted budget establishes the baseline for reporting to OMB on program performance. The Program Risk-Adjusted Budget (PRB) is formed after determining the Program Budget (PB) and the Performance Measurement Baseline (PMB). The appropriate agency official must ensure the PRB is justified based on risk, and that the agency will fund the program at that level.

The foundation of the Program Budget is the Work Breakdown Structure (WBS). Once the technical scope of work has been described through a WBS, the appropriate experts along with cost and schedule estimators can use this information to develop cost and schedule estimates. Budgets are assigned to each WBS element, and when time-phased, form the Performance Measurement Baseline. The Performance Measurement Baseline is the total Budget-at-Completion (BAC) assigned to summary planning accounts, control accounts and the undistributed budget.

Significant investments require a clearly understood process for ensuring that the program budget, expected outcomes, and cost/schedule performance measurements are integrated with risk management. Risk management begins with evaluating the WBS for cost, schedule and technical risk. Risks in each of these areas for each WBS element should be identified, analyzed, and quantified in terms of potential cost to the program. Risk identification involves analyzing program areas and critical technical elements to identify and document the associated risk. Assumptions and constraints also need to be identified and analyzed for cost impact. Risk analysis involves examining each risk issue to determine the probability of the risk occurring and the cost, schedule, and technical consequences if the risk occurs. The cost of the risk occurrence is added to the BAC and the result of this analysis is a risk-adjusted budget.

The program's milestone schedule should also be adjusted for risk. Measurable WBS elements significant to a project milestone should be analyzed for most optimistic, most pessimistic, and most likely durations. A risk-adjusted schedule will have finish dates that reflect the likelihood of a risk event occurring and its associated schedule impact. If schedule delays will affect cost, this information should be reflected in a risk-adjusted cost estimate.

I.5.2.1) Changes to the Baseline (Rebaselining)

In general, agencies and their contractors should establish a performance measurement baseline for an investment, to track progress against the baseline and report the cost variance and the schedule variance to senior management at least monthly. While legitimate reasons exist for changing a baseline, as a general rule, changes should be rare. When a change to a baseline is needed, agency governance should review, approve and document the change. A revised baseline should not be used in performance reports until agency governance approves the change. If a change to a baseline is approved, agencies should maintain a record of the original baseline and the rationale for the change.

I.5.2.2) Breach Margins (Variance Thresholds)

As part of monitoring progress, agencies are encouraged to establish cost and schedule variance thresholds that will require a formal explanation to the agency when breached. Corrective action should be taken whenever a breach occurs. The breach margins should be set so that when a threshold is crossed, management is informed while there is still time to take corrective action. Agencies have significant latitude when setting a threshold for an investment unless breach margins have been specified in statute, regulation or Federal policy. As a general guide, a cost or schedule variance of plus or minus 10% or more should trigger formal reporting.

I.5.3) Select the Best Alternative: Benefit-Cost Analysis

Once the IPT determines that it has sufficient market information on alternative solutions, it should compare the initial acquisition cost and the other life-cycle cost elements of the various alternatives. It is critical that the cost estimates are realistic estimates of the final costs and are adjusted to consider risk. When seeking funds during the budget process, the credibility of the costs will be examined, and OMB and the Congress will hold agencies accountable for meeting the schedule and performance goals within the cost estimates. Alternative solutions that are not affordable within potential budget availability should be dropped from consideration, but documented for comparison purposes. The information needed to determine whether a proposed acquisition is affordable is based on a juxtaposition of three factors: availability of potential funding, agency mission objectives the investment will help achieve, and the impact that purchasing the new asset will have on funds available for other agency mission objectives.

The selection of the best alternative to compare with other agency projects should be based on a systematic analysis of expected benefits and costs. The fundamental method for formal economic analysis is benefit-cost analysis. OMB guidance on benefit-cost analysis can be found in OMB Circular A–94. Benefit-cost analysis includes the following steps:

Identify Assumptions and Constraints. Assumptions are explicit statements used to specify precisely the environment to which the benefit-cost analysis applies. Assumptions reduce complex situations to manageable proportions. Constraints are requirements or other factors that cannot be traded off to achieve a more cost-beneficial approach. Cost estimates involve many assumptions and these assumptions carry risk. Risk should be quantified so that the budget accurately reflects the cost of risk.

Identify and Quantify Benefits and Costs. Benefits and costs should be quantified in monetary terms wherever possible. All types of benefits and costs should be included, and should be discussed in a narrative. The level of detail should be commensurate with the size and criticality of the investment. The benefits should be linked to the program goals and needs identified in the previous Planning Sections. Benefits and costs should be estimated over the full life-cycle of each alternative considered. Life-cycle costs include all initial costs, plus the periodic or continuing costs of operation and maintenance (including staffing costs), and any costs of decommissioning or disposal. Estimates of costs and benefits should show explicitly the performance and budget changes that result from undertaking the project.

Evaluate Alternatives Using Net Present Value. Investment alternatives should be evaluated using the net present value criterion. Potential projects should be ranked according to the discounted value of their expected benefits, less the discounted value of expected costs. (Appropriate discounting techniques are described in OMB Circular A–94.) Qualitative evaluation considerations—such as explicit regulatory requirements, considerations of business strategy, or unquantifiable social benefits or costs—may override quantitative criteria in deciding on the final ranking of projects. The analysis may be supplemented by including other summary measures, like

the internal rates of return on the alternative projects or return on assets. Effects on income distribution should be identified for projects that have such effects. Even when the monetary value of benefits or costs cannot be measured, physical quantification may be feasible and should be pursued. When the benefits of alternative investments are the same, cost-effectiveness analysis may be used to rank alternatives. An investment is most cost effective when it has the lowest discounted present value of life-cycle costs for a given stream of annual benefits. When benefits are different, the most cost-effective investment is the one that has the highest discounted net (of cost) benefit.

Perform Risk and Sensitivity Analysis. Benefit and cost estimates involve a degree of uncertainty. Estimates are based on assumptions, and those assumptions carry risk. Risk analysis can be used to identify where uncertainties exist and subsequently quantified so that their cost can be factored into overall cost estimates. Benefits may not be realized as planned, and the risk of this occurring should be factored into cost-benefit analyses. Sensitivity analysis can identify the response of program costs and benefits to changes in one or more uncertain elements of the analysis. Sensitivity analysis should be used to test the response of the investment's net present value to changes in key assumptions.

I.5.4) Develop an Acquisition Strategy

The IPT should begin to tailor an acquisition strategy for the program as soon as the best alternative is selected. The acquisition strategy and analysis risks should be part of the information provided to the Executive Review Committee when seeking approval of the project.

I.5.5) Risk Management

Planning for risk management for the life-cycle is a critical component of program/investment management and begins at project conception. Risk analysis is an integral part of the planning process. An approach for managing risk on the investment should be established early in the Planning Phase. An effective Risk Management Plan addresses the following risk areas: schedule risk; cost risk; technical feasibility; risk of technical obsolescence; dependencies between a new project and other projects or systems; procurement and contract risk; and resources risks.

Risk Management is continual throughout the life cycle of an investment. Planning for risk and incorporating risk analysis into planning decisions is included in this section of the Guide. Managing risk in the Acquisition Phase and the Management-in-Use Phase is discussed in those sections of this Guide.

I.5.5.1) Earned Value Management

A critical component of risk management on major investments is the use of EVM. Implemented properly, an EVM system will measure progress against a baseline and provide an early warning of cost overruns and schedule delays. Most likely, a practical application of EVM will involve tailoring the principles to a project’s unique circumstances. When an EVM system is required (see Federal Acquisition Regulation 34.2), the cost and schedule variances should be reported to senior management at least monthly. Appendix 3 provides an example of the calculations. Some project management software tools will perform the calculations with no additional effort.

EVM is not tied to any specific development methodology and does not prevent the use of other risk management techniques such as agile development. EVM and agile development are complementary and can be used on the same project. Agile development can be used to incrementally deliver functionality to the customer while EVM provides a standard method for measuring progress.

A related process used to mitigate risk is the Integrated Baseline Review (IBR) process. The IBR process provides program managers with a thorough understanding of the project plan and any risks associated with the Performance Measurement Baseline (PMB). Initial risks identified and their impact on program cost and schedule should be updated based on IBR findings. Risks identified in the IBR are documented, analyzed, and risk-handling plans are developed and are included in an overall program risk register. These risks are then monitored and acted upon as appropriate. By paying close attention to higher risk WBS elements, program managers are capable of prioritizing areas for management attention. Initial risks identified along with their impacts on program cost and schedule should be updated based on IBR findings and subsequently managed until they are retired. A close watch for new risk should also be maintained and these should be entered into the risk management process.

Use of an EVM system will assist in identifying and mitigating project risk. Additionally, projects with broad scope typically involve more risk than those that limit what they are trying to accomplish.

I.5.5.2) Planning for Contract Type

The agency should strive to use fixed price or fixed price incentive contracts to the maximum extent possible. The ability to use fixed price contracts results from the fact that the capability the agency is seeking is available in the market. The need to use cost type contracts usually means that the capability is not readily available in the market, requiring a risky development effort to be undertaken.

For long-duration contracts that include significant development, it may be impossible to estimate the cost of performing the entire contract with sufficient accuracy to use a fixed price or structured incentive contract from day one. As the contract progresses and the ability to estimate the cost of performance increases, the use of such contracts becomes more practical. Therefore, it may be desirable to initiate the work with a small, short-duration time and material or cost plus fixed fee contract for studies or early design, evolve to a cost plus award fee or cost plus incentive fee contract for later design and initial development, and then to a cost plus incentive fee, fixed price incentive, or fixed price contract for the initial and production units once all development work is complete. For such contracts, it also may be desirable to negotiate an estimated cost or price in increments. The initial estimated cost or price would be for the studies or early design. As work progresses, the estimated cost or price should be renegotiated upward at appropriate points in the contract as those costs become more predictable.

Agencies should make good use of contract type by matching the type of contract to how much is known about the requirement, and the likely accuracy of the agency's and the contractor's cost estimates. There are two basic sets of considerations:

1. How much is known about what it will actually take to do the contractor's part of the project?

A. Fixed Price: Does the agency know (and can a contractor reasonably be expected to discover) enough about what it will take for a contractor to do their part of the current phase(s) of the project so that the contractor could reasonably set a series of fixed (not hourly, but by task) prices to perform their part? If so, agencies should use fixed price contracting for the requirement. If the only element keeping an agency from being able to do this is moderately significant variations in the price of a key commodity used to make the item, then agencies can adjust for that using Fixed Price with Economic Price Adjustment. Agencies would then be able to adjust the price paid for an item in accordance with market fluctuations in the price of the key commodity. If agencies don't know enough about the requirement to reasonably expect a contractor to be able to price it this way, then they should explore Cost Reimbursement.

B. Cost Reimbursement (for example, Cost Plus Award Fee): Is the agency at the point where contractors can reasonably give the agency Rough Order of Magnitude (ROM) estimates to do what the agency asks?

Is it likely that actual performance of the requirement will be within plus or minus approximately 50 percent of the ROM estimates? If the answer to both questions is yes, the agency should use cost reimbursement contracting to have the contractor meet the requirement. Agencies should use Integrated Baseline Reviews (preferably before contract award) to identify deficiencies in contractor proposals that would impede them from reasonably performing the proposed effort for the proposed price. The contractor would then include in their proposal the cost of correcting these deficiencies, and thus reflect the true "probable cost" of performing the contract. The ultimate goal of the cost reimbursement/IBR process is to yield enough information about what it will actually take to perform the project so that the Government could reasonably use a Fixed Price contract to fill the requirement.

C. Time and Materials or Labor Hour: If agencies are still some distance from being able to do either A or B above for a given project, then agencies should consider a small, short duration (less than one year) Time and Materials or Labor Hour type of contract for that project. This type of contract should only be used in the Planning Phase, and only when there is insufficient knowledge about the requirement to be able to use a cost reimbursement contract to fill the requirement. Agencies should remember that Integrated Baseline Reviews can and should be used in concert with cost reimbursement contracting to control project costs to a greater degree than is usually the case in Time and Materials or Labor Hour contracts. A "Term" Cost Reimbursement contract versus a "Completion" type is similar to this and does not require the contractor to complete the tasks. The discussion on the time to use Time and Materials versus Cost Reimbursement needs to make a distinction between Completion and Term CR contracts. See Federal Acquisition Regulation (FAR) 16.306.

2. How should agencies decide how much goods and services to require in a given contract, task or delivery order?

An agency should only require in the contract, task order or delivery order sufficient goods and services to result in the agency receiving complete, useful assets. (A useful asset is defined in the Glossary of this Guide.) Therefore, if funding was eliminated for the project, the agency would still be able to walk away with, for example, a completed building rather than just a foundation, or software that is complete enough to be useable in and of itself, without having to add software modules to make it useable.

Agencies should separately evaluate each piece of contracting support needed for their project in light of the above yardsticks to see what type of contract makes sense. Agencies are often able to combine parts of the contractor support effort that would require the same type of contract for that support. For example, in some initial parts of the requirements definition phase, so little is known about what it will take to do the contractor portions of the requirement itself that any ROM estimate is far enough outside the plus or minus 50 percent that it is closer to a guesstimate than a reliable estimate. For these parts, Time and Materials may be the best contract type to use. Once requirements are defined and as agencies are working on putting together Performance Work Statements, models, prototypes, etc., more is known about what it will take to meet Government requirements. Then estimates tend to become more reliable. With more reliable estimates, agencies are likely in the plus or minus 50 percent range for estimates, at which point a Cost Plus Award Fee may be the way to go. Once agencies get into production, deployment, and/or maintenance, even more is known about what it will take to meet Government requirements—enough to make it worthwhile to ask a contractor for fixed pricing. The Government then expects contractors and contracting personnel alike to be working in a fixed price contract environment. It is also possible to mix into any of these contract types the ability to place later orders, depending on how much is known about when, where, and in what quantities services are to be performed or goods are to be delivered.

I.5.5.3) Planning for Competition

The acquisition strategy should include how to make the most effective use of competition in all phases of the process. In most cases, competition will yield better value at lower prices. In looking for ways to make the most effective use of competition, agencies should pay special attention to using: (1) performance-based contracting, where innovative solutions are sought to meet functional requirements rather than the more traditional method of detailed Government specifications; (2) competitive demonstrations, where the Government allows several competing vendors to demonstrate their products or prototypes in an operational environment; and (3) solicitation of assets, which permit interoperability with others by featuring open architectures.

Let competition improve results through:

- *Using commercially available and non-developmental items*
- *Publicizing opportunities widely*
- *Applying functional/ performance specifications/targets*
- *Limiting burdensome information requirements*
- *Using open architectures to enhance interoperability*

I.5.5.4) Planning for Acquisition Management

The risk associated with the asset selected for consideration will determine the type of performance-based management system that should be used to monitor contractor performance in achieving the cost, schedule, and performance goals during the contract period. All major acquisitions with development effort will include the requirement for the contractor to use an Earned Value Management System (EVMS) that meets the guidelines in EIA Standard—748 to monitor contract performance. EVMS is normally used on Fixed-Price Incentive contracts and Cost Reimbursement contracts for major acquisitions. EVM shall also be used on Firm-Fixed Price and any other type of contract or task order that meets the major acquisition threshold if that contract or task order contains a significant amount of development effort.

I.5.5.5) Integrating Earned Value into Acquisition Strategy

The acquisition strategy should make sure any contracts resulting from the acquisition that meet the Major Acquisition Threshold contain requirements for the use of EVM.

All contracts with EVM are required to have an Integrated Baseline Review (IBR) pre- or post-award to finalize the agreement on the baseline and ensure all risks are identified and understood. An IBR, a part of the overall risk management process, must be accomplished whenever there are major changes to the baseline. Depending on the risk to establishing an achievable performance measurement baseline at time of contract award, the use of an IBR before or after award must be determined. Agencies are expected to achieve at the completion of the contract at least 90 percent of the cost, schedule, and performance goals established at time of contract award. For more information see Section II.2.4, Establishing an Earned Value Management System.

I.5.6) Allow for Adequate Time to Evaluate Alternatives

Selecting the most promising capital asset should not be rushed, especially for mission-critical assets. 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. Agencies should not request funds for the production or installation stage of an acquisition until they establish firm goals that have a high probability of successful achievement.

I.5.7) Plans for Proposed Capital Assets Once in Use

Plans should also be developed for management of the capital asset once in use, including plans for operational analysis, operations and maintenance, and disposal. Both assets that are on-hand and those being considered for acquisition will have to be disposed of at some point. These costs may be very large. For example, a building may require demolition, or the production of waste may require large cleanup costs. The costs associated with the operating and disposal of assets should be included in the life-cycle and benefit-cost analysis (see Management-In-Use Phase).

Agencies should identify a measurement system for once the asset is in use that provides the cost and performance data needed to monitor and evaluate investments individually and strategically. For example, if an agency makes an advanced technology investment to achieve certain cost savings and quality improvements, the management system should permit the agency to measure whether these improvements occurred and whether operations and maintenance costs are within projections. The measurement system implemented should provide feedback on adherence to strategic initiatives and plans. The system should also allow for review of unexpected costs or benefits that result from the investment decision. This tracking system is a critical element of capital programming, for it follows through the operational life-cycle of the asset. One purpose of the measurement system is to help guide future investment decisions (see Management-In-Use Phase).

I.5.8) Portfolio Management

Capital assets should be compared against one another to create a prioritized portfolio of all major capital assets. Just as an individual invests in a diverse portfolio of securities, agencies invest in a diverse portfolio of capital assets. For the individual investor, returns are measured in dividends or capital gains. While the benefits and costs of capital asset portfolios should be quantified in monetary terms when feasible, agencies also measure return on the basis of outputs and outcomes.

Agencies should choose a portfolio of capital investments that maximizes return to the taxpayer and the Government—at an acceptable level of risk.

For the individual investor, some investments are more risky than others. Similarly, an agency's capital asset investments have various levels of risk. Sound planning for procurement and operational management can mitigate risk. But all assets, especially those that require extensive development work before they can be put into operation, are inherently risky and should be justified by high return. Agencies should choose a portfolio of capital investments that maximize return to the taxpayer and the Government—at an acceptable level of risk.

In general, agencies should establish and manage portfolios of programs, projects and other work in accordance with Federal policy and widely accepted standards. The coordinated management of the items in a portfolio should enhance executive decision making and help ensure programs and projects contribute to an agency’s ability to achieve strategic goals and objectives. The process includes the selection, prioritization and monitoring of programs and projects, but it does not include the management of the items in a portfolio. The management of individual items should be addressed in program/project management policy.

Portfolio management theory and standards are readily available from commercial sources and academic literature. The theory is not repeated here. Agencies are encouraged to focus on the practical application of the principles as opposed to the development of portfolio management theory. Most likely, the practical application will involve the tailoring of the principles to an agency’s unique circumstances.

All of the items in a portfolio must support strategic plans, goals, objectives and priorities. The strategy and goals drive the selection and prioritization. The selection process should eliminate unnecessary and poorly planned projects. In addition, the risks associated with each item should be evaluated and responses should be developed. The risk management process should reduce threats to the agency objectives. The selection and evaluation should result in a portfolio that is balanced so that the mix of items maximizes the agency's ability to achieve strategic goals.

Annual reviews should include key performance indicators and ensure that the portfolio only contains items that support the mission. In addition to reviewing portfolio performance, each item should be reviewed individually to evaluate its contribution. Items may be added, deleted or reprioritized based on their performance and alignment with the strategy. The reviews should also address programs, projects and other work identified as high risk by the Government Accountability Office.

One approach to devising a ranked listing of projects is to use a scoring mechanism that provides a range of values associated with project strengths and weaknesses. Appendix 11 shows examples of how some key risk and return criteria might be scored. These examples are drawn from multiple best practices organizations. Higher scores are given to projects that meet or exceed positive aspects of the decision criteria. Additionally, in this example, weights have been attached to criteria to reflect their relative importance in the decision process. To ensure consistency, each of the decision criteria should have operational definitions based on quantitative or qualitative measures. A scoring and ranking process, such as the one depicted in Appendix 11 may be used more than once, and in more than just this step to limit the number of projects that will be considered by an executive decision-making body.

An outcome of such a ranking process might produce three groups of projects:

Likely Winners: One group, typically small, is a set of projects with high returns and low risk that are likely "winners."

Likely Drop-outs: At the opposite end of the spectrum, a group of high-risk, low-return projects that would have little chance of making the final cut.

Projects That Warrant a Closer Look: In the middle is usually the largest group. These projects have either a high-return/high-risk or a low-return/low-risk profile. Analytical and decision-making energy should be focused on prioritizing these projects where decisions will be more difficult. At the end of this step, senior managers should have a prioritized list of capital investments and proposals with supporting documentation and analysis. An example of criteria and scoring process to rank capital assets is in Appendix 11.

I.6) THE AGENCY CAPITAL PLAN

As part of its strategic plan, each agency is encouraged to have an Agency Capital Plan (ACP) that defines the long-term agency capital asset decisions. The ACP is the ultimate product of the Planning and Budgeting Phase and should be the result of an executive review process that reviews the work done in this Phase. The ACP should include an analysis of the portfolio of assets already owned by the agency and in procurement, the performance gap and capability necessary to bridge it, and justification for new acquisitions proposed for funding.

I.6.1) Executive Review Process

Each agency should establish a formal process for senior management to review and approve the capital assets that make up the ACP before the plan is presented to the agency chief executive for approval.

As described in OMB's "Evaluating Information Technology Investments, A Practical Guide" (November 1995), the number of times a capital asset is reviewed by senior management should be based on the associated level of risk involved in the acquisition. The cost of an asset and its importance to achieving the agency mission should also be taken into consideration when defining criteria for executive review. One private sector best practice company requires more documentation and greater analytical rigor if a proposed asset would replace or change an operational system vital to keeping the company running, or if it matched a company-wide strategic goal. Lower-impact proposals that would affect only a particular office or had a non-strategic objective would not be analyzed by senior management in such detail. Senior management should also review acquisitions not achieving 90 percent of established goals, as required by FASA Title V (see Acquisition Phase).

I.6.2) Purpose of the Agency Capital Plan

The Agency Capital Plan is the principal output of the Planning Phase. It is a dynamic plan that changes to reflect decisions about adding new assets and deleting old or even in-process asset acquisitions that are not meeting goals (i.e., the return on investment does not justify continued funding of the project). It should be the central document, or group of documents, that the agency uses for its capital asset planning. Agencies are encouraged to use a summary of the Agency Capital Plan for budget justifications to OMB, congressional authorizations of projects, and justifications for appropriations to the Congress. (See OMB Circular A–11, Part 2 for budget submission guidance.)

Agencies are encouraged to have on hand capital planning documents at various levels of detail, applying each for different purposes. For example, a summary level might be sufficient for the authorization process in the Congress or justifications for the appropriations committees. The same or a different summary might be made available to OMB to support agency budget proposals to, or if requested by, OMB. The most detailed level might remain in the agency for use in developing the summary materials for OMB and the Congress. In this regard, the Agency Capital Plan can be an excellent means of explaining the background for capital asset purchases, as well as their justification, and can be used as a means of answering inquiries related to an agency's budget submission. Last, the Agency Capital Plan can support an agency's related salaries and expenses associated with the staffing, operation, and maintenance of its capital asset portfolio.

I.6.3) Key Elements of the Agency Capital Plan

Agencies are encouraged to include the elements described below in their Agency Capital Plans. This outline and description should not be viewed as a required format. Agencies that choose to use a summary of their capital plans to justify funding requests for capital assets are encouraged to work with the Congress, OMB, and other stakeholders to determine what should be included and in what format.

The Agency Capital Plan may contain the following elements:

- Statement of agency mission, strategic goals and objectives, and annual performance plans;
- Description of the Planning Phase;
- Baseline assessment and identifying the performance gap;
- Justification of spending for proposed new capital assets;
- Cost-Schedule and performance goals and changes thereto;
- Risk-Management Plan;
- Staff requirements;
- Timing issues, if involved in a multi-agency acquisition;
- Plans for proposed capital assets once in use; and
- Summary of risk management plan.

Each of the elements is discussed in detail with a table demonstrating the relationships between strategic plan, annual plan, and capital plan in Appendix 12.

I.7) AGENCY SUBMISSION FOR FUNDING IN THE BUDGET YEAR

The Budgeting step of the capital programming process occurs when OMB works with the agencies to devise a funding plan to allocate resources among various priorities.

This process begins when the agency starts to incorporate budget concerns into its strategic and annual performance planning, including consultation with OMB staff and perhaps congressional staff. Budgeting is of greater urgency when the agency formally requests budget authority for the asset in its budget submission to OMB for the coming year. Although budgeting should be incorporated to account for all phases of an asset's life-cycle, the formal budget process really begins during this step of the Planning Phase once the agency requests OMB to include the funding for a program or project in the President's Budget. The Budgeting Step and the Planning and Budgeting Phase ends when the Congress appropriates funds for the acquisition and OMB apportions the funds to the agency.

Agencies are encouraged to work with OMB through the entire Planning and Budgeting Phase to greater increase its likelihood of funding. This is where a long-term capital asset investment and utilization plan is useful. It greatly assists the decision makers at OMB see where this asset, among others, fits into the long-term goals of the agency. The plan, as described above, which includes condition analysis, annual performance, and asset inventory, would be familiar with the OMB RMO staff and clearly list out where the asset in question fits into the long term plan.

This step differs from the other planning steps in part because the sole decision making authority does not rest within the agency. They are made in part by OMB (whether to include the request in the Administration's budget proposal to the Congress), and by the Congress (whether to enact budget authority for the acquisition).

This section could also be called the "Justification" or "Approval" section. The agency justifies its proposal to OMB and the Administration, and if approved, the agency and the Administration justify the proposal to the Congress.

Return on Investment (ROI) includes consideration of integrity, confidentiality and authenticity, availability and reliability. If an asset does not have all these characteristics, then the chances of realizing the ROI are reduced. Agencies must demonstrate the use of a repeatable framework for considering these aspects in the selection of capital asset investments. The Federal Information Security Management Act (FISMA) is such a framework for IT assets. Two key aspects of this framework are:

- Implementation of security configurations. FISMA requires each agency to determine minimally acceptable system configuration requirements and ensure compliance with them. In addition, agencies must explain the degree to which they implement and enforce security configuration.

- Plan of Action and Milestones. FISMA requires agencies to develop a process for planning, implementing, evaluating, and documenting remedial action to address any deficiencies in the information security policies, procedures, and practices of the agency.

Agencies must report annually the status of both implementation of security considerations and the Plan of Action and milestones. OMB uses this information to determine the degree to which agencies use the framework and to establish an understanding of the overall level of risk in the Federal IT portfolio.

I.7.1) Agency Submission to OMB

The agency submission should be consistent with the Principles of Budgeting for Capital Asset Acquisitions, which can be found in Appendix 6 to this Guide and is published annually within OMB Circular A–11 as Appendix J. Once submitted, the agency may be called upon to defend the proposal formally in OMB's agency hearings, or informally in many other ways. The proposal will undergo further scrutiny within OMB, and OMB may request more information from the agency, before the OMB Director makes the budget recommendation to the President.

In most cases, the formal submission to OMB will not be the first time OMB or the Congress learns of the proposal, because OMB, and perhaps the Congress, may have been involved in developing the Agency Capital Plan and in approving funding for the Planning Phase. It is also not the first time that the agency has been involved in budgeting and justification. Within the agency, budgeting and justification take place among the various programs and bureaus. Projects that cover more than one appropriation account within the agency or are multi-agency projects should have undergone careful planning to determine how the total cost should be allocated among the various accounts. By the time it is proposed to OMB for funding, the project has survived the competition for resources within the agency and is ready, in the view of the agency head, to compete in a larger and more demanding arena for budgetary resources.

I.7.2) Criteria for Justification of Spending for Proposed New Capital Assets

Although the details will vary depending on the acquisition, there are certain key criteria that OMB will look for in the justification. OMB Circular A–11, Part 7, defines the budget submission requirements for both new and in-process acquisitions. A discussion of the key elements of an Agency Capital Plan can be found in Section I.6.3 of this Guide, with further detail in Appendix 8 and Appendix 12. The principles incorporate the requirements of the Clinger-Cohen Act of 1996 for justifying budgets for capital assets. The three parts of the justification discussed here are (1) basis for selection of the capital asset (2) principles of financing and (3) strategies for strengthening accountability for achieving goals.

I.7.2.1) Basis for Selection of the Capital Asset

The basis for selection of the capital asset is taken from the Justification of Spending for Proposed Capital Assets in Appendix 12. Illustrations of questions OMB Resource Management Offices (RMO) may ask when reviewing agency submissions are shown below.

Illustrative Agency Statement of Program Objectives and Related Information: The program is expected to process 50,000 documents next year and will have to process a projected 60,000 documents five years later. Legislation making the documents more complicated is likely to be enacted. Current projections indicate that the number of Federal employees (FTE) must decline by 15 percent between now and then.

Illustrative Questions from OMB and Others Regarding Program Objectives: Are the documents important to the agency mission? What is the basis for the projected increase in the number of documents? What are the assumptions regarding the complexity of the documents and the amount of time needed to process each document? What is the basis for assuming that the number of Federal employees will decline?

I.7.2.2) Principles of Financing

Illustrative Requests from OMB and Others Regarding the Cost, Schedule, and Performance Goals:

- *Provide baseline cost and schedule goals for the acquisition.*
- *Explain the agency system for developing the baseline goals and evaluating whether the goals will be met.*
- *Explain the performance goals for the asset.*
- *Explain the risk that the cost, schedule, and performance goals will not be met and how that risk will be monitored and controlled.*

The following principles of financing should be followed for the acquisition of capital assets. These are from Principles of Budgeting for Capital Asset Acquisitions (see Appendix 6).

- **Principle 1. Full Funding.** Agencies should request budget authority sufficient to complete a useful segment of a project (or the entire project, if it is not divisible into useful segments). Full funding must be appropriated before any obligations for the useful segment (or project) may be incurred.

- **Principle 2. Regular Appropriations and Authority for Multi-Year Contract Authority.** Regular appropriations for the full funding of a capital project or a useful segment (or investment) of a capital project in the budget year are preferred. If this results in spikes that, in the judgment of OMB, cannot be accommodated by the agency or the Congress, see Principle 4 below.

- **Principle 3. Separate Funding of Planning Segments.** As a general rule, planning segments (e.g., initial planning, competitive prototypes) should be financed separately from the procurement of a useful asset.

- **Principle 4. Accommodation of Lumpiness or "Spikes" and Separate Capital Acquisition Accounts.** To accommodate lumpiness or "spikes" in funding justified acquisitions, agencies, working with OMB, are encouraged to aggregate financing for capital asset acquisitions in one or several separate capital acquisition budget accounts within the agency, to the extent possible within the agency's total budget request.

I.7.2.3) Strategies for Strengthening Accountability for Achieving Goals

Failure to achieve the project cost, schedule, and performance goals can have serious consequences on the ability of the agency to meet its strategic goals and objectives and can seriously affect the agency budget for many years. In addition to providing the cost, schedule, and performance goals, agencies should describe: how much development work is involved, the procurement strategy that will be used (including use of competition and financial incentives), how the acquisition will be managed (use of IPT and the performance-based management system that will be used to provide visibility into program status), the risks associated with the acquisition, the probability of achieving the goals, and the thresholds for termination of the project. This material can be taken from the ACP, Appendix 12.

II. ACQUISITION PHASE

Introduction

Acquisition Planning started with the steps in the previous phase and resulted in the capital plan that justified the funding to acquire the asset. The Acquisition Phase, for purposes of this Guide, begins after the agency has received funding from the Congress for a segment, module, or the entire asset and ends when the asset is delivered and fully operational. Although this section of the Guide addresses issues that arise when the agency intends to satisfy its requirements using outside contractors, most of the principles are equally germane when the work will be performed in-house. The in-house work must be managed with the same rigor as contractor work. In-house operations are expected to achieve the cost, schedule, and performance goals to ensure success of the project, just as with contractors. While a project charter replaces the contract for in-house work, the other requirements for good project management, including the use of EVM in accordance with the EIA 748 standard are applicable for development efforts or multiple projects in a program. Where there are both Government development efforts and contractor development efforts in the same program, the data from the two EVM systems must be consolidated at the reporting level for total program management and visibility. If specific EVM and other project management best practices are not deemed necessary for in-house management, the business case for major acquisitions will need to explain why the agency determined the specific management practice was not germane to the in-house operation.

Depending on the results of the research into the capabilities of the market to provide the asset, the agency will begin the process to procure the asset. In most cases, the procurement should be for a commercial item involving limited or no development work. When the risk inherent in development is offset by the high expected return, the procurement may begin with a development contract.

All projects involve risk, even those that seem ordinary and do not involve high technology. Nevertheless, agencies are expected to award contracts which have a high probability of achieving at least 90 percent of the cost, schedule, and performance goals established in the Planning Phase. The requirements to establish realistic goals and manage the acquisition to meet those goals applies to all contracts, including both development and production contracts. The IPT must ensure that the proposals and in-house estimates clearly recognize the amount and impact of risk on cost, schedule, and technical effort. The contract should provide for a reasonable profit if the contractor meets the risk-adjusted cost, schedule, and performance goals. It should also provide incentives to the contractor only for cost and schedule reductions while maintaining the expected performance, or for performance improvement while maintaining cost and schedule goals, if performance improvement is actually needed to meet agency strategic goals and objectives.

Not every project will achieve the cost-benefit expectations of the Planning and Budgeting Phase. If the EVMS and other management tools indicate that the planning expectations are not realized during the Acquisition Phase, agencies should undertake benefit-cost analysis to evaluate whether the benefits of completing the project are worth the additional costs, schedule delays, or performance reductions that would be incurred. Assuming the re-baselined project has an acceptable cost/benefit ratio, the agency must then compare that ratio with other projects within the agency's portfolio to determine if the re-baselined project merits continued funding. If not, agencies should concede the sunk-costs and terminate the project.

Sound acquisition management requires holding managers accountable. By making the decision makers responsible for their decisions, there will be a greater emphasis in the long run on setting realistic goals and on seeing that they are met. Agencies should establish for the IPT, and others as appropriate, a system of incentives to encourage achievement of the project's baseline goals. These incentives should include rewards (including bonuses), recognition, and consideration in both personnel evaluations and promotion

decisions, when performance of IPT personnel contributes to achieving or exceeding the cost, schedule, and performance goals of the acquisition. Incentives are not appropriate if the acquisition does not achieve its baseline goals.

II.1) VALIDATE PLANNING DECISION

The Acquisition phase implements the planning discussed earlier in this Guide by using the funding provided via the budget process. The specifics of each acquisition are governed by the Acquisition Plan (AP) which documents the planning decisions. Formal written plans that include all of the information described in Phase I and FAR 7.105 are required for all major acquisitions. The FAR and the agency implementation regulations guide the program through the acquisition process from requirement need through close out of the final contract.

At the beginning of the Acquisition Phase, the IPT should re-examine the mission need. The IPT should also re-examine the sustainable design principles and determine if new sustainability initiatives are available. Furthermore, it should re-assess the market capabilities to verify the conclusions reached in the Planning Phase as to whether a commercially available asset can be acquired or limited (or full-scale) development work is needed. The amount of development and complexity of integration are usually the greatest risk factor. Therefore, this validation will have a significant impact on what types of risk treatment and mitigation will be necessary. The IPT should review any prior decisions that development work would be necessary, because technical advances that have occurred since the Planning Phase (or even pre-existing capabilities that were overlooked) could render development work unnecessary. Large, complex implementations of COTS solutions should be broken down into manageable components of useful functionality to reduce risk.

Alternatively, the IPT may determine that a decision in the Planning Phase for direct procurement is no longer valid and development is necessary. When such a determination is made, the analysis and recommendations to change direction should be considered and approved through the portfolio planning process before the IPT proceeds with the acquisition.

The IPT should also re-examine how it can make the most effective use of competition and financial incentives. For instance, if full-scale development was originally planned, but now only limited development will be necessary, more commercial firms may be willing to compete. Also, it is generally appropriate to use firm fixed-price or fixed-price incentive contracts if the development is limited or nonexistent. Of course, the re-examination of the contracting method will also lead the IPT to re-examine what type of acquisition management system is necessary to ensure adequate progress and accountability. If the scope of work requires development type work, EVM must be the major management system used. For major acquisitions, the use of interagency contracts and Indefinite Delivery/Indefinite Quality contracts should be limited. Major acquisitions are large dollar acquisitions and the maximum amount of competition should be solicited.

The IPT must review the WBS to ensure that it completely defines the program scope of work and will provide the basis to extend the Contract WBS to achieve integrated cost, schedule, and technical performance management. The cost estimates and risk assumptions must be reviewed by the systems engineers and cost estimators to ensure the Government has a sound basis for negotiating the contract.

II.2) MANAGE THE ACQUISITION RISK

The most important aspect of the Acquisition Phase is managing the risk. The Program/Project Manager must provide for continual risk management throughout the life of the program/project. Risk management

should be built into an agency's Acquisition processes as a variety of risks may arise in each stage of the Acquisition process. Agencies should also carefully monitor the terms and conditions, including pricing, on which risk allocations are determined, to ensure that they reflect value for money. To ensure that all the risk is identified by the Government and contractors, integrated baseline reviews are required either prior to award or as soon as possible after award, as appropriate, and whenever there is a major modification to the program or a baseline change is requested. The purpose of this function during the Acquisition Phase is to:

1) Track, manage, and report risks associated with the Acquisition Phase;
2) Develop the risk management requirements for the RFP; and
3) Based upon the winning proposal, identify new risks associated with the Development and Implementation Phases of the project, and develop necessary mitigation/contingency strategies.

An appreciation of business risk management at all levels in the organization will help to ensure that the impact on a project is fully understood and monitored throughout its life. It is important that a risk management strategy is established early in a project and that risk is continually addressed throughout the project life cycle.

Risk management includes several related actions involving risk: planning, assessment (identification and analysis), handling, and monitoring.

The extent of risk management required by an agency will vary from following routine Acquisition processes to a significant undertaking involving a high level of planning, analysis, and documentation. Risk management increases the number of projects that will meet the established goals. Management of risk is an ongoing process throughout the life of the project, as risk will be constantly changing. Before starting any acquisition, the IPT should update the acquisition plan to ensure that the risk management strategies considered in the Planning Phase remain appropriate. Agencies should address considerations of safety, security, and risk management in acquisition strategy meetings, source selections, award fee structures, and project surveillance.

Appendix 5 further describes the risk management process.

II.2.1) Limiting Development

The greatest risk factor to successful contract performance is the amount of development that is planned for the Acquisition. Projects requiring full scale development have the greatest potential to experience cost overruns, schedule delays and not meeting performance goals. Therefore, agencies should procure, to the maximum extent practicable, commercial and non-developmental items to satisfy needs.

When commercial or non-developmental items are not available, agencies should consider pursuing limited development work. Although limited development still poses more risk to successful contract completion than needing no development, it does not endanger the success as much as full-scale development. Full-scale development should normally only be considered when it promises exceptionally high returns for achievement of strategic goals if it is successful. Full-scale development should not be used if it will cause the agency to reduce service or increase costs if it is not successful.

There are several ways of mitigating risk, especially the risk that limited or full development presents. One method is to make use of the Nation's integrated industrial base (i.e., companies with facilities, design and manufacturing processes, and technologies capable of servicing both commercial and Government needs). When limited development is necessary, agencies should make maximum use of commercial assembly lines, technology, components, and processes.

Even when full scale development is required, the commercial marketplace has established processes for development work (e.g., design, quality control, and technologies) that the agency can use in its development effort. Furthermore, there are significant advantages if the contractor establishes a market for the product of the development effort beyond the current need. This approach creates the need for the contractor to plan for future maintenance. In many large, full scale development efforts, cost precludes selecting anyone other than the original developer to maintain the custom solution. Planning for custom solutions must address the risk of having to pay excessive amounts for future maintenance.

The Pentagon Renovation Program was conducted in stages relating to "wedges" in the building. The first phase of the renovation did not use a performance-based contract (PBC) and the design plans included 2,600 pages of detailed design specifications. The renovation of wedges 2 through 5 used a PBC and needed just 16 pages to communicate performance-based requirements. For this second part of the project, potential offerors were encouraged to attend the Government's requirements definitions meetings help identify performance requirements, not detailed specifications. For example, one of the sustainability requirements for restrooms was that wall surfaces should have a 50 year life. This resulted in Corian being proposed in place of the traditional tile because Corian was significantly less costly on a life-cycle basis.

II.2.2 Using Competition and Financial Incentives

The effective use of competition and financial incentives is another means to reduce the risk to successful contract completion. In the earliest stages of the acquisition process, the agency should still be looking for innovative solutions to meet its needs. Advance Acquisition Planning (AAP) should be used so that the contracting officer has time to perform any necessary market surveys, prepare a clear solicitation, and effectively identify and use available resources. Given the opportunity, industry can be helpful in proposing innovative solutions. This is more likely to be effective if sufficient time is given for a thorough review of the requirement. Requirements in solicitations should be written not as detailed design specifications, but rather as clear performance standards for asset function and performance, including long term operation and maintenance (O&M) costs, that allow sources to propose various alternative solutions for meeting the agency's needs. Additionally, making effective use of competition and financial incentives will help the agency obtain better cost, schedule, and performance goals at contract inception.

A major barrier to taking advantage of the Nation's integrated industrial base can be the burdens and risks imposed by the Government's demands, in order to ensure price reasonableness, for offerors to submit certified cost data and/or to comply with the Government's cost accounting standards. Agencies can avoid this problem by using acquisition strategies that rely on competition and fixed-price contracts to ensure that reasonable value is received for the price paid.

Creating a monopoly can create problems far beyond an increased procurement price in the current acquisition. Whenever the Government lacks viable alternative sources of supply the agency may lack a realistic means of enforcing contract cost, schedule, and performance goals. Additionally, the lack of viable alternative sources of supply increases the agency's risk of being unable to obtain spare parts and O & M services at reasonable prices.

Agency acquisition plans should attempt to avoid monopolies through mitigation techniques such as multi-sourcing and using commercial standards (e.g., interfaces and footprints that allow for the use of alternative components). Sometimes (e.g., in an extremely large development effort) the nature of an acquisition effectively precludes competition for the foreseeable future. In such circumstances, an agency must take precautions to mitigate the negative effects of the monopoly (e.g., long term pricing arrangements for system upgrades and maintenance with source code or technical data in escrow in case of a violation). The use of Indefinite Delivery Indefinite Quantity (IDIQ) contracts awarded to one contractor for a long term project means that the task orders for future work when defined are negotiated in a sole source environment, even though the FAR classifies the contract as competitive.

Rationale for Providing Stipends

- *Proposal Development is very costly;*
- *Signals the intent that owners are serious about carrying the project forward;*
- *Improves the quality of firms which are submitting; and*
- *Encourages proposers to give full effort.*

Providing stipends to contractors to cover some or all of proposal costs can provide an effective financial incentive to increase competition.

The use of a multi-step source selection process is necessary to effectively use stipends. Stipends to non-successful offerors help defray, but rarely come close to fully covering the costs that offerors expend in responding to RFPs. However, providing a stipend strongly encourages the very best companies to put forth their very best proposals. The Government may decide to require permission to use design plans as a precondition to receiving a stipend. Experience in construction contracts has shown that where an optional stipend is given to a non-successful offeror in exchange for the right to use the design plans, the stipend is generally readily accepted. The availability of a stipend and the terms governing its use must be identified in the RFP.

Financial incentives may reduce risk by motivating contractors to meet cost, schedule, and performance goals. Financial incentives can take the form of additional profit for reducing cost, faster delivery or improved performance. Incentives must be used properly. One way to motivate cost reduction without jeopardizing contract performance is to motivate based on the "probable cost" resulting from the IBR. The incentive must be large enough to be meaningful to the contractor.

Significantly faster delivery than required. Agencies need to be mindful of three things when working with delivery or performance incentives:

- Such incentives are only paid for delivery that is faster than not only what is called for in the contract, but also what is normally done in the marketplace.

- For cost reimbursement contracts, the effort to deliver early to earn the delivery incentive does not drive up the cost of contract performance.

- The incentive for delivery will not result in delivery before the Government is ready to use the items.

Delivery of goods/services that significantly exceeds Government performance requirements. This is when the contractor delivers a good or service that exceeds the performance requirements (other than delivery time) stated in the contract. Agencies need to be mindful of three things here:

- Agencies should only motivate performance that is significantly above and beyond contract requirements.

- For cost reimbursement contracts, agencies should also be careful that the effort to exceed Government requirements to earn the incentive does not drive up the cost of contract performance.

- The incentive should not encourage the provision of performance that exceeds the Government's needs to meet the agency strategic goals and objectives. This would be a waste of resources that could be used elsewhere in the agency where strategic goals and objectives are not being met.

Agencies need to be cautious and ensure that the incentive awards the appropriate behavior. An agency provided an award fee incentive if a call center picked up telephone calls within two rings and established a system to monitor the requirement. The contractor met the requirement by hiring more low-paid employees to answer calls, but the overall objective of achieving quality was lacking.

The standards for the payment of incentives must be clearly defined in the contract and incentive payments must not be made if the standards are not met. Paying incentives without clear justification, even for award fee incentives, has been identified in GAO reviews as a major problem area in contract administrations.

For award fee contracts the award standards must be as clear as possible, but the incentive provisions can be for patterns of behavior, rather than specific measures. If performance evaluation requirements are written too narrowly, the agency may not reward sought after behavior.

While the element of subjectivity must be recognized in evaluating award fees, suggested criteria for award fees may include:

- Quality of work
- Problem solving
- Safety
- Communications
- Minority business opportunities

II.2.3 Using Performance-Based Specifications

When developing the statement of work for major contracts, the more design and specification detail included by the Government on "how to" meet the contract requirements, the more the Government warrants that the specified "how" will meet the performance requirements of the contract; therefore, the more risk the Government assumes for the success of the project. Performance Work Statement (PWS) may reduce the amount of changes and limit the litigation risk.

Using PWS encourages competition by allowing offerors to compete based on providing unique and innovative solutions to performance needs, rather than just price. In this way, the Government benefits from a marketplace of potential solutions and may choose the solutions that best meet the agency's goals within the available budget.

The PWS must include the outcome goals of the acquisition. The outcome goals are normally discussed in the Justification Section (I.) of the business case, and the performance goals section of the business case.

The use of PBSs is a mandatory requirement for all major acquisitions. Failure to use a PBS, unless justified, will result in a poor evaluation of the acquisition strategy in Section I.G. of the business case when the business cases are being reviewed by management for funding.

II.2.4 Establishing an Earned Value Management System

The third key principle of risk management in the Acquisition Phase is using Earned Value Management in accordance with the guidelines in EIA Standard 748.

The solicitation for the contract, or in-house charter, must contain the FAR EVM provisions for pre- or post-award IBRs, as appropriate, and the EVM clause. The process and schedule for contractor and in-house EVM system validation for meeting the EIA 748 standard through EVMS Compliance Recognition documents or a Compliance Evaluation Review where a compliance document does not exist, and periodic systems surveillance must be also be defined in the solicitation.

When considering whether to conduct a pre- or post-award IBR, the IPT should consider that the baseline established with the initial contract award becomes the original baseline for meeting the requirement to achieve 90 percent of the cost, schedule, and performance goals. Any request for a baseline change after initial award that exceeds the 90 percent threshold will require agency head review and OMB approval before the new baseline may be included in the contract.

The Agency EVM process should be consistent with established best practices. For more information see Appendix 3, Example of Earned Value Concept and Schedule Variance for Capital Assets.

II.3) CONSIDER TOOLS

Various tools permit agencies to manage risk in the Acquisition Phase. Three such tools are modular contracting, advisory multi-step acquisitions, and competitive demonstrations/prototyping. All of these tools can be used in combination with each other.

MODULAR CONTRACTING

Reduces Risk by:

- *Increasing competition among firms*
- *Facilitating fixed-price contracting*
- *Accommodating changing technology and agency priorities*

II.3.1) Modular Contracting

Agencies should, to the maximum extent possible, consider breaking large acquisitions into smaller, more manageable segments or modules. Each module must be an economically and programmatically viable (i.e., useful) segment, as defined in the Glossary. A module should include whatever design, development, prototyping, testing, and production are necessary to obtain the identified functionality. However, a module may be a phase such as Planning, or a part of a phase, such as Development and Selection of Prototypes. Each module should be fully funded (see Section I.7.2). As technology advances and agency priorities change, the design of subsequent modules may incorporate these improvements. Modular contracting, therefore, is appropriate even in commercial or non-developmental item Acquisitions. Although modular contracting is generally thought of in terms of contracts for information technology (the Clinger-Cohen Act of 1996 requires that IT contracts be completed within 18 months of the issuance of the solicitation, which almost demands modular contracting for IT), this concept is a best practice for other types of capital assets. This concept is also known as spiral development.

In addition, in limited or full-scale development efforts, if program progress falls short of expectations, it usually is easier and less expensive to make adjustments using modular contracting. A modular approach allows the agency to attack risk incrementally, thereby making it easier to manage. Projects may include successive modules, where each module depends upon already completed modules. Projects may also be composed of several parallel modules, provided that, if one fails, the others will still provide a cost-beneficial service.

The parameters of a module will vary depending upon the type of asset being acquired or the nature of the asset being developed. The following factors, however, should be considered:

- **Separability**. A module should be an economically and programmatically separable segment. The module should be fully funded, have substantial programmatic use that is not dependent on any subsequent module, and be capable of performing its principal functions even if no subsequent modules are acquired.

- **Interoperability**. Each module should comply with a common architecture or commercially acceptable technology standards. Increments should be compatible and capable of being integrated with other modules. By using common or commercially acceptable standards, agencies make competition for subsequent modules a more viable option. For IT acquisitions, modules should also conform to the agency's master information technology architecture regarding interoperability.

- **Performance requirements.** The performance requirement of each module should be consistent with the performance requirements of the completed, overall system and should address interface requirements with other increments.

In acquiring the first module, the agency should plan for the acquisition of subsequent modules. Contracts should be structured to ensure that the Government is not required to procure additional modules. The following list provides examples of contracting techniques that may be used to acquire subsequent modules:

- **Include Modules in Initial Contract**. This technique is most appropriate when product integration may be a problem, subsequent modules can be clearly defined at contract inception, and options can be exercised shortly after contract award. If there is going to be other than a minimal amount of delay in awarding the subsequent modules, it may not be prudent to include subsequent modules in the initial contract, because agencies would want the flexibility of taking advantage of technology improvements or changes in agency priorities.

- **New Solicitation.** An agency can issue a new solicitation and award a new contract for subsequent modules. This approach is most appropriate when integration will be relatively easy and there is a pool of contractors that could perform the work without a large capital investment.

- **Task and Delivery Order Contracts**. Some agencies have awarded IDIQ contracts with task orders issued for each module. These contracts normally are issued because the agency has not defined the work except in broad terms. These contracts contain a high degree of risk as the subsequent task order statements of work can be highly influenced by the contractor and the negotiation for scope of work and cost, and schedule goals is done on a sole source basis. Where possible, agencies should enter into multiple award contracts to maintain effective competition throughout the acquisition.

In order to reduce the high risk in IDIQ contracts for major acquisitions agencies should use competitive prototyping or define the first task order in the solicitation and conduct a full IBR on the two most qualified offeror's proposals before awarding the contract and first task order. Either of these methods will maintain competition through a detailed review of the proposed solution and provide a clear set of risk adjusted cost, schedule, and performance goals and a PMB that both the Government and contractor believe can be achieved without major changes. The award of this competitive task order will provide the Government with realistic cost information that can be used as a basis to negotiate the follow-on sole source task orders.

- **Sole Source.** When the original contract does not provide for follow-on modules and it is determined that follow-on modules should be awarded to the original source (see FAR 6.302–1(a)(2) (ii)), an agency may issue a sole source award for subsequent modules to the supplier of a previous module. This approach is appropriate when the benefits of having the incumbent contractor continue the work outweigh the benefits of competition (e.g., contractor continuity is necessary to

ensure good system integration). Pre-award IBRs should be conducted before the award of any sole source contract to ensure the cost, schedule, and performance goals have been thoroughly reviewed and agreed to by both parties.

With modular contracting, agencies are better able to manage developmental risk. Accordingly, agencies are more likely to be able to use a firm fixed-price or fixed-price incentive contract for the acquisition of each module. As discussed more thoroughly in Section II.4., using a firm fixed-price contract is the preferred contracting method. Modules can often be acquired on a firm fixed-price basis when a large developmental program could not, because modules reduce the risk to cost, schedule, and performance goals that a large developmental program would otherwise have. Modules also can limit the Government's exposure when contracting on a cost reimbursement basis because the task is smaller and more likely to be accomplished within goals by the contractor. In addition, the Government may terminate the acquisition with smaller sunk costs if it becomes apparent that the threshold goals will not be met.

Modular contracting, especially when using an open architecture, can also increase the effective use of competition. The contract base for large development efforts tends to be limited to those large companies that have the Government as their major, if not only, buyer. By breaking the acquisition into smaller pieces, the agency is able to make better use of the Nation's integrated industrial base by making the competition more attractive to smaller firms as well as firms that do predominantly commercial work. This increases both the quantity and quality of the competition.

II.3.2.) Advisory Multi-Step Acquisition

Like modular contracting, a multi-step approach has advantages regardless of the amount of development necessary. In a multi-step approach, the agency asks for limited information in the first phase. The requested information typically consists of information about past performance and experience, a conceptual outline of the proposed technical approach (versus a particular technical solution), and a rough order of magnitude pricing. Detailed technical and cost proposals are not received in the first phase. After requesting and evaluating the limited information submitted by potential offerors in the first phase, agencies can then advise each potential offeror whether or not it is a realistic contender for award. In general, when the agency does issue the actual solicitation, in the second phase, all responsible sources, even those sources that participated in the first phase but were advised that they were unlikely to be realistic contenders, as well as sources who did not participate at all in the first phase, are allowed to submit proposals and have those proposals fully considered. A third step may be added to allow for a down select to two offerors where a pre-award IBR will be conducted on each proposal to finalize the cost, schedule, and performance baselines, complete the risk management plan, and select the best offeror for award of the contract.

The type and amount of information the IPT requests in the first phase step depends on the type of acquisition. In commercial and non-developmental item acquisitions with limited or no development, the information requested in the first step can focus on past performance references and commercial catalogs. Such information would give the IPT a good sense of which offerors have demonstrated their success in applying their capabilities on similar projects.

Advising prospective offerors, in the first step of their competitive viability should limit the number of full technical and cost proposals the IPT receives. Limiting the number of full proposals received should save valuable resources for both the agency and prospective contractors. Prospective offerors' up-front expenditures will be reduced, and they need not expend more resources until after they have been advised of their likelihood of being competitive for the award. A multi-step process may, therefore, encourage more participation by firms that have successfully performed in the private sector, but because of the high cost, have not previously chosen to compete for Government contracts.

Regardless of whether or not development is required, a multi-step approach allows the acquisition to benefit substantially from the efficient and effective communication between sources and agency personnel. These communications will foster the development of requirements and evaluation criteria that allow the best fit between agency needs and marketplace capabilities. Sources that are advised, based on the first step review, that they are strong competitors should be encouraged to participate in such a due diligence effort. As a general matter, however, because the interchange occurs before issuance of the solicitation for proposals in the second step, all interested sources will have the opportunity to participate. Agencies that are not bound by the requirement in the Office of Federal Procurement Policy Act and the Small Business Act that all responsible sources be allowed to submit offers, can restrict participation in the due diligence effort to those offerors selected in the first phase, making it even more beneficial. [2]

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[2] This is consistent with the definition of budget authority contained in Section 3(2) of the Congressional Budget and Impoundment Control Act of 1974, as amended by the Omnibus Budget and Reconciliation Act of 1990.

Multi-Step acquisition provides incentives to bidders to invest more of their own resources to perform due diligence to learn about agency needs and develop innovative high value solutions. The multi-step approach provides an incentive for offerors to invest resources in performing due diligence. Once an offeror has been told that, based on the first step review, it is a leading contender to receive the award and it knows that only a limited number of other offerors are in that position, the offeror has a strong incentive to work with the IPT, end-users, and others to obtain good information about the agency's needs. Offerors will be able to assess well the gaps between the functionality and performance available using existing assets and the functionality and performance desired. There is also a strong incentive to understand what is expected by those who will have to use, maintain, and rely on the new system. This information and understanding can enhance substantially offerors' ability to submit high value proposals and avoid contract disputes.

It is not necessary in the multi-step process outlined above to include firm requirements or evaluation criteria for the second step solicitation in the initial notice or before due diligence is complete. As a result, the dialogue between prospective offerors and agency personnel can contribute substantially to the development of requirements and evaluation criteria that yield very effective competition. The benefits of competition depend not only on the number of offers received, but also on how likely the offerors are to submit proposals that will meet the agency's needs and provide good value. It is better to receive three robust offers than ten mediocre ones. By accommodating and targeting marketplace capabilities that are suitable for meeting agency needs, the refined solicitation (that is produced by a multi-step approach) puts offerors in a good position to propose what the agency actually needs and wants and increases the probability of awarding a contract that represents the best value available in, or capable of being developed by, the marketplace.

Of course, if the Government believes it is appropriate (e.g., the development work will be substantial) to offer further incentives, the Government may award competing prototype contracts with limits on the total costs to be reimbursed by the Government (see II.3.3, Competitive Prototyping). This type of contracting can be used if the agency decides a pre-award IBR is necessary to establish a firm baseline with a high probability of achieving the cost, schedule, and performance goals for the contract or module before award to prevent the potential need to ask for a baseline change if the IBR is done after award.

The term prototype normally means a physical deliverable that can demonstrate actual performance characteristics. For long-duration contracts that include significant development, it may be impractical to proceed all the way through completion of a prototype. In lieu of a prototype, the Government may require an initial detailed design activity that is sufficient to demonstrate the adequacy of the proposed technical approach and enable the accurate estimation of the cost of development.

There is no generally preferred contract pricing mechanism for a multi-step acquisition. The pricing mechanism will depend on the type of acquisition. If the acquisition is for a commercial or non-developmental item or for a limited development effort, it should be a fixed-price effort; if, however, the acquisition is for a full-scale developmental system, a cost reimbursement contract may be necessary if the risk is too great for a fixed-price contract. For development efforts, however, thresholds should be established beyond which the project would not be cost-beneficial and should be considered for termination.

II.3.3. Competitive Prototyping

To mitigate the risk of full-scale or limited development, agencies may use competitive prototyping. In competitive prototyping, contractors offering alternative system design concepts are selected to develop prototypes of their products. In acquisitions with limited development, the development work can be completed as part of the prototyping effort. When limited development is done as part of the prototyping effort, the contractor would be ready to move to full-scale production after satisfactorily completing the prototype.

Whether full-scale or limited development is contemplated, both contractors and the agency can use the competitive prototyping phase to exchange information. This opportunity gives the contractor a better idea of what the end-users need. Similarly, it allows the agency to learn what the marketplace can provide. As is the case with multi-step acquisitions generally, continuing needs definition and market research in a due diligence effort—conducted with those sources selected to develop prototypes—allows for an effective and efficient information exchange. This exchange will foster achieving the best fit between agency needs and market capabilities. Prototyping also allows the Government to obtain enough information about the design and production to be able to determine the product's subsequent affordability. A goal of any prototyping and development effort is to get the project developed to the point that the agency can use firm fixed-price contract for production and/or implementation.

If full-scale development is contemplated, competitive prototyping can be used to verify that the chosen concepts are sound, to perform in an operational environment, and to provide a basis of selection of the system design concept to be continued into full-scale development, before the agency commits to large scale funding. Prototypes may range from a principal end item or critical subsystem, to a limited and less than complete development model. It is anticipated that the winning concept and contractor of the competitive prototyping evaluation will then move into full-scale development and initial production. In awarding the prototype contracts, agencies may provide different funding amounts to each contractor depending on several circumstances (e.g., particular design, the amount sought, and the concept's potential).

When using competitive prototyping in advance of full-scale development, the competitive prototyping contracts should provide for contractors to develop and submit proposals for full-scale development and

initial production by the conclusion of the prototyping effort. When the agency is doing development after the prototyping effort, agencies can use fixed-price contracts in which the performance standards may vary to contain the development effort.

If only limited development is necessary, a commercial style approach can be used in which the development can be accomplished as part of a fixed-price prototype contract. This approach contains the development risk and is most appropriate in cases where the development is an extension of a commercial item or otherwise existing technology (e.g., for products that can be produced on a flexible manufacturing line).

Awarding at least two combined prototyping and development contracts provide a strong incentive for contractors to devise the highest value performance-cost tradeoff. In some cases, the contractor may choose to invest some of its own resources in development, particularly if the item has commercial as well as Government use. As when prototyping is done in advance of development, agencies may provide different amounts of funding to each contractor. As an alternative to the award of multiple combined prototype and development contracts (i.e., when at least two awards are not feasible) an agency can consider whether an upgrade of the current system (presumably requiring no more than limited development) is a realistic option that would provide competitive pressure.

A major benefit of the commercial style approach that combines development with prototyping under competitively awarded fixed price contracts is that it can avoid any need for the submission of certified cost data or compliance with Government cost accounting standards for the purposes of determining the initial price or supporting contract payments. Firms doing business in the commercial market view government demands for the submission of certified cost data, compliance with Government accounting standards and the associated burdens and risks to be among the most significant barriers to their participation in government contracting. The commercial style approach, by avoiding the need for such data and accounting, provides increased access to the Nation's integrated industrial base and the commercial assembly lines, technology, components, and procedures that can serve as the basis for achieving an agency's functional and performance objectives with only limited development.

II.4) SELECT CONTRACT TYPE AND PRICING MECHANISM

It is incumbent upon the agency IPT to clearly define the performance requirements and estimated costs for major acquisitions before RFPs are issued. This process starts with the development of the WBS to identify the requirements and the use of cost estimators and systems engineers to develop the Government cost estimate to be used in the contract negotiations. The Government cannot issue broad based statements of objectives without the basic performance standards and allow the contractors to set the scope of work and costs because the Government has not done sufficient market research and requirements definition to establish initial baselines upon which to evaluate offerors' proposals. This up-front planning work allows the Government to assess the amount of risk to the contractors and select the appropriate contract type to protect both the Government and contractors from a high probability of program failure to achieve cost, schedule, and performance goals. The objective is to negotiate a contract type and price (or estimated cost and fee) that will result in a reasonable contractor risk and provide the contractor with the greatest incentive for efficient and economical performance. Agencies should make good use of contract type by matching the type of contract to how much risk there is to meeting the requirement. The amount of developmental risk determines how accurate the Government and the contractor's cost estimates are likely to be.

The Government's preferred contract type is Firm-Fixed Price (FFP), because this contract type is used when the risk involved is minimal or can be predicted with a reasonable degree of certainty. When used for acquisitions with minimal risk this type of contract has the greatest probability of successful achievement of its cost, schedule and performance goals. The use of an EVM system on FFP contracts is based on the

nature of the work. If this type of contract is used when the acquisition has a significant amount of development work, the Government is required to include the FAR EVM requirements in the contract

Fixed-Price Incentive contracts and all cost type contracts should be used as appropriate for the type of risk as discussed in FAR Part 16. These contracts should be performance-based and completion type contracts. Earned Value is required on all of these contracts because of their inherent risk. The business case for major acquisitions that use these types of contracts must clearly explain and list the risk that cannot be mitigated and why the risk cannot be mitigated through another approach. The risk should be quantified in the cost, schedule, and performance goals.

Time and Materials and Labor Hour Contracts are not appropriate for major acquisitions that have passed the planning stage. They are to be used only when it is not possible at the time of placing the contract to estimate accurately the extent or duration of the work or to anticipate cost with any reasonable degree of confidence. These types of contracts may be imbedded in the prime contract for short duration unquantifiable work, but never used as the primary vehicle for the delivery of products or services. Earned Value is required on these types of contracts if they are used for development work.

If an agency wanted to buy a specific fleet asset, it might try to discover every capability available in the market place and then, before issuing the solicitation, establish which capabilities it wants. A better way is to solicit for that particular asset, including any particular target performance capabilities the agency wants, and wait for the various bid offers to come in before making trade-offs.

For long-duration contracts (that cannot be broken into modules) that include significant development, it may be impossible to estimate the cost of performing the entire contract with sufficient accuracy to use a fixed price or structured incentive contract from day one. As the contract progresses and the ability to estimate the cost of performance increases, the use of such contracts becomes more practical. Therefore, it may be desirable to initiate the work with a small, short duration time and material or cost plus fixed fee contract for studies of early design, evolve to a cost plus award fee or cost plus incentive fee contract for later design and initial development, and then to a cost plus incentive fee, fixed price incentive, or fixed price contract for initial and full scale production once all development work is complete. For such contracts, it also may be desirable to negotiate the cost or price in increments. The initial estimated cost or price would be for the studies or early design. As work progresses, the estimated cost or price should be renegotiated upward at appropriate points in the contract as those costs become more predictable.

II.5) ISSUE THE SOLICITATION

Solicitations should make the most effective use of competition. Generally, increased public exposure to agency functional and performance objectives will increase not only the quantity of solicitation, but also the quality of the procurement. Solicitation exposure is important, especially when trying to expand the supplier base for major asset acquisitions beyond those few firms that regularly sell only to the Government (sometimes so dependent on Government business that a monopoly exists) to include firms with significant commercial sales.

In addition to notices in the in Federal Business Opportunities (FedBizOpps, at http://www.fedbizopps.gov) and alternative electronic means when available, the IPT should make sure that upcoming or recently released solicitations get announced in trade journals and at related conferences.

The solicitation should explain the mission need in terms of functional and performance objectives (i.e., capability targets versus equipment needs), schedule, and operating constraints. To verify that the performance standards are measurable, the IPT should develop a preliminary quality assurance surveillance

plan that defines the process for measuring the standard. Performance standards that cannot be measured need to be deleted and another measurable standard developed. Offerors should be free to propose their own technical approach, main design features, sub-systems, and alternatives to schedule, cost, and functional and performance capability goals.

In developing the evaluation factors to be considered for award, agencies should make allowances for trade-offs among technical features and between technical features and cost. Market analysis, as discussed in the Planning and Budgeting Phase, can help an agency better understand the general capabilities and the state-of-the-art available in the marketplace.

However, the IPT should not limit competition unduly by making trade-offs between price and technical factors too early in the solicitation and evaluation process. Targets should be considered for inclusion in solicitations in place of mandatory minimum requirements.

Market research continues until contract award. It need not be completed prior to issuing the solicitation; in fact, it may be counterproductive to do so if it results in the adoption of minimum requirements in the solicitation that severely limit the range of possible best value tradeoffs. Market research includes the information that members of the Source Selection Team and IPT gain after receipt of offers, but prior to award, as a result of reviewing offers and communications with offerors.

In issuing the solicitation, agencies should consider as an evaluation factor the manner in which the offeror proposes to deal with the various risk considerations. For example, the evaluation strategy in the solicitation should prefer proposals that offer limited or no development over those that offer full-scale development.

The solicitation must require the contractor to operate and maintain an earned value management system to manage the acquisition during its performance period. The system must provide, at a minimum, monthly status reports to the agency IPT on the achievement of, or deviation from, the cost, schedule, and performance goals established for the acquisition. The solicitation for all major acquisitions must contain the appropriate FAR EVM provision for either a pre-award IBR or a post-award IBR, and the FAR EVM clause (see FAR Part 34). In addition, the agency must include the reporting requirements for the agency's oversight needs. Additional reporting may be necessary to manage programs that are not meeting goals. Non-major acquisitions should use EVM to the extent necessary to ensure the program meets its cost, schedule, and performance goals. The solicitation must also provide for the accomplishment of EVM system acceptance reviews for verifying a previous system acceptance or conducting an acceptance review, as needed. The schedule for system surveillance reviews should also be included.
IPTs should conduct orientation briefings for industry and allow industry to comment on the acquisition strategy and a draft solicitation. The objectives are to clarify the solicitation requirements and remove inhibitors to innovative solutions.

II.6) PROPOSAL EVALUATION AND NEGOTIATION

A Source Selection Team (SST) (whose members come from the IPT) should evaluate proposals based on the evaluation criteria in the solicitation. The SST should determine to what extent each proposal meets the criteria included in the solicitation and compare the proposals to each other based on those determinations. If appropriate, the SST should conduct negotiations with offerors to clarify and improve proposed technical solutions and costs. The team should prepare analyses and recommendations for presentation to senior management. If a pre-award IBR is required, it must be included in the proposal evaluation process during the best value tradeoff analysis. If a pre-award IBR was not contemplated at the time of the solicitation, but the SST determines that the proposals received do not clearly demonstrate that

the cost, schedule, and performance goals have a high probability of being met, an IBR can be conducted before the award is made.

In selecting from competing alternatives, the reviewers, consistent with the solicitation, should consider:

- Functional and performance capabilities of the proposed solutions in relation to the mission needs and program objectives, including resources required and benefits to be derived by trade-offs, where feasible, among technical performance, acquisition costs, sustainable design principles, ownership costs, and time to develop and field.

- The competitors' relative accomplishment record (past performance).

- Offeror's documentation from a Cognizant Contracting Officer or a Cognizant Federal Agency that has conducted a systems acceptance review that the EVM system proposed for use meets the guidelines in EIA Standard 748. The SST should ensure that the documented system is compatible with the contemplated contract and that the contractor will actually use it to manage the project.

- If the offeror proposes to use a system that has not been determined to be in compliance with the EIA Standard, the offeror's comprehensive plan for compliance must be reviewed to ensure the system will likely be validated in a reasonable time to provide adequate reporting on contract status. The SST must schedule the systems acceptance review within the time established in the contract.

The contracting agency should ensure that the documented system is compatible with the contemplated contract and that the contractor will actually use it to manage the project. The contract must set a specific time for the system to be acceptable.

For long-duration contracts that include significant development, the effects of competition will drive competing suppliers to make overly optimistic estimates of the cost of performing the contract. If a contract is awarded at an estimated cost or price that is substantially less than the probable cost of performing the contract, the likelihood that the Government will receive the product or service on time and within the cost estimates is unlikely. If the contract requirements were appropriately written to reflect the true needs of the agency to meet its strategic goals and objectives, a low probable cost of performing the contract will result in the project's failure to meet essential goals. The evaluation process must require competitors to demonstrate the realism of their proposals to actually achieve the cost, schedule, and performance goals. Agencies are graded on their ability to achieve major acquisition goals, because failure to meet those goals causes budgeting and performance problems for the agency and reflects badly on the agency's and the project manager's ability to provide for the commitment to the public to be good stewards of public funds. One method to reduce the probability of acquisitions not meeting original goals is to conduct an IBR prior to the award of any contract. An IBR may be conducted on the selected offeror or on the best two offerors. If the IBR is to be conducted on the best two offerors, provision for payment to both for the conduct of the IBRs should be made. The savings from keeping competition in the process until the end of the IBRs will more than cover the cost of conducting the IBRs. Deficiencies identified by the Government evaluation team during the IBR must be conveyed to the competitor, and corrected by proposal revisions. The estimated cost or price of any resulting contract must include the cost of correcting those deficiencies.

II.7) CONTRACT AWARD

The Source Selection Authority (SSA) selects the successful contractor. If a trade-off process (see FAR Part 15.101–1) is used, the award decision should ensure that any higher price paid is worth the perceived benefits, and is within the planned funding level for the project. However, if cost, schedule, or performance

parameters proposed by the contractor offering the best value to the Government do not achieve program objectives within funding limitations, the SSA should discuss the funding shortfall with the Executive Review Committee. The Executive Review Committee will then decide if the project's revised cost-benefit ratio, in comparison with other potential projects, remains large enough, given the new information, to warrant award of the contract. If not, the SSA should terminate the acquisition and evaluate how and why the process failed.

II.8) CONTRACT MANAGEMENT

The success or failure of capital asset acquisitions to achieve cost, schedule, and performance goals can significantly affect the agency's ability to maintain budget discipline and achieve its strategic plan. Program managers need visibility early on into a contract's progress to identify any problems. This allows time for contractors and the Government to implement corrective actions before significant deviation from goals results. Agency financial management and control systems should have activity based costing capability to accumulate the actual costs of the project and integrate them with performance indicators to give program managers a clear understanding of how resources are connected to results.

If corrective actions cannot be implemented to maintain the expected return on investment, the contract can be terminated with limited loss, and planning for another solution may begin promptly. Information from the contractor's management system should be incorporated in the agency's financial management and control system. The agency's system should accumulate the actual costs of the project (including both contract costs and agency program management costs) and integrate them with performance indicators to give program managers a clear understanding of how resources are connected to results. Appendix 3 provides an example of the earned value management system concept. If a pre-award IBR was not conducted, it is essential that a post-award IBR be performed as soon as practical after contract award. This IBR must be completed no later than six months after contract award. If the post-award IBR results in a change to the cost, schedule, and performance goals, the new baseline must be approved by the ERC and OMB before being implemented.

Using EVM, the contractor plans its work using a contractually specified work breakdown structure as the baseline. The objectives, tasks, services, or deliverables that must be produced by the organization are described in the work breakdown structure. The IPT ensures that the contractor plans, budgets, and schedules the work effort in time-phased "planned value" increments constituting a performance measurement baseline (time-phased budget).

The contractor assigns the planned work for cost accumulation and individual responsibility to control accounts and subsidiary work packages under the cost-control accounts. The sum of the budgets for all the work packages scheduled to be accomplished is the "planned value" of the effort. This is called the Budgeted Cost for Work Scheduled.

By integrating the responsible organization and the specific deliverables at the control account or work package level, the project manager can see the relationship between the work and the responsible resources. The program manager can pinpoint both where problems occur and the responsible party. Work that does not earn its planned value can be identified so that corrective actions can be taken and new estimates of budget needs made.

As work is completed in the work packages, it is "earned" on the same budget dollar basis as it was planned. The sum of the budgets for completed work packages and completed portions of open work packages is the earned value. This is called the Budgeted Cost for Work Performed. The cost actually incurred and recorded in accomplishing the work performed within a given time period is called the Actual Cost of Work Performed.

Measuring the amount of work accomplished against the original planned baseline and against actual costs provides critical management visibility on the achievement of, or deviation from, goals. Management systems that only track actual expenditures against planned expenditures fail to provide the key piece of management information—amount of work actually accomplished—needed to make appropriate decisions about the status of the contract. Milestones must be defined in terms of products or functions that are measurable through demonstration or observation such that the percentage of completion can be determined in terms of dollars expended for milestones at certain points in time.

Contractor accounting systems should accumulate actual costs of accomplished work, which is compared with earned value, providing a cost variance for the accomplished work and indicating whether the work is over- or under-running its plan. Planned value, earned value, and actual cost data provide an objective measure of performance, enabling trend analysis and evaluation of cost estimated at completion at all levels of the acquisition.

The EVMS will provide useful information for all levels of the management team. The contractor's EVMS will provide the following information for analysis:

- Change control
- Cost variance
- Understanding of whether technical objectives are being achieved
- Variance analysis
- Performance variance
- Schedule variance
- Identification of problem areas at both the organization and work breakdown structure levels.
- Variance at completion analysis

II.9) ACQUISITION ANALYSIS

II.9.1) Contract Performance Evaluation

The IPT should receive monthly, or more often if necessary, status reports from the contractor on the acquisition. Direct access to the contractor's EVM system, if negotiated into the contract, can substitute for or supplement formal reporting. If the acquisition is not achieving cost, schedule, or performance goals, the IPT should determine the reasons for the deviations and the corrective actions planned by the contractor. The corrective actions should be evaluated as to whether they are likely to be effective. If the corrective action cannot return the contract within goals before contract completion, it must at least ensure that the deviations will not continue to expand and that the current estimates to complete the contract are realistic.

Agencies should establish thresholds for deviation from goals that require Executive Review Committee notification when exceeded. FASA Title V requires agency head review if major acquisitions are projected not to achieve at least 90 percent of cost, schedule, and performance goals. Agencies may establish tighter thresholds. If the threshold goals will not be achieved at contract completion, the IPT should prepare an analysis of the estimated changes in cost, schedule, and performance goals and whether the acquisition would remain cost-beneficial and should continue to receive priority in comparison to other projects at the new funding levels. It is important to note that a recommendation to reduce the performance requirements also affects the amount of cost and schedule overruns. Not only has the ability to meet strategic goals and objectives been effected, but the costs and schedules are for a lesser amount of work so the deviations must be adjusted upward to reflect the lesser scope of work.

The IPT's analysis and recommendations should be evaluated by the Executive Review Committee for a determination to:

Continue the acquisition (by reallocating or seeking additional funds through OMB);

Restructure the acquisition with lower goals (and not seek additional funding); or

Terminate the acquisition.

Periodic status reports should be provided by the IPT to the Executive Review Committee on all major acquisitions, even if they are within goals. Because of changing technology, mandates, and mission, a project within goals may no longer provide the agency with the highest return on the use of the funds.

II.9.2.) OMB RMO Review

OMB's RMO staff will review status information for all major acquisitions at least once a year, or as necessary, for critical acquisitions and those other major acquisitions that are not projected to achieve 90 percent of goals. RMOs shall request a sample or all of an agency's Major Acquisition Business Case with the annual budget submission to OMB. OMB reviews the reasons for deviation from goals, the reasonableness of the corrective actions proposed, and the validity of increased cost estimates. OMB considers approving a re-baseline proposal only when the agency has provided justification, based on an IBR, demonstrating the new goals have a high probability of success and that the acquisition will still have a benefit-cost result that justifies continued funding after comparison with the other projects in the portfolio and budget limitations. Acquisitions not meeting objectives that have no acceptable plan for fixing the problems may be recommended for termination and the agency instructed to return to the Planning Phase for consideration of alternative solutions.

If OMB agrees to the new baseline and the Congress funds it, the project may measure deviations from the new baseline, but all reporting on the project/program must also show the deviations from the original baseline.

II.9.3) OFPP Assessment

OFPP is responsible, under FASA Title V, for submitting an annual assessment to the Congress on progress made by civilian agencies in achieving 90 percent of acquisition goals. The Secretary of Defense has the same requirement for Defense acquisitions. Civilian agencies must submit with their annual budget a list of all major acquisitions with the original cost, schedule, and performance goals and all deviations over 10 percent to the original baseline from the start of the acquisition to the date of the budget submission.

II.10) ACCEPTANCE

Acceptance is the final step in the Acquisition Phase. Upon acceptance of the asset, the asset moves to the Management-in-Use Phase. The IPT should ensure the asset meets the requirements of the contract. Often this will be accomplished through an acceptance test plan. Acceptance testing can be performed during and/or at the end of contract performance.

Effective testing will determine whether the agency received the benefits it anticipated and whether the system is acceptable for use in accomplishing the agency's mission. Agencies should invest adequate resources to ensure that there is a thorough test plan. A thorough plan is one that will accurately determine if the contractor's product meets all of the requirements of the contract. The plan should also determine whether the asset is capable of meeting the program needs and providing the projected benefits which

supported the project. If a commercial or non-developmental item is procured, the IPT should consider using commercial quality standards or the contractor's quality system to ensure acceptability. Where appropriate, independent validation, verification, quality assurance processes, and regression testing should be required as part of testing for acceptance.

Having established a thorough test plan, managers should ensure it is followed, the tests are performed rigorously, and acceptance does not occur unless each item of the test plan is fully met. Properly conducted demonstrations evidencing the product's ability to meet the test plan and program needs and to provide the anticipated benefits are very important. Time should be planned in the contract schedule for such demonstrations.

Agencies should also ensure that unacceptable ratings with respect to contract requirements are effective disincentives to contractor's poor performance. When appropriate, agencies should withhold payment or fee depending on the contract's payment mechanisms. Agencies should also make it a policy to use accurate performance ratings in subsequent contract award decisions.

If the agency accepts the asset with deviations from the contract requirement, these deviations should be documented, including any consideration (e.g., reduction in price) received from the contractor as required by the contract. Formal contractor performance evaluations are required to be completed by the IPT at least annually and at completion of the contract. These evaluations are entered into the past performance database used by the agency.

The evaluations must reflect an accurate summary of the contractor's performance in meeting the cost, schedule, and performance goals from the beginning to the end of the contract. When entered in the past performance data base they provide a contract performance record that can be used by Government source selection teams when evaluating the contractor's potential for other contract awards.

III. MANAGEMENT IN-USE

Introduction

The Management-In-Use Phase begins after completion of the Acquisition Phase. Effective Management-In-Use requires the continuous monitoring of an Agency's inventory of capital assets to ensure they are maintained at the right size, cost, and condition to support agency mission and objectives. Management-In-Use is generally the longest phase of the investment or asset life-cycle. Ownership costs, such as operations, maintenance (including service contracts), energy use, and disposition, can often consume more than 80 percent of the total life-cycle costs. Agencies must review, properly plan for, and actively manage their investment during this phase and employ effective measures of an asset's financial and physical condition and its operational support for the agency mission. This portion of the Guide describes tools that can be used to ensure the continued viability of each capital asset to support the agency mission. Unlike other sections of this guide, the actions in the Management-In-Use Phase can occur simultaneously and some activities necessarily occur iteratively.

III.1) OBJECTIVES DURING MANAGEMENT-IN-USE

Key objectives during the Management-in-Use Phase are: 1) to demonstrate that the existing investment is meeting the needs of the agency, delivering expected value or that the investment is being modernized and replaced consistent with the Agency's enterprise architecture; and 2) to identify smarter and more cost effective methods for delivering performance and value. Thus, an operational analysis seeks to examine specific areas such as: Customer Results, Strategic and Business Results, and Financial Performance.

The following questions help reveal useful information about each area:

- Are annual operating and maintenance costs comparable to the estimates developed during the Selection, Planning, and Budgeting Phases? (Financial Performance)
- Are operational costs to the customer as low as they could be for the results delivered? (Customer Results)
- Is the asset meeting performance goals established during the Selection and Planning Phases? (Customer Results)
- Is the asset performing in accordance with the sustainable design? (Strategic and Business Result)
- Is the asset continuing to meet stakeholder needs? (Customer Results)
- Does the asset continue to meet business needs and contribute to the achievement of the organization's current and future strategic goals? (Strategic and Business Results)
- Are there smarter or more cost effective ways of deliver the functionality? (Financial Performance)

To ensure sound investment decisions throughout the life of the asset, managers at all levels must use the information derived from these types of questions.

Circular A-123, Management's Responsibility for Internal Control, emphasizes effectiveness and efficiency of operations as one of its three core objectives. Agencies should ensure that the appropriate controls are in place to make sure that the asset is being managed effectively. For capital investments, the greatest level of operational efficiency occurs at the asset or project level. To improve the accuracy and efficiency of operational data collection, whenever possible, an agency should employ an efficient way of collecting and analyzing operating cost and performance data.

III.2) OPERATIONAL ANALYSIS IS A KEY TOOL IN MANAGEMENT-IN-USE

Operational analysis is a method of examining the ongoing performance of an operating asset investment and measuring that performance against an established set of cost, schedule, and performance goals. An operational analysis is, by nature, less structured than performance reporting methods applied to developmental projects and should trigger considerations of how the investment's objectives could be better met, how costs could be reduced, and whether the organization should continue performing a particular function.

While great emphasis is often placed on meeting the budget, scope, schedule, and goals during the Acquisition Phase, developmental costs are only a fraction of the asset's total life-cycle costs. Operations is a critical area where improved effectiveness and productivity can have the greatest net measurable benefit in cost, performance, and mission accomplishment. A periodic, structured assessment of the cost, performance, and risk trends over time is essential to minimizing costs in the operational life of the asset.

Beyond the typical developmental performance measures of cost and schedule performance, an operational analysis should seek to answer more subjective questions in the specific areas of:

- Customer Satisfaction,
- Strategic and Business Results,
- Financial Performance, and
- Innovation

In addressing Customer Satisfaction, the analysis should focus on whether the investment supports customer processes as designed. The focus is on how well the investment is delivering the goods or services it was designed to deliver.

Strategic and Business Results measure the effect the investment has on the performing organization itself, and should provide a measure of how well the investment contributes to the achieving the organization's strategic goals.

In measuring the Financial Performance of an operating asset, the operational analysis should compare current performance with a pre-established cost baseline. While financial performance is typically expressed as a quantitative measure, the investment should also be subjected to a periodic—preferably annual—review for reasonableness and cost efficiency.

Addressing innovation in the operational analysis is an opportunity to conduct a qualitative analysis of the investment's performance in terms of the three previously mentioned areas. It also demonstrates that the agency has revisited alternative methods or achieving the same mission needs and strategic goals.

Operational analysis is also an opportunity to conduct a qualitative analysis of the investment's performance in a holistic fashion. The analysis should address issues such as greater utilization of technology or

consolidation of investments to better meet organizational goals and also include an ongoing review of the status of the risks identified in the investment's Planning and Acquisition Phases.

Operational analysis may indicate a need to redesign or modify an asset if previously undetected faults in the design, construction, or installation are discovered during the course of operations; if operational or maintenance costs are higher than anticipated; or if the asset fails to meet program requirements. Operational analysis may show a need to apply an improvement methodology, such as value management, to identify better ways for the asset to meet its life-cycle cost and performance goals. Such analysis may also help to identify where faulty operations are eroding the asset's ability to perform its function. Operational analysis will lose much of its benefit to the capital programming process if early warning indicators do not serve as a trigger mechanism within the agency to take corrective actions.

III.3) OPERATIONAL ANALYSIS PROCESS AND OUTCOME

The operational analysis process consists primarily of tracking and identifying the operational cost and performance of assets in the Management-In-Use Phase of their life cycle. If any of the cost, schedule, or performance variances are 10 percent or more, agencies are to provide a complete analysis of the reasons for the cost overrun or performance gap with planned actions to correct the variance and share techniques that generated the savings. Agency discussions should address lessons learned, why the problems occurred, or how the savings were realized. If the asset cost or schedule variance is +/– 10 percent and/or if the performance goals are not being met, then the project requires a more in-depth operational review in which relevant indicators will be applied for analysis purposes. The outcome of the analysis may include recommendations to redesign or modify an asset before it becomes a problem, identify areas where cost of ownership can be reduced, or potentially serve as input to the Select Review.

Regardless of performance of operational indicators, a formal operational analysis is warranted for every steady-state project. Recommendations and evaluations will be consolidated into the project's operational analysis plan. This plan will continuously be reviewed and updated as future operational analyses will be conducted yearly or on an as-needed basis.

Agencies must submit information about their data collection methods and evidence that the methods used lead to the collection and use of valid and accurate performance data. Only current, complete, accurate, and relevant data can help the agency to make informed decisions regarding the allocation of resources, compare actual vs. planned results, and provide meaningful feedback to improve the planning process. The collection and verification of accurate asset or investment data should be a priority in establishing the baseline and collecting actual operational data.

III.3.1.) Continuous Monitoring

Whether an asset is newly acquired or already operational, focus should be placed on analyzing each asset's ability to support the organizational mission. Continuous monitoring of both supply (the assets currently available in the inventory) and demand (the agency's changing mission requirements) is essential. The resulting gap analysis should be documented in the Enterprise Architecture (EA), Real Property Asset Management Plan, or other strategic planning tool.

These tools document the agency's strategy for integrating capital programming and agency mission requirements. The agency should analyze their portfolio of capital assets, set goals and priorities for the optimization of the inventory, explain their use of performance indicators and analysis in decision-making, and develop a strategic timeline outlining improvement initiatives.

Executive Order 13327, and the corresponding guidance issued by the Federal Real Property Council (FRPC) in December 2004, defines the basic descriptive elements each Agency should know about every asset in their real property inventory. All data is required to be collected at the individual, constructed asset level. In addition to the inventory data elements, the guidance also identifies four performance measures for real property. They are:

Operating Costs—Costs attributed to recurring maintenance and repair, utilities, janitorial and roads/grounds expenses.
Facility Utilization Index (FUI)—A measure of the percent of space occupied versus the designed amount.
Facility Condition Index (FCI)—A measure of a facility's condition at a particular point in time. The FCI rating is a ratio of the cost of repair needs of the asset divided by the current replacement value of the asset.
Mission Dependency—An asset evaluation process that describes the value of an asset in relation to the mission of the organization.

Analyzed separately and in combination with each other, these and other performance indicators can help the agency determine reinvestment priorities. For example, an asset with a high mission-related value, but a poor condition index requires immediate attention. Such an asset should receive funding priority over a non-mission critical asset with the same poor condition index. Conversely, an asset with low mission value and a poor condition index could be a viable candidate for disposition. These and other agency identified performance indicators are powerful tools that allow agencies to segment their entire asset portfolio in a quantitative, objective manner for analysis. This is discussed further in section III.4. Asset Disposition.

III.3.2.) Operations and Maintenance

Poorly performing assets detract from mission effectiveness by utilizing resources that could be used more effectively to support other mission priorities. If not properly managed, a capital asset's useful life can be shortened dramatically or prolonged beyond the planned termination date at high cost and risk, thereby reducing the return on the taxpayers' investment. Each asset should have an Operations and Maintenance (O&M) plan that outlines the procedures and responsibilities for scheduled preventive and regular or routine corrective maintenance.

A 100,000 square foot (sf) office building just outside of Washington, D.C. is separately metered for all utilities. The owner began comparing the facility's utility costs to properly adjusted private sector benchmarks and discovered that the asset's electricity costs were $1.20/sf over market averages. The asset manager alerts field personnel who are able to study and correct the problem, saving over $120,000 per year in wasted electricity charges. If the building were part of a larger facility or complex of buildings where one electricity meter monitored the entire complex, for accounting purposes the electricity costs would be allocated by square foot across the entire complex of assets (a common occurrence). The $120,000 in wasted electricity costs is no longer easily recognizable, and never raises the red flag for management attention. Cost and energy savings such as these are one reason the Energy Policy Act of 2005, sec. 103, requires the installation of meters and advanced meters of all Federal buildings (where appropriate) by the year 2012.

- The elements of an Operations and Maintenance Plan include:
  - For scheduled preventative maintenance:
    - Sign-offs to instill personal responsibility,
    - Training of use staff, and
    - Tracking of labor and material costs.
  - For predictable corrective maintenance:
    - Budget expenditure for minor maintenance and repair, and
    - Maintenance contracts.

To ensure efficient operations, relevant and appropriate public and private sector benchmarks should be implemented whenever possible. For example, real property managers should benchmark an asset's janitorial costs against those of their private sector counterparts. As a reminder, benchmarks should be adjusted to reflect differences in accounting practices (i.e., capitalization thresholds or indirect costs), if necessary. Combined with strategic targets, benchmarks contribute significantly to improved performance management and informed decision-making.

Some Agencies have implemented computerized maintenance management systems (CMMS) to manage their preventive maintenance and service call workload. These systems automatically generate and track:

- Instructions and schedules for preventive maintenance
- Equipment warranty information and automatically filing claims when appropriate
- New work orders
- Service call response time and customer satisfaction
- Service call history to alert management to potential problem areas

The use of these systems allows management to measure operating performance against established goals such as system downtime, preventive maintenance hours, or backlog. Service call history along with other diagnostic tools can help managers proactively identify and correct deficiencies in advance of breakdown, reducing unexpected downtime and repair costs.

III.3.3) Post Implementation Review and Post-Occupancy Evaluation

Whereas operational analysis is a control mechanism during the operational life cycle of an asset, the Post Implementation Review (PIR) for IT projects and a similar Post Occupancy Evaluation (POE) for construction projects are diagnostic tools to evaluate the overall effectiveness of the agency's capital planning and acquisition process.

The primary objectives of a PIR/POE are:

- To identify how accurately a capital investment project meets the objectives, expected benefits, and the strategic goals of the agency;
- To ensure continual improvement of an agency's capital programming process based on lessons learned; and
- To minimize the risk of repeating past mistakes by providing quality services to business partners and customers.

Both a PIR and a POE evaluate an investment's efficiency and effectiveness to determine how well the investment achieved the planned functionality and anticipated benefits. The POE also determines if the investment supports the mission efforts and strategic plan as originally identified. It is an essential and valuable component in soliciting customer feedback and incorporating that feedback into improvements to the performance and delivery of the capital investment process.

The PIR and POE have a dual focus:

- They provide assessments of implemented investments, including an evaluation of the development process; and
- They indicate the extent to which the agency's decision-making processes are sustaining or improving the success rate of capital investments.

Team membership: The PIR and POE teams should be comprised of individuals not directly involved in the acquisition of the asset. Members can include owners and users of the asset, other personnel, and consultants.

Factors to be considered include:

Customer/User Satisfaction

- Strategic Impact and Effectiveness
- Business process support
- Investment performance
- Investment performance

Internal Business

- Project performance
- Infrastructure availability
- Standards and compliance
- Maintenance
- Evaluations (accuracy, timeliness, Program quality, adequacy of information)
- Employee satisfaction/retention

Strategic Impact and Effectiveness

- System impact and effectiveness
- Alignment with mission goals
- Portfolio analysis and management
- Cost savings

Innovation

- Workforce competency
- Advanced technology use
- Methodology expertise

To ensure that each asset is evaluated consistently, the organization should have a documented methodology for conducting these reviews. The methodology chosen must be in alignment with the organization's planning process and must build on the organization's memory. The organization should determine whether there may be better cost, benefit, and risk measures that could be established that would improve the monitoring of future projects. A mechanism should also be in place that takes the lessons learned through the PIR or POE and uses the lessons to update the Planning and Budgeting Phase decision criteria as well as the Acquisition and Management-in-Use processes.

III.3.3.1) Post Occupancy Evaluation (POE)

A Post Occupancy Evaluation (POE) is usually conducted 12 months after the construction project has been beneficially occupied. The 12-month review timeframe allows sufficient time for the customer to evaluate systems performance and relevant aspects of project delivery. Agencies, however, may perform the POE at different times to meet their unique requirements. The POE team reviews the provided information and assesses process successes as well as failures. Areas for improvement are analyzed and improvements to the process are evaluated.

Some common POE activities include:

- Commissioning
- Completing the POE questionnaire
- Analyzing the completed questionnaire
- Interviewing with key stakeholders
- Measuring performance
- Providing recommendations for process improvements

III.3.3.2) Post-Implementation Review (PIR)

The Post-Implementation Review (PIR) usually occurs either after a system has been in operation for about six months or immediately following investment termination. The review should provide a baseline to decide whether to continue the system without adjustment, to modify the system to improve performance or, if necessary, to consider alternatives to the implemented system. Some common elements reviewed during the PIR include:

- Mission alignment
- IT architecture including security and internal controls
- Performance measures
- Project management
- Customer acceptance
- Business process support
- Financial performance
- Return on investment
- Risk management
- Select and control phase performance ensuring initiative success
- Gaps or deficiencies in the process used to develop and implement the initiative
- Best practices that can be applied to other IT initiatives or the CPIC process

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

Even with the best system development process, it is quite possible that a new system will have problems or even major flaws that must be rectified to obtain full investment benefits. The PIR should provide decision-makers with useful information on how best to modify a system, or to work around the flaws in a system, to improve performance and bring the system further in alignment with the identified business needs.

To minimize inadequate returns on low value or high cost IT investments, the agency will conduct periodic reviews of operational systems to determine whether they should be retained, modified, replaced, or retired. With the emergence of new business and process requirements, and new and updated technology, systems should be assessed to determine the extent to which they continue to support the agency's mission and business objectives.

III.4) ASSET DISPOSITION

Asset disposition is the culmination of previous planning, budgeting, and acquisition efforts. But the determination to dispose of a capital asset should not be an afterthought once obsolescence is reached. Agencies have established best practices in the disposition of capital assets, focusing primarily on real property and information technology assets. The methodologies presented are general and may be applicable to the disposition of other types of capital assets, e.g. motor vehicle, ship, and aircraft fleets. The laws and statutes that govern the disposition of the wide array of Federal assets vary among agencies. It is important that agencies comply with the applicable laws and statutes.

III.4.1) The Decision Process

Disposition of an asset is the culmination of the processes discussed earlier in this Guide. Projected costs of asset disposal are critical elements in the planning and budgeting for asset acquisition. The decision to dispose of an asset may be triggered by any number of events; most will be part of a systematic plan formulated in advance that integrates the asset into the agency's broader Capital Asset Plan. Beginning with mission analysis and planning for the purpose of matching capabilities to mission requirements, and continuing with ongoing analysis, criteria are established and monitored to determine the condition of the asset and how well it is performing. If an asset becomes uneconomical to keep in service or fails to meet performance criteria, the agency should critically assess the asset to determine whether it should be retired, replaced, enhanced, or refurbished.

The following questions are a starting point to assist agencies in determining whether or not any type of capital asset is a candidate for disposition. It is important that all appropriate stakeholders are involved in the decision process.

- Does the capital asset still support the mission?
- Is the asset wholly or partly unneeded?
- Is the asset being put to optimum use?
- Is the asset functionally obsolete or has it deteriorated beyond economical repair?
- Will program changes alter asset requirements?
- Is the asset used only irregularly for program use? Would a portion of the asset satisfy program needs?
- Is continued Federal ownership and operation of the property justified in light of its current use?

- Are operating and maintenance costs excessive?
- Can the asset be made available for use by others within or outside the Federal community?
- Are there security or other considerations that outweigh disposition of the asset?

III.4.2) Real Property Assets and Information Technology Considerations

The two major categories of capital assets are Real Property Assets and Information Technology Systems. Both of these capital asset types have similar life-cycles within the Federal Government. However, both types of assets also have their own unique characteristics and considerations which are explained in turn below.

III.4.2.1) Real Property Assets

Recognizing long-standing concerns of the Federal Government in the disposition of excess and unneeded property, GAO labeled Federal real property as high-risk in GAO Report Number GAO–03–122. In the report, GAO highlighted that the Federal Government's capital asset portfolio no longer effectively aligns with, or is responsive to, agencies' changing missions. Executive Order 13327, Federal Real Property Asset Management, issued on February 6, 2004, which establishes the Federal Real Property Council (FRPC), addresses many of the opportunities and challenges of asset disposition within the Federal Government. Agencies are expected to dispose of unneeded assets, in accordance with applicable statutes, to ensure that the agency real property inventory of assets is maintained at the right size, cost, and condition. Inventories should contain mission critical and mission dependent assets that are maintained in the appropriate condition and operated at the right cost.

Additional Real Property Considerations. In addition to the considerations highlighted above in section III.4.1, the following should also be considered when evaluating real property assets for disposition:

- Is the asset uneconomical to retain?
- If so, could it be sold or exchanged for a more suitable asset with lower maintenance and operating costs, at a price roughly equivalent to the value of the present asset?
- Considering the cost of acquisition or lease, moving costs, preparation of the new space, operation and maintenance costs, and the increase in efficiency of operations, can net savings to the U.S. Government be realized by relocation?
- What effect does the availability of alternative facilities, if required, have on the foregoing?

III.4.2.2) Information Technology

Growing demands for performance require increased and sharpened focus on management in use and disposition of information technology assets. Overall IT investments in steady state assets have increased in each year since 2003. During this same period, investments in development, modernization, and enhancements have trended downward. Agency Capital Planning and Investment Control processes should lead to overall reductions or stabilization in costs during the Management-In-Use of all Capital Assets.

Additional IT Considerations. In addition to the considerations highlighted above in section III.4.2, the following should also be considered when evaluating IT assets for disposition:

- Does the effect on program performance measures justify the cost to operate and maintain the asset?
- Is the asset compliant with current security, architectural, and technological standards?

III.4.3) Decision Models

Agencies are encouraged to use decision models to determine if an asset should exit the agency inventory of capital assets. Decision models define and document the decision process, ensuring a consistent application of identified criteria in deciding a course of action. As discussed earlier in this guide, the FRPC developed four performance measures (operating and maintenance costs, utilization index, condition index, and mission-dependency) to facilitate the continuous monitoring of real property assets. Agencies should apply the four performance measures to segment their portfolio and identifying assets that are candidates for disposition. A decision tree is just one of many diagnostic tools available to supplement agency portfolio analysis and provide additional information for decision-making. Specific examples of real property and IT assessment models can be found in Appendix 9.

III.4.4) Executing the Asset Disposal Plan

The procedure for disposition of an asset will depend upon the type of asset, as well as existing agency guidelines and any laws and regulations governing the disposal of that particular asset (e.g., E.O. 12999, of April 17, 1996, authorizing Federal agencies to donate excess computers and related peripheral tools directly to schools). Upon determination that an asset is a candidate for disposition, agencies must consider a broad range of regulatory requirements to ensure that all proper procedures are followed and all alternatives are considered before an asset is disposed. For example, a specialized contractor following environmental laws monitored by EPA would most likely perform hazardous material disposal, while GSA, following real property regulations, would dispose of an office building. In all cases, relevant subject matter experts, guided by internal policy and applicable laws and regulations, should work closely with agency executives to ensure cost-effective and timely asset disposal.

Once the decision to dispose is made, a number of issues must be considered, including how to remove the asset from service, planning for transition to a replacement if required, redeployment elsewhere in the agency where it may continue to provide a benefit greater than the cost, or final removal of the asset from the agency's inventory. Depending on the type of asset, disposal may be as simple as transferring the item to another agency, turning it over to GSA as excess, or demolishing it and selling it as scrap. Additional methodologies can be found in Appendix 10.

The disposition of an asset leads to the phase-out of an obsolete asset, transition to a new asset or significant enhancement to an existing asset. Due to increased risk to agency programs during the transition and the required planning and coordination the status of the asset necessarily moves from steady state to mixed life cycle. It is important that agency carefully plan the timing of an asset transition to minimize disruption to programmatic function. For IT systems, transition planning begins immediately upon deployment. After the new system has been acquired, developed, and tested, deployment takes place according to the plan developed early in the Acquisition Phase. The elements of a transition may include:

- Converting data from the old asset to the new,
- Operating both the old and new assets concurrently,
- Validating that the new system has converted old data properly,
- Ensuring users are trained on the new asset,
- Keeping the customers informed of transition progress, and
- Outlining these actions and agreements in a memorandum of understanding signed by representatives from all parties affected by the conversion.

Once an asset has exited the inventory, agencies should ensure that updates are made to budgeting, accounting, and inventory systems, as appropriate.

APPENDICES

APPENDIX 1

DEFINITION OF CAPITAL ASSETS

Capital assets are land (including park lands), structures, equipment (including motor and aircraft fleets), and intellectual property (including software), which are used by the Federal Government and that have an estimated useful life of two years or more. Capital assets exclude items acquired for resale in the ordinary course of operations or held for the purpose of physical consumption such as operating materials and supplies. The cost of a capital asset is its full life-cycle costs, including all direct and indirect costs for planning, procurement (purchase price and all other costs incurred to bring it to a form and location suitable for its intended use), operations and maintenance (including service contracts), and disposal.

Capital assets may be acquired in different ways: through purchase, construction, or manufacture; through a lease-purchase or other capital lease, regardless of whether title has passed to the Federal Government; through an operating lease for an asset with an estimated useful life of two years or more; or through exchange. Capital assets include the environmental remediation of land to make it useful, leasehold improvements and land rights; assets owned by the Federal Government but located in a foreign country or held by others (such as Federal contractors, State and local governments, or colleges and universities); and assets whose ownership is shared by the Federal Government with other entities. Capital assets include not only the assets as initially acquired but also additions, improvements, modifications, replacements, rearrangements and reinstallations, and major improvements (but not ordinary repairs and maintenance). Examples of capital assets include the following, but are not limited to them:

- Office buildings, hospitals, laboratories, schools, and prisons;
- Dams, power plants, and water resources projects;
- Motor vehicles, airplanes, and ships;
- Satellites and space exploration equipment;
- Information technology hardware, software and modifications;
- Department of Defense (DOD) weapons systems; and
- Environmental restoration (decontamination and decommissioning efforts).

Capital assets may or may not be capitalized (i.e., recorded on an entity's balance sheet) under Federal accounting standards. Examples of capital assets not capitalized are DOD weapons systems, heritage assets, stewardship land, certain assets acquired for environmental cleanup efforts, and some software.

Capital assets do not include grants for acquiring capital assets made to State and local governments or other entities (such as National Science Foundation grants to universities). Capital assets also do not include intangible assets such as the knowledge resulting from research and development (R&D) or the human capital resulting from education and training, although capital assets do include land, structures, equipment (including fleet), and intellectual property (including software) that the Federal Government uses in R&D and education and training. Agencies are encouraged to use the capital programming process or elements thereof in planning for expenditures not covered by this definition, to the extent that they find it useful.

APPENDIX 2

INTEGRATED PROJECT/PROGRAM TEAMS (IPTs)

Agencies should apply an integrated project and process development (IPPD) approach to manage capital assets, using Integrated Project Teams (IPTs) assigned, as appropriate, to manage the various capital programming phases or major acquisition programs within the agency. The approach of having specific teams, accountable for managing all or specific parts of the capital programming process for large projects, enjoys a successful track record in industry and Government.

A program manager with the appropriate level of knowledge, skills, and experience shall normally lead the IPT. The program manager should understand user needs and constraints, and demonstrate the ability to manage large projects to achieve cost, schedule, and performance goals. This manager should have sufficient tenure and interest in the project to provide continuity and to ensure personal accountability for her or his actions. Continuity reinforces accountability. Program managers and other senior IPT staff (e.g., contracting officer who should be assigned to the IPT from its inception and remain at least through the Acquisition Phase) should commit to remain with the project for four years or the completion of the Acquisition Phase whichever is earlier, or at least until (a) the phase that is underway is completed, or (b) a milestone during the phase is completed where accountability for success or failure to achieve goals may be assessed. When possible, senior members of the IPT should be encouraged to remain with the project from the Baseline Assessment Step of the Planning Phase into the Management-In-Use Phase.

The program manager should be provided with a written charter defining the team's responsibilities, budget constraints, and the extent of authority and accountability for accomplishing project objectives. The charter should be updated as necessary, but at least at the start of each phase, and should be based on decisions of the Executive Review Committee. Program managers should be given sufficient funding to establish an IPT to meet the charter. To keep the project moving on a tight schedule, management layers between the program manager and senior management should be limited to ensure accountability for the program manager and timely decisions from above.

The members of the IPT should be dedicated to the project and responsible to the program manager for the duration of their assignment to the IPT. Where services of team members are not needed on a full-time basis, support to the IPT should take priority over other duties. This is necessary to maintain the continuity for good management and team accountability.

The team should be cross-functional, as necessary, to accomplish the various tasks of the project. The members should reflect the user community, the project's stakeholders and should have a core knowledge of project management, value management, budget, finance, sustainable design, and procurement.

APPENDIX 3

EXAMPLE OF EARNED VALUE CONCEPT

Earned value is a management technique that relates resource planning to schedules and to technical, cost, and schedule 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:

- 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.

The example shown here illustrates how the earned value concept works. The analysis begins with a baseline schedule showing how much work is planned for each time period. The subsequent sections show how to calculate the deviation from the planned schedule (schedule variance) and the deviation from the planned cost (cost variance).

Baseline. For this hypothetical example, the baseline plan (planned value increments) in Table 1 shows that 6 work units (A–F) would be completed at a cost of $100 for the period covered by this report.

Table 1. Baseline Plan

Work Units	A	B	C	D	E	F	Total
Planned Value ($)	10	15	10	25	20	20	100

Schedule Variance. As work is performed, it is "earned" on the same basis as it was planned, in dollars or other quantifiable units such as labor hours. Planned value compared with earned value measures the dollar volume of work planned vs. the equivalent dollar volume of work accomplished. Any difference is called a schedule variance. In contrast to what was planned, Table 2 shows that work unit D was not completed and work unit F was never started, or $35 of the planned work was not accomplished. As a result, the schedule variance shows that 35 percent of the work planned for this period was not done.

Table 2. Schedule Variance

Work Units	A	B	C	D	E	F	Total
Planned Value ($)	10	15	10	25	20	20	100
Earned Value ($)	10	15	10	10	20	0	65
Scheduled Variance	0	0	0	–15	0	–20	–35 = –35%

Cost Variance. Earned value compared with the actual cost incurred (from contractor and agency accounting systems, not through estimation techniques) for the work performed provides an objective

measure of planned and actual cost. Any difference is called a cost variance. In this example, a negative variance means more money was spent for the work accomplished than was planned. Table 3 shows the calculation of cost variance. The work performed was planned to cost $65 and actually cost $91. The cost variance is a negative 40 percent.

Table 3. Cost Variance

Work Units	A	B	C	D	E	F	Total
Earned Value ($)	10	15	10	10	20	0	65
Actual Cost ($)	9	22	8	30	22	0	91
Cost Variance	1	–7	2	–20	–2	0	$ –26 = –40%

Spend Comparison. The typical spend comparison approach, whereby contractors report actual expenditures against planned expenditures, is not related to the work that was accomplished and is not a valid measure of program status. Table 4 shows a simple comparison of planned and actual spending which indicates the program is under running by 9 percent. When compared to the schedule and cost variance examples under an earned value system, the management information provided below gives a false indication of true program performance.

Table 4. Spend Comparison Approach

Work Units	A	B	C	D	E	F	Total
Planned Value ($)	10	15	10	25	20	20	100
Actual Cost ($)	9	22	8	30	22	0	91
Variance	1	–7	2	–5	–2	20	$9 = 9%

References:

Electronic Industries Alliance (EIA) Standard 748 Earned Value Management Systems

APPENDIX 4

ACCOUNTING FOR CAPITAL ASSETS

The Statement of Federal Financial Accounting Standards (SFFAS) No. 6, Accounting for Property, Plant, and Equipment (PP&E), revised by SFFAS No. 23, Eliminating the Category of National Defense Property, Plant and Equipment, and SFFAS 29 Heritage Assets and Stewardship Land, establishes standards for capital assets. These standards were issued by the Federal Accounting Standards Advisory Board, in which OMB subsequently published guidance in its OMB Circular A–136 Financial Reporting Requirements (August 23, 2005).

One significant objective of financial accounting standards is to support assessment of operating performance. Financial reporting should provide information to determine: (1) the cost of providing specific programs and activities, including the composition of these costs and changes over time; (2) financial inputs in relation to a program's outputs; and (3) the efficiency and effectiveness of the Government's management of its assets. To facilitate meeting these information needs, PP&E has been divided into two categories: general PP&E; and Stewardship PP&E, consisting of heritage assets and stewardship land.

For general PP&E (i.e., PP&E used to produce general Government goods and services), SSFAS 6 supports these information needs by allocating costs—including cleanup costs—of general PP&E to the periods in which the assets are used through historical cost depreciation methods. The cost is allocated to the period when it is incurred. Managerial cost accounting standards, established by SFFAS 4, Managerial Cost Accounting Concepts and Standards for the Federal Government, will result in these period costs being tied to outputs. In addition, deferred maintenance reporting will provide financial statement users with information on the condition and management of assets.

The Stewardship PP&E category consists of assets whose physical properties resemble those of general PP&E that are traditionally capitalized in financial statements. However, due to the nature of these assets, (1) valuation would be difficult, and (2) matching costs with specific periods would not be meaningful. The standards provide for a different type of reporting. SFFAS No.8, Supplementary Stewardship Reporting, superseded by SFFAS 29, requires that information on Stewardship PP&E be reported in a manner that highlights their long-term-benefit nature and demonstrates accountability over them. SFFAS 29 reclassified all heritage assets and stewardship land information as basic except for condition and deferred maintenance information, which is classified as required supplementary information (RSI). SFFAS 29 requires that entities reference a note on the balance sheet that discloses information about heritage assets and stewardship land, but no asset dollar amount should be shown.

Each agency's financial system needs to have the capability to accumulate, recognize, and distribute the cost of an agency's activities such as the costs of major acquisitions and other major programs within the agency that need to provide visibility to senior management on their total costs.

APPENDIX 5

RISK MANAGEMENT

The aim of risk management is to ensure that risks are identified at project inception and their potential impacts allowed for and accepted, where possible, so that the risks or their impacts are minimized. Risk management is an integral part of project management on the project. Risk management processes are utilized from project initiation through development, maintenance and operations, and end only when the project/system is shutdown or retired.

A risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on a project objective. Risk is one of those words that immediately conjures up an image of something bad, but it is important to remember that risk can provide positive benefits as well as negative ones.

Risk management is the systematic process of identifying, analyzing, and responding to project risk. The need to manage risk increases with the complexity of the investment. It is an ongoing process that requires continuous risk identification, assessment, planning, monitoring, and response. It is the responsibility of everyone on the IPT. It implies control of possible future events and is proactive rather than reactive.

Risk planning

This is the process of developing and documenting an organized, comprehensive, and interactive strategy, the methods for identifying and tracking the risk issues, developing risk handling plans, performing continuous risk assessments to determine how risks have changed, and assigning adequate resources. Projects should develop a Risk Management Plan that:

- Establishes the purpose, objective, and goals of the project,
- Assigns responsibility for specific areas,
- Describes how risks will be assessed,
- Defines the risk rating approach,
- Establishes monitoring metrics;,
- Defines how risk will be monitored throughout the project life-cycle, and
- Assesses risk.

This process involves identifying and analyzing program areas and critical technical process risks to increase the likelihood of meeting cost, performance, and schedule objectives.

- **Risk identification** is the process of examining the program areas and each critical technical process to identify and document the associated risk.

The following common areas of risk are consistent with OMB risk requirements.

- Technology—Lack of expertise, software and hardware maturity or immaturity, installation requirements, customization, O&M requirements, component delivery schedule/availability, uncertain and changing requirements, design errors and/or omissions, technical obsolescence.

- Project Schedule and Resources—Scope creep, requirement changes, insufficient or unavailable resources, overly optimistic task durations, and unnecessary activities within the schedule, critical deliverables or reviews not planned into the schedule.

- Business—Poorly written contracts, market or industry changes, new competitive products become available, creating a monopoly for future procurements.

- Organizational and Change Management—Business process reengineering acceptance by users and management, time and commitment managers will need to spend overseeing the change, lack of participation by business owners in the reengineering process, necessary change in manuals and handbooks, personnel management issues, labor unions, ability of the organization to change.

- Strategic—Project does not tie to the Department's mission or strategic goals, project is not part of the Department's IT Capital Planning and Investment Control (CPIC) process.

- Security—Project does not conform to the requirements of OMB Circular A–130 Management of Federal Information Resources (November 28, 2000).

- Privacy—Project does not conform to the requirements of OMB Circular A–130.

- Data—Data standards are not defined, data acquisition and/or conversion costs are unknown.

- Integration Risks

- Project Team Risks

- Requirements Risks

- Cost Risks

- Project Management Risks

Risk analysis is the process of examining each identified risk issue or process to refine the description of the risk, isolate the cause, and determine the effects. The cost of a risk event occurring can be quantified by determining its expected value (probability X impact). These costs must be included in cost estimates. A risk register should be developed and maintained. The table below provides a means by which risk identification can be easily captured, documented and analyzed.

Risk Priority	Risk Category	Date Identified	Risk Description	Risk Rating	Risk Response Strategy	Status

Risk handling is the process that identifies, evaluates, selects, and implements options in order to set risk at acceptable levels given program constraints and objectives. This includes the specifics on what should be done, when it should be accomplished, who is responsible, and associated cost and schedule. Risk handling options include assumption, avoidance, control (also known as mitigation), and transfer. The most desirable handling option is chosen, and then a specific approach is developed for this option.

Risk monitoring is the process that systematically tracks and evaluates the performance risk handling actions against established metrics throughout the acquisition process and provides inputs to updating risk handling strategies, as appropriate. After encountering problems on a program, the IPT should document any warning signs that, with hindsight, preceded the problem, what approach was taken, and what the outcome was. This will not only help future programs, but could help identify recurring problems in existing programs.

APPENDIX 6

PRINCIPLES OF BUDGETING FOR CAPITAL ASSET ACQUISITIONS

Introduction and Summary

The Administration plans to use the following principles in budgeting for capital asset acquisitions. These principles address planning, costs and benefits, financing, and risk management requirements that should be satisfied before a proposal for the acquisition of capital assets can be included in the Administration's budget. The principles are organized in the following four sections:

A. Planning. This section focuses on the need to ensure that capital assets support core/priority missions of the agency; the assets have demonstrated a projected return on investment that is clearly equal to or better than alternative uses of available public resources; the risk associated with the assets is understood and managed at all stages; and the acquisition is implemented in phased, successive segments, unless it can be demonstrated there are significant economies of scale at acceptable risk from funding more than one segment or that there are multiple units that need to be acquired at the same time.

B. Costs and Benefits. This section emphasizes that the asset should be justified primarily by benefit-cost analysis, including life-cycle costs; that all costs are understood in advance; and that cost, schedule, and performance goals are identified that can be measured using an earned value management system.

C. Principles of Financing. This section stresses that useful segments are to be fully funded with appropriations; that as a general rule, planning segments should be financed separately from procurement of the asset; and that agencies are encouraged to aggregate assets in capital acquisition accounts and take other steps to accommodate lumpiness or "spikes" in funding for justified acquisitions.

D. Risk Management. This section is to help ensure that risk is analyzed and managed carefully in the acquisition of the asset. Strategies can include separate accounts for capital asset acquisitions, the use of apportionment to encourage sound management, and the selection of efficient types of contracts and pricing mechanisms in order to allocate risk appropriately between the contractor and the Government.

In addition, cost, schedule, and performance goals are to be controlled and monitored by using an earned value management system, and if progress toward these goals is not made, there is a formal review process to evaluate whether the acquisition should continue or be terminated.

As defined here, capital assets are generally land, structures, equipment (including fleet), and intellectual property (including software), and weapon systems that are used by the Federal Government. Not included are grants to States or others for their acquisition of capital assets. A complete definition is provided in Appendix 1.

A. Planning

Investments in major capital assets proposed for funding in the Administration's budget should:

1. Support core/priority mission functions that need to be performed by the Federal Government;

2. Be undertaken by the requesting agency because no alternative private sector or governmental source can support the function more efficiently;

3. Support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial, off-the-shelf technology;

4. Demonstrate a projected return on the investment that is clearly equal to or better than alternative uses of available public resources. Return may include: improved mission performance in accordance with measures developed pursuant to the Government Performance and Results Act; reduced cost, increased quality, speed, or flexibility; and increased customer and employee satisfaction. Return should be adjusted for such risk factors as the investment's technical complexity, the agency's management capacity, the likelihood of cost overruns, and the consequences of under- or non-performance;

5. For information technology investments, be consistent with Federal and agency enterprise architectures which: integrate agency work processes and information flows with technology to achieve the agency's strategic goals, reflect the agency's technology vision, specify standards that enable information exchange and resource sharing while retaining flexibility in the choice of suppliers and in the design of local work processes, and ensure that security is built into and funded as part of the enterprise architecture in accordance with OMB Memorandum M–00–07, Incorporating and Funding Security in Information Systems Investments (February 28, 2000);

6. Reduce risk by: avoiding or isolating custom-designed components to minimize the potential adverse consequences on the overall investment; using fully tested pilots, simulations, or prototype implementations when necessary before going to production; establishing clear measures and accountability for investment progress; and securing substantial involvement and buy-in throughout the investment from the program officials who will use the system;

7. Be implemented in phased, successive segments as narrow in scope and brief in duration as practicable, each of which solves a specific part of an overall mission problem and delivers a measurable net benefit independent of future segments, unless it can be demonstrated that there are significant economies of scale at acceptable risk from funding more than one segment or there are multiple units that need to be acquired at the same time; and

8. Employ an acquisition strategy that appropriately allocates risk between the Government and the contractor, effectively uses competition, ties contract payments to accomplishments, and takes maximum advantage of commercial technology. Prototypes require the same justification as other capital assets.

As a general presumption, OMB will recommend new or continued funding only for those capital asset investments that satisfy these criteria. Funding for those investments will be recommended on a phased basis by segment, unless it can be demonstrated that there are significant economies of scale at acceptable risk from funding more than one segment or there are multiple units that need to be acquired at the same time.

OMB recognizes that many agencies are in the middle of ongoing investments, and they may not be able immediately to satisfy the criteria. For those investments that do not satisfy the criteria, OMB will consider requests to use funds to finance additional planning, as necessary, to support the establishment of realistic cost, schedule, and performance goals for the completion of the investment. This planning could include: the redesign of work processes, the evaluation of alternative solutions, the development of information system architectures, and if necessary, the purchase and evaluation of prototypes. Realistic goals are necessary for agency portfolio analysis to determine the viability of the investment, to provide the basis for fully funding the investment to completion, and setting the baseline for management accountability to deliver the investment within goals.

Because OMB considers this information essential to agencies' long-term success, OMB will use this information both in preparing the Administration's budget and, in conjunction with cost, schedule, and

performance data, as apportionments are made. Agencies are encouraged to work with their OMB representative to arrive at a mutually satisfactory process, format, and timetable for providing the requested information.

B. Costs and Benefits

The justification of the investment should evaluate and discuss the extent to which the investment meets the above criteria and should also include:

- An analysis of the investment's total life-cycle costs and benefits, including the total budget authority required for the asset, consistent with policies described in OMB Circular A–94 (October 1992);

- An analysis of the risk of the investment (including how risks will be isolated, minimized, monitored, and controlled), and for major programs, an evaluation and estimate by the Chief Financial Officer of the probability of achieving the proposed cost goals;

- If after the Planning Phase, the procurement is proposed for funding in segments, an analysis showing that the proposed segment is economically and programmatically justified, that it is programmatically useful if no further investments are funded, and that in this application its benefits exceed its costs; and

- Cost, schedule, and performance goals for the investment (or the planning segment or useful asset being proposed) that can be measured throughout the acquisition process using a performance based management system (e.g., earned value management).

C. Principles of Financing

Principle 1: Full Funding

Budget authority sufficient to complete a useful segment of a capital project (investment), or the entire capital project, if it is not divisible into useful segments, must be appropriated before any obligations for the useful segment (or project or investment) may be incurred.

Explanation: Good budgeting requires that appropriations for the full costs of asset acquisition be enacted in advance to help ensure that all costs and benefits are fully taken into account at the time decisions are made to provide resources. Full funding with regular appropriations in the budget year also leads to tradeoffs within the budget year with spending for other capital assets and with spending for purposes other than capital assets. Full funding increases the opportunity to use performance-based fixed price contracts, allows for more efficient work planning and management of the capital project (or investment), and increases the accountability for the achievement of the baseline goals.

When full funding is not followed and capital projects (or investments) or useful segments are funded in increments, without certainty if or when future funding will be available, the result is sometimes poor planning, acquisition of assets not fully justified, higher acquisition costs, cancellation of major investments, the loss of sunk costs, or inadequate funding to maintain and operate the assets.

Principle 2: Regular and Advance Appropriations

Regular appropriations for the full funding of a capital project or a useful segment (or investment) of a capital project in the budget year are preferred. If this results in spikes that, in the judgment of OMB, cannot be accommodated by the agency or the Congress, see Principle 4 below.

Explanation: Principle 1 (Full Funding) is met as long as appropriations provide budget authority sufficient to complete the capital project or useful segment or investment. Full funding in the budget year with regular appropriations alone is preferred because it leads to tradeoffs within the budget year with spending for other capital assets and with spending for purposes other than capital assets. In contrast, full funding for a capital project (investment) over several years with regular appropriations for the first year and advance appropriations for subsequent years may bias tradeoffs in the budget year in favor of the proposed asset because with advance appropriations the full cost of the asset is not included in the budget year. Advance appropriations, because they are scored in the year they become available for obligation, may constrain the budget authority and outlays available for regular appropriations of that year.

Principle 3: Separate Funding of Planning Segments

As a general rule, planning segments of a capital project (investment) should be financed separately from the procurement of a useful asset.

Explanation: The agency must have information that allows it to plan the capital project (investment), develop the design, and assess the benefits, costs, and risks before proceeding to procurement of the useful asset. This is especially important for high risk acquisitions. 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 studies, and prototypes. The construction of a prototype that is a capital asset, because of its cost and risk, should be justified and planned as carefully as the investment itself.

The process of gathering information for a capital project (investment) may consist of one or more planning segments, depending on the nature of the asset. Funding these segments separately will help ensure that the necessary information is available to establish cost, schedule, and performance goals before proceeding to procurement. If budget authority for planning segments and procurement of the useful asset are enacted together, OMB may wish to apportion budget authority for one or several planning segments separately from procurement of the useful asset.

Principle 4: Accommodation of Lumpiness or "Spikes" and Separate Capital Acquisition Accounts

To accommodate lumpiness or "spikes" in funding justified capital acquisitions, agencies, working with OMB, are encouraged to aggregate financing for capital asset acquisitions in one or several separate capital acquisition budget accounts within the agency, to the extent possible within the agency's total budget request.

Explanation: Large, temporary, year-to-year increases in budget authority, sometimes called lumps or spikes, may create a bias against the acquisition of justified capital assets. Agencies, working with OMB, should seek ways to avoid this bias and accommodate such spikes for justified acquisitions. Aggregation of capital acquisitions in separate accounts may:

- Reduce spikes within an agency or bureau by providing roughly the same level of spending for acquisitions each year;

- Help to identify the source of spikes and to explain them. Capital acquisitions are more lumpy than operating expenses, and with a capital acquisition account it can be seen that an increase in operating expenses is not being hidden and attributed to one-time asset purchases;

- Reduce the pressure for capital spikes to crowd out operating expenses; and

- Improve justification and make proposals easier to evaluate, since capital acquisitions are generally analyzed in a different manner than operating expenses (e.g., capital acquisitions have a longer time horizon of benefits and life-cycle costs).

D. Risk Management

Risk management should be central to the planning, budgeting, and acquisition process. Failure to analyze and manage the inherent risk in all capital asset acquisitions may contribute to cost overruns, schedule shortfalls, and acquisitions that fail to perform as expected. For each major capital project (investment), a risk analysis that includes how risks will be isolated, minimized, monitored, and controlled may help prevent these problems.

The investment cost, schedule, and performance goals established through the Planning Phase of the investment are the basis for approval to procure the asset and the basis for assessing risk. During the Procurement Phase, performance-based management systems (earned value management system) must be used to provide contractor and Government management visibility on the achievement of, or deviation from, goals until the asset is accepted and operational. If goals are not being met, performance-based management systems allow for early identification of problems, potential corrective actions, and changes to the original goals needed to complete the investment and necessary for agency portfolio analysis decisions. These systems also allow for Administration decisions to recommend meaningful modifications for increased funding to the Congress, or termination of the investment, based on its revised expected return on investment in comparison to alternative uses of the funds. Agencies must ensure that the necessary acquisition strategies are implemented to reduce the risk of cost escalation and the risk of failure to achieve schedule and performance goals. These strategies may include:

- Having budgetary resources appropriated in separate capital asset acquisition accounts;

- Apportioning budget authority for a useful segment;

- Establishing thresholds for cost, schedule, and performance goals of the acquisition, including return on investment, which if not met may result in cancellation of the acquisition;

- Selecting types of contracts and pricing mechanisms that are efficient and that provide incentives to contractors in order to allocate risk appropriately between the contractor and the Government;

- Monitoring cost, schedule, and performance goals for the investment (or the planning segment or useful asset being proposed) using a performance-based management system, e.g., earned value management system.

- If progress is not within 90 percent of goals, or if new information is available that would indicate a greater return on investment from alternative uses of funds, instituting senior management review of the investment through portfolio analysis to determine the continued viability of the investment with modifications, or the termination of the investment, and the start of exploration for alternative solutions if it is necessary to fill a gap in agency strategic goals and objectives.

APPENDIX 7

VALUE MANAGEMENT

The value management methodology (also known as value analysis, value engineering, value planning, etc.) should be considered for use in the Planning and Budgeting, Acquisition, and Management-In-Use Phases of capital programming. The value methodology uses a systematic job plan to identify essential functions necessary to accomplish an activity, analyze those functions, and generate alternatives to secure them at their greatest worth on a life-cycle benefit-to-cost basis. By following the process defined in the job plan, the use of the value methodology will facilitate the selection through evaluation and analysis of the "best value" alternative for those functions. The process provides plans and actions to acquire and implement the selected alternatives. The IPT may employ the use of the value management methodology in several ways including a professional value management specialist as a member of the team, using team leaders trained in the value management methodology, or using value specialists (either agency employees or industry consultants) to perform studies.

Planning Phase

This process has seven elements which define capital asset needs in terms of the performance and functional requirements necessary to meet an agency's strategic goals. The seven elements are:

1. Selection of the Function/Process to be studied.

2. Determination of why the function is performed. The need for the function itself may be questioned by asking: "What does it do?"

3. Information gathering. This is the collection and assembly of all necessary information concerning the selected study item. This provides an understanding of what is to be accomplished through the performance of the function and provides answers to the questions: "What does it cost?" and "What is the function worth?"

4. Development of alternatives. This is the single most important element of the process. The use of free imagination, tempered with experience, will develop the best ideas. In initial brainstorming sessions, all ideas, even the wildest, should be duly recorded and encouraged. Many times, the most progressive, breakthrough ideas, with the greatest payoff, will come from near or beyond the edge of the current function paradigms in the area being studied. This element provides answers to the question, "What are the different ways this function can be performed?"

5. Analysis of alternatives. The purpose of this analysis process is to eliminate those ideas that are technically or financially unfeasible in order to permit the selection of alternatives for further feasibility testing based on the resulting cost estimates. This element will answer the question, "What is the cost of the selected alternative?"

6. Feasibility testing and function verification. This determines that the selected alternative can perform the required function and is technically feasible. A viable alternative must provide the essential function performance and be capable of being implemented. This element answers three questions for each selected alternative: "Is the alternative feasible?"; "Does the alternative provide the essential function?" and "Does the alternative meet the definition of function worth?"

7. Implementation and follow-up. This is the selection of the final alternative, documentation of the decision, and preparation of the necessary implementation plans. Integrating schedules and funding requirements documents into the agency capital plan is part of this element.

Procurement Phase

The agency should include the FAR Part 48, Value Engineering, requirements in its contracts and actively encourage the contractor(s) to identify potential cost savings, along with schedule and performance enhancements.

Management-In-Use Phase

The use of statistical process control, Pareto analysis, and the value management function analysis methodology can be used to analyze performance data to determine whether the asset is meeting cost and performance goals, and can help identify if there are better ways for the asset to meet its life-cycle cost and performance goals.

The IPT may perform the value management function by including a professional value management specialist as a member of the team, using team leaders trained in the value management methodology, or using value process facilitators (either agency employees or commercial consultants) to perform the value management studies.

APPENDIX 8

COST ESTIMATING

Introduction

Credible cost estimates are vital for sound management decision making and for any program/capital project to succeed. Early emphasis on cost-estimating during the planning phase is critical to successful life cycle management of a program/project. As requirements and approaches vary based on the Agency's mission, agencies have to develop a cost estimating capability—collecting, managing, and sharing cost data that best meets their mission needs.

This Appendix is based on the Government Accountability Office's (GAO) guide to their auditors on how to evaluate an agency's cost estimating process, and the reliability and validity of the data used to develop the cost estimates. Following these guidelines will help agencies to meet most cost estimating requirements. Individual cost estimating guides are also available from, or are in use by, several Government agencies, including several DOD Service branches, NASA, and the Department of Energy.

Cost Estimating and its Role in Managing Capital Assets

A disciplined Cost Estimating process provides greater information management support, more accurate and timely cost estimates, and improved risk assessments that will help to increase the credibility of capital programming cost estimates. Cost Estimation touches on various disciplines such as accounting, economics, management science, engineering, statistics, probability, and more. Combining these disciplines and using them effectively produces sound cost estimates which can be used in preparing annual budgets, developing net present value or other return on investment estimates, improving life cycle management of various capital assets with more reliable performance baselines and earned value management, evaluating alternatives through cost-benefit analysis, assessing risk, and so forth.

Types of Government Cost Estimates

Capital cost estimating attempts to predict future capital expenditures even though not all factors and conditions of the investment are fully defined. There are many different types of cost estimates that agencies develop for various purposes and at different phases of the life cycle. For each type of estimate, bases (ground rules) and assumptions are spelled out. Some key challenges in performing the estimates are: insufficient data are available; the program scope is not fully defined; the availability of resources is not definitive; and risks are not fully determined.

The following are types of cost estimates used in the program life-cycle:

- **Conceptual Cost Estimate:** This is used early in the Planning Phase of the acquisition life cycle and is often based on a one-to-one comparison with an existing system similar to the system being proposed.
- **Preliminary Cost Estimates:** This is used as more details are available and for preparing budgets.
- **Detailed or Engineering Cost Estimates:** This is a bottom-up estimate using the detailed WBS structure to price out discrete components, such as material, design hours, labor, off the shelf software, etc.
- **Definitive Cost Estimate:** This is used late in the acquisition life cycle during the Project Control Phase, based on actual cost data, available from the same system at an earlier time. The Earned Value Management concept is used to arrive at the Estimate at Completion (EAC).

- **Life Cycle Cost (LCC) Estimate**: This estimate provides the total cost to the Government of acquisition and ownership of the system over its full life time. It includes the cost of development, acquisition, support, and (where applicable) disposal.
- **Independent Cost Estimate (ICE):** This estimate is based on the same scope as the LCC, except that it is prepared by an independent review team using independent data sources and cost estimating approaches.
- **Independent Government Cost Estimate (IGCE):** This estimate is prepared for evaluating and validating contractor proposals presented during the Acquisition Phase. This is prepared from the offeror's point of view and is based on the scope of work outlined in the solicitation.

Techniques of Cost Estimating

Many techniques can be used for cost estimating, from simple arithmetical calculations, to complex mathematical models with numerous variables. Some of the techniques (as defined by DOD –DAU) are:

- **Analogy:** Used early in the acquisition life cycle based on a one-to-one comparison with an existing system similar to the system you are designing.
- **Parametric:** Uses statistical analysis from a number of similar systems and their relationship to your system.
- **Engineering:** A bottom-up estimate using the detailed WBS structure to price out discrete components, such as material, design hours, labor, etc.
- **Extrapolation-from-actual-costs:** Method used late in the acquisition life cycle after actual cost data are available from the same system at an earlier time.

Cost Estimating Methodology

To keep the estimate current, accurate and valid, the cost estimating process is continuously updated, based on the latest information available. As the project matures, the availability of valid data increases. The major steps in the cost estimating process are as follows:

- Based on preliminary project scope, prepare a high level Work Breakdown Structure (WBS)—generally three levels deep.
- Define the Ground Rules and Assumptions including technical, economic, schedule, business, and other factors. These assumptions need to be realistic, and continuously reviewed and updated as the scope of the project becomes better defined with the passage of time.
- Develop Data: Collect, identify, and analyze data for the cost estimate. Data (accurate, relevant, and correct confidence level) is the most important piece of the cost estimate, is time consuming to prepare properly, and includes cost drivers for the cost estimate and risk. Agencies need to develop the capability to collect, identify, and analyze data from various sources such as previous in-house projects, outside parties (professional organizations, vendors, and others engaged in the industry), various procurement/contract data, project management data, accounting/financial management systems, and other sources. Most data are in raw form and must be normalized using learning curves and other methods so that they are comparable and consistent. The normalized data are then adjusted to make them useable for the specific project. All data, including any adjustments made, should be thoroughly documented so an audit trail is established for verification purposes.
- Select/Construct Cost Model: Select the most appropriate tool/model or create a model to estimate the cost. Document factors that influence the selection process such as data and resource availability, schedule, and cost.
- Develop the Estimate: Based on the Ground Rules and Assumptions, and using the normalized/adjusted data, develop the cost estimate and the level of confidence using the various risk factors.

- Perform the sensitivity analysis: Once the estimate is developed, decision makers want and need to know how sensitive the total cost estimate is to changes in the data input. Therefore, a sensitivity analysis is performed to identify the major cost drivers for the estimate. Sensitivity analyses determine how the different ranges of estimates affect the estimates. Cost drivers are those variables that, when changed in value, create the greatest changes in cost. Generally, many initial assumptions made in the early phases of a project's definition will, in later phases, be found to be inaccurate.
- Develop Contingency Reserve: Based on the confidence level, a contingency allowance is used to cover the items of cost which are not known exactly at the time of the estimate. A Preliminary Estimate generally has a confidence level of 70 percent while a Definitive Estimate will have a confidence level of 90 percent. Contingency allowances of 30 percent and 10 percent, respectively, would be added to the preliminary estimate and definitive estimate.
- Document Cost Estimate: Explain the cost estimating process used, and document how the cost estimates were prepared so that the quality of the estimate could be determined. Perform a peer review. Proper documentation will increase credibility, facilitate information sharing, and make these estimates usable in the future.
- Update Cost Estimate: On a regular basis, keep the cost estimates current. Such quality data are needed for decision-making using "what if" models and to project the impact of alternative decisions.

Application of Cost Estimating

Capital budget estimates: Using these estimating techniques and processes, agencies can develop more reliable and accurate capital budget estimates for funding acquisition programs with realistic schedules. This may be submitted to OMB in a business case during the agency budget submission cycle.

Cost and benefit studies: Through cost and benefit studies, agencies can determine the best investments meeting the agency mission, goals, and objectives.

Life Cycle Cost: The project's Life Cycle Cost helps management to make the right decision.

Project Management: Determines the project's PMB and identify risks which are managed through the EVM technique and through pre-award or post-award IBRs.

Risk Analysis: Cost estimates at various stages of the program identify the nature of the risk and its impact on the program. As the program matures, uncertainties are reduced as the design and development processes are known. Therefore through the use of EVM, risks are managed. Management reserves are defined for the use by the Program Manager.

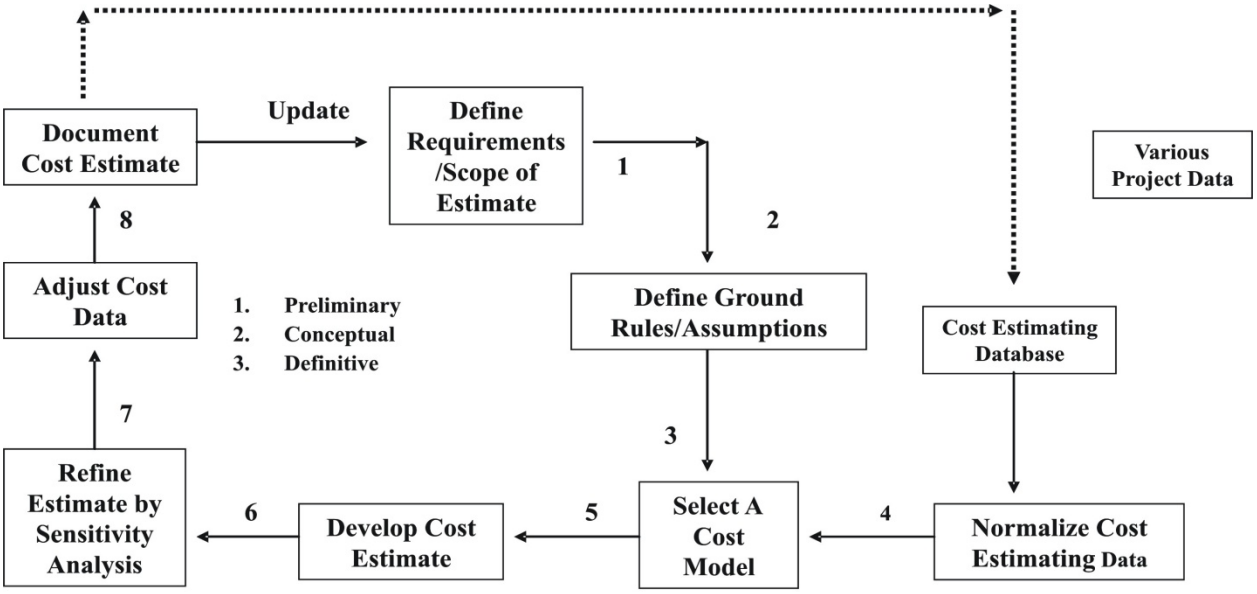
Conclusion:

Understanding the type of estimating technique is important for providing a useful estimate to the decision makers. Cost estimates are key elements of a project plan, so project personnel expend considerable effort preparing them. They provide the basis for assessing the total requirement and the recommended phasing of budgets. Obtaining accurate cost estimates can be difficult for complex projects which involve new technologies and require extensive time to complete. While managers sometimes feel pressured to provide optimistic estimates in order to obtain project go-ahead approval, a poor cost estimate can create an un-executable plan. A project with an inaccurate cost estimate undermines the process for developing an optimal portfolio of capital projects, and when the funding shortage becomes apparent may lead to significant de-scoping or termination of the project.

References:

GAO Cost Estimating and Assessment Guide, March 2009, GAO-09-3SP

DOD/DAU—Integrated Defense Acquisition, Technology and Logistics Life Cycle Management Framework



Flow Chart Cost Estimating Model

APPENDIX 9

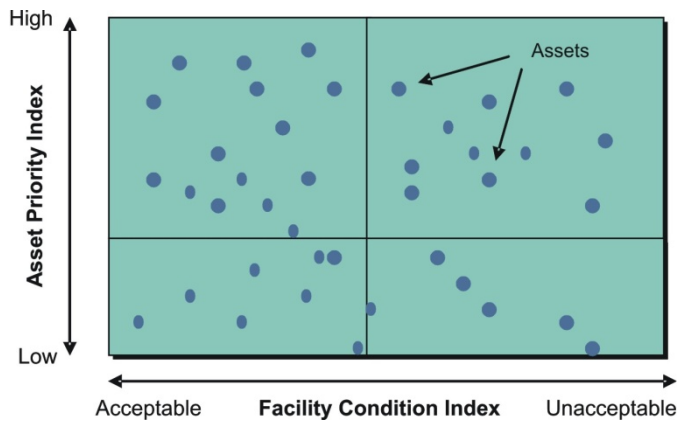
Disposition Decision Models

Real Property Assessment Models

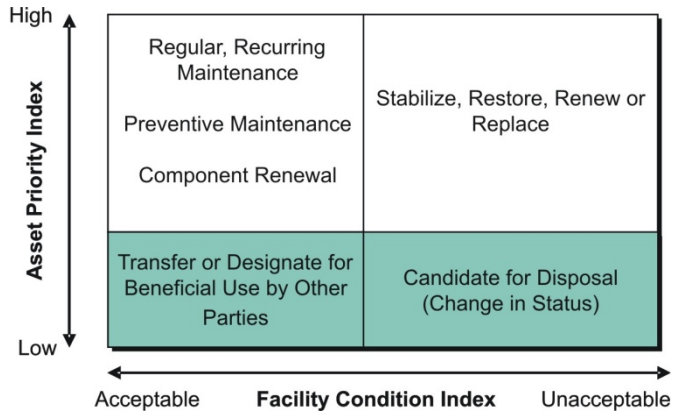
Disposition of an asset results in a change in its status that is accomplished through either employing a disposal option (such as sale, demolition, deconstruction or transfer) or a retention option (such as alteration for another use, doing nothing/hazard prevention, or interim leasing). Initiating a disposition program for the asset portfolio ensures that managers are able to properly identify assets that may no longer support the mission and are potential candidates for disposal, thereby freeing up resources for other uses. This applies to all assets, whether owned, leased, or acquired through another means.

Asset Prioritization

Prioritizing assets based on their importance to mission is one of the most significant criteria used in both focusing reinvestment funds and finding candidates for disposition. The adjacent diagram shows an example of a distribution of assets graphed by their importance to mission and their condition. Graphical representations such as this scatter diagram can be a useful tool in segmenting and presenting asset portfolios. Other performance indicators such as cost or utilization can also be used for portfolio analyses such as finding opportunities for consolidation.



The use of the tools such as this Asset Priority Index (API), help managers identify the most important assets, and therefore provides a logical continuum for which to direct limited funding. In addition, the use of the API is not only important in developing deferred maintenance and component renewal projects; it is equally important when planning for operations, recurring maintenance, and preventive maintenance and changes in asset status (e.g., expansion, consolidation, and disposal).

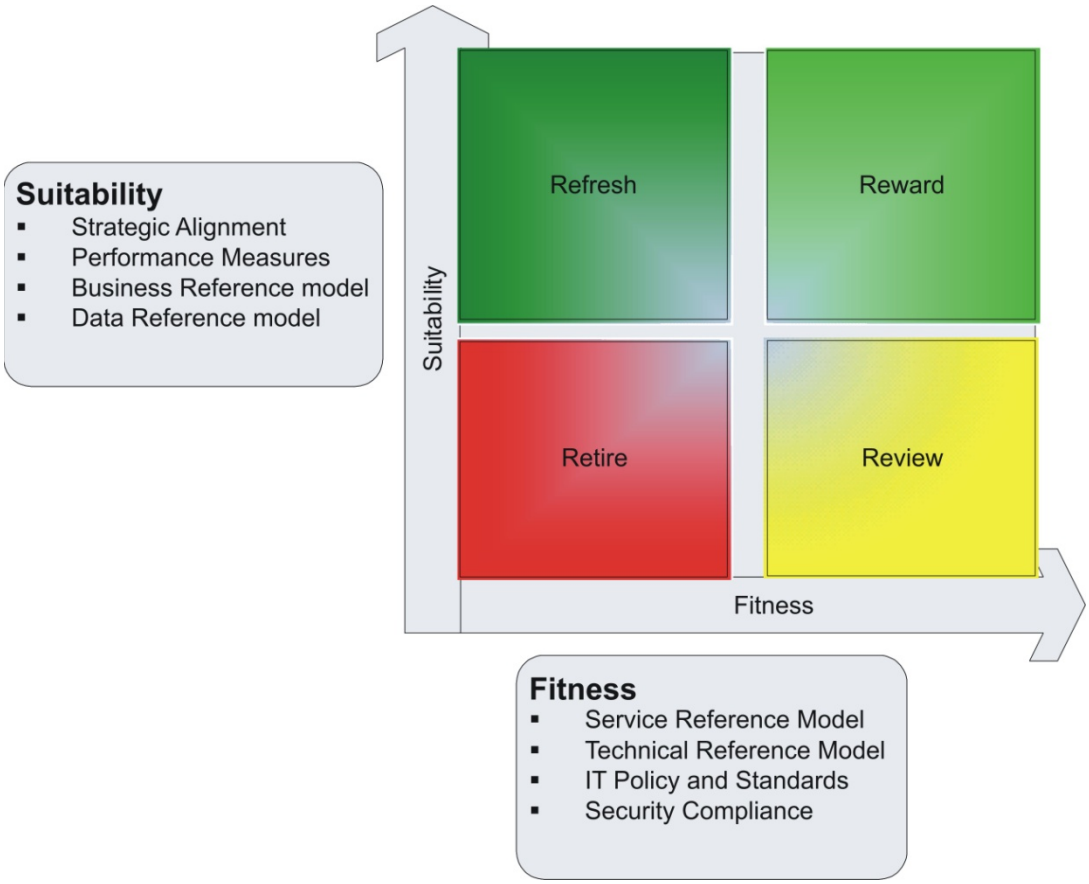


The area highlighted in the adjacent chart shows where an asset no longer supports the mission of the site or bureau or that has reached the end of its useful life. It is at this point in an asset's life-cycle that a manager should consider asset disposition. In this part, the disposition of an asset is considered which can result in the disposal of an asset and removal from the inventory, or retention of the asset with a change in its status within the inventory.

Traditionally, many agencies' disposal programs consist of waiting for field offices to alert management of a vacant facility. Under the concept of continuous monitoring, the disposition of an asset should be a proactive process that occurs at the portfolio level.

IT Assessment Models

A similar approach can be utilized for continuous monitoring of IT assets. The results can be used to identify candidates for disposition.



The business case for disposal is clear: resources are limited. Inefficient and underutilized assets waste those limited resources, detracting from an agency's ability to fund capital improvements and deferred maintenance for those assets critical to supporting the agency mission.

APPENDIX 10

Federal Sustainability

The Federal Government has many Executive Order and statutory goals designed to protect the environment, conserve energy, minimize waste, and promote Federal leadership as good stewards of our natural resources. Sustainability has become the overarching theme for incorporating these concepts in a cost-effective and sensible manner. In November 2004 and January 2006, memoranda of understanding (MOUs) were signed by a majority of Federal agencies to consider sustainability in two major areas: electronics and buildings. The main objective of these MOUs is that the Federal Government should plan, acquire, site, design, build, operate, maintain, and ultimately dispose (or plan for reuse) of both its electronics and facilities in a manner that achieves our agencies' functional missions, uses sound financial practices, and provides a healthy and safe workplace, all while protecting and sustaining the environment. As emphasized in the introduction to the Capital Programming Guide, agencies need to consider all phases in the capital assets' lifecycle, including deconstruction or reuse. Some sustainability considerations are highlighted below.

Buildings & Facilities:

- Integrate these concepts into the design process and establish performance goals
- Use commissioning to ensure that they perform as intended
- Optimize energy performance and improve energy efficiency
- Protect and conserve water with indoor and outdoor water use strategies
- Enhance indoor environmental quality such as thermal comfort, day lighting, and use of low-emitting materials (during construction and occupancy)
- Reduce the environmental impact of materials by specifying recycled, bio-based, and energy efficient products; eliminate the use of ozone depleting compounds; and recycle and salvage construction waste

Electronics:

- Acquire computer products that are EPEAT-registered
- Ensure that energy star features are enabled on computer monitors
- Develop policies and programs to extend the life of all electronic equipment
- Plan upfront for recycling, reuse, donation or take-back at end-of-life phase

Other:

- Land use and regional planning including watersheds and airsheds
- Physical and energy security
- Sustainable materials designed for cradle to cradle with full life cycle analysis
- Flexible assemblies, design for longevity, adaptive reuse, deconstruction

Resources

MOU on Sustainable Green Buildings, 1/24/06

Energy Policy Act of 2005 (Publ. L. No. 109-58), §§ 104 and 109

Electronic Product Environmental Assessment Tool (EPEAT) (http://www.epeat.net)

USGBC Leadership in Energy and Environmental Design "LEED" (http://www.usgbc.org)

APPENDIX 11

Scoring Process to Rank Proposed Capital Assets

A Example of Criteria and Scoring Process to Rank Proposed Capital Assets

	Capital Asset (l thru n)	Weight
DECISION CRITERIA	SCORING	%
Overall Risk Factors		Weights for Risks Σ=100%
Investment Size—How large is the proposed investment, especially in comparison to the overall budget?	1_____5_____10 Large Small	40
Project Longevity—Do projects adopt a modular approach that combines controlled systems development with rapid prototyping techniques? Are projects as narrow in scope and brief in duration as possible to reduce risk by identifying problems early and focusing on projected versus realized results?	1_____5_____10 Non-modular Modular	30
Technical Risk—How will proposed assets be integrated into existing ones? Will proposed investment take advantage of Commercially Available and Non-Developmental Items? How will the complexity of the asset's design effect the development of the project?	1_____5_____10 Experimental Established Custom Industry Standard	30
Sum of Overall Risk Factors		

Overall Return Factors		Weights for Returns Σ=100%
Business Impact or Mission Effectiveness—How will the asset contribute toward improvement in organizational performance in specific outcome-oriented terms?	1_____5_____10 Low High	25
Customer Needs—How well does the asset address identified internal and/or external customer needs and demands for increased service quality and timeliness or reductions in costs?	1_____5_____10 Low High	15
Quantitative Analysis—Is the benefit-cost analysis reliable and technically sound?	1_____5_____10 Risky Known estimates benefits	20
Organizational Impact—How broadly will the asset effect the organization (e.g., the number of offices, users, work processes, and other systems)?	1_____5_____10 Low High	25
Expected Improvement—Is the asset to be used to support, maintain, or enhance operational systems and processes (tactical) or designed to improve future capability (strategic)? Are any projects required by law, court ruling, Presidential directive, etc.? Is the project required to maintain critical operations—beneficiary checks, human safety, etc.—at a minimal operating level? What is the expected magnitude of the performance improvement expected from the asset?	1_____5_____10 Tactical: Strategic: Low High	15
Sum of Overall Return Factors		
Total Risk Adjusted Score = Weighted Sum of Overall Risk Factors + Weighted Sum of Overall Return Factors		

APPENDIX 12

JUSTIFICATION OF SPENDING FOR NEW CAPITAL ASSETS

Statement of Agency Mission, Strategic Goals and Objectives, and Annual Performance Plans

The Agency Capital Plan should begin with a summary of the agency mission, strategic goals and objectives, and Annual Performance Plan. This is a summary of the analysis done in Step I.

Description of the Planning Phase

The Agency Capital Plan should describe its planning process and the phase's key decision points. It should include: a description of the Executive Review Process discussed in Section I.6.1. of the Guide; the role of the IPT; and decision points in the process to determine whether assets should be acquired and whether the acquisition should be terminated if cost, schedule, and performance goals are not met.

Baseline Assessment and Identifying the Performance Gap

This section of the Agency Capital Plan should be a summary of the work done in Section 2. It should help lay the groundwork for justifying the need for new acquisitions.

- Examining the existing portfolio. An examination of the existing portfolio of assets is encouraged in order to identify capital assets currently in use and in procurement that can help meet program objectives. This analysis will be the basis for assessing where there are gaps and whether funding for new assets should be proposed. The analysis should ensure that the assets are linked to mission needs. The analysis should be across programs and bureaus to identify cross-servicing, and should be over a multi-year horizon to ensure a dynamic analysis that anticipates future changes.

- Identifying the performance gap. This section should identify the performance gap. The gap identifies the agency objectives that cannot be met with existing assets and other resources. Asset inventory and current condition information should be made available here.

Justification of Spending for Proposed New Capital Assets

Agencies are encouraged to include in their Agency Capital Plan a section that justifies proposed spending on new capital assets, using the criteria described in this Step and expanded upon in Appendix 6, Principles of Budgeting for Capital Asset Acquisitions. The main elements of these principles are incorporated in the suggested sections of the justification discussed below. Agencies should feel free to use other justification criteria as well.

As a general presumption, OMB will recommend new or continued funding only for those capital asset investments that satisfy these criteria. Funding for those projects will be recommended on a phased basis by segment, unless it can be demonstrated that there are significant economies of scale at acceptable risk from funding more than one segment or that there are multiple units that need to be acquired at the same time.

Basis for Selection of the Capital Asset

This section should justify the selection of the proposed asset.

- Statement of program objectives and functional requirements. This statement should be a summary of the analysis done in Sections I. through 1.3 as it relates to the proposed asset. The statement should identify program objectives from the annual performance plan, the performance gap, and the functional requirements for the asset. These requirements should be defined in terms of the mission, purpose, capability, agency components involved, schedule and cost objectives, and operating constraints. The requirements should not be defined in terms of equipment or software.

- Explanation of alternative ways of meeting the program objectives. This should be a summary of the analysis in Section I.4, Alternatives to Capital Assets. It should review alternatives to meeting the program objective by means other than acquisition of the asset and explain why these alternatives were rejected.

- Explanation of why the acquisition of the proposed asset is the best alternative. This section should justify why the proposed asset is the best alternative for meeting the program objectives. It should summarize the analysis that appears largely in Section I.5, Choosing the Best Capital Asset. The explanation should be based on a benefit-cost analysis, including an analysis of life-cycle costs and an analysis of how best to identify, monitor, manage, and control risk. The explanation should also include the baseline cost, schedule, and performance goals that will be the basis for the budget request and tracking of achievement of goals and demonstrate that the Comptroller or Chief Financial Officer has evaluated the cost goals to meet the FASA Title V requirements.

- Budget projections and financial forecasts. This section should draw from the elements above to give a year-by-year forecast of total projected budget authority and outlays for the asset to ensure that all relevant costs are understood in advance. The request should provide for full funding (see Section I.7.2.2, Principles of Financing). This section should also discuss performance measures relevant to the asset, tied to agency mission and performance goals and objectives, and address cost-effectiveness.

Strategies for Strengthening Accountability for Achieving Goals

Once the acquisition is funded, the IPT is accountable for achieving the project cost, schedule, and performance goals that are the basis used to obtain approval to acquire the asset. This section should discuss the strategies that will be used to manage the project during the Procurement Phase. These strategies should include:

- Having budget authority apportioned for a useful segment, if appropriate;

- Selecting types of contracts and pricing mechanisms that are efficient and provide incentives to contractors in order to allocate risk appropriately between the contractor and the agency;

- Monitoring cost, schedule, and performance goals for the project—or the useful segment being proposed—using an earned value management system (Earned value is described in Appendix 3);

- Establishing thresholds for cost, schedule, and performance goals of the acquisition, including return on investment, which, if not met, may result in termination of the acquisition;

- Management actions if progress is not within 90 percent of goals, or if new information is available that would indicate a greater return on investment from alternative uses of funds (senior management review of the project should be instituted to determine the continued viability of the project with modifications, or the termination of the project, and the start of exploration for alternative solutions if it is necessary to fill a gap in agency strategic goals and objectives); and

- Proactive risk management approach and a process for identifying, analyzing, and monitoring risks throughout the life-cycle of the investment.

Staff Requirements

This section should discuss the management staff, both in-house and contracted, needed by the agency to manage the Acquisition Phase and the operations and maintenance staff projections, both in-house and contractor, for the Management-In-Use Phase.

Timing Issues, if Involved in a Multi-Agency Acquisition

Agencies are encouraged to explore multi-agency acquisitions where feasible. This section should discuss the timing of the support to be provided to the acquisition by the various agencies involved in the acquisition. These include the timing of fund transfers to the lead agency and the timing of use of the asset by the various agencies.

Plans for Proposed Capital Assets Once in Use

The Agency Capital Plan should discuss the costs associated with the asset's procurement, management-in-use, and ultimate disposal, and how these costs will be tracked by program managers.

Summary of Risk Management Plan

Planning, budgeting, and procurement of capital assets is not always a smooth process. In spite of careful planning, there are normally disruptions to the process, and the analysis of alternative ways of meeting program objectives should respond to disruptions quickly. The risk management plan developed in Section I.5.5 should be summarized in the Agency Capital Plan.

(This example is hypothetical, and does not represent the program or activity of any Federal agency.)

AGENCY STRATEGIC PLAN (ASP)	Year 1 Budget Year (BY)	Year 2 BY +1	Year 3 BY +2	Year 4 * BY +3
Mission: ... prevent loss of life ...	ASP Submitted			
Outcome Goal: By year 4, hurricanes will cause 50 percent fewer fatalities than in Year 0 (100).	ASP Submitted			Goal measured**
Outcome Objectives: By year 4, the Neptune satellite will be operational. Predictive accuracy at 24 hours pre-landfall will increase from current 100 mile landfall range to 15 miles; and estimated barometric pressure (hurricane strength) at landfall will be within 3 millibars compared to current 25 millibar standard.	ASP Submitted			Objectives measured**
Description of resources, technologies, assets needed to achieve goals and objectives.	1 Neptune satellite	1 Booster rocket to launch Neptune satellite		1 Neptune II satellite
ANNUAL PERFORMANCE PLAN (APP)				
Outcome Goals and objectives measured.				Goals Referenced in ASP Program performance measured**
Output Goals defined and measured.		Satellite: - Issue RFPs for components - Evaluation - Award contracts	Satellite: - Assembly - Test - Acceptance Booster Rocket: - Issue RFP - Evaluation - Award contract	Satellite - Launch - Made fully operational Booster rocket: - Test - Acceptance - Launch satellite
Description of resources, technology, assets needed to achieve goals			1 Neptune satellite	1 Booster rocket
AGENCY CAPITAL PLAN				
Outcome Goal				Goal Referenced in ASP & APP
Output Goals				Goals Referenced in ASP & APP
Asset Procurement Goals	Neptune Satellite: - Capital Plan submitted - Funds included in budget - Congress appropriates	Satellite: - Issue RFPs for components - Evaluation - Award contracts Booster Rocket: - Capital plan submitted - Funds included in budget - Congress appropriates	Satellite: - Assembly - Test - Acceptance Booster Rocket: - Issue RFP - Evaluation - Award contract	Neptune II Satellite: - (Steps before including budget request for Neptune II satellite in Capital Plan.) Booster rocket: - Test - Acceptance - Launch satellite

* A revised/updated Strategic Plan would be required by year 4. Replacement satellite required, as Neptune I class satellite has 3 year operational life.
** Achievement of outcome goals and objectives in Strategic Plan is determined by including those goals and objectives in an Annual Performance Plan for the appropriate year, and using the Program Performance Report (or Accountability Report) to record and report on actual performance compared to the goals.

GLOSSARY

Appropriations. An appropriation provides budget authority that permits Government officials to incur obligations that result in immediate or future outlays of Government funds.

Regular annual appropriations. These appropriations are:

- Enacted normally in the current year;
- Scored entirely in the budget year; and
- Available for obligation in the budget year and subsequent years if specified in the language (see "Availability," below).

Availability. Appropriations made in appropriations acts are available for obligation only in the budget year unless the language specifies that an appropriation is available for a longer period. If the language specifies that the funds are to remain available until the end of a certain year beyond the budget year, the availability is said to be "multi-year." If the language specifies that the funds are to remain available until expended, the availability is said to be "no-year." Appropriations for major procurements and construction projects are typically made available for multiple years or until expended.

Assets. Tangible or intangible items owned by the Federal Government which would have probable economic benefits that can be obtained or controlled by a Federal entity (adapted from SFFAS No. 6, Elements of Financial Statements, and Kohler's Dictionary for Accounting).

Baseline Goals. 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. The goals, and any changes to the goals, must be approved by OMB.

- **Cost and schedule goals**. 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. Appendix 3 illustrates the earned value concept for establishing cost and schedule goals, one of several concepts that could be used.

- **Performance goals**. A target level of performance against which actual achievement or progress can be compared, preferably expressed as a tangible, measurable objective or as a quantitative standard, value, or rate. This can include goals containing key milestones or goals framed as a position relative to the past or relative to peers.

- **Illustrative major milestones in establishing goals**. 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 the Congress;
    - Enactment of appropriations;
    - Before and after the contract or contracts are signed; and
    - Other times after the contracts are signed, depending on circumstances.

Budget Authority. Budget authority (BA) 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.

This definition of budget authority is consistent with the definition contained in Section 3(2) of the Congressional Budget and Impoundment Control Act of 1974, as amended by the Omnibus Budget and Reconciliation Act of 1990. Section 20.4 of Circular A-11 explains budget authority in more detail.

Capital Assets. See Appendix 1.

Capital Programming. See OMB Circular A–11, Part 7 definition on page 2.

Capital Project and Useful Segments of a Capital Project. The total capital project, or acquisition of a capital asset, includes useful segments that are either planning segments or useful assets.

- **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 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.

- **Useful asset**. A useful asset is an economically and programmatically separate segment of the asset or whole asset that may be procured to provide a useful asset for which the benefits exceed the costs, even if no further funding is appropriated. The total capital asset procurement may include one or more useful assets, although it may not be possible to divide all procurements in this way. Illustrations follow:

Illustration 1. If the construction of a building meets the justification criteria and has benefits greater than its costs without further investment, then the construction of that building is a "useful segment." Excavation is not a useful segment because no useful asset results from the excavation alone if no further funding becomes available. For a campus of several buildings, a useful segment is one complete building if that building has programmatic benefits that exceed its costs regardless of whether the other buildings are constructed, even though that building may not be at its maximum use.

Illustration 2. If the full acquisition is for several items (e.g., aircraft), the useful segment would be the number of complete aircraft required to achieve benefits that exceed costs, even if no further funding is available. In contrast, some portion of several aircraft (e.g., engines for five aircraft) would not be a useful segment if no further funding is available, nor would one aircraft be a useful segment if two or more are required for benefits to exceed costs.

Illustration 3. For information technology, a module (the information technology equivalent of "useful segment") is separable if it is useful in itself without subsequent modules. The module should be designed so that it can be enhanced or integrated with subsequent modules if future funding becomes available.

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 nongovernmental 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.

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."

Efficiency measures. While outcome measures provide valuable insight into program achievement, more of an outcome can be achieved with the same resources if an effective program increases its efficiency. Agencies are encouraged to develop efficiency measures. Efficiency gains may be described as maintaining a level of performance at a lower cost, improving performance levels at a lower cost, improving performance levels at the same cost, or improving performance levels to a much greater degree than costs are increased. Simply put, efficiency is the ratio of the outcome or output to the input of any program.

Full Cost. All direct and indirect costs to any part of the Federal Government of providing goods, resources, and services (OMB Circular A–25: User Charges (July 8, 1993)). 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).

Funding. There are two types of funding for projects: (1) Full funding means that appropriations are enacted that are sufficient in total to complete a useful segment of a capital project (investment) before any obligations may be incurred for that segment. When capital projects (investments) or useful segments are incrementally funded, without certainty if or when future funding will be available, it can result in poor planning, acquisition of assets not fully justified, higher acquisition costs, projects (investments) delays, cancellation of major projects (investments), the loss of sunk costs, or inadequate funding to maintain and operate the assets. Budget requests for full acquisition propose for full funding. (2) Incremental (annual) funding means that appropriations are enacted that only fund an annual or other part of a useful segment of a capital project (investment). OMB or the Congress may change the agency's request for full finding to incremental funding in order to accommodate more projects in a year than would be allowed with full funding.

Information Technology. Section 5002 (3) of the Clinger-Cohen Act defines information technology as follows:

"(3) INFORMATION TECHNOLOGY.

(A) 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. For purposes of the preceding sentence, equipment is used by an executive agency if the equipment is used by an executive agency directly or is used by a contractor under a contract with the executive agency which (i) requires the use of such equipment, or (ii) requires the use, to a significant extent, of such equipment in the performance of a service or the furnishing of a product.

(B) The term "information technology" includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources.

(C) Notwithstanding subparagraphs (A) and (B), the term "information technology" does not include any equipment that is acquired by a Federal contractor incidental to a Federal contract."

Information Technology Systems for National Security. Section 5142 of ITMRA defines a national security system as follows:

"(a) DEFINITION. In this subtitle, the term "national security system" means any telecommunications or information system operated by the United States Government, the function, operation, or use of which:
1. involves intelligence activities;
2. involves cryptologic activities related to national security;
3. involves command and control of military forces;
4. involves equipment that is an integral part of a weapon or weapons system; or
5. subject to subsection (b), is critical to the direct fulfillment of military or intelligence missions.

(b) LIMITATION. Subsection (a)(5) does not include a system that is to be used for routine administrative and business applications (including payroll, finance, logistics, and personnel management applications)."

Integrated Project Team (IPT). Integrated Project Team means a multi-disciplinary team led by a project manager responsible and accountable for planning, budgeting, procurement and life-cycle management of the investment to achieve its cost, schedule, and performance goals. Team skills include: budgetary, financial, capital planning, procurement, user, program, architecture, earned value management, security, and other staff as appropriate.

Life-cycle Costs. 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.

Nation's Integrated Industrial Base. The Nation's integrated industrial base includes those companies with facilities, design and manufacturing processes, and technologies capable of servicing both commercial and Government needs.

Non-Developmental Item (NDI). Any previously developed item of supply used exclusively for governmental purposes by a Federal agency, a State, or local government that requires only minor modifications or modifications of a type customarily available in the commercial marketplace.

Outcome Measure. Outcomes describe the intended result of carrying out a program or activity. Outcome measure indicates progress against achieving the intended result of a program. Indicates changes in conditions that the Government is trying to influence.

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.

Output Measure. A type of measure, specifically the tabulation, calculation, or recording of activity or effort usually expressed quantitatively. Outputs describe the level of activity that will be provided over a period of time. Outputs refer to the activities or products of a program. While output measures can be useful, there must be a reasonable connection between outputs used as performance indicators and outcomes. Agencies should select output measures based on evidence supporting the relationship between outputs and outcomes, or in the absence of available evidence, based on a clearly established argument for the logic of the relationship.

Performance budget. A budget presentation that clearly links performance goals with costs for achieving a target level of performance. In general, a performance budget links strategic goals with related long-term and annual performance goals (outcomes) with the costs of specific activities to influence these outcomes about which budget decisions are made. The Performance Budget/Annual Performance Plan is either used to structure or is a part of the agency's budget submission to OMB and the agency's Congressional Budget Justification.

Performance Measurement. A means of evaluating efficiency, effectiveness, and results. A particular value or characteristic used to measure progress toward goals, and also used to find ways to improve progress, reduce risks, or improve cost-effectiveness.

Portfolio. A set of programs, projects or other work grouped together to meet strategic goals and objectives.

Program Risk-Adjusted Budget (PRB). The total budget that represents the amount of resources and schedule expected to be needed to cover the risk of cost and schedule overruns to meet a 90 percent probability of project/program success. It is an amount held at a level above the program level to be released to the program when needed to cover risk that was not identifiable through an IBR, but that history indicates will cause cost and schedule overruns from the Performance Measurement Baseline through no fault of the program management process.

Program. An ongoing initiative composed of a group of projects and other work managed in a coordinated way to obtain benefits not obtained from managing them individually.

Project. A temporary endeavor to create a unique product or service with a start date, a completion date, and a defined scope.

Strategic Goal. A statement of aim or purpose that is included in a strategic plan. Strategic goals articulate clear statements of what the agency wants to achieve to advance its mission, and address relevant national problems, needs, and challenges. Each performance goal should relate to the strategic goals of the agency.

Support Costs. Costs of activities not directly associated with production. Typical examples are the costs of automation support, communications, postage, process engineering, and purchasing.

Target. Quantifiable or otherwise measurable characteristic that tells how well or at what level a program aspires to perform.