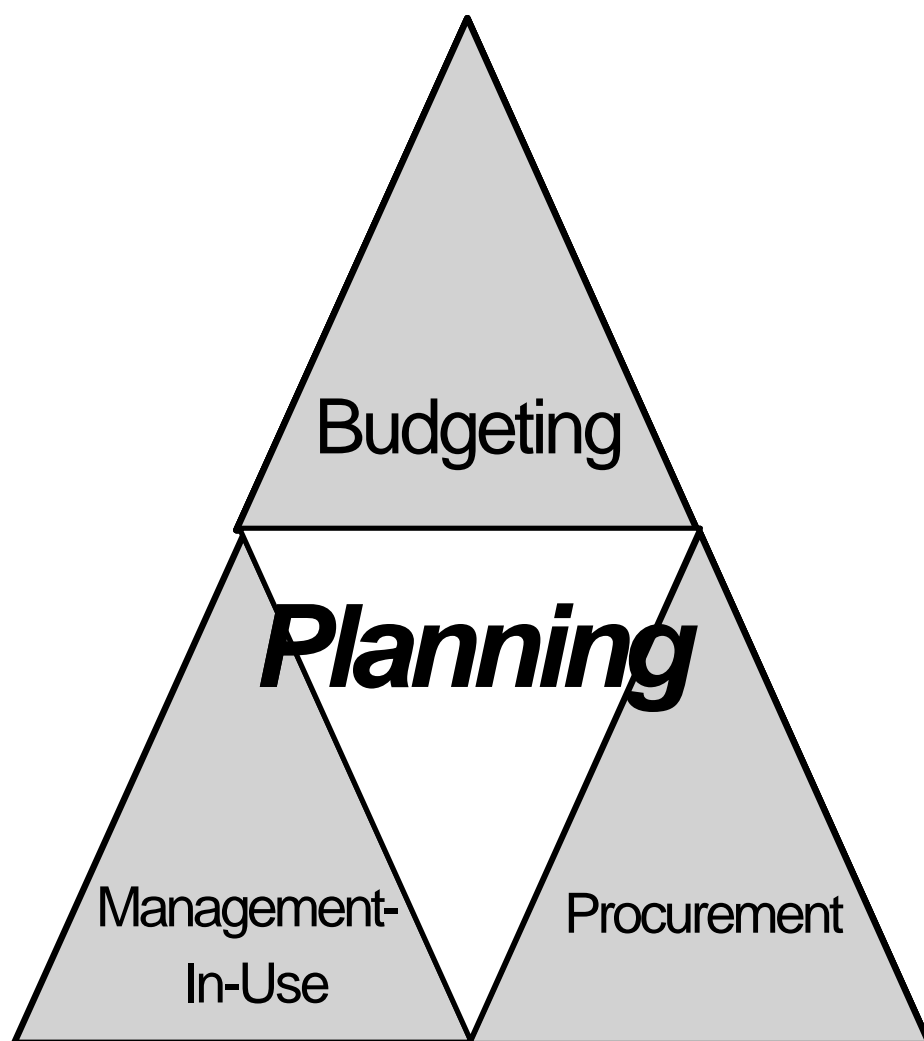


CAPITAL PROGRAMMING GUIDE

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

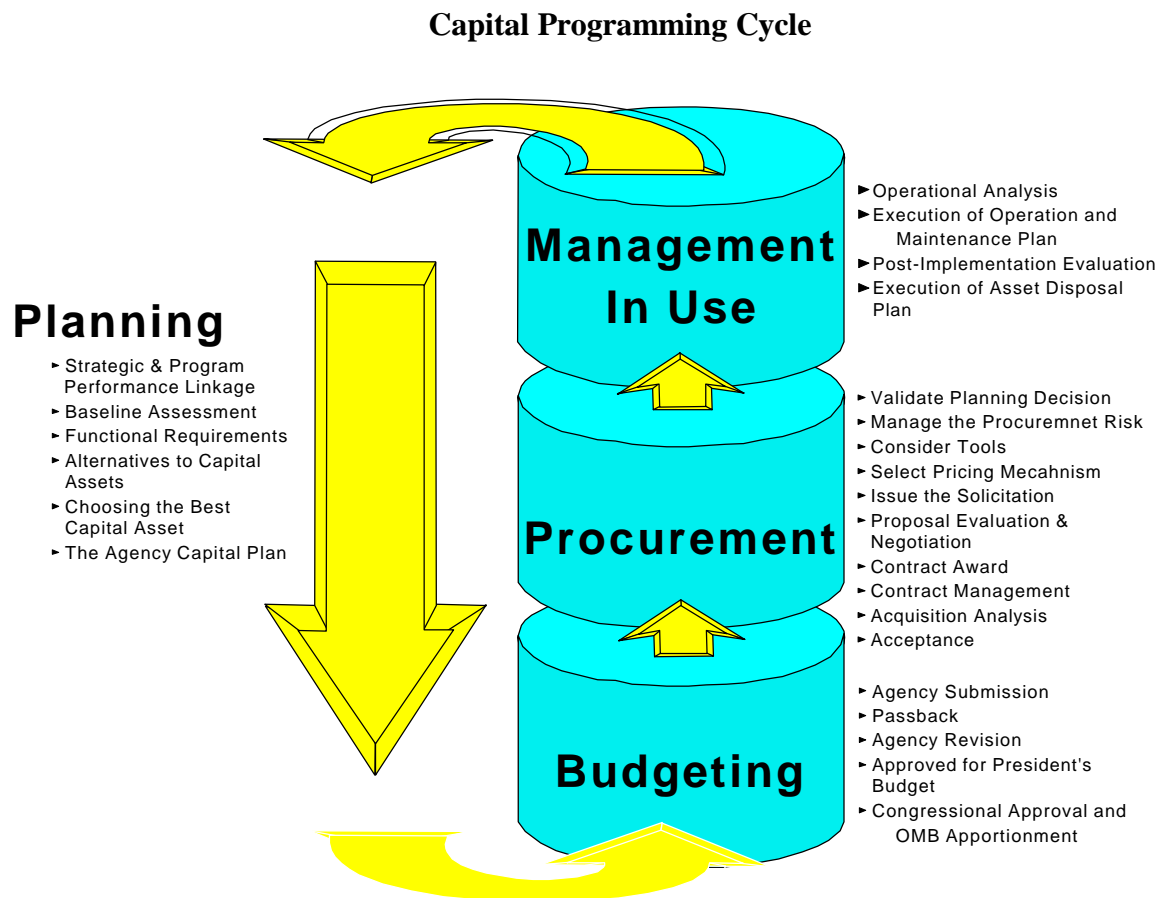
Step IV.1. Operational Analysis. Operational analysis involves the collection of information concerning a capital asset's performance and the comparison of this performance with an established baseline. Asset performance measures should include how well the asset supports customers and stakeholders and 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.

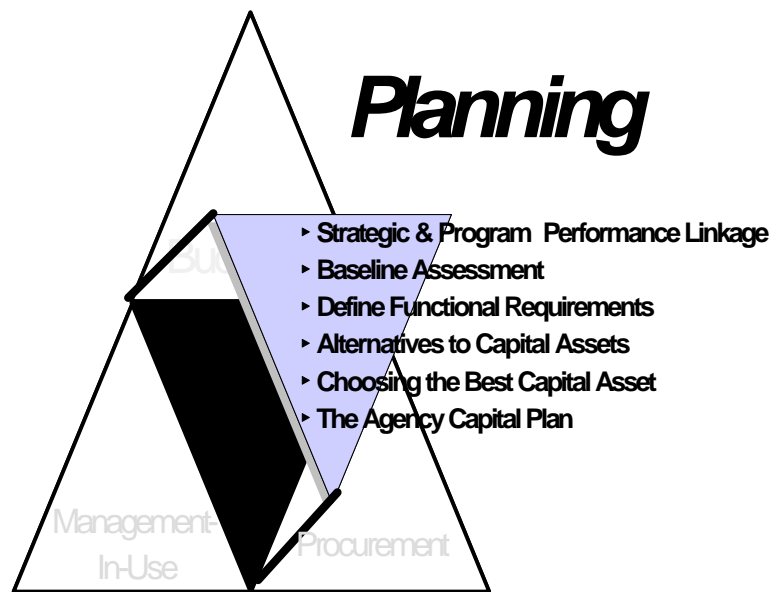
Step IV.4. Execution of Asset Disposal Plan. Disposal of an asset is typically the end of the asset's life cycle, and represents the culmination of the processes discussed earlier in this Guide. Issues to be considered include the action required to remove the asset from service, planning for transition 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.

Functional requirements should not

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

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- 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

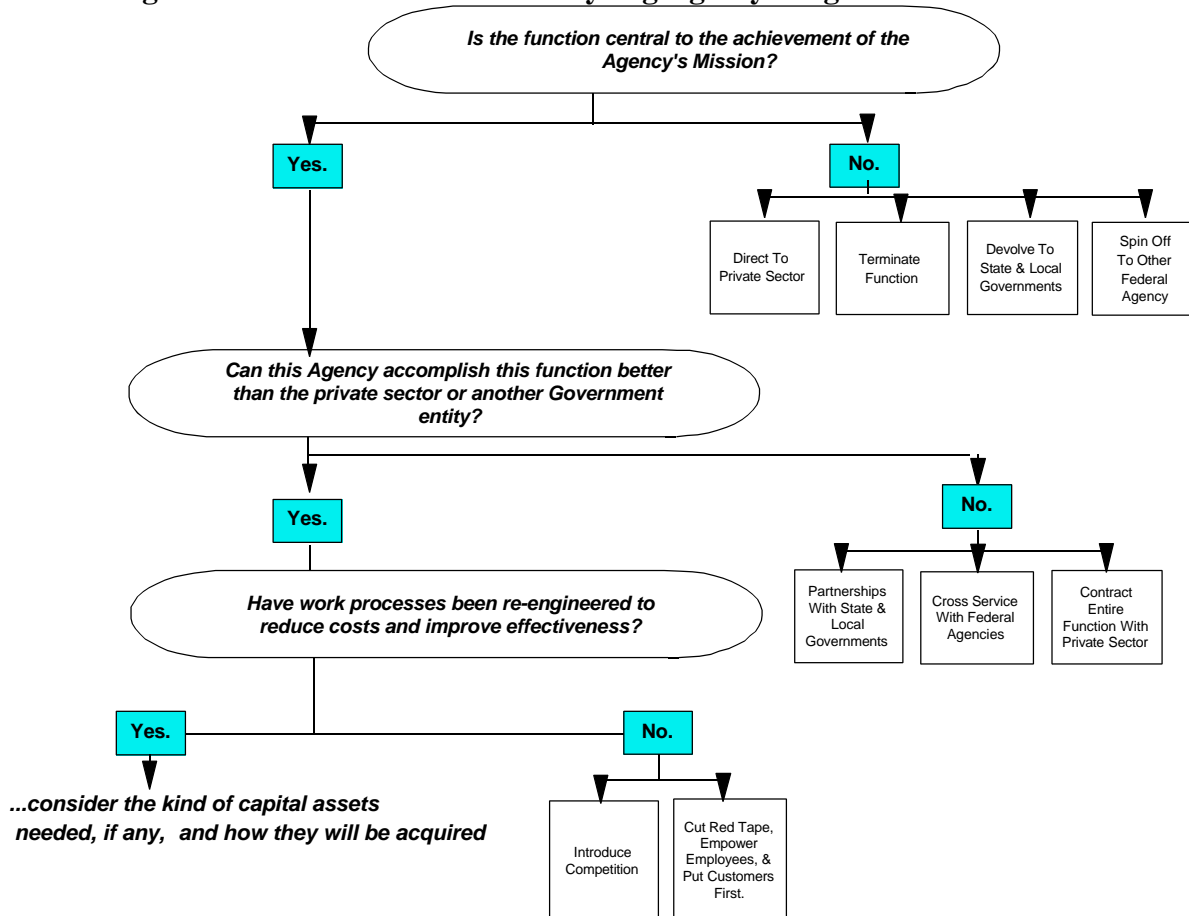
With detailed requirements defined, management should answer the *Three Pesky Questions* before planning to acquire capital assets. These questions, which should have been raised during the strategic planning process, are drawn from the *Principles of Budgeting for Capital Asset Acquisitions* (see Appendix 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 -7ive Revs t (n De(As nagemostAgime re(Fignce)Tj ET EMC /P <</M8ID



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.

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

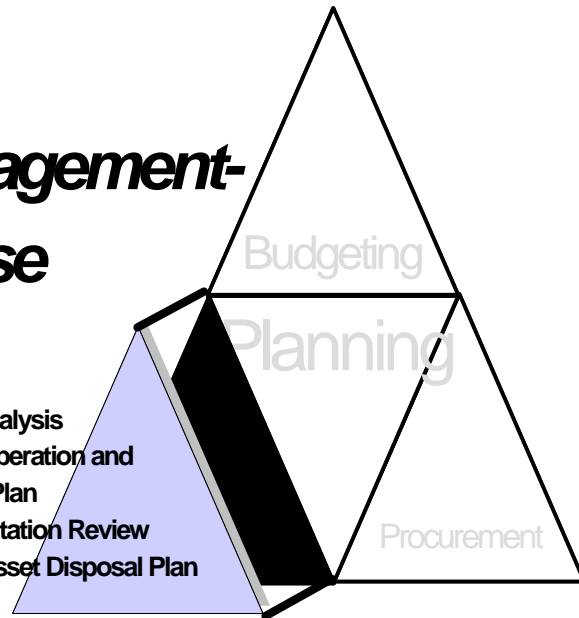
Agencies should establish a system to measure the performance and cost of an operational asset against the baseline established in the Planning Phase. The tracking method is called operational analysis. This information will allow agency resource managers to

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:

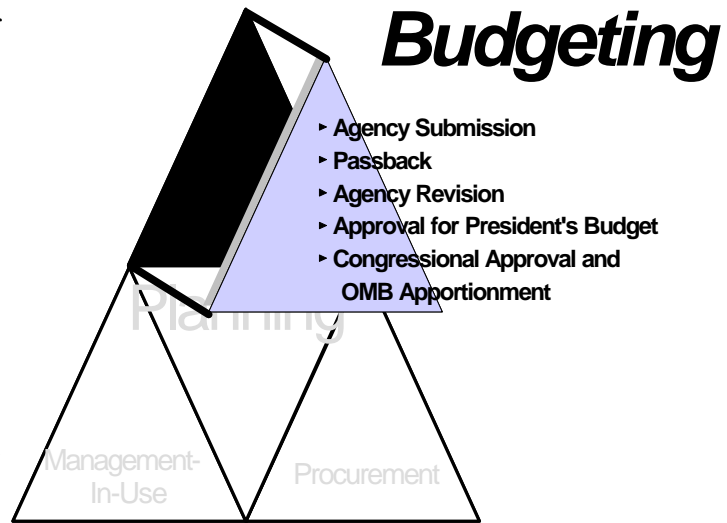
- converting data from the old system to the new;
- operating both the old and new systems concurrently;
- validating that the new system has converted old data properly;
- ensuring users are trained on the new equipment and software;
- keeping the customers informed of transition progress; and
- outlining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

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.



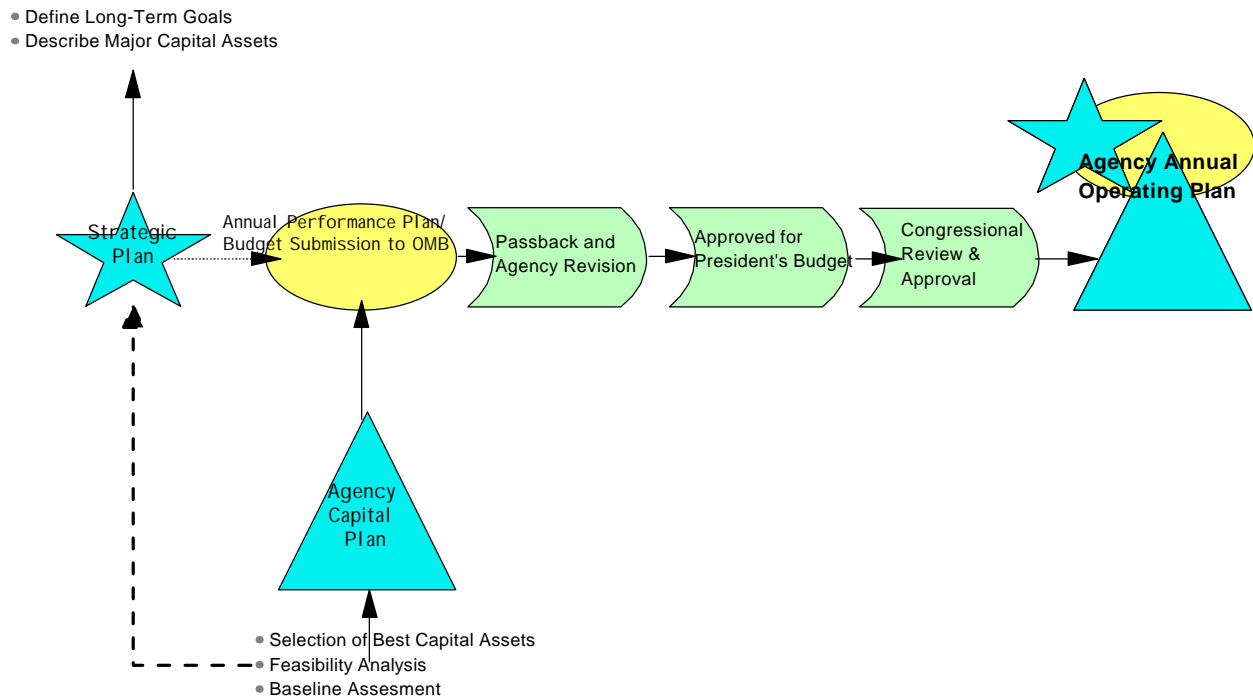
Planning, budgeting, and other Phases should be well integrated, with information from one phase causing periodic reviews of the other. For example, information in the Budgeting Phase that the full agency request will not be approved should cause agencies to change the project's cost, schedule, or performance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

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.