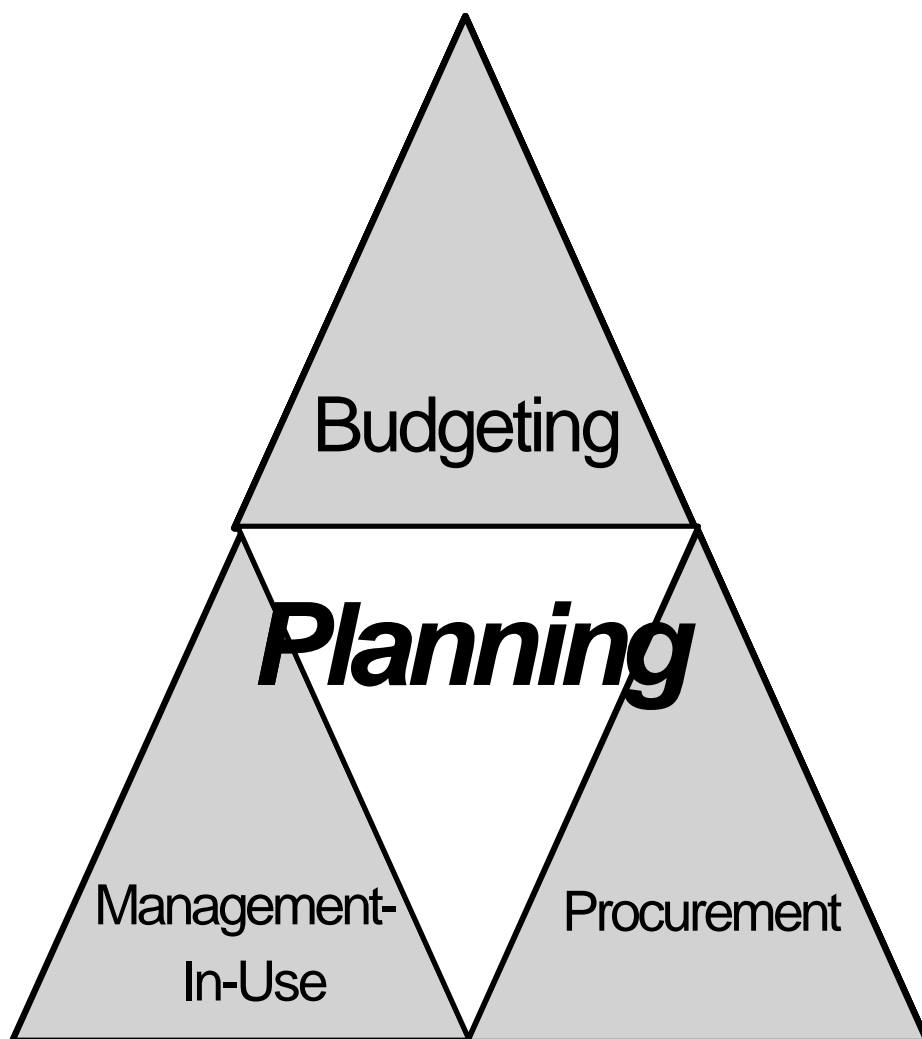


CAPITAL PROGRAMMING GUIDE

VERSION 1.0



SUPPLEMENT TO
OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-11, PART 3:
PLANNING, BUDGETING, AND ACQUISITION OF CAPITAL ASSETS

JULY 1997

The Guide has been developed by the Capital Programming Guide Group, made up of over 80 staff representing 14 agencies, and chaired by John Koskinen, Deputy Director for Management at the Office of Management and Budget (OMB). G. Edward DeSeve, Controller, Office of Federal Financial Management-OMB, and Philip R. Dame, Deputy Assistant Director, Budget Analysis and Systems Division-OMB, have served as the Group's conveners.

The Guide is organized to reflect four phases of capital programming -- Planning, Budgeting, Procurement, and Management-In-Use. The chapters have been developed by inter-agency working groups, led by Scott Quehl, David Muzio, Larry Hush, Larry Magid, and Kathleen Turco. Especially significant contributions were provided by Robert Anderson, Mark Blace, Les Bloom, Allan Brown, David Childs, Wendy Comes, Walter Groszyk, Michele Heffner, Richard Kellet, Robert Kilpatrick, Bruce McConnell, Bernie Martin, Rusty Moran, M. Jane Morgan, Gay Morris, Michael O'Brien, Justine Rodriguez, Diane Savoy, Robyn Seaton, Jasmeet Seehra, Marlon H. Sellow, Justin Sullivan, Nathan Tash, Cindy Veneziano, and Victoria Viets. Margaret Christian and Mary Chuckerel have provided administrative support.

Contributions by the General Accounting Office (GAO) have greatly enriched the Guide. GAO will undertake a series of case studies on promising capital programming practices among private industry and State and local governments to complement this effort.

The measuring stick of the Guide's "success" is the extent to which agency staff find it useful -- in defining why a capital asset is necessary, what it will do, how it will be paid for and acquired, and how the asset will be managed well. We ask for your support in distributing this Guide widely in your agency, including program, budget, procurement, financial management, and information resource staff. Please direct any comments to David Muzio, Office of Federal Procurement Policy, OMB (phone: 202-395-6805; fax: 202-395-5105; E-mail: muzio_d@a1.eop.gov).



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, DC 20503

July 22, 1997

THE DIRECTOR

M-97-18

MEMORANDUM FOR HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

FROM:

Franklin D. Raines
Director

A handwritten signature in black ink, appearing to read "F. D. Raines", followed by a period.

SUBJECT:

Capital Programming Guide, Supplement to A-11, Part 3

Managing the stock of Federal capital assets and planning, budgeting and acquiring assets is important work. 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.

The National Performance Review and recent legislation suggest widespread concern in the agencies and Congress that the Government must improve its performance in this area. Many programs have not had a clear sense of mission, and life-cycle costs have not been given sufficient consideration. It is important that agencies do not underinvest in new projects or maintenance of existing assets that support high priority agency missions and services to the public. Agencies must have an effective process for making investment decisions that puts funds in the right places. A recurring theme in many asset acquisitions is that risk management is not central to the planning, budgeting, and acquisition process. Failure to analyze and manage the risk inherent in capital asset acquisition has too often resulted in cost overruns, schedule delays, and assets that fail to perform as expected.

Agencies need to have a disciplined capital programming process that addresses the project prioritization, risk management and other difficult challenges posed by asset management and acquisition. The purpose of this guide is to provide guidance for a disciplined capital programming process. 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 gain experience and develop improved best practices. However, the key principles and importance of thorough planning, risk management, full funding, portfolio analysis, performance-based acquisition management, accountability for meeting goals, and cost effective life-cycle management will not change. As a general presumption, 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 is the result of an effort by many talented Federal employees to improve how the Government manages and acquires capital assets. The group brought its expertise to the project and sought out best practices from State and local governments and from industry leaders. The common theme of the group was a desire for the Government to gain the reputation of good management of capital assets in our quest to provide a Government that works better and costs less.

LIST OF ABBREVIATIONS

ACP	Agency Capital Plan
CI	Commercial Items
COTS	Commercial-off-the-shelf
GPRA	Government Performance and Results Act of 1993
FAR	Federal Acquisition Regulation
FARA	Federal Acquisition Reform Act (Clinger-Cohen Act) of 1996 ¹
FASA	Federal Acquisition Streamlining Act of 1994
IPT	Integrated Project Team
ITMRA	Information Technology Management Reform Act (Clinger-Cohen Act) of 1996 ¹
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
SSA	Source Selection Authority
SST	Source Selection Team

¹ These two Acts together are known as the Clinger-Cohen Act.

KEY INTERNET ADDRESSES

The Capital Programming Guide and **OMB Circular A-11, Part 3**, can be found at:
<http://www.whitehouse.gov/WH/EOP/omb>

The Principles of Budgeting for Capital Asset Acquisitions: FY 1998 Budget, can be found with other *FY 1998 Budget* documents at:http://www.access.gpo.gov/su_docs/budget/index.html
The Principles also appear as Appendix Seven to this Guide.

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:
<http://www.arnet.gov>

The Information Technology Management Reform Act (now known as the Clinger-Cohen Act), can be found on the Chief Information Council Working Group web site at:
<http://www.cio.fed.gov>

Three IT Investment Guides are available:

Office of Information and Regulatory Affairs - Evaluating Information Technology Investments, (November 1995) can be found at:
<http://www.whitehouse.gov/WH/EOP/OMB/infotech/infotech.html>

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/policy/itguide/index.htm>

GSA - Performance Based Management -- Eight Steps To Develop and Use Information Technology Performance Measures Effectively, (December 1996) can be found at: <http://www.itpolicy.gsa.gov/mkm/pathways/pathways.htm>

The Government Performance and Results Act, can be found on FinanceNet
[gopher://pula.financenet.gov:70/00/docs/legis/gpra93.gop](http://pula.financenet.gov:70/00/docs/legis/gpra93.gop)

Many GPRA-related documents can be downloaded from
<ftp://ftp.fedworld.gov/pub/results/results.htm>

Government CFO Council, GPRA Implementation Committee documents can be found at:
<http://www.financenet.gov/financenet/fed//cfo/gpra/gpra.htm>

OMB Circulars, can be found on the OMB Homepage at:
<http://www.whitehouse.gov/WH/EOP/omb>

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CAPITAL PROGRAMMING GUIDE

INTRODUCTION

The Guide's Purpose

The purpose of this Guide is to provide professionals in the Federal Government a basic reference on principles and techniques for planning, budgeting, procurement, and management of capital assets. The Guide should help Federal agencies to achieve “world class” recognition for these activities and achieve the maximum return on these investments. The guidance integrates the various Administration and statutory asset management initiatives (including GPRA, Clinger/Cohen Act, FASA, and others) into a *single, integrated* capital programming process to ensure that capital assets contribute to the achievement of agency strategic goals and objectives.

Agencies should use this Guide to help establish a capital programming process in each agency. Effective capital programming uses long range planning and a disciplined 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. This information will help agencies make decisions on the best use of available funds to achieve strategic goals and objectives.

While agencies are provided 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. This Guide does not discuss the entire strategic planning process, only that portion that pertains to the contribution of capital assets.

Definition of Capital Asset

Capital assets are land, structures, equipment, and intellectual property (including software) that 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 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 or may not be capitalized (i.e., recorded on an entity's balance sheet) under Federal accounting standards. Appendix One defines capital assets more fully.

Threshold for Capital Programming

The capital programming process is useful for all long-term investments in capital assets. However, agencies should consider the materiality of the investment to the agency -- both its cost and its strategic significance -- in determining the level of effort devoted to capital programming. Full

analysis and management should be applied to capital assets (including major modifications or enhancements to existing systems) that meet the criteria for a “major acquisition” in OMB Circular A-11, Part 3, *Planning, Budgeting, and Acquisition of Capital Assets*. According to Circular A-11, Part 3, 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.

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 executive review committee, 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 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. 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 should 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. Even if the Guide's other recommendations are followed, agencies may make poor decisions without this infrastructure.

Agencies may choose to plan for capital assets agency-wide or by bureau or functional area. A key principle of the Guide is that this planning should not be duplicated by more than one group, and that an executive review committee determine which of all the competing asset opportunities will be recommended for funding each year. Many agencies have started to redesign their long-range 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*. Agencies having IT resources investment boards, cross-functional review teams for IT investments, standardized qualitative and quantitative criteria for developing a net risk-adjusted return on investment, and other processes that identify and rank IT investments for comparison with other competing asset opportunities by the agency executive review committee, have an IT planning process consistent with the principles of this Guide.

Organization of the Guide

- This Guide is organized to reflect the four Phases of the capital programming process: Planning, Budgeting, Procurement, 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.
- Also included are a Glossary and a list of Selected Capital Programming References.

Summary of Each Phase and Step

I. Planning Phase

The Planning Phase is the “core” of the capital programming process. Its products are applied throughout the remaining Phases, and information from the other Phases flows into the Planning Phase. Much as a road map allows a traveler to plan a preferred route while keeping alternatives in mind, good capital planning can help agencies develop, justify and carry out budget proposals, procurement, and operational responsibilities. Plans can expose “traffic jams” agencies invariably encounter and the alternate routes to avoid them. Planning should be undertaken because it results in better use of scarce resources and makes decision making and implementation easier, not merely for the sake of compliance.

Step I.1. Strategic and Program Performance Linkage. There is an unseverable link between planning and budgeting, a connection through which an agency decides what to do and how to do it well. The enactment of the Government Performance and Results Act (GPRA) of 1993 put into law the means for developing strategic plans and connecting them to resource requests. This Guide emphasizes the importance of linking capital asset planning, funding, and management, to agency strategic plans and annual performance plans. In turn, future revisions of strategic and annual performance plans should reflect the analysis and decisions of the Planning Phase.

Step I.2. Baseline Assessment and Identifying The Performance Gap. Using value management techniques (see appendix nine), the IPT should assess the extent to which existing capital assets are helping the program achieve its strategic goals and objectives. This assessment should evaluate the capacity of existing assets and those being acquired to achieve program goals, and identify any performance gap. The evaluation criteria include applicability to mission, affordability relative to future resource expectations, benefits, life-cycle costs, and agency capacity to manage the asset. The executive review committee should review this assessment and determine, within budget limits, at which level current and new assets should be funded to achieve strategic goals and objectives.

Step I.3. Functional Requirements. If a gap between planned and actual performance is found, various options for addressing this “performance gap” -- both through capital assets and other means -- should be identified. Program staff may find that identifying more detailed program requirements than those established in the annual performance plan can help identify the proper size and scope of potential options. Detailed functional requirements for capital asset options also should be defined. These 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 management capacity.

Step I.4. Alternatives to Capital Assets. Before planning to acquire new capital assets, managers should apply the “Three Pesky Questions” to ensure that: (1) the functions to be supported are mission critical; (2) no other governmental or private entity can do them better; and (3) agency business processes

have been reengineered to optimize performance at the lowest cost. Agencies should select alternatives over new capital assets to achieve the same programmatic goals whenever practicable and more cost-beneficial, including new program design (e.g., the use of grants, vouchers, or regulation) or operational improvements through such means as cross-servicing or short-term operating leases with commercial providers. Benefit-cost analysis is the primary method to compare alternatives and select the best solution, given budget constraints. (See OMB Circular A-94.)

Step I.5. Choosing the Best Capital Asset. If no cost-beneficial means for meeting program performance requirements other than a capital asset are available, the IPT should determine: (1) *Availability* - if the market can provide capital assets that meet detailed program and functional requirements; (2) *Affordability* - if the alternatives available to satisfy needs are affordable; and (3) *Feasibility* - if their costs and benefits merit their inclusion in the agency's portfolio of proposed assets to be considered for funding by the agency's executive review committee. This process starts with a strategy to review the market and ends with the development of an acquisition plan, outlining the best approach to acquire the recommended asset. There should be a risk analysis that identifies how risk for the different parts of the project will be isolated, minimized, monitored, and controlled. High risk should be accepted only insofar as it can be justified by high expected returns, and only if project failure can be absorbed by the agency without loss of service capability or significant effect on budget. Plans for asset evaluation, operation and maintenance, and disposal should also be developed, with the costs of their execution 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 Procurement and Management-In-Use Phases.

Step I.6. The Agency Capital Plan. The Agency Capital Plan (ACP) is the ultimate product of the Planning Phase and should be the result of an executive investment review process of the capital asset portfolio that reviews the work done in this Phase. The ACP should reflect trade-offs made between funding the operational expenses for an existing asset and the acquisition of a new one. If a proposed acquisition can outperform an existing one for less or equal cost, the existing asset may be disposed of before originally planned. The ACP should include a statement of the relevant agency strategic plans, an analysis of the portfolio of assets already owned by the agency and in procurement, the gap between planned and actual performance, justification for new acquisitions proposed for funding, and related information. Once the ACP is approved by the agency head, the agency may wish to include a summary to support its budget justification to OMB and Congress.

II. Budgeting Phase

Step II.1. Agency Submission for Funding in the Budget Year. This Step is the formal beginning of the Budgeting Phase, when the agency head has decided that the planning for the portfolio of acquisitions is complete and the budget proposal is ready for submission to OMB. Agency submissions should demonstrate that the asset request is justified primarily by benefit-cost analysis, including life-cycle costs; that all costs are understood in advance; and that cost, schedule, and performance goals for the procurement are clearly identified and will be measured using an earned value management system or similar system. Project risks and the probability of achieving project goals should be identified. 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, including requests for more information from the agency, before the OMB Director makes a recommendation to the President regarding the proposal. The agency submission to OMB should be fully funded and consistent with the *Principles of Budgeting for Capital Asset Acquisitions*, published with the *FY 1998 Budget* and shown in Appendix Seven of this Guide.

Step II.2. Passback. In this Step, the agency is formally advised of the OMB Director's recommendation to the President regarding the acquisition. The recommendation may require considerable changes from the initial agency request, including different funding levels, different modules for full funding, changes in the performance goals, and alternatives for financing the proposal (e.g., user fees, account structure). In this Step, the agency can normally appeal to the President or his advisors to overrule or modify the OMB Director's recommendation.

Step II.3. Agency Revision. In this Step the agency may have to redesign certain aspects of the proposal or cost, schedule, or performance measures if funding has been reduced or other changes have taken place as a result of passback.

Step II.4. Approved for the President's Budget. If the proposal has cleared the review process, it is ready for inclusion in the President's budget proposal to Congress.

Step II.5. Congressional Approval and OMB Apportionment. The proposal is likely to face critical questioning by Congress. The agency and others in the Executive Branch may be called upon to justify the request, much of which may be based on material in the ACP. The justification may take place in formal or informal hearings or presentations before authorizing or appropriations committees or staff. Additional revisions to the proposal may be required at various stages in the Congressional review process if Congress changes the funding levels or takes other actions. The Budgeting Phase ends when appropriations are enacted for the asset, OMB apportions the funds to the agency, and the acquisition is adopted into the agency's annual operating plan.

III. Procurement Phase

Step III.1. Validate the Planning Decision. Acquisition planning begins after the agency has determined, in the Planning Phase, that a large expenditure for a capital asset is necessary. The Procurement Phase formally begins once Congress has approved funding and OMB has apportioned it to the agency. The first action is to validate that the Planning Phase decision on direct purchase of the asset or the need for development is still appropriate. Because a year or more can lapse between the Planning Phase decisions and the time the Procurement Phase begins, the agency should review the mission need and the capabilities of the market to determine whether direct purchase of the asset can be made or if development work is needed.

Step III. 2. Manage the Procurement Risk. The most important aspect of the Procurement Phase is *managing risk* to limit the number of projects that will not meet the established goals. Before starting any procurement, the IPT should update the acquisition plan to ensure that the risk management techniques considered in the Planning Phase are still appropriate. There are three key principles for managing risk when procuring capital assets: (1) avoiding or limiting the amount of development work; (2) making effective use of competition and financial incentives; and (3) establishing a performance-based acquisition management system that provides for accountability and measurement of program successes and failures (e.g., earned value reporting).

Step III. 3. Consider Tools. There are three tools that agencies should consider using to mitigate risk, regardless of the amount of development work involved in the acquisition. The first, *modular contracting*, breaks large acquisitions into smaller, more manageable modules where complex requirements can be addressed incrementally in order to enhance the likelihood of achieving workable solutions within goals

while allowing for subsequent modules to take advantage of technological changes. The second, *two-phase acquisitions*, enables the agency to ask for limited capability information in the first phase, which allows many firms to offer solutions without large expenditures. The government may then select the most promising for the second phase of detailed cost and technical proposals. The third tool, *competitive prototyping*, reduces risk in development efforts by selecting contractors to produce prototypes of their product so that the agency may select the most cost-beneficial design concept for further development or production.

Step III.4. Select Contract Type and Pricing Mechanism. After an agency has determined the amount of development work -- if any -- that is anticipated for a given acquisition, the IPT should then choose an appropriate pricing mechanism. The range of pricing mechanisms extend from firm fixed price, which transfers all of the risk to the contractor, to cost-plus-fixed-fee, in which the government assumes all of the risk. Careful management of the risk factors by the government should result in most contracts being fixed price contracts.

Step III.5. Issue the Solicitation. Generally, increased exposure to agency functional requirements will increase not only the number of firms responding to the solicitation, but also the quality of the bids. The solicitation should explain the mission need (not equipment needs), schedule, cost, capability objectives and operating constraints. Offerors should be free to propose their own technical approach, main design features, sub-systems, and alternatives to schedule, cost and capability goals.

Step III.6. Proposal Evaluation and Negotiation. Based on evaluation criteria in the solicitation, a Source Selection Team (SST) of the IPT should evaluate proposals, and the contracting officer should negotiate with offerors to determine the comparative values of proposals in meeting the criteria included in the solicitation document. The SST should then prepare analyses and recommendations for presentation to senior management, specifically a Source Selection Authority (SSA).

Step III.7. Contract Award. The SSA should review the SST's comparative analysis and recommendations and selects the contractor to receive the contract. The SSA can also cancel the solicitation if cost, schedule or performance parameters proposed by the best value contractor do not achieve program objectives within funding limitations. If cancellation of the solicitation occurs, the project should return to the planning phase for review of other options.

Step III.8. Contract Management. Once the contract is awarded, the IPT is expected to manage the contract to achieve, on average, at least 90 percent of the cost, schedule and performance goals. The contractor should use a performance-based management system, as specified in the contract, to manage the contract and provide management information on the actual accomplishment of the goals compared to the baseline goals, throughout the acquisition life-cycle. Agency financial management and control systems should accumulate the actual costs of the project by the work breakdown structure, including both contract costs and government program management costs, to track costs by major element of the contract, and integrate them with performance indicators to give program managers a clear understanding of how resources are connected to results. Agencies should ensure that these systems have the capability of generating easily understood information that can be used by managers to make sound management decisions. Systems that generate reams of data, but little information that can be easily understood and used by management, are not good management tools.

Step III.9. Acquisition Analysis. The IPT should receive monthly status reports on the performance of the acquisition from the contractor-operated performance-based management system and the agency financial management and control system. Following FASA, Title V, if the acquisition is not achieving

at least 90 percent of its cost, schedule or performance goals, the IPT should determine the reasons for the deviations, the corrective actions planned by the contractor, and whether the corrective actions are likely to result in the acquisition achieving baseline goals by contract completion. If the acquisition will not be able to achieve baseline goals, the IPT must present an analysis with recommendations to the agency head for a determination on whether to continue the acquisition and seek additional funding through OMB, to restructure the acquisition with lower goals, or to cancel the acquisition and return the project to the Planning Phase to determine a new approach to achieving mission objectives. However, if the 10 percent deviation criteria is too great a deviation from goals to meet the agency's strategic goals and budget limitations the agency may establish a lesser threshold. In either case, the agency may need to have information about any deviations as early as possible so that corrective actions may be evaluated as soon as possible and management decisions on the viability of the project be made before there is a significant impact on the budget.

OMB's RMO staff should review acquisition status information from the acquisition's performance management system at least once a year, or as necessary, for acquisitions that are not achieving 90 percent of goals. OMB should review the reasons for the deviation from goals, the reasonableness of the proposed corrective actions, and the validity of increased cost estimates. Acquisitions that will not meet objectives in a cost-effective manner should be recommended for termination. OFPP is responsible for submitting to Congress an annual assessment of progress made by civilian agencies in achieving 90 percent of acquisition goals.

Step III.10. Acceptance. 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. Final acceptance will often depend on the successful outcome of testing. Agencies should invest adequate resources to ensure that there is a thorough functional test plan. Although a contractor will *design* to a specification, a contractor will *build* to the test plan -- successfully accomplishing the tests in the test plan determines if the contractor gets paid. Having established a thorough test plan, managers should ensure it is followed, that the tests are performed rigorously, and the contractor is not given an acceptable rating unless each item of the plan is fully met.

IV. Management-In-Use Phase

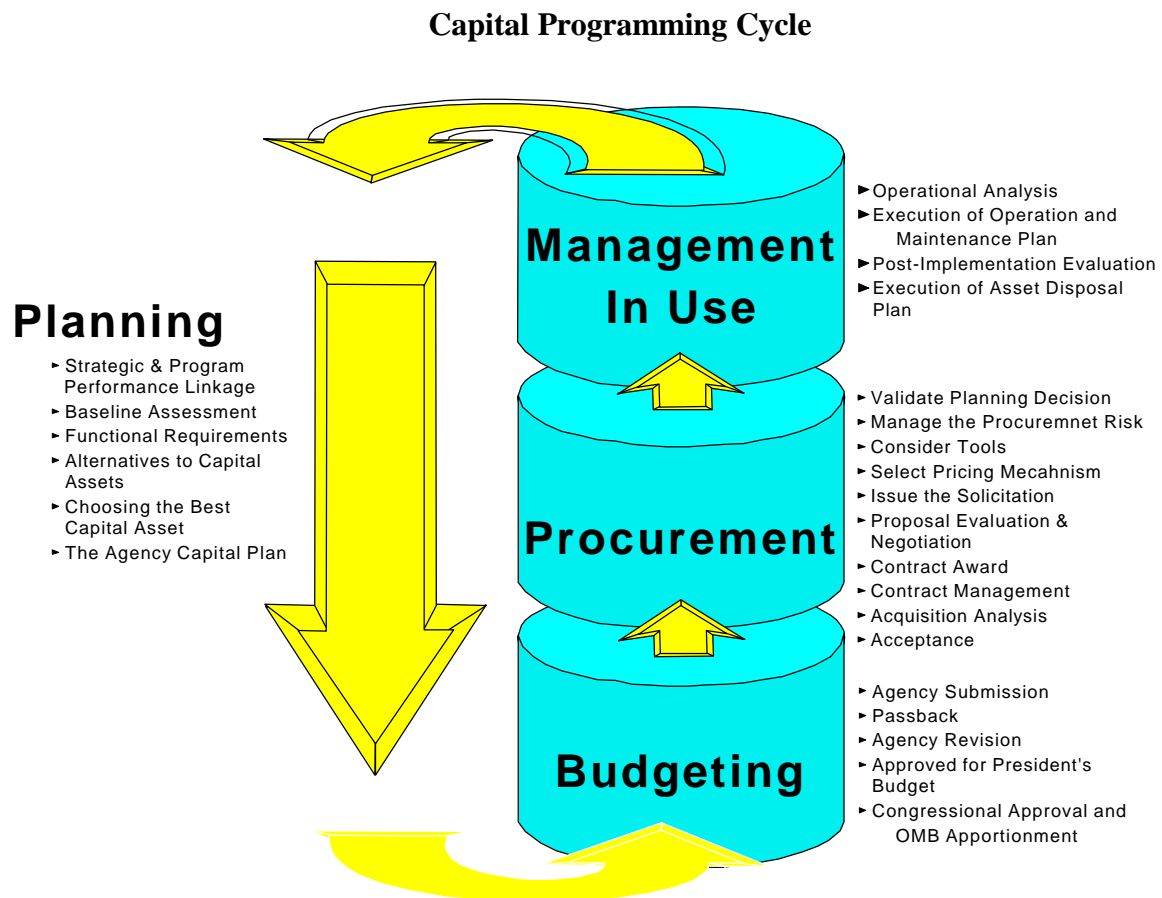
Step IV.1. Operational Analysis. Operational analysis involves the collection of information concerning a capital asset's performance and the comparison of this performance with an established baseline. Asset performance measures should include how well the asset supports customers and stakeholders and how well the asset is managed by the agency. The outputs of this process are recommendations to agency resource managers as to the asset's continued use, modification, improvement, or termination.

Step IV.2. Execution of Operation and Maintenance Plan. Even the best planned, budgeted and acquired asset will fail to adequately deliver to the public unless an operations and maintenance plan is incorporated into the asset's procurement process and properly executed. Proper maintenance can ultimately prove less expensive than more frequent asset replacement. Operational analysis should indicate when new technology can make the replacement of an asset less expensive than maintenance of the existing asset.

Step IV.3. Post-Implementation Review. Post-implementation Review is a diagnostic tool to evaluate the overall effectiveness of the agency's capital planning and acquisition process. The primary objective of a post-implementation review is to identify whether the asset is performing as planned and to

ensure continual improvement of an agency's capital programming process based on lessons learned, thus minimizing the risk of repeating past planning and procurement mistakes.

Step IV.4. Execution of Asset Disposal Plan. Disposal of an asset is typically the end of the asset's life cycle, and represents the culmination of the processes discussed earlier in this Guide. Issues to be considered include the action required to remove the asset from service, planning for transition to a replacement if required, and final removal of the asset from the agency's property inventory. Disposal of complex assets or systems may involve a multi-year process requiring significant effort and funding to execute. In all cases, agency property specialists, guided by internal policy and applicable laws and regulations, must work closely with agency executives to ensure cost-effective and timely disposal of assets.



I. PLANNING PHASE

Introduction. There is an unseverable connection between planning and budgeting, a connection through which an agency decides what to do and how to do it well. A plan connotes a series of actions contemplated and results desired. A budget should present the resources to be allocated and the results expected. Thorough planning is particularly critical when managing within limited budgets. There can be no

good budget without a plan, and there can be no executable plan without a budget to fund it.



There have been many attempts to find techniques for structuring this linkage within the Federal Government. The Planning, Programming, Budgeting System, Management By Objectives, Zero Based Budgeting and other methods were tried and mostly discarded. Often, the techniques overshadowed the fundamental questions. *What are we getting for what we are spending? How do we connect resources with results?* The Government Performance and Results Act (GPRA) puts into law for the first time the requirement for developing strategic plans and tying them to resource requests.

This Guide stresses the importance of linking the planning, funding, procurement, and management of capital assets in an agency's portfolio to goals and objectives spelled out in its strategic plan and annual performance plans. Strategic plans span five years. Planning for capital assets should do the same. 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.

Agencies should not have to plan for the same thing more than once. Strategic plans, annual performance plans, and plans for capital assets should flow from the *same* process for identifying: a baseline of current performance and the gap between current and planned performance (Step I. 2.); functional requirements for bridging this gap (Step I. 3.); alternatives for meeting these functional requirements (Step I. 4.); the best capital asset solution if one is needed (Step I. 5.); and a summary of proposed funding, procurement, and management of each capital asset within the agency's portfolio of assets in an Agency Capital Plan (Step I. 6.). Information technology (IT) capital asset planning required by the Clinger-Cohen Act is an integral part of the agency capital programming process.

STEP I.1. STRATEGIC AND PROGRAM PERFORMANCE LINKAGE

I.1.1. Strategic Planning

Capital programming is an integral part of an agency's strategic planning process, within the framework established by GPRA. The initial strategic plans, due to OMB and Congress by September 1997, are expected to include:

- a comprehensive mission statement;
- long-term goals, covering a five year period, for the agency and an explanation of how they will be achieved;
- schedule and resource implications of goal achievement;
- description of the relationship between annual performance goals in the annual performance plan and the long-term goals in the strategic plan; and
- identification of external factors that could affect the achievement of long-term goals.

Figure 1. Strategic Planning at NASA

By the mid-1980s, NASA was struggling to define its mission and defend the public's return for its spending. Its budget already in decline, NASA realized it would have to change to survive. Since 1993, NASA has been using the development of its strategic plan to align resource allocation and program decisions within its newly-defined mission: (1) to advance and communicate scientific knowledge and understanding; (2) explore and enable the development of space; and (3) research, develop, and transfer advanced space and aeronautic technologies.

NASA has established four Strategic Enterprises to carry out this mission -- Aeronautics and Space Transportation, Space Technology, Human Exploration and Development of Space, and Mission to Planet Earth. Each Center develops a Center implementation plan within its areas of core competency to align its activities with the strategic direction of the Agency and Enterprises it supports. Headquarters guides the plans, so that the Centers support one another, not duplicate effort. Cost reduction measures, such as performance-based contracting and outsourcing functions, like Space Shuttle flight operations, are spelled out in each Center's plan.

The planning process has not been easy. Much work remains before performance indicators and organizational structure are fully integrated into NASA's strategic plan. Still, the benefits of *Better-Faster-Cheaper* within the strategic planning framework are becoming clear. NASA launched an average of two scientific spacecraft a year between 1990 and 1994. Over the next five years, it will increase the launch rate to eight. By 2004, it plans to launch 12. It will do this with 5,000 fewer employees than in 1993 and with 50,000 fewer contractor employees.

An effective strategic plan should anticipate changes in the agency's requirement for technological capabilities, identify major capital 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.

Developing an agency mission, and then the long-term objectives and annual performance goals for each major program based on that mission, produces powerful tools for justifying the principal activities of the agency. These tools help define what the agency will do, and establish performance targets to measure if the agency does it well. Figure 1 describes how NASA is using strategic planning to guide a major restructuring intended to boost productivity by 40 percent while avoiding the cancellation of major programs -- despite cutting its budget by 36 percent from 1995 through the year 2000.

A 1996 GAO study¹ found that three practices appear to be critical for strategic planning to have this impact. Organizations should:

- involve their stakeholders, including Congress and the Administration, state and local governments, third-party service providers, interest groups, agency employees, fee paying customers, and the public;
- assess their internal and external environments continuously and systematically to anticipate future challenges and make adjustments so that potential problems do not become crises; and
- align their activities, core processes, and resources to support mission-related outcomes.

By the time this Guide is published, each agency should be well on its way to developing its initial strategic plan. The Steps of this Phase may lead agencies to revise the portions of strategic plans pertaining to capital assets.

I.1.2. Program Goals and Objectives

As required by GPRA and OMB Circular A-11, Part 2, *Preparation and Submission of Strategic Plans*, these plans will include the following when the FY 1999 agency budgets are submitted to OMB:

- performance goals tied to strategic goals -- to define the level of performance to be achieved by specific activities or projects identified as a program activity in the budget, typically in an objective, quantifiable, and measurable form;
- performance measures for outputs, service levels, and outcomes of each program activity;
- a description of the operational processes, skills, human and capital assets, and other resources required to meet these goals;
- a basis for comparing actual program results with the established performance goals, including goals established for assets during the procurement of a new capital asset; and
- a description of the means to be used to verify and validate measured values.

The goals and objectives described in these annual performance plans should demonstrate incremental progress toward the long-term goals and objectives described in the agency strategic plan.

Program goals and objectives should describe how outputs and outcomes will be achieved. The role of a capital asset in achieving these outputs and outcomes should be made clear. *Outputs* -- e.g., the number of youths trained, the number of social security checks disbursed -- help managers measure efficiency, giving them a better sense of how much “bang” we are getting for the “public’s buck.”

1 GAO, *Executive Guide: Effectively Implementing the Government Performance and Results Act*, GAO/GGD-96-119, June 1996, pp. 13, 18-19.

Outcomes -- e.g., the number of youths that get and hold a job, the number of elderly Americans who live above the poverty line -- give managers a sense of the effectiveness of the use of that public dollar. Appendix Two provides examples of outputs and outcomes, by Government function.

Once the budget and the annual performance plans are approved by Congress and apportionments are made by OMB, the annual performance plans are revised to reflect any changes and turned into that year's operational plan.

I.1.3. Capital Planning and the First Iteration of Strategic Planning

Capital assets should be planned for, acquired, and managed in light of their ability to contribute to accomplishing program outputs and outcomes, as described in the agency strategic plan. OMB Circular A-11, Part 3, *Planning, Budgeting, and Acquisition of Capital Assets* requires that this contribution be described in the agency budget submission to OMB.

Agencies should have undertaken Steps 2 through 6 of the Planning Phase when determining the capital assets to be included in their strategic plans and annual performance plans. Agencies that have not should consider developing another iteration of their strategic plans. While these plans have a five-year horizon, they are not fixed in stone. When first undertaking the process, both businesses and public agencies often produce several iterations of long-term plans before they "get it right." NASA, for example, issued the first version of its strategic plan in May 1994, and has gone through several iterations since, as managerial priorities and resource expectations have changed. Step I. 6. describes more fully how strategic, annual performance, and capital plans can be linked.

STEP I.2. BASELINE ASSESSMENT AND IDENTIFYING THE PERFORMANCE GAP

Given current demands to deliver more with less, strategic and annual performance plans can be expected to establish performance levels beyond current capacity, or to maintain current performance with fewer resources. Agencies should form a multi-disciplinary Integrated Project Team (described below) for each major program to evaluate the capacity of existing capital assets for bridging the performance gap between current and planned results. This assessment of the existing performance baseline should cover assets currently in use and those being tracked in the Procurement Phase, including those acquired by purchase, capital lease, operating lease, service contract, or exchange. Criteria for the baseline assessment should include each major asset's current or anticipated:

- functionality;
- full life-cycle costs, including all direct and indirect costs for planning, procurement, operations and maintenance (operational analysis should be used to evaluate condition and any negative trends on cost projections for assets in use), and disposal;
- the affordability of full life-cycle costs relative to expected funding levels;
- associated risks; and
- agency capacity to manage the asset.

Applying these criteria across programs allows an agency to build an original portfolio of capital assets from which it can explore alternatives for filling the performance gap. Once a program's functional requirements for achieving its goals and objectives are

determined (Step I.3.), and if alternative means of meeting those requirements have been evaluated and discarded (Step I.4.), the development of a portfolio based on common criteria allows the executive review committee to evaluate and prioritize competing capital asset options with greater clarity (Steps I.5. and I 6.).

Figure 2. Integrated Project Teams (IPTs)

The IPT concept was developed by leading private companies, such as Boeing, and has been successfully applied at the Defense Department and NASA. IPTs should feature multi-disciplinary membership and leadership by the senior program manager. Their focus should rest on ownership by the program managers who use the assets, accountability for results, and long-term continuity.

Agencies that are formally developing an Information Technology Architecture, as defined in the Clinger-Cohen Act and in accordance with the guidance developed by OMB, will be well on their way to establishing the baseline assessment with respect to IT. One of the fundamental aspects of an Information Technology Architecture is the identification of current systems -- their performance and their continued value with respect to agency missions, goals, and business functions.

I.2.1. Integrated Project Team

The Integrated Project Team (IPT), established to analyze the performance and capability of the portfolio of assets used by the program, should be led by a qualified program manager, supported by budgetary, financial, procurement, user, program, information resource management, value management professionals (see Figure 3), and other staff as appropriate.

Figure 3. Value Management

Value management is an analysis methodology consistent with the Guide's total process analysis, which businesses and public agencies are applying to capital asset programming. Staff trained in value management identify alternatives to perform a function, recommend which "best value" option should be selected, and plan for and manage implementation. Such staff are already assigned to most Federal agencies and should be productive members of IPTs. Appendix Nine describes this method.

The program manager should be given a charter 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 are developed by technology or finance specialists alone, without the benefit of an agency-wide review of the system's requirements and capabilities. Appendix 3 discusses IPTs in more detail.

STEP 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. Figure 4 provides an example.

The IPT should provide its findings to the Executive Review Committee, which should consider how much of the performance gap it should propose to eliminate. The degree to which an objective may be satisfied will depend upon policy priorities and resource constraints.

Figure 4. Example of Detailed Program Requirements

A corrections program would have public safety as part of its mission and goals regarding rehabilitation and secure incarceration of inmates. At one site, several facilities house 9,000 inmates, classified as maximum, medium, and minimum-security prisoners. A baseline assessment determines that the program's goals cannot be met with the current old, overcrowded, and poorly designed facilities. Despite sound policies and procedures, rates of escape and violence are well above program performance objectives, while rehabilitation rates fall short. To achieve its objectives, management would judge the desirability of capital asset options for meeting the distinct functional requirements for maximum, medium, and minimum security prisoners.

For inmates with minimal security requirements, management may enter into a service contract with a private contractor instead of building and operating a new facility to house them. Because the program has made proximity to family a key functional requirement -- since it improves rehabilitation rates -- the privatization option would only be considered if contractors offered suitable services and/or facilities within 50 miles of the inmates' place of residence. But for violent prisoners with life sentences, security requirements would force management to consider alternatives involving only government facilities. Reduced emphasis on functional requirements for rehabilitation would present the option of transferring these prisoners to under-used, high-security facilities up to 400 miles away instead of building a new facility on the present site. Distinct requirements for distinct prisoners lead to analysis of distinct capital asset alternatives.

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. Such an 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. For example, a requirement to meet a program's goal of providing a warning about hurricanes within a certain number of hours before they reach landfall may indicate that a new satellite with the latest technology could be a solution. But, if the program's ground stations use obsolete technology, or if the system used to interpret and disseminate the satellite's information is cumbersome, merely improving the satellite's functional capacity will not enable program performance to reach its full potential.

Functional requirements should include the following elements:

- the performance criteria of the function being acquire, 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).

Figure 5. Considerations when Planning for High-Tech Assets

One common issue with technology projects is the fact that, by its very nature, technology is changing rapidly. Part of dealing with this is being able to recognize the need for keeping technology projects within short time frames. If new technology appears during the project, the project management should be convinced that using it is worth the risk and is within cost and schedule parameters. *It should never be automatically used, simply because it is the "latest technology."* Other suggestions for defining functional requirements:

- Be on the leading edge, but never the "bleeding edge" of technology.
- Build a solid foundation, using commercial items.
- Have a "plain vanilla" foundation in place, before you begin to customize.
- Issue notices of need in terms of requirements to be done, not specific solutions.

For IT systems, state requirements using an "open" system architecture whenever possible. A system is considered "open" when it has the following characteristics:

- User applications are not tied to a single hardware or system software manufacturer;
- New functionality can be added from a different contractor without significant effort; and
- Other systems can be tied into the system without significant effort.

Open architectures help avoid proprietary and custom-developed products with little flexibility or upgradability. The cost effective approach is to buy products that work together with other agency systems and provide clean interfaces for reuse with new applications when feasible.

Figure Five describes other factors to consider when planning requirements for potential high-tech solutions.

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.

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.

STEP I.4. ALTERNATIVES TO CAPITAL ASSETS

I.4.1. Answering the Three Pesky Questions

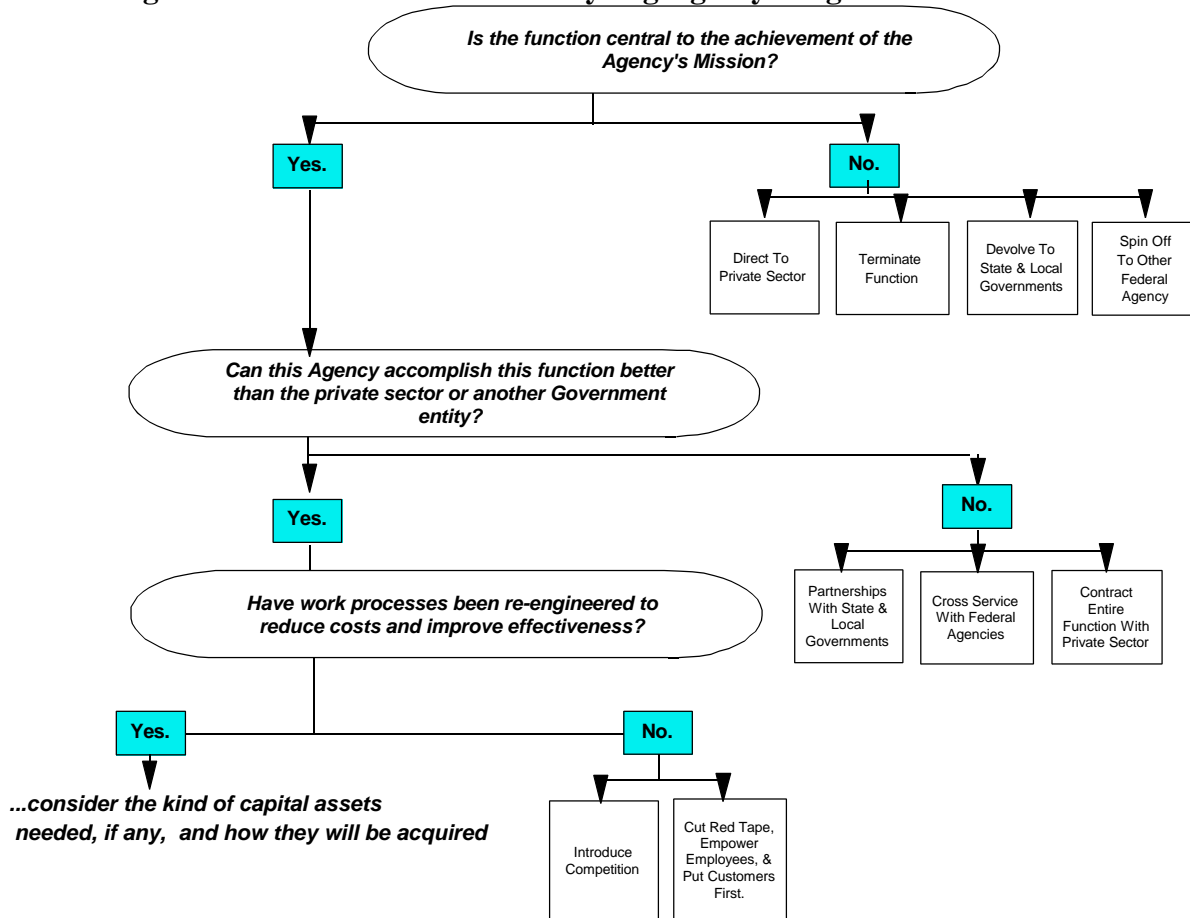
With detailed requirements defined, management should answer the *Three Pesky Questions* before planning to acquire capital assets. These questions, which should have been raised during the strategic planning process, are drawn from the *Principles of Budgeting for Capital Asset Acquisitions* (see Appendix Seven) in the President's FY1998 Budget and the Clinger/Cohen Act. The Questions are applicable to all major capital investments, and are consistent with those posed by the Vice-President's National Performance Review, when "REGO II" was launched. The Three Pesky Questions are:

Management should reengineer business processes first, then consider investing in capital assets.

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;
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, 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.
 - Also, if an agency is currently performing a function that could produce the requirement (e.g., an in-house software function), the decision to use in-house or contract resources must consider the requirements of OMB Circular A-76. (See Appendix Eight for further discussion of A-76).
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 process through cutting red tape, empowering employees, revising or pooling existing assets within the agency or with other agencies, redeploying resource, or offering training opportunities.

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

Figure 6. Decision Tree for Analyzing Agency Programs and Investments



If the answer to all Three Pesky 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.4.1.1. 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 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*, which is summarized in Step I.5.2.

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.

STEP I.5. CHOOSING THE BEST CAPITAL ASSET

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?
- **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 Congress consider for funding? (Value management methodology can provide the “best value” alternatives to meet the functional requirements.)

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.

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 Procurement and Management-In-Use Phases.

I.5.1. Asset Availability

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 by going directly to the market for information.

I.5.1.1. Market Research Strategy

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

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.

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.

I.5.2. Selecting 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. When seeking funds during the budget process, the credibility of the costs will be examined, and agencies will be held

When seeking funds during the Budget Phase, the credibility of cost estimates and goals will be examined, and agencies will be held accountable for meeting them.

accountable by OMB and Congress 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, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*. The elements of benefit-cost analysis include:

1. **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.
2. **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 previous Planning Steps. 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.

3. **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.
4. **Perform Risk and Sensitivity Analysis.** Benefit and cost estimates are typically uncertain. Risk analysis can be used to identify where the relevant uncertainties exist or where development work will be needed to resolve the uncertainties. For example, installation costs are not always identified exactly and can exceed expectations. Unexpected technological changes may make new equipment obsolete sooner than foreseen. 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.5.3. 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 risks should be part of the information provided to the Executive Review Committee when seeking approval of the project.

I.5.3.1. Risk Management

Planning for risk management for the life cycle of the asset should be considered in every acquisition. The types of risk agencies face include schedule, cost (both acquisition and life-cycle), technical

High risk should be accepted only insofar as it can be justified by high expected returns.

obsolescence, feasibility, reliability and risk of project failure, dependencies between a new project and other projects or systems, and risk of creating a monopoly for future procurement. In developing the risk management strategy, IPTs should assess the different kinds of risk for different parts of the project and should limit any development of new technology. High risk should be accepted only insofar as it can be justified by high expected returns, and only if project failure can be absorbed by the agency without loss of

service capability or significant affect 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.

The greatest risk to successful completion of acquisitions is the amount of development work desired. Additionally, projects that involve a wide scope involve more risk than those that limit what they are trying to accomplish. Figure 7 describes industry executives' confirmation of *Pareto's 80/20 Rule* -- that when it comes to acquiring capital assets, trying to achieve more than the market can provide is not good business.

I.5.3.2. 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.

I.5.3.3. 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

Figure 7. Pareto's 80/20 Rule

In a survey of private industry IT investments undertaken by OFPP in 1995, industry executives emphasized Pareto's 80/20 rule:

"The last 20 percent of improvement will yield only marginal benefits and will generally cost more and take longer than the first 80 percent."

The executives stressed that the costs and complexity associated with the last 20 percent of the project are typically too great to even be attempted.

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***

prototypes in an operational environment; and (3) solicitation of assets, which permit interoperability with others by featuring open architectures.

I.5.3.4. 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. Performance-based management systems (e.g., earned value management system as described in Appendix Four) should be used on both fixed price and cost type contracts. The extent of information on project status, particularly cost information, should be less on fixed price contracts than on cost type contracts, but monitoring even fixed price contracts is necessary because of the effect on other agency plans and costs if the project does not achieve original goals. The method chosen should be included in the acquisition plan presented to senior management during portfolio analysis.

I.5.4. 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.

Even in the private sector, it is not uncommon for the evaluation of alternatives to take a year or longer before an organization seeks the extensive funding needed to produce and install a capital asset. Iridium, Inc., a telecommunications firm, took over two years to complete its planning and selection of assets before it tried to convince investors that it could build a world-wide satellite telephone system in five years for \$4.6 billion.

I.5.5. 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 disposal of assets should be included in the 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.5.6. Prioritize Projects within a Portfolio

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 requiring 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.

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. Figure 8 on the following page 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 Figure 8, 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.

Figure 8. Example of Criteria and Scoring Process to Rank Proposed Capital Assets

	<i>Capital Asset (1 thru n)</i>	Weight
DECISION CRITERIA	SCORING	%
Overall Risk Factors		Weights for Risks $\Sigma=100\%$
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 affect 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 $\Sigma=100\%$
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 benefit	20
Organizational Impact - How broadly will the asset affect 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		

STEP 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 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 (see Figure 9).

As described in OMB's *Evaluating Information Technology Investments, A Practical Guide*, the number of times a capital asset is reviewed by senior management should be based on the associated level of risk (see Step I. 5. 3. 1.) involved in the acquisition. The cost of an asset and its importance

Figure 9. Capital Asset Review at the Department of Agriculture

The U.S. Department of Agriculture (USDA) has implemented an Executive Information Technology Investment Review Board (EITIRB) to approve new information technology investments and evaluate existing projects and operations systems for inclusion in an USDA IT investment portfolio. The EITIRB is comprised of the senior management official of each of the Department's program areas, the Chief Financial Officer, the Budget Director, the General Counsel, the Chief Information Officer, and is chaired by USDA's Deputy Secretary. Using pre-approved standards developed by the office of the CIO, the board evaluates proposed IT investments for "significant systems." USDA defines significant systems to include "large" systems (life-cycle acquisition costs over \$100 million), high-risk systems (those with significant deviation from Departmental architecture), "critical systems" (as identified by the Secretary), and high-impact systems (intra-agency efforts affecting two or more program areas). The board also has in place criteria for comparing and prioritizing alternative information systems and projects for selection. The EITIRB links USDA's budget process, financial management and overall Capital Planning Process by having performance plan and funding information identified when the board selects a project for review, by reserving the right to review approved systems for continued viability, and by having the authority to take corrective actions.

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 *Procurement 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 Congress. (See OMB Circular A-11, Part 3 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 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 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. If agencies already have the major elements of the plan in a different form, or prefer alternative formats for presenting the same information, they can use that material in place of this illustration. Agencies that choose to use a summary of their capital plans to justify funding requests for capital assets are encouraged to work with Congress, OMB, and other stakeholders to determine what should be included and in what format.

The Agency Capital Plan may contain the following elements:

1. Statement of agency mission, strategic goals and objectives, and annual performance plans;
2. Description of the Planning Phase;
3. Baseline assessment and identifying the performance gap;
4. Justification of spending for proposed new capital assets;
5. Staff requirements;
6. Timing issues, if involved in a multi-agency acquisition;
7. Plans for proposed capital assets once in use; and
8. Summary of risk management plan.

Each of these elements is discussed below.

I.6.3.1. 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. 1.

I.6.3.2. 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 Step I. 6. 1. above; 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.

I.6.3.3. Baseline Assessment and Identifying the Performance Gap

This section of the Agency Capital Plan should be a summary of the work done in Step 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.

I.6.3.4. 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 Seven, *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.² 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

² OMB recognizes that many agencies are in the middle of ongoing projects, and may not be able to satisfy the criteria immediately. For those projects that do not satisfy the criteria, OMB will consider requests to use funds to support the redesign of work processes, the evaluation of investment alternatives, the development of information architectures, and the use and evaluation of prototypes.

at acceptable risk from funding more than one segment or that there are multiple units that need to be acquired at the same time. (For more information, see OMB Circular A-11, Part 3, *Planning, Budgeting and Acquisition of Capital Assets*).

I.6.3.4.1. 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 Steps 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 Step 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 Step 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 Step II.1.1.2, Principles of Financing in the budgeting phase). This section should also discuss performance measures relevant to the asset, tied to agency mission and performance goals and objectives, and address cost-effectiveness.

I.6.3.4.2. 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 or similar system. (Earned value is described in Appendix Four);
- 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; and
- 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.)

1.6.3.5. Staff Requirements

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

1.6.3.6. 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.

1.6.3.7. 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.

1.6.3.8. 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 Step I.5.3. should be summarized in the Agency Capital Plan.

I.6.4. Connecting Strategic, Annual Performance, and Capital Plans

The ACP should describe how each asset will help achieve agency outcome goals and objectives presented in the strategic plan and the program output goals presented in the annual performance plan. All of the ACP need not be submitted to OMB, but the portion of the ACP that discusses yearly goals *should* be incorporated into the capital assets section of the annual performance plan. Agencies may find that having sound ACPs on hand will improve their ability to inform OMB and Congress about their funding requests, if staff members ask for more information than the summaries in the annual performance plan.

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. Figure 10 on the following page displays a hypothetical example of the relationship between capital planning, strategic and annual performance planning, and budget requests.

I.6.5. Coordination with OMB Guidance

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 as advisors or members on the Integrated Project Teams will facilitate a continuing review and dialogue regarding the agency's plan, so that there will be no surprises. The process of submission should be consistent with the annual guidance contained in OMB Circular A-11, as well as with other current OMB guidance.

Figure 10. Relationship of Agency Strategic Plan, Annual Performance Plan, and 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
<u>Mission</u> : ... prevent loss of life ...	ASP Submitted			
<u>Outcome Goal</u> : By year 4, hurricanes will cause 50 percent fewer fatalities than in Year 0 (100).	ASP Submitted			Goal measured**
<u>Outcome Objectives</u> : 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.		<u>Satellite</u> : - Issue RFPs for components - Evaluation - Award contracts	<u>Satellite</u> : - Assembly - Test - Acceptance <u>Booster Rocket</u> - Issue RFP - Evaluation - Award contract	<u>Satellite</u> - Launch - Made fully operational <u>Booster rocket</u> - 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	<u>Neptune Satellite</u> : - Capital Plan submitted - Funds included in budget - Congress appropriates	<u>Satellite</u> : - Issue RFPs for components - Evaluation - Award contracts <u>Booster Rocket</u> - Capital plan submitted - Funds included in budget - Congress appropriates	<u>Satellite</u> : - Assembly - Test - Acceptance <u>Booster Rocket</u> - Issue RFP - Evaluation - Award contract	<u>Neptune II Satellite</u> - (Steps before including budget request for Neptune II satellite in Capital Plan.) <u>Booster rocket</u> - Test - Acceptance - Launch satellite

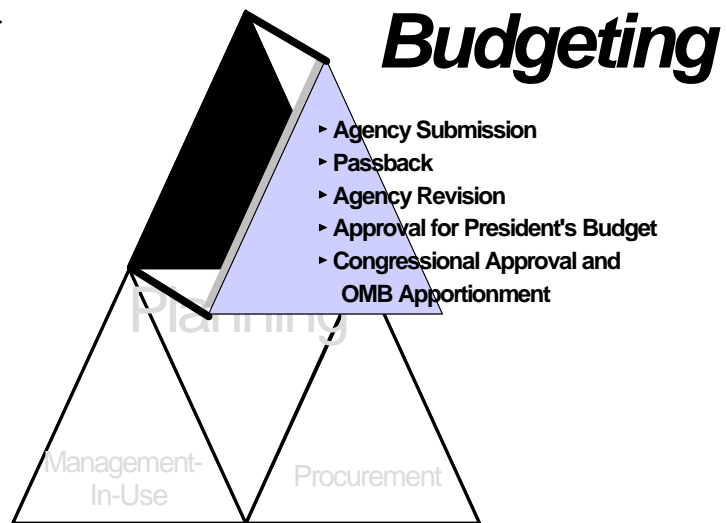
* A revised/updated Strategic Plan would be required by year 4. Replacement satellite required, as Neptune I class satellite has 3 year operational life.

** 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.

II. BUDGETING PHASE

Introduction. The Budgeting Phase of the capital programming process occurs when decisions are made across the Government on how much to spend and how to allocate the spending among different priorities.

Budgeting overlaps the Planning Phase and 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 realities become a greater concern when the agency formally requests budget authority for the asset in its submission to OMB for the coming year. Although budgeting begins in the Planning Phase, the agency request to OMB for asset acquisition is used here as the formal beginning of the Budgeting Phase. This Phase ends when Congress appropriates funds for the acquisition and OMB apportions the funds to the agency. If OMB or Congress chooses not to fund the acquisition, it could return to the Planning Phase for submission again in a later year or further review for a new solution if the requirement continues to exist in order to meet strategic goals and objectives.



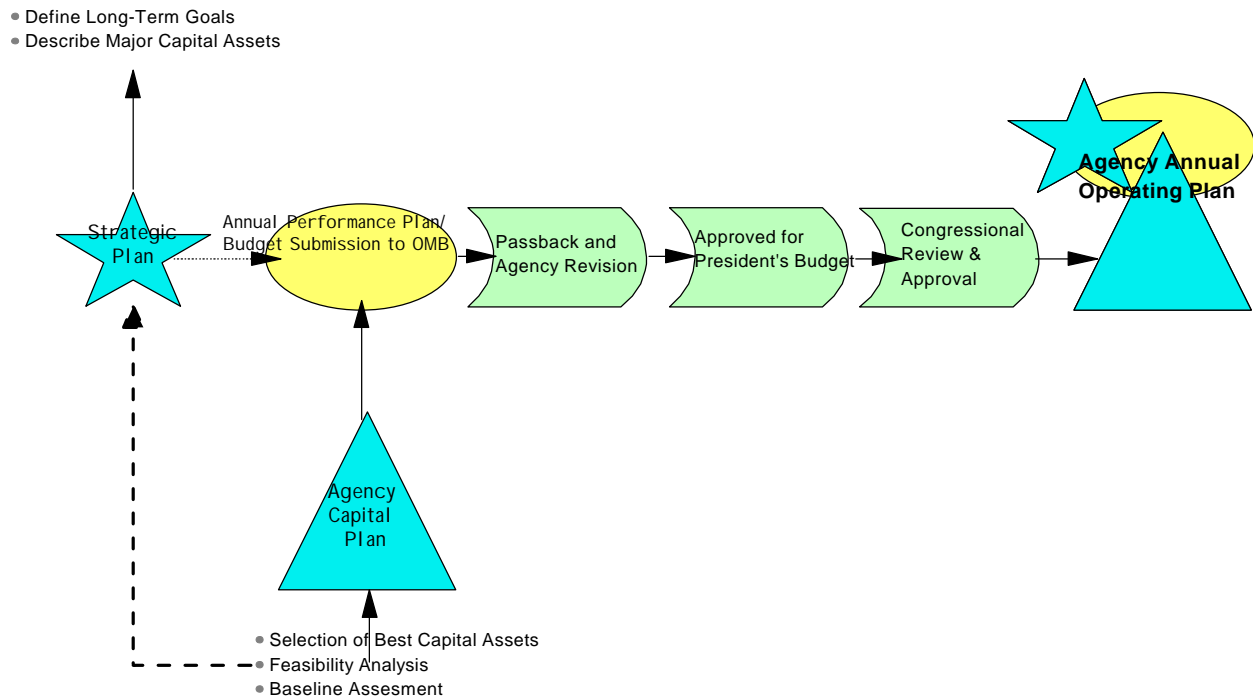
Planning, budgeting, and other Phases should be well integrated, with information from one phase causing periodic reviews of the other. For example, information in the Budgeting Phase that the full agency request will not be approved should cause agencies to change the project's cost, schedule, or performance goals.

This Phase differs from the other phases in part because the major decisions in the Budgeting Phase are not made by the agency. They are made in part by OMB (whether to include the request in the Administration's budget proposal to Congress), and by the Congress (whether to enact budget authority for the acquisition).

This Phase could also be called the "justification" or "approval" phase. The agency justifies its proposal to OMB and the Administration, and if approved, the agency and the Administration justify the proposal to Congress.

Agencies are encouraged to justify their proposals by following the criteria in Step I. 6. 3. 4., which is the justification section of the Agency Capital Plan.

Figure 10. The Budgeting Phase



STEP II.1. AGENCY SUBMISSION FOR FUNDING IN THE BUDGET YEAR

The annual budget submission to OMB includes those decisions of the Executive Review Committee on the portfolio of capital assets that are approved by the agency head. The agency submission should be consistent with the *Principles of Budgeting for Capital Asset Acquisitions*, which was published with the *FY 1998 Budget* and can also be found in Appendix Seven to this Guide. 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 Congress learn of the proposal, because OMB, and perhaps 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.

II.1.1. 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 3, defines the budget submission requirements for both new and in-process acquisitions. These criteria can be drawn from the Agency Capital Plan Step I. 6. 3. 4. *Justification of Spending for Proposed New Capital Assets*, as well as other sections of the Guide. The criteria are explained more fully in that Step and expanded upon in Appendix Seven, *Principles of Budgeting for Capital Asset Acquisitions*. 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

II.1.1.1. Basis for Selection of the Capital Asset

The basis for selection of the capital asset is taken from Step I. 6. 3. 4. and should cover each of that step's parts. Illustrations of questions OMB program analysts 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 by the year 2002. 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 2002.

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?

II.1.1.2. Principles of Financing

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 Seven).

- ***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 and Advance Appropriations.*** Regular appropriations for the full funding of a project or a useful segment in the budget year are preferred. However, if this

results in spikes that, in the judgment of OMB, cannot be accommodated by the agency or Congress, OMB will recommend that a combination of regular and advance appropriations that together provide full funding for a project or a useful segment should be proposed in the budget.

- **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.

Illustrative Questions from OMB and Others Regarding the Full Funding Guidance: Can the acquisition be separated into several economically and programmatically separable stages or modules? If so, how did the agency do this? Is each stage or module prepared for the budget year fully funded up-front? If not, is the entire acquisition fully funded up-front? Explain why you chose the type of account that you did rather than an alternative type.

II.1.1.3. 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 effect 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, Step 1.6.3.4.2.

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.

STEP II. 2. PASSBACK

In this Step, the agency is formally advised of the OMB Director’s recommendation regarding the acquisition. If the agency justification for the asset does not adhere to the “*Principles of Budgeting*

for Capital Asset Acquisitions,” or OMB recommends other uses for the funds requested, the acquisition may require considerable changes from the initial agency request, including different funding levels, different modules for full funding, changes in the performance goals, and alternatives for financing the proposal. Agencies can normally appeal the Director’s recommendation to the President or his advisors, if they wish.

STEP II.3. AGENCY REVISION

The agency may have to redesign certain aspects of the proposal or the cost, schedule, or performance measures if funding has been reduced or other changes have taken place as a result of passback.

STEP II.4. APPROVED FOR THE PRESIDENT’S BUDGET

If the proposal has survived OMB’s review process, it is ready for inclusion in the President’s budget proposal to Congress.

STEP II.5. CONGRESSIONAL APPROVAL AND OMB APPORTIONMENT

Congress reviews the proposal and, if Congress approves it, enacts budget authority to finance the proposal. If budget authority is enacted for the project, OMB apportions the budget authority to the agency, subject to the Anti-Deficiency Act and the Impoundment Control Act.

II.5.1. Congressional Approval

Any proposal is likely to face critical questioning by Congress. The agency and others in the Executive Branch may be called upon to justify the request, much of which may be based on material in the Agency Capital Plan. The justification may take place in formal or informal hearings or presentations before authorizing or appropriations committees or staff. Additional revisions to the proposal may be required if Congress changes the proposal or the funding levels or decides to take other actions.

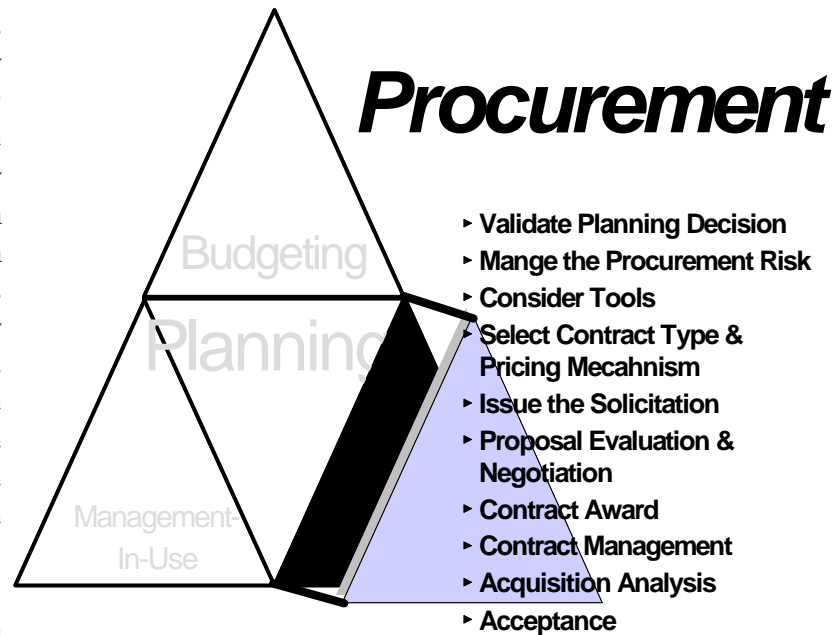
II. 5. 2. OMB Apportionment

The final part of the Budgeting Phase is apportionment. After budget authority is enacted, the agency is not permitted to obligate the funds until OMB apportions them to the agency, subject to the conditions of the Anti-Deficiency Act and the Impoundment Control Act. Under certain conditions, apportionment (and reapportionment) may be used to help ensure sound management of the spending.

The Budgeting Phase formally ends when the funds are apportioned to the agency. From this point, plans for the asset procurement and management-in-use are adopted into annual operating plans of the agency. Congress, OMB, and others will continue to monitor the progress of the procurement and take corrective actions if necessary.

III. PROCUREMENT PHASE

Introduction. The Procurement Phase, for purposes of this Guide, begins after the agency has determined in the Planning Phase that a large expenditure for a capital asset is necessary and has received funding from Congress. Although this section of the Guide addresses issues that arise when the agency intends to satisfy its requirements using outside contractors, many of the principles are equally germane when the work will be performed in-house.



Depending on the results of the research into the capabilities of the market to provide the asset, the agency will begin the process to purchase the asset. In most cases, the purchase 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 purchase 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 and Budgeting Phases. The requirements to establish realistic goals and manage the acquisition to meet those goals applies to all contracts, including both development and production contracts.

In most cases, the purchase should be for a commercial item involving limited or no development work.

Not every project will achieve the cost-benefit expectations of the Planning Phase. If the planning expectations are not realized during the Procurement Phase, agencies should undertake cost-benefit 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 rebaselined 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 rebaselined 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 contributed to achieving or exceeding the cost, schedule and performance goals of the acquisition.

If planning expectations are not realized during the Procurement Phase such that the costs for completing the project outweigh the benefits and the return on investment and risk are less advantageous in comparison to alternative projects, agencies should concede the sunk-costs and terminate the project.

STEP III.1. VALIDATE PLANNING DECISION

At the beginning of the Procurement Phase, the IPT should re-examine the mission need. It should also 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 is 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.

Alternatively, the IPT may determine that a decision in the Planning Phase for direct purchase 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 procurement.

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 fixed-price or 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.

STEP III.2. MANAGE THE PROCUREMENT RISK

The most important aspect of the Procurement Phase is *managing the risk*. Risk management limits the number of projects that will not meet the established goals. Before starting any procurement, the IPT should update the acquisition plan to ensure that the risk management techniques considered in the Planning Phase remain appropriate. Appendix Six further describes the risk management process.

There are three key principles for managing risk when procuring capital assets. They are:

1. Avoiding or limiting the amount of development work;
2. Making effective use of competition and financial incentives; and
3. Establishing a performance-based acquisition management system.

III.2.1 Limiting Development

Probably the greatest risk factor to successful contract performance is the amount of development that is planned for the procurement. Projects requiring full scale development have the greatest

Projects requiring full scale development have the greatest potential for cost and schedule overruns. Agencies should purchase commercial items to the maximum extent practicable.

potential to experience cost and schedule overruns and not meet performance goals. Therefore, agencies should purchase, 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 other than the original developer to maintain the custom solution. Maintenance planning, therefore, is necessary to address the risk of having to pay excessive amounts for future maintenance.

III.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. If given the opportunity, industry can be helpful in proposing innovative solutions. Requirements in solicitations should be written not as detailed design specifications, but rather as broad based statements of objectives (or targets) for asset function and performance, including long term O&M costs, that allow sources to propose various alternative solutions to 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.¹

Creating a monopoly can create problems far beyond an increased purchase 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 operation and maintenance 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).

¹ Firmed-fixed price and fixed-price with economic price adjustment contracts are exempt from cost accounting standards coverage, provided that they are awarded without the submission of cost data to determine the reasonableness of price and that the economic price adjustment is not dependent on the contractor's actual costs.

Financial incentives may also reduce risk by motivating contractors to meet cost, schedule, and performance goals. Financial incentives can take the form of additional profit for improved performance such as in fixed-price and incentive fee contracts. Past performance evaluations that will affect the company's ability to obtain further business are also an effective motivation for superior performance.

NASA recently selected a firm other than the incumbent for a maintenance contract at one of its 10 Centers, based largely on the incumbent's poor performance. Soon after, the other 9 Centers' maintenance contract administrators reported an immediate increase in the level of contractor performance.

III.2.3 Establishing a Performance-Based Acquisition Management System

The third key principle of risk management in the procurement phase is acquisition management. Good acquisition management requires contractors to use management systems that provide good management visibility into the status of the project's prospects for success. By using and relying upon adequate systems in to make program decisions, contractors and agencies can more easily and quickly take corrective actions when problems arise. The sooner corrective action is taken, the less damage is caused to the program. If corrective action cannot bring a project to within 90% of its cost, schedule, and performance goals, agencies will need to consider what other action is appropriate (e.g., rebaselining the contract, terminating the contract).

STEP III.3. CONSIDER TOOLS

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

III.3.1. Modular Contracting

Agencies should, to the maximum extent possible, consider breaking large acquisitions into smaller, more manageable segments or modules. Each module should 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. Each module should be fully funded (see Step II.1.1.2). As technology advances and

MODULAR CONTRACTING

Reduces Risk by:

- **increasing competition among firms**
- **facilitating fixed-price contracting**
- **accommodating changing technology and agency priorities**

agency priorities change, the design of subsequent modules may incorporate these improvements. Modular contracting, therefore, is appropriate even in commercial or non-developmental item procurements. Although modular contracting is generally thought of in terms of contracts for information technology, the concept can also be used for other types of capital assets.

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. 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 the availability of streamlined procedures makes conducting a competition cost effective.
- **Issue Task and Delivery Orders.** Agencies may provide for follow-on modules in the original contract by entering into task and delivery order contracts. Task and delivery order contracts have a broad statement of work in the initial contract and provide for the issuance of task and delivery orders with more defined scopes as modules are acquired. This technique is most appropriate when subsequent modules cannot be clearly defined at the award of the initial contract or when there will be a lag time between the acquisition of the first module and subsequent modules. Task order contracts allow an agency to take advantage of advances in technology and changing agency priorities. Where possible, agencies should enter into multiple award contracts to maintain effective competition throughout the system acquisition.
- **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).

With modular contracting, agencies are better able to manage developmental risk. Accordingly, agencies are more likely to be able to use a fixed-price contract for the acquisition of each module. As discussed more thoroughly in Step III.4.1., using a fixed-price contract is usually best for the agency. In a fixed-price contract the agency and contractor have agreed that the project risks are manageable within the goals of the contract and risk of contract failure falls on the contractor. 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 and because 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 as well as firms that do predominantly commercial work. This increases both the quantity and quality of the competition.

III.3.2. Two-Phase Acquisition

Like modular contracting, a two-phase approach has advantages regardless of the amount of development necessary. In a two-phase 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.²

The type and amount of information the IPT requests in the first phase depends on the type of acquisition. In commercial and non-developmental item acquisitions with limited or no development, the information requested in the first phase can focus on past performance references and commercial catalogs. Such information would give the IPT a good sense of which offerors are realistic contenders for award. In acquisitions where full-scale development is required, agencies can request that offerors demonstrate their success in applying their capabilities to address similar projects.

TWO-PHASE ACQUISITIONS

Reduce Risk by:

- **allowing efficient and effective communication to identify the best fit between government needs and marketplace capabilities**
- **attracting more firms to compete**
- **increasing the intensity of competition**
- **facilitating the use of fixed-price contracts**

Advising prospective offerors, in the first phase, 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 receiving the award. A two-phase 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 two-phase 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 phase 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 phase, 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.³

Two-Phased 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 two-phase approach provides an incentive for offerors to invest resources in performing due diligence. Once an offeror has been told that, based on the first phase 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 two-phase process outlined above to include firm requirements or evaluation criteria for the second phase 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 two-phase 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.

³

Agencies that have the authority to limit consideration in the second phase to those offerors selected in the first phase to participate in the due diligence effort are in the position to get the most benefit from that effort because with fewer offerors participating, both the government and the offerors will be able to concentrate their resources. This will make for a more intense and worthwhile effort to identify the best fit between agency needs and marketplace capabilities. There is also a pending legislative proposal to amend the OFPP Solutions-Based test authority in the Clinger-Cohen Act of 1996 to permit, on a limited basis, selected agencies to use the two-phase approach and only consider proposals in the second phase from sources that participated in the first phase and were determined to be realistic competitors.

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 III.3.3, Competitive Demonstrations/Prototyping).

There is no generally preferred contract pricing mechanism for a two-phase 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.

III.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 two-phase 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.

COMPETITIVE PROTOTYPES

Reduce Risk by:

- **proving concepts are sound**
- **allowing efficient and effective communication to identify the best fit between agency needs and marketplace capabilities**
- **providing for competition during the development effort**
- **where appropriate, ensuring development remains constrained**
- **facilitating firm fixed-price contracting for production**

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 provides 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,⁴ 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.

STEP III.4. SELECT CONTRACT TYPE AND PRICING MECHANISM

As presented in detail in FAR Part 16, the pricing mechanism in the contract is another tool for risk management. In terms of the discussion of risk management in Appendix Six, in selecting the pricing mechanism, the parties are establishing whether the risk will be transferred, assumed, or shared by the agency. The range of pricing mechanisms extend from firm fixed-price for low risk factor projects, which transfers most of the risk to the contractor, to cost-plus-fixed-fee for very high risk factor projects, in which the agency assumes most of the risk. There are many contract types between these two extremes. Agencies should use pricing mechanisms as incentives for efficient contract completion within established goals.

III.4 1. Fixed Price

The feasibility of using firm, fixed-price contracts depends on whether the contractor can effectively manage the risk imposed. A firm fixed-price contract puts the greatest amount of risk on the contractor for contract success. When purchasing commercial or nondevelopmental items, the entire risk can rest

When risk can be contained, agencies should use a firm fixed-price pricing arrangement.

with the contractor because there is very little chance of technical failure. It is also appropriate to award a firm, fixed-price contract putting all of the risk on the contractor when the development is sufficiently contained such that the risk of failure can be managed by the contractor within economically reasonable bounds. Fixed-priced, competitively awarded contracts can be negotiated without certified cost or pricing data or cost accounting standards⁵ coverage reducing impediments that discourage firms that do predominantly commercial work from competing for government business.

III.4.2. Cost Reimbursement

Where a large amount of development effort is anticipated, and the agency is willing to accept the risk of failure within budget limitations a cost reimbursement contract type may be most appropriate. It is usually not cost effective for the agency to use fixed-price contracts, as the contractor will have to include large contingencies in the proposed price. Cost reimbursement contracts, however, put the largest amount of risk for technical failure and cost overruns on the agency.

III.4.3. Incentives

Incentive mechanisms should be used in all cost-reimbursement contracts to encourage contractors to meet or exceed the cost, schedule, and performance goals. Specific incentives for cost, schedule,

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See footnote 1.

and performance achievement should be used along with other incentives, such as value engineering and past performance ratings based on achievement of, or deviation from, goals.

III.4.4. Combinations

In large scale development contracts, there may be several different pricing mechanisms in one contract. For instance, the development effort may be cost reimbursement and the production phase may be fixed-price. Each segment of the contract should have an appropriate performance-based management system in use to provide information on the achievement of, or deviation from, goals.

III.4.5. Share-In-Savings

Another mechanism for containing risk on new systems while encouraging offerors to make the new systems as efficient as possible, is a share-in-savings approach. Using share-in-savings, offerors propose arrangements, whereby they charge less for their product or service in exchange for a government obligation to pay an agreed upon percentage of future savings generated by the new product or service.

As an example, consider an agency could be prepared to pay \$10 million for a new system to track and pay contractor invoices. The current system is very labor intensive, slow, and often requires interest payments under the Prompt Pay Act. Using share-in-savings, one offeror can propose to provide the new system for \$5 million and 50 percent of the savings generated from such things as decreased labor or lack of interest payments over the next five years. Another offeror might offer the new system without charge, but request 90 percent of the savings generated over the next five years. Other offerors could propose different formulas.

A major benefit of share-in-savings is that it provides incentives for the contractor to design and field an efficient system. The more savings the contractor generates for the government, the more profit it makes.

To the extent that the award of share-in-savings contracts require special budgetary mechanisms, agencies can work with their OMB RMO in obtaining the appropriate authority.

STEP III.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 curement.⁶ 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 monopsony exists) to include firms with significant commercial sales. In addition to notices in the *Commerce Business*

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In a two-phase acquisition the first phase notice will be a broad statement of the agency's anticipated requirements. The solicitation which will be more refined than the first phase notice, but still allow for innovation in offerors' proposals, is issued in the second phase.

Generally, increased public exposure to agency functional and performance objectives will elevate not only the quantity of firms responding to the solicitation, but also the quality of the procurement.

Daily 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. 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 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 should require the contractor to operate and maintain a performance-based management system, using “earned value” or a similar approach, as the means to manage the acquisition during its performance period. The system should provide periodic status reports to the agency IPT on the

If an agency wanted to buy a VCR, 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 a VCR, including any particular target performance capabilities the agency wants, and wait for the various bids to come in before making trade-offs.

achievement of, or deviation from, the cost, schedule, and performance goals established for the acquisition.

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.

STEP III.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.

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, ownership costs, and time to develop and field; and
- the competitors' relative accomplishment record (past performance).

STEP III.7. CONTRACT AWARD

The Source Selection Authority (SSA) selects the successful contractor. If a trade-off process 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 project should be reviewed by 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 procurement and evaluate how and why the process failed.

STEP III.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 into a contract's progress to identify early any problems. This

allows time for contractors and the government to implement corrective actions before significant deviation from goals 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. To achieve necessary visibility into contract performance, agencies should incorporate into all major capital asset acquisitions, both fixed-price and cost-reimbursement, a requirement for the contractor to implement a performance-based management system. Contractor systems should operate on an *earned value* or similar concept. 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 Four provides an example of the earned value management system concept.

Performance-based management systems provide a framework for defining work, assigning work responsibility, establishing budgets, controlling costs, and summarizing, with respect to planned versus actual accomplishments, the detailed cost, schedule, and related technical achievement information for appropriate management review. The contractor's management control systems must meet criteria established by the agency in the contract. These criteria, at a minimum, should require a defined process and method of assigning organizational resources to achieve program and acquisition project objectives. The DOD/NASA *Joint Implementation Guide on Earned Value*, and the National Security Industrial Association's, *Industry Standard: Earned Value Management System Guidelines* (Draft) provide the criteria for acceptable performance-based management systems.

Under a performance based management system, 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

Agency financial management and control systems should 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.

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 cost accounts and subsidiary work packages under the cost accounts. The sum of the budgets for all the work packages scheduled to be accomplished, plus the amount of indirect

effort to be accomplished within the contract performance period, 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, 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, plus the applicable portion of the budgets for indirect effort is the "earned value." This is called the *Budgeted Cost for Work Performed*. The costs 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 performance-based management system should provide useful information for all levels of the management team. Whatever system is adopted, it should have the following information available for analysis:

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

STEP III.9. ACQUISITION ANALYSIS

III.9.1. Contract Performance Evaluation

The IPT should receive monthly, or more often if necessary, status reports from the contractor on the acquisition. 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.

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

1. continue the acquisition (by reallocating or seeking additional funds through OMB);
2. restructure the acquisition with lower goals (and not seek additional funding); or
3. 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.

III.9.2. OMB RMO Review

OMB's RMO staff should review status information from 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. OMB should review the reasons for deviation from goals, the reasonableness of the corrective actions proposed, and the validity of increased cost estimates. OMB should consider approving a re-baseline proposal only when the agency has provided justification 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 other projects in the portfolio analysis and budget limitations. Acquisitions not meeting objectives (including cost objectives) that have no acceptable plan for fixing the problems should be recommended for termination and the agency instructed to return to the Planning Phase for consideration of alternative solutions.

III.9.3. OFPP Assessment

OFPP is responsible, under FASA Title V, for submitting an annual assessment to 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.

STEP III.10. ACCEPTANCE

Acceptance is the final step in the Procurement 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

FOR TESTING . . .

- Have a thorough test plan***
- Be rigorous***

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 purchased, the IPT should consider using commercial quality standards or the contractor's quality system to ensure acceptability. Where appropriate, independent validation and 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 contractors. 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.

IV. MANAGEMENT-IN-USE PHASE

Introduction. The Management-In-Use Phase includes the Steps an agency should take to manage and evaluate the continued viability of an acquired capital asset as part of the agency portfolio.

STEP IV.1. OPERATIONAL ANALYSIS

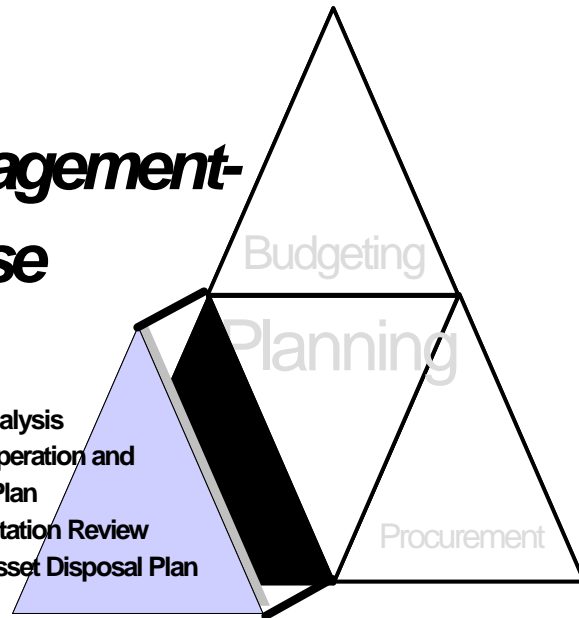
Agencies should establish a system to measure the performance and cost of an operational asset against the baseline established in the Planning Phase. The tracking method is called operational analysis. This information will allow agency resource managers to

optimize the performance of capital assets. Additionally, operational analysis may indicate the need for the acquisition of a new capital asset. The system established should have the capability to provide simple, easy to understand information that can be used by managers to make sound management decisions.

Analysis of operations can be used to minimize the *cost of asset ownership* while simultaneously improving the function the asset performs. The *cost of asset ownership* is defined as the total of all costs incurred by the owners and users to obtain the benefits of a given acquisition. While great emphasis is often placed on meeting the budget, scope, and schedule for the acquisition of a capital asset, these are only a fraction of the asset's total life-cycle costs. Ownership costs, such as operations, maintenance, including service contracts, and disposition, can easily consume as much as 80 percent of the total life-cycle costs. A disciplined assessment of the condition and usability of the asset, and of trends over time, should be included. Operations is a critical area where improved effectiveness and productivity can have the greatest net measurable benefit in cost, performance, and mission accomplishment. If life-cycle cost criteria are given serious consideration during the Planning, Budgeting, and Procurement Phases, total life-cycle costs can be greatly reduced.

Once an asset has been acquired and is in use, operational analysis should take place in accordance with a schedule of fixed milestones or on a cyclical basis. This should be a formal analysis to determine whether the asset is meeting program objectives and the needs of the owners and users, as well as performing within baseline cost, schedule, and performance goals. An automated system

Management-In-Use



could flag the need, on an exception basis, to view the status of a capital asset before it becomes a problem. Figure 11 describes operational analysis at the Department of Energy.

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 O&M costs are higher than anticipated, or if the asset fails to meet program requirements. 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 value-added benefits to the capital programming process if an opportunity to make a course correction is missed due to inattention to early warning indicators. Analysis of such indicators may show a need to apply an improvement methodology, such as value management, to identify if there are better ways for the asset to meet its life-cycle cost and performance goals. Operational indicators for a given asset may include any of the following:

Figure 11. Operational Analysis at the Department of Energy

The Department of Energy (DOE) has established an operations assessment program to formalize and standardize a method by which the safety and effectiveness of facility operations are evaluated. The program requires Operations offices to schedule and perform operations assessments at six month intervals. Assessments focus on identifying operational weaknesses requiring management corrective action rather than on identifying lists of individual deficiencies. Corrective actions are tracked and implemented, and the results of assessments are reported to line managers.

This program has resulted in strong improvement in operations oversight and operational improvements at a number of the operations offices, including changes in nuclear fuel handling procedures; development of standardized operations policies and procedures; decrease in design deficiencies; development of complex-wide well-drilling procedures using lessons learned from all the sites; more efficient and effective lockout/tagout systems; better control of equipment and system status; and improved radiological controls. This program allows DOE managers to target improvement actions and more effectively utilize scarce resources.

- effectiveness
- efficiency
- productivity
- availability
- energy usage
- reliability
- maintainability
- security

STEP IV.2. EXECUTION OF OPERATION AND MAINTENANCE PLAN

If not properly maintained, a capital asset's useful life can be shortened dramatically, thereby reducing the return on the taxpayers' investment. Day-to-day operation and maintenance of any asset must be carefully planned. In addition, the projected costs associated with the day-to-day operation and maintenance of the asset must be factored into the asset's procurement -- to make a best value

determination when selecting between competing proposals -- and tracked throughout its life cycle (see *Planning Phase*, Steps I.5. and I.6.).

The elements of an O&M plan include:

- For scheduled preventive maintenance;
 - Sign-offs to instill personal responsibility;
 - Training of user staff; and
 - Tracking of labor and material costs.
- For predictable corrective maintenance;
 - Budget expenditure for minor maintenance and repair; and
 - Maintenance contracts.

STEP IV.3. POST-IMPLEMENTATION REVIEW (PIR)

Whereas operational analysis is a control mechanism during the operational life cycle of an asset, PIR is a diagnostic tool to evaluate the overall effectiveness of the agency's capital planning and acquisition *process*. The primary objective of a PIR is to identify whether the asset is performing as planned, ensure continual improvement of an agency's capital programming process based on lessons learned, and minimize the risk of repeating past mistakes. Where agencies have multiple requirements for reviews, one system to consolidate all PIRs should be established.

Three to twelve months after a new asset becomes operational, the planning and procurement process should be evaluated to determine whether they accurately predicted the benefits to be derived from the new asset. These benefits could include lowered cost, reduced cycle time, increased quality, additional quantity of services, or increased speed of service delivery. Such an assessment is done by conducting project PIRs that compare actual results against planned cost, returns, and risks. The PIR results are used to calculate a final return on investment, determine whether any additional project modifications may be necessary, and provide "lessons learned" input for changes to the organization's capital programming processes and strategy. Agencies should be able to document and report on the performance benefits achieved by their investments and explain how those benefits support the accomplishment of agency goals. Specifically, there should be mechanisms in place that take the lessons learned from the PIR and use them to update the Planning Phase decision criteria and Procurement and Management-In-Use processes.

The PIR should be conducted by individuals not directly involved in the acquisition of the asset. The PIR team can be composed of owners and users of the asset or other personnel and consultants.

Factors to be considered in the PIR include:

Customer/User Satisfaction

- Partnership/involvement
- Business process support
- Investment performance
- Usage

Strategic Impact and Effectiveness

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

Internal Business

- Project performance
- Infrastructure availability
- Standards and compliance
- Maintenance
- Security issues and internal controls
- Evaluations (accuracy, timeliness, adequacy of information)

Innovation

- Workforce competency
- Advanced technology use
- Methodology expertise
- Employee satisfaction/retention
- Program quality

To ensure that each project 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.

STEP IV. 4. EXECUTION OF ASSET DISPOSAL PLAN

Disposal 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 resource management plan. Beginning with mission analysis and planning for the purpose of matching capabilities to mission requirements, and continuing with ongoing operational analysis, criteria are established and monitored to determine how well an asset is performing. At any time that the 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 or replaced.

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 property 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. Disposal of complex assets or systems may involve a multi-year process requiring significant effort and funding to execute. For example, when the FAA replaces a

navigation system for commercial and private air traffic, it must communicate the details of the plan to thousands of system users worldwide and ensure that the transition to the new system is seamless, timely, and coordinated. Figure 12 discusses disposal of an IT system.

The procedure for disposing 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, authorizing federal agencies to donate excess computers and related peripheral tools directly to schools). Hazardous material disposal would most likely be performed by a specialized contractor following environmental laws monitored by EPA, while disposing of an office building might be carried out by GSA following real property regulations. In all cases, agency property specialists, guided by internal policy and applicable laws and regulations, should work closely with agency executives to ensure cost-effective and timely asset disposal.

Figure 12. Example of Asset Disposal

Disposal of an IT system typically requires the phase out of obsolete equipment and a transition to a new system. This process can take years to accomplish and requires extensive planning and coordination. For IT systems, the transition actually begins early in the planning stages for the new system. Acquisition planners have to work with prospective contractors to establish timeliness and devise a transition plan. 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 the transition may include:

- converting data from the old system to the new;
- operating both the old and new systems concurrently;
- validating that the new system has converted old data properly;
- ensuring users are trained on the new equipment and software;
- 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.

A select group of users will test the system using real data and real situations to identify bugs and develop solutions. Any problems that occur will be documented in a “lessons learned” report and be resolved before the final, organization-wide transition to the new system. The transition team completes all system integration and testing to ensure that the new IT environment meets design requirements, and that office workloads will fit into the new environment as planned and perform to the users satisfaction. Upon formal acceptance, the old system is de-installed and final property disposal actions are executed as required.

Appendix One

DEFINITION OF *CAPITAL ASSETS*

Capital assets are land, structures, equipment, and intellectual property, including software, that 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 acquisition cost of a capital asset includes both its purchase price and all other costs incurred to bring it to a form and location suitable for its intended use.

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 repairs 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;
- furniture, elevators, and printing presses;
- 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 or Department of Transportation grants to AMTRAK). 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 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 Two

SELECTED EXAMPLES OF PERFORMANCE MEASURES

"TRADITIONAL" PRODUCTION OR DELIVERY TYPE MEASURES

Production

Output: *Number of armor-piercing 120mm projectiles manufactured and delivered in FY 1997.*
Outcome: *Produce sufficient 120 mm armor-piercing projectiles to achieve a 60 day combat use supply level by 1999 for all Army and Marine Corps tank battalions.*

Transaction Processing

Output: *Process 3.75 million payment vouchers in FY 1995.*
Outcome: *Ensure that 99.5 percent of payment vouchers are paid within 30 days of receipt.*

Records

Output: *Update earnings records for 137 million employee contributors to Social Security Trust Fund.*
Outcome: *Ensure that all annual wage reports are posted within 6 months following the close of the tax year.*

Service Volume

Output: *Provide meals and temporary shelter for 35,000 homeless individuals for up to 18 months following the Short Beach tsunami disaster.*
Outcome: *Maintain a capacity to provide, nationally, meals and temporary shelter for an indefinite period for up to 100,000 individuals who are homeless as a result of major disasters.*

Frequency Rates

Output: *Issue 90 day national temperature and precipitation forecasts every six weeks.*
Outcome: *Provide users of meteorological forecasts with advance information sufficiently updated to be useful for agricultural, utility, and transportation planning.*

Inventory Fill

Output: *Store a minimum of 3.5 million barrels of petroleum stock.*
Outcome: *Petroleum stocks shall be maintained at a level sufficient to provide a 60 day supply at normal daily drawdown.*

OPERATING-TYPE MEASURES

Utilization Rates

Output: *Number or percentage of tactical fighter aircraft simulator training facilities operational at not less than 85 percent of rated capacity.*

Outcome: *Ensure optimized operation of all simulator facilities to provide all active duty tactical fighter aircraft pilots with a minimum of 80 hours of simulator training every 12 months.*

Out-of-Service Conditions

Output: *All Corps of Engineer locks on the Showme River basin shall be operational during at least 22 of every consecutive 24 hours.*

Outcome: *Ensure no significant delays in commercial traffic transiting through the Showme River basin system.*

Maintenance and Repair Intervals

Output: *All out-of-service aircraft requiring unscheduled repairs shall be repaired within 72 hours.*

Outcome: *The Forest Service will maintain 90 percent of its 135 firefighting aircraft in an immediately deployable status during forest fire season.*

QUALITY-TYPE MEASURES

Defect Rates

Output: *Percentage of 120 mm armor piercing projectiles that are rejected as defective.*

Outcome: *No armor-piercing ammunition projectiles fired in combat shall fail to explode on impact.*

Mean Failure Rates

Output: *Premature space Shuttle main engine shutdown shall not occur more than once in every 200 flight cycles.*

Outcome: *The Space Shuttle shall be maintained and operated so that 99.95 percent of all flights safely reach orbit.*

Accuracy

Output: *The initial monthly estimate of the previous month's value of exports shall be within one percent of the revised final value.*

Outcome: *All preliminary, periodic estimates of economic activity shall be within three percent of the final value.*

Error Rates

Output: *Not more than four percent of initial determinations of the monthly entitled benefit amount shall be incorrectly calculated.*

Outcome: *No errors materially affecting customers will be made.*

CUSTOMER-RELATED MEASURES

Complaints

Output: *Percent of individuals seeking information who subsequently re-request the same information because the initial response was incomplete.*

Outcome: Customers express a high degree of satisfaction.

Customer Satisfaction Levels (Output and outcome measures may often be indistinguishable.)

Output: *In 1998, at least 75 percent of individuals receiving a service will rate the service delivery as good to excellent.*

Outcome: *At least 90 percent of recipients will rate the service delivery as good to excellent.*

Timeliness

Response Times

Output: *Adjudicative decision on all claim disallowances will be made within 120 days of appeal hearings.*

Outcome: *Provide every claimant with timely determination on claims filed.*

Adherence to Schedule

Output: *Operate 95 percent of all passenger trains within 10 minutes of scheduled arrival times.*

Outcome: *Provide rail passengers with reliable and predictable train service.*

Responsiveness

Output: *98 percent of notices to the Department of Transportation of navigational hazards will result both in an on-site inspection of the hazard and Notice to Mariners within 48 hours of receipt of the notice*

Outcome: *Ensure prompt response to potential public safety concerns in the navigation of coastal and off-shore waters.*

EFFICIENCY AND EFFECTIVENESS MEASURES

Efficiency

Output: *Number of transaction costs/production costs/delivery of service costs projected on a per unit basis. Number of rounds of armor-piercing ammunition at a cost of \$17.75 per round.*

Outcome: *(Not commonly measured as an outcome.)*

Effectiveness

Output: *In FY 1999, not more than 7,000 in-patients in military hospitals will be readmitted, post discharge, for further treatment of the same diagnosed illness at the time of initial admission.*

Outcome: *Annually, initial treatment will be therapeutically successful for 85 percent of all hospital admissions.*

OTHER TYPES OF MEASURES

Milestone and activity schedules

Output: *Complete 85 percent of required flight-worthiness testing for Z-2000 bomber by July 30, 1999.*

Outcome: *The Z-2000 bomber will be flight-certified and operational by December 1, 2000.*

Design Specifications

Output: *Imaging cameras on Generation X observational satellite will have resolution of 0.1 arc second.*

Outcome: *Generation X observational satellite will successfully map 100 percent terrain of six Jovian moons to a resolution of 100 meters.*

Status of Conditions

Output: *In 1995, repair and maintain 1,400 pavement miles of federally owned highways to a rating of "good".*

Outcome: *By 2000, 35 percent of all federally owned highway pavement miles shall be rated as being in good condition.*

Percentage Coverage

Output: *Provide doses of vaccine to 27,000 pre-school children living on tribal reservations.*

Outcome: *100 percent of children living on tribal reservations will be fully immunized before beginning school.*

Appendix Three

INTEGRATED PROJECT 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 procurement phase) should commit to remain with the project for four years or the completion of the procurement 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 of project management, value management, budget, finance, and procurement knowledge.

Appendix Four

EXAMPLE OF EARNED VALUE CONCEPT AND COST AND SCHEDULE VARIANCES FOR CAPITAL ASSETS

Introduction. 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

	<u>Work Units</u>						
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>Total</u>
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

	<u>Work Units</u>						
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>Total</u>
Planned value (\$)	10	15	10	25	20	20	\$100
Earned value (\$)	<u>10</u>	<u>15</u>	<u>10</u>	<u>10</u>	<u>20</u>	<u>0</u>	<u>\$ 65</u>
Schedule 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 40 percent.

Table 3. Cost Variance

	<u>Work Units</u>						
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>Total</u>
Earned value (\$)	10	15	10	10	20	0	\$ 65
Actual cost (\$).....	<u>9</u>	<u>22</u>	<u>8</u>	<u>30</u>	<u>22</u>	<u>0</u>	<u>\$ 91</u>
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 underrunning 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

	<u>Work Units</u>						
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>Total</u>
Planned value (\$)	10	15	10	25	20	20	\$100
Actual cost (\$).....	<u>9</u>	<u>22</u>	<u>8</u>	<u>30</u>	<u>22</u>	<u>0</u>	<u>\$ 91</u>
Variance.....	1	-7	2	-5	-2	20	\$9 = 9%

Appendix Five

ACCOUNTING FOR CAPITAL ASSETS

The Statement of Federal Financial Accounting Standards (SFFAS) No. 6, *Accounting for Property, Plant, and Equipment (PP&E)*, establishes standards for most capital assets.¹ These standards were recommended by the Federal Accounting Standards Advisory Board and published by OMB November 30, 1996.

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 four categories: general PP&E; Federal mission PP&E; 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.

For the remaining three categories, SFFAS No.6 recognizes that period-by-period cost allocation and allocation of period costs to outputs is not relevant. The standards provide for a new type of reporting. SFFAS No.8, *Supplementary Stewardship Reporting*, requires that information on these three categories of PP&E (known collectively as stewardship PP&E) be reported in a manner that highlights their long-term-benefit nature and demonstrates accountability over them. Depending on the nature of the PP&E, stewardship reporting could consist of financial and non-financial data. Deferred maintenance reporting also applies to these categories.

¹ SFFAS No. 6 will become effective for fiscal year 1998, although earlier implementation is encouraged.

Appendix Six

RISK MANAGEMENT IN THE PROCUREMENT PHASE

Risk management is an organized method of identifying and measuring risk and developing, selecting, and managing options for handling these risks. There are several types of risk an agency should consider as part of risk management. The types of risk include:

- schedule risk;
- cost risk;
- technical feasibility;
- risk of technical obsolescence;
- dependencies between a new project and other projects or systems (e.g., closed architectures); and
- risk of creating a monopoly for future procurement.

Risk management is the responsibility of everyone on the IPT. It implies control of possible future events and is proactive rather than reactive. There are four elements of risk management.

1. **Risk Assessment.** The first step in risk management is to identify and assess all potential risk areas. A risk area is any part of a project where there is an uncertainty regarding future events that could have a detrimental effect on meeting the program goal. Risk assessment continues throughout the life cycle of a program. As the program progresses, previous uncertainties will become known and new uncertainties will arise.
2. **Risk Analysis.** Once risks are identified, each risk should be characterized as to the likelihood of its occurrence and the severity of potential consequences. Risk analysis will result in a “watch list” of potential areas of risk. The watch list may identify early warning signs that a problem is going to arise. As in risk assessment, risk analysis continues through the life cycle of the program; the watch list should be updated as appropriate.
3. **Risk Treatment.** After a risk has been assessed and analyzed, the agency should consider what to do about it. Alternatives include:
 - **Transfer.** The agency may transfer the risk to the contractor or some third party. It may be appropriate to transfer the risk to the contractor when it is in the best position to exercise effective control and manage the risk within economically reasonable bounds. At other times it may be more appropriate to transfer the risk to a third party (e.g., bonding, insurance).
 - **Avoidance.** When looking at the risks of achieving various solutions to an agency’s needs, the program manager may determine that the risks of a particular solution are so great that the solution should be removed from further consideration and alternative solutions should be found.

- Reduction. Another method for dealing with the risk is to take the necessary measures to minimize the likelihood that it will occur, minimize the damage to program goals should it occur (e.g., contingency plans), or both.
 - Assumption. The agency may chose to assume the risk if it is in the best position to exercise effective control, the probability of risk is small, or the potential damage is either minimal or too great for the contractor to bear. The decision should depend on whether the expected benefits of the project exceed the expected costs by enough to compensate the agency for assuming the risk. It may assume the risk through differing site conditions clause, or other means. As long as the program manager has done appropriate risk analysis and understands the situation, the agency may take the programmatic equivalent of an “I’ll cross that bridge when I come to it” position. Effective risk management makes assumption of the risk a conscious decision rather than an oversight.
 - Sharing. When the risk cannot be appropriately transferred -- nor is it in the best interest of the agency to assume the risk -- the agency and contractor may share the risk. Such shared risks require extensive monitoring.
4. Lessons Learned. 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 acquisitions, but could help identify recurring problems in existing programs.

Appendix Seven

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. See the Glossary of this Guide for key terms. The principles are organized in the following four sections:

A. *Planning: Raines Rules.* 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 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 or similar system.

C. *Principles of Financing.* This section stresses that useful segments are to be fully funded with regular or advance appropriations or both, enforced by a proposed new Budget Enforcement Act scorekeeping rule; 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 or a similar system; and if progress toward these goals is not met there is a formal review process to evaluate whether the acquisition should continue or be terminated.

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

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 project'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, agency, and bureau information architectures which: integrate agency work processes and information flows with technology to achieve the agency's strategic goals; reflect the agency's technology vision and year 2000 compliance plan; and 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;
6. reduce risk by: avoiding or isolating custom-designed components to minimize the potential adverse consequences on the overall project; using fully tested pilots, simulations, or prototype implementations when necessary before going to production; establishing clear measures and accountability for project progress; and, securing substantial involvement and buy-in throughout the project 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 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 there are multiple units that need to be acquired at the same time. (For more information, see the Glossary entry, *Capital Project and Useful Segments of a Capital Project*.)

OMB recognizes that many agencies are in the middle of ongoing projects, and they may not be able immediately to satisfy the criteria. For those projects that do not satisfy the criteria, OMB will consider requests to use FY 1997 and FY 1998 funds to finance additional planning, as necessary, to support the establishment of realistic cost, schedule, and performance goals for the completion of the project. 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 project, to provide the basis for fully funding the project to completion, and setting the baseline for management accountability to deliver the project 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 project should evaluate and discuss the extent to which the project meets the above criteria and should also include:

1. an analysis of the project'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: "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs" (October 1992);
2. an analysis of the risk of the project 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 goals;
3. 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 is, it is programmatically useful if no further investments are funded, and in this application its benefits exceed its costs; and
4. show cost, schedule, and performance goals for the project (or the useful segment being proposed) that can be measured throughout the acquisition process using an earned value management system or similar system. Earned value is described in Appendix Four.

C. Principles of Financing

Principle 1. Full Funding

Budget authority sufficient to complete a useful segment of a capital project (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) may be incurred.

Enforcement. The *FY 1998 Budget* proposes a new Budget Enforcement Act scorekeeping rule to enforce this principle. The proposed rule is the following:

“An appropriations act that provides only partial funding for a useful segment of a capital project will be scored for the estimated total budget authority for the useful segment in the fiscal year in which the partial funding is provided, unless the appropriation language clearly prohibits obligations from being incurred until complete funding for the useful segment is provided.

"A useful segment of a capital project is defined as a component of a capital project that provides either:

- information that allows the agency to plan the capital project, develop the design, and assess the benefits, costs, and risks 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. Because of uncertainty regarding the identification of separate planning segments for research and development activities, the application of full funding concepts to research and development planning will need more study pending preparation of the 1999 budget; or
- a useful asset for which the benefits exceed the costs even if no further funding is appropriated.”

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, and increases the accountability for the achievement of the baseline goals.

When full funding is not followed and capital projects 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 projects, 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 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, a combination of regular and advance appropriations that together provide full funding for a capital project or a useful segment should be proposed in the budget.

Explanation. Principle 1 (Full Funding) is met as long as a combination of regular and advance appropriations provide budget authority sufficient to complete the capital project or useful segment. 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 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.

If, however, the lumpiness caused by regular appropriations cannot be accommodated within an agency or Appropriations Subcommittee, advance appropriations can ameliorate that problem while still providing that all of the budget authority is enacted in advance for the capital project or useful segment. The latter helps ensure that agencies develop appropriate plans and budgets and that all costs and benefits are identified prior to providing resources. In addition, amounts of advance appropriations can be matched to funding requirements for completing natural components of the useful segment. Advance appropriations have the same benefits as regular appropriations for improved planning, management, and accountability of the project.

Principle 3. Separate Funding of Planning Segments

As a general rule, planning segments of a capital project 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, 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 project itself. The process of gathering information for a capital project 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 a risk analysis that includes how risks will be isolated, minimized, monitored, and controlled may help prevent these problems.

The project cost, schedule and performance goals established through the planning phase of the project 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 or similar 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 project 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 project, 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:

1. having budget authority appropriated in separate capital asset acquisition accounts;
2. apportioning budget authority for a useful segment;
3. 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;
4. 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;
5. monitoring cost, schedule, and performance goals for the project (or the useful segment being proposed) using an earned value management system or similar system. Earned value is described in Appendix Four; and
6. 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, institute senior management review of the project through portfolio analysis 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.

Appendix Eight

ALTERNATIVE COMPETITIONS AND OMB CIRCULAR A-76

The August 1983 Office of Management and Budget (OMB) Circular No. A-76, *Performance of Commercial Activities*, and its March 1996 *Revised Supplemental Handbook* establish Federal policy for the performance of recurring commercial activities. The Circular provides guidance and procedures for determining whether recurring commercial activities should be provided through contracts with commercial sources, through in-house resources using Government facilities, equipment and personnel, or through inter-service support agreements (ISSAs) with other Federal or State and local agencies.

Americans want to know that they are “getting their money’s worth” and want a Government that is more businesslike and better managed. The reinvention of Government begins by focusing on core mission competencies and support service requirements. Thus, the reinvention process must consider a wide range of alternatives to continued capital investment, including: the consolidation, restructuring or reengineering of activities; privatization options; make or buy decisions; joint ventures with the private sector; the possible devolution of activities to other federal, state or local agencies; and the termination of obsolete services or programs. Circular A-76 provides a minimum level of analytic rigor for the evaluation of these alternatives. It is designed to: (1) balance the interests of the parties; (2) provide a level playing field between public and private offerors; and (3) encourage competition and customer choice.

Generally, agencies will conduct cost comparisons when activities do not meet established performance standards, when agencies believe fair and reasonable prices cannot be obtained from qualified commercial sources, or as otherwise provided to permit the conversion of work to or from in-house, contract or ISSA performance. The Circular requires a cost comparison whenever an expansion, modernization, replacement, upgrading or the enlargement of an in-house commercial activity or capability is being considered.

The cost comparison process, similar to the capital programming process discussed in this Guide, consists of six major components. They are: (1) the development of a Performance Work Statement (PWS); (2) the performance of a market and a management study to determine the Government's Most Efficient Organization (MEO); (3) the development of in-house Government cost estimates; (4) issuance of the Request for Proposal (RFP) or Invitation for Bid (IFB); (5) the comparison of the in-house bid against a proposed contract or ISSA offer; and (6) the Administrative Appeal Process, which is designed to assure that all costs entered on the Cost Comparison Form (CCF) are fair and accurate.

Appendix Nine

VALUE MANAGEMENT

The value management methodology, (also know as value analysis, value engineering, value planning, etc.) should be considered for use in the Planning, Procurement 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, “What does it do?”
3. ***Information Gathering.*** 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.*** 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.*** Selection of the final alternative, documentation of the decision, and preparation of the necessary implementation plans complete the process in this phase. 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 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 process facilitators, either agency employees or commercial consultants, to perform the value management studies.

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.)
- **Advance appropriations.** Advance appropriations may be accompanied by regular annual appropriations to provide funds available for obligation in the budget year as well as subsequent years. Advance appropriations are:
 - *enacted* normally in the current year;
 - *scored* after the budget year (e.g., in each of one, two, or more later years, depending on the language); and
 - *available for obligation* in the year scored 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 Four illustrates the earned value concept for establishing cost and schedule goals, one of several concepts that could be used.
- **Performance goals.** The performance goals should be realistic assessments of what the acquisition is intended to accomplish, expressed in quantitative terms if possible. For

example, an illustrative performance goal may be that the asset will allow the agency to process, on average, 1,000 units of work per month.

- ***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 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.² 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.³

Capital Assets. See Appendix One.

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. Because of uncertainty regarding the identification of separate planning segments for research and development activities, the application of full funding concepts to research and development planning will need more study pending preparation of the FY 1999 budget.
- **Useful asset.** A useful asset is an economically and programmatically separate segment of the asset procurement stage of the capital project that provides an asset for which the benefits exceed the costs, even if no further funding is appropriated. The total capital asset

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.

³ OMB Circular A-11: Section 14.2 (b) explains budget authority in more detail.

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.”

Full Cost. All direct and indirect costs to any part of the Federal Government of providing goods, resources, and services (OMB Circular A-25). The total amount of resources used to produce the output. More specifically, the full cost of an output produced by a responsibility segment is the sum of: (1) the costs of resources consumed by the responsibility segment that directly or indirectly contribute to the output; and (2) the costs of identifiable supporting services provided by other responsibility segments within the reporting entity and by other reporting entities (SFFAS No. 4, *Managerial Cost Accounting Concepts and Standards for the Federal Government*).

Funding

- **Full funding:** Full funding means that appropriations -- regular appropriations or advance appropriations -- are enacted that are sufficient in total to complete a useful segment of a capital project before any obligations may be incurred for that segment. Full funding for an entire capital project is required if the project cannot be divided into more than one useful segment. If the asset can be divided into more than one useful segment, full funding for a project may be desirable, but is not required to constitute full funding.
- **Incremental (partial) funding:** Incremental (partial) funding means that appropriations -- regular appropriations or advance appropriations -- are enacted for just part of a useful segment of a capital project, if the project has useful segments, or for part of the capital project as a whole, if it is not divisible into useful segments. Under incremental funding for a capital asset, which is not permitted under the principles in this Guide (See Appendix Seven), the funds could be obligated to start the segment (or project) despite the fact that they are insufficient to complete a useful segment or project.

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.

© 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).”

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. An assessment of the results of a program activity compared to its intended purpose.

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 tabulation, calculation, or recording of activity or effort that can be expressed in a quantitative or qualitative manner. They shall have two key characteristics: 1) they shall be periodically or systematically captured through an accounting or management information system; and 2) there shall be a logical connection between the reported measures and the program’s mission, goals, and objectives.

Performance Measurement. A means of evaluating efficiency, effectiveness, and results. Performance measurement should include program accomplishments in terms of outputs (quantity of products or services provided) and outcomes (results of providing outputs in terms of effectively meeting intended agency mission objectives).

Risk Management. See Appendix Six.

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

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