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EXECUTIVE GUIDE

Leading Practices in Capital Decision-Making

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Preface

Federal government spending on major physical capital investments is projected to total over $68 billion in fiscal year 1999. While federal agencies historically make large numbers of capital acquisitions annually, past management problems and years of budget restraint have led to an increased focus on strengthening capital decision-making and management. To enhance the effectiveness of federal investments in capital assets, the Office of Management and Budget (OMB) and the General Accounting Office (GAO) have been working to promote improvements in decision-making practices to ensure that the purchase of new assets and infrastructure will have the highest and most efficient returns to the taxpayer and to the government and that existing assets will be adequately repaired and maintained.

In July 1997, OMB issued the Capital Programming Guide—a supplement to OMB Circular A-11—which provides detailed guidance to federal agencies on planning, budgeting, acquisition, and management of capital assets. This guidance ranges from information on linking capital decisions to strategic goals and objectives, to analyzing and ranking potential investments, to making informed decisions based on the full cost and risk of a project.

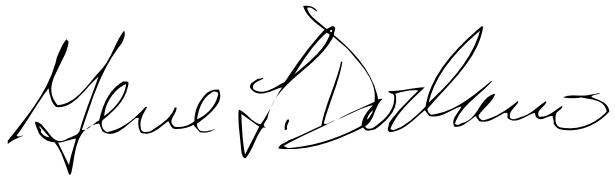
GAO participated in the development of the Capital Programming Guide and conducted extensive research to identify leading practices in capital decision-making used by state and local governments and private sector organizations. GAO has provided OMB with examples for inclusion in the second version of the Capital Programming Guide and has produced this executive guide based on these leading practice examples. This executive guide summarizes 12 fundamental practices that have been successfully implemented by organizations recognized for their outstanding capital decision-making practices. It also provides examples of leading practices from which the federal government may be able to draw lessons and ideas. In 1994-95, GAO also worked with OMB to produce guidance on evaluating information technology (IT) investments,[1] which are a form of capital asset. GAO produced a leading practices guide[2] in that instance as well and

[1]Evaluating Information Technology Investments: A Practical Guide, Office of Information and Regulatory Affairs, Information Policy and Technology Branch, Office of Management and Budget, November 1995.

[2]Executive Guide: Improving Mission Performance Through Strategic Information Management and Technology (GAO/AIMD-94-115, May 1994).

subsequently produced additional guidance on IT investments.[3] The guidance provided in the OMB Capital Programming Guide and in this GAO leading practices executive guide applies to all forms of capital investment, including IT investments, and should be used in conjunction with other GAO and OMB IT guidance. We would like to thank the Private Sector Council and the leading practice organizations we selected for our study, which are listed on pages 10 and 11, for providing us with information about their practices and assisting us in producing this executive guide. We would also like to thank the individuals who provided helpful comments on the exposure draft of this guide.[4]

This guide was prepared under the direction of Paul Posner, Director, Budget Issues. If you have questions or comments about the guide, he can be reached at (202) 512-9573. Other major contributors are listed in appendix I.



Gene L. Dodaro
Assistant Comptroller General
Accounting and Information Management Division

[3]Information Technology Investment: Agencies Can Improve Performance, Reduce Costs, and Minimize Risks (GAO/AIMD-96-64, September 30, 1996).

Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-making (GAO/AIMD-10.1.13, Version 1, February 1997).

Executive Guide: Measuring Performance and Demonstrating Results of Information Technology Investments (GAO/AIMD-98-89, March 1998).

[4]Executive Guide: Leading Practices in Capital Decision-Making, Exposure Draft (GAO/AIMD-98-110, April 1998).

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Abbreviations

BEST	Budget Evaluation Study Team
CEC	Corporate Executive Council
CEO	Chief Executive Officer
CIO	Chief Information Officer
DOT	department of transportation
FASA	Federal Acquisition Streamlining Act
GAO	General Accounting Office
IT	information technology
OMB	Office of Management and Budget
ROI	return on the investment

Introduction

The Congress, the Office of Management and Budget (OMB), and GAO have identified the need to improve federal decision-making regarding capital acquisition and management. GAO's past work has identified a variety of federal capital projects where acquisitions have yielded poor results—costing more than anticipated, falling behind schedule, and failing to fully meet mission needs and goals. The Congress has expressed concern regarding the management of information technology projects, the federal acquisition process, and the collection of information pertaining to deferred maintenance on capital assets.[1] OMB also has noted a lack of a clear sense of mission for many programs, insufficient consideration of life-cycle costs, and failure to analyze and manage the risk inherent in capital asset acquisitions. Recent OMB guidance is attempting to fill these gaps, but guidance on project analysis, selection, tracking and evaluation historically has not been provided on a governmentwide basis, and agencies have not always developed overall goals and strategies for implementing capital investment decisions. Nor has the federal government generally planned or budgeted for capital assets over the long term.

In fiscal year 1997 alone, the federal government spent a reported $72.2 billion, which was equal to 4.5 percent of total outlays, on direct major physical capital investment. This does not include grants to state and local governments for highways, environment and other infrastructure projects. Of this, the largest portion, a reported $52.4 billion, was spent on defense-related capital assets, while a reported $19.7 billion was spent for nondefense capital assets. Direct physical investment for nondefense assets includes outlays for water, power, and natural resource projects; construction and rehabilitation of Postal Service facilities and veterans hospitals; major equipment; facilities for space and science programs; the air traffic control system; and information technology. In fiscal year 1998, the President's budget estimates that spending for direct physical capital investments will decrease to $64.1 billion, and in fiscal year 1999 it will increase slightly to about $68.6 billion. With federal agencies facing increasing demands to improve performance and with continuing tight budgets, the importance of making the most effective capital acquisition choices, implementing those choices well, and maintaining these acquisitions over the long term will intensify. While capital decision-making involves the leadership of the executive branch and the Congress, who must weigh a range of options as competing priorities,

[1]Statement of Federal Financial Accounting Standards No. 6 defines deferred maintenance as "maintenance that was not performed when it should have been or was scheduled to be and which, therefore, is put off or delayed for a future period."

federal agencies have an essential role to play in managing the capital decision-making process and ensuring that informed choices are made.

A number of laws enacted in this decade are beginning to propel agencies toward improving their capital decision-making practices. The Congress enacted the Federal Acquisition Streamlining Act of 1994 (FASA) to improve the federal acquisition process. Title V of FASA was designed to foster the development of (1) measurable cost, schedule, and performance goals and (2) incentives for acquisition personnel to reach these goals. Civilian and Department of Defense agencies are required to report annually on whether major and nonmajor programs are achieving 90 percent of program goals and to identify suitable action if goals are not being met. The Congress enacted the Clinger-Cohen Act in 1996 to improve the implementation and management of information technology projects by requiring that agencies engage in capital planning and performance and results-based management. The Government Performance and Results Act of 1993 (the Results Act) requires agencies to develop mission statements, long-range strategic goals and objectives, and annual performance plans. It also emphasizes identifying and measuring outcomes, including benefits. To help agencies integrate and implement these various requirements, OMB has added a new section to its annual budget preparation guidance (Circular A-11) requiring agencies to provide information about their major capital acquisitions and to submit a "capital asset plan and justification." This guidance is supplemented by OMB's Capital Programming Guide, which provides detailed steps on planning, budgeting, acquiring, and managing capital assets. Circular A-11 also includes guidance to agencies on linking annual performance plans to capital planning efforts.

In its Capital Programming Guide, OMB encourages federal agencies to develop long-term "agency capital plans" as part of their capital planning process and to use these plans to develop a summary for their budget justifications, for congressional authorizations, and for justifications for appropriations to the Congress. Agencies will give greater attention to the quality of these plans if they view them as being important to decisionmakers. If oversight and appropriation committees use an agency capital plan when reviewing requests for capital, these committees will then have the opportunity to assess whether agencies are incorporating the aforementioned requirements into their capital planning process.

Objectives, Scope, and Methodology

The objectives of our research were to (1) identify which government and private sector organizations are recognized for their outstanding capital decision-making practices and (2) identify and describe leading capital decision-making practices that have been implemented by these organizations.

In order to identify organizations that might exhibit leading practices in capital decision-making, we asked experts in the fields of capital planning and decision-making to help us identify which government and private sector organizations are recognized for their outstanding capital decision-making practices. Our contacts included the Private Sector Council, the Consortium for Advanced Manufacturing International, the Financial Executives Institute, the Institute of Management Accountants, the National Association of State Budget Officers, the Government Finance Officers Association, the National Governors Association, the U.S. Advisory Commission on Intergovernmental Relations,[2] and academic experts. We researched literature, including textbooks, professional journals, academic articles, and financial reports, to obtain information on organizations suggested by these experts. We also used Financial World's "State of the States: 1995" and "The State of the Cities: 1995" reports to help us in our selection of leading state and local government capital decision-making practices.

Based on our literature searches and discussions with experts, we developed criteria for the actual selection of leading organizations. Criteria included recognition by experts and academics as being leading organizations in the field; receipt of awards for capital planning or elements of quality; references as outstanding in multiple sources of information; and superior financial performance. Based on these criteria, we selected the following organizations:

- State of Maryland
- State of Minnesota
- State of Missouri
- State of Virginia
- State of Washington
- Dayton, Ohio
- Montgomery County, Maryland
- Phoenix, Arizona
- Ford Motor Company
- General Electric

[2]The Advisory Commission on Intergovernmental Relations is no longer in existence.

- Mobil Corporation
- Texas Instruments

We also selected one federal agency, the U.S. Coast Guard, with which to discuss the applicability of the examples identified at private, state, and local organizations to the federal government's capital decision-making experiences. We selected the Coast Guard because it makes relatively large amounts of capital purchases on a recurring basis and because of on-going and recent GAO work pertaining to the Coast Guard's budgeting and capital acquisitions processes on which we could build. We did not assess the quality of the Coast Guard's planning, budgeting, and acquisition processes. Coast Guard personnel volunteered their time and effort to assist GAO with this project.

We developed a series of interview questions pertaining to planning, budgeting, acquisition, management, and evaluation of capital. Representatives of the Mead and Xerox Corporations, in their capacity as Private Sector Council members, reviewed our methodology, case study selections, and initial findings. They also provided us information on their capital decision-making practices.

We conducted site visits at each of the leading organizations and interviewed senior officials about the organization's capital decision-making practices. In the organizations we studied, capital assets included buildings, equipment, land, roads, bridges, and, in some cases, information technology. Many entities consider IT to be an operating expense and thus do not consider it in their capital decision-making process. We relied on the organizations to describe their processes to us. We did not verify the accuracy of their statements but, wherever possible, we obtained documentation describing the processes and results. The documentation we obtained was consistent with the statements made by each of the organizations.

Based on the interviews and documentation obtained from our site visits, we compared practices across the organizations and identified innovative practices used by individual organizations as well as approaches and elements that were common across organizations. The leading organizations in our study have reviewed a draft of this guide and have verified that the case study examples are an accurate representation of their practices.

Members of the U.S. Coast Guard and the Private Sector Council have each reviewed two drafts of this document. Officials at OMB, as well as a representative of a leading academic organization, have also reviewed this guide, and we have incorporated their comments as appropriate. The guide was first issued as an exposure draft for comment in April 1998 and widely distributed to persons within and outside of government. Comments were received from 20 individuals between May 1998 and September 1998 and have been incorporated as appropriate. The comments primarily noted the usefulness of the guide and some suggested ways to clarify and/or strengthen points that it contained.

Both the OMB Capital Programming Guide and this executive guide stress the importance of linking resource requests to results-oriented capital strategies that are rooted in sound and thorough planning. Both guides include the following concepts:

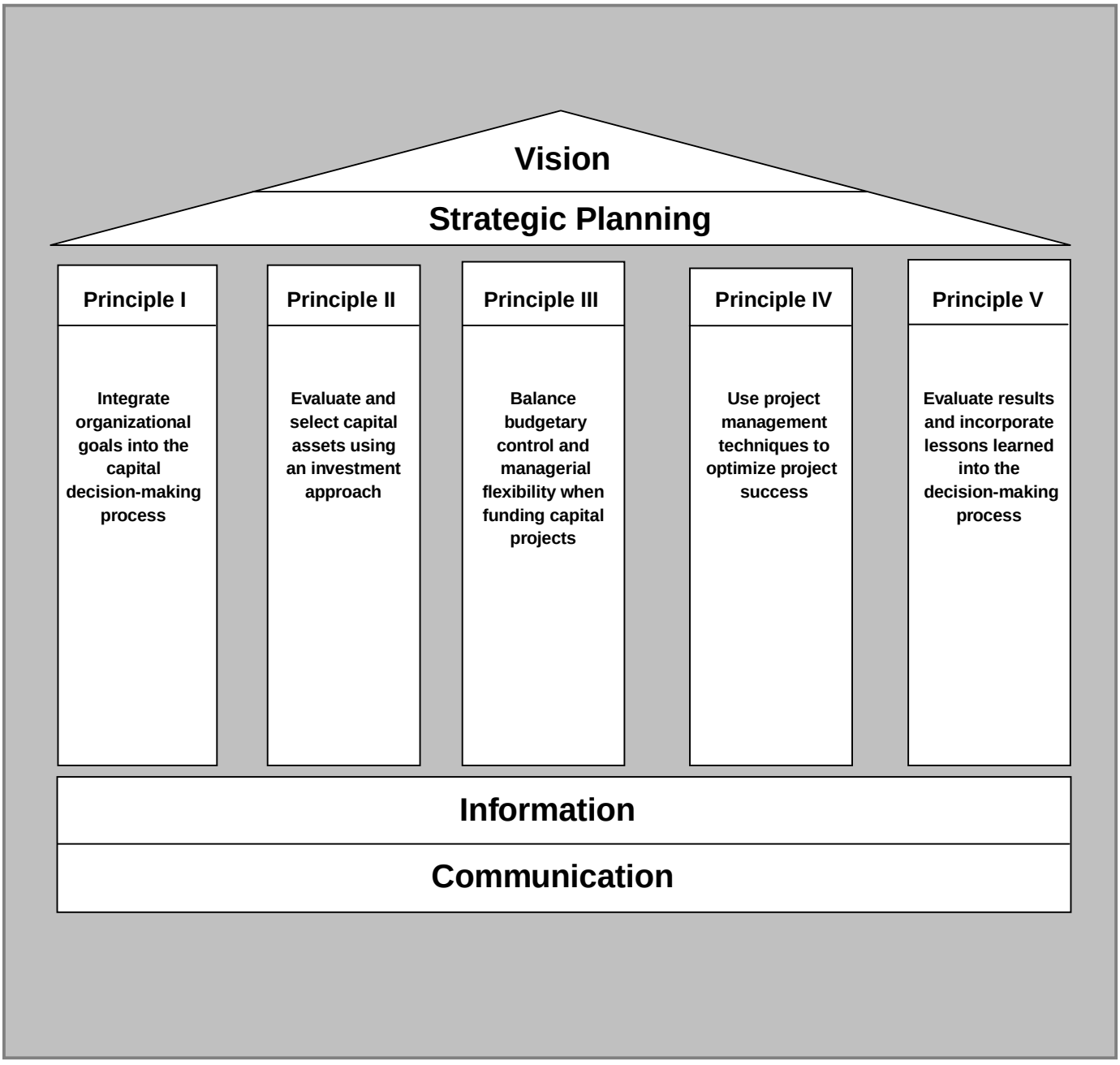
- determining the gap between the capacity of current assets and planned results;
- evaluating alternative approaches to achieving results;
- assessing investments as a portfolio;
- using executive review committees to make selections;
- developing measurable goals and performance measures;
- forming integrated project teams;
- funding in useful segments;
- tracking project cost, schedule, and performance;
- developing a long-term capital plan; and
- conducting postimplementation reviews.

The examples provided in this executive guide can be used to illustrate these concepts as they are discussed in the OMB Capital Programming Guide.

The Capital Decision-Making Framework

This executive guide identifies organizational attributes that are important to the capital decision-making process as a whole, as well as capital decision-making principles and practices used by outstanding state and local governments and private sector organizations. Figure 1 illustrates how these attributes and principles fit together. The executive guide also includes information from one federal agency, which helped us in considering the applicability of our findings to the federal government experience. Although this executive guide focuses on fundamental practices rather than detailed guidance, the examples illustrate and complement many of the phases and specific steps contained in the OMB Capital Programming Guide.

Figure 1: The Capital Decision-Making Framework



Based on our interviews with leading organizations, we found that the principles and related practice areas are most effective when reinforced by four important success factors. These factors are vision, strategic planning, the availability of good information, and communication.

Vision

Vision and leadership are crucial to the success of leading organizations—not only for capital planning and decision-making, but for all aspects of the organization's activities. Leaders define the mission of the organization and identify new directions, strategies, and priorities. In leading organizations—including state governments—chief executives set goals and priorities for the organization or state as a whole based on the mission they have defined for the organization. They then determine which areas and, in some cases, which specific projects should receive increased emphasis and funding and which areas should remain stable or receive reduced emphasis. Subunits within the organization know why they have been allocated a certain level of funding and where their unit fits within the overall plan for the organization.

Setting goals and priorities for the organization as a whole is an essential first step in developing the long-range strategy for the organization. Top-level officials in the private sector determine which areas of the organization will be targeted for growth and where they may expect to receive increased returns. In the public sector, the state governor or legislature, or agency head, determines which areas should be targeted for reengineering and expected savings. Greater resources will then be devoted to these targeted areas, while other areas of the organization know that they are not one of these priority areas. Units within the organization or individual state agencies then develop their strategic plans accordingly.

In the federal arena, the President and the Congress articulate the goals and priorities for the country as a whole, reflecting the views of the citizens who elected them. The President's budget reflects the President's priorities and view of the nation. In contrast to the hierarchy of the executive branch, the Congress is a group of peers representing diverse interests and concerns, and its spending and revenue decisions incorporate the priorities and vision of the 535 congressional members. Appropriations and other spending laws, which are passed by the Congress and signed by the President, reflect the agreements within the Congress and between the two branches of government and represent the goals and priorities of the government as a whole. These goals and

priorities are the starting point for the planning process, and agencies should ensure that selected projects will meet these goals and produce expected benefits.

Strategic Planning

In successful organizations, strategic planning guides the decision-making process for all spending. Strategic planning can be defined as a structured process through which an organization translates a vision and makes fundamental decisions that shape and guide what the organization is and what it does. Leading organizations also use their strategic planning process to assess (1) the needs of their clients and constituents and (2) the political and economic environment in which they are operating. A strategic plan defines an organization's general goals and objectives, while an annual performance plan describes in greater detail the specific processes, technologies, and types of resources, including capital, that are needed to achieve the performance goals. Leading organizations use their strategic planning process to link the expected outcomes of projects, including capital projects, to the organization's overall strategic goals and objectives.

In the federal arena, the Results Act focuses on the results of activities as opposed to the activities themselves and requires federal agencies to establish strategic plans that include the following elements: (1) a mission statement, (2) agencywide goals and objectives, (3) a description of how the goals are to be achieved, (4) a description of the relationship between long-term goals and objectives and annual performance goals, (5) an identification of key factors external to the agency that could significantly affect the achievement of its goals and objectives, and (6) a description of the program evaluation used to establish or revise agency goals and objectives. The Results Act provides the underpinnings for agencies to develop comprehensive and effective plans for all activities, including capital investments. It can also facilitate communication within the agency itself as well as between the agency and its external clients.

Good Information and Data Systems

Officials at leading entities stated that good data and information systems, in addition to effective information control systems, are essential to supporting sound capital planning and decision-making. To make informed capital resource allocation decisions, information and feedback on asset performance, condition, cost of programs, and operations are critical.

Leading organizations maintain asset and facility inventory systems that include the current condition of existing capital assets. The asset condition information is used to calculate deferred maintenance needs and costs and to make decisions about the allocation of maintenance and repair funds to agencies. Information about existing assets is also used in determining what capital resources are currently available and what resources are needed in order for the organization to be able to meet its goals and objectives. The data and information provided by well planned information systems give organizations the ability to build comprehensive measures, collect relevant data, and perform analyses which can be used to support strategic as well as operational budgeting decisions.

Communication

In leading organizations, clear communication of an organization's vision and strategic goals is also a prerequisite for success. Goals are unlikely to be achieved unless the entire organization knows and understands what they are. In leading organizations, the vision and goals of top-level officials are communicated down to all levels of the organization, and communication from lower levels feeds back up to top management. Individuals involved in the capital decision-making process know what outcomes and results are expected of them and thus projects are selected, designed, and implemented to contribute to the achievement of the organization's strategic goals. For example, top-level officials develop the organization's priorities and financial targets based on the leadership's vision and communicate them downward to subunits within the organization. Based on these goals and targets, managers at all levels work to produce plans and capital initiatives that outline their individual strategies for achieving top-level goals. These managers know the priorities of the organization and how their units are expected to contribute to the organization's success. Organizationwide measures are also translated to subunits within the organization and are ultimately used to measure the performance of individual projects and employees.

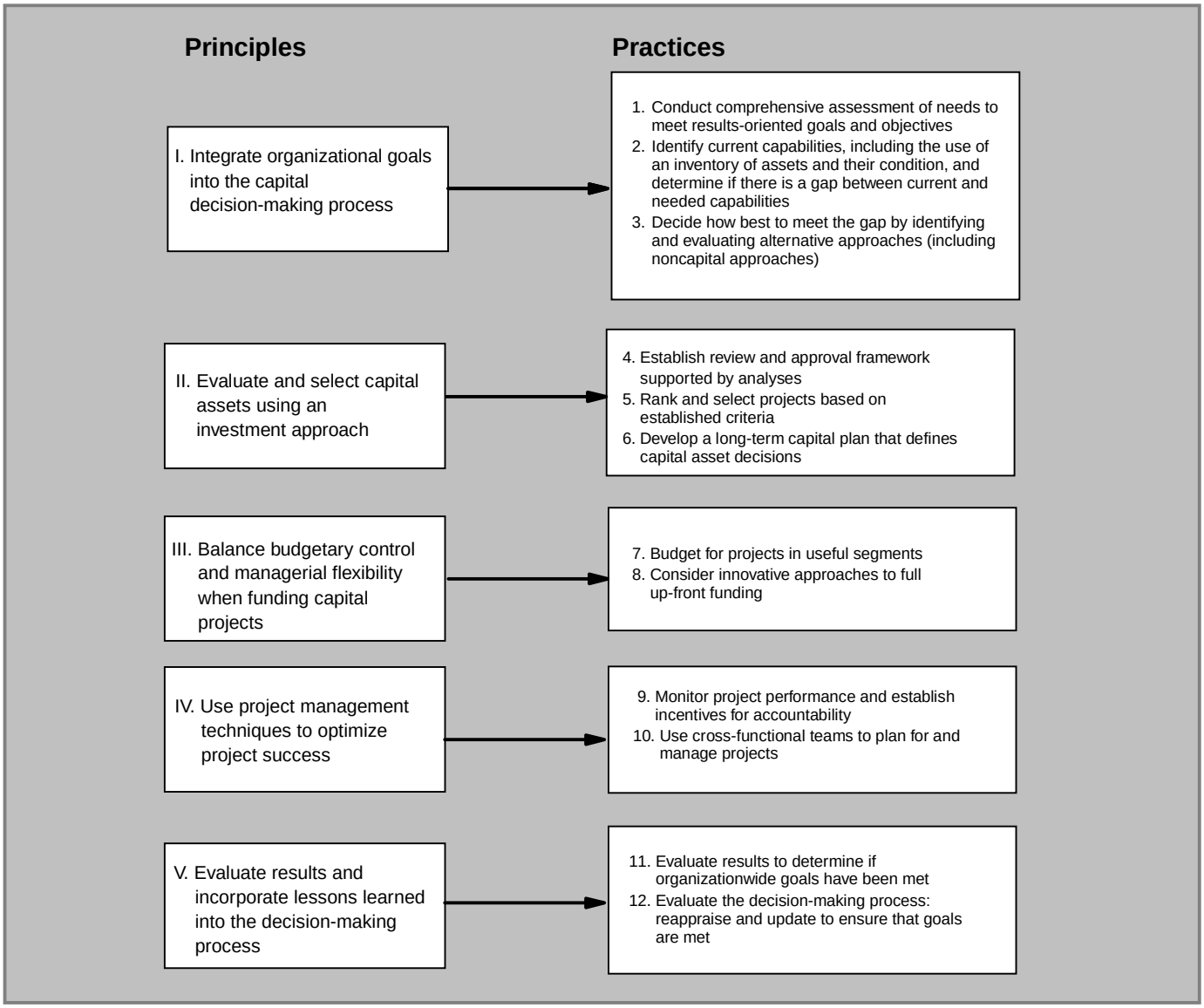
Principles and Practices

From these critical success factors, we distilled five general principles that leading organizations used to make capital investment decisions. These principles are (1) integrate organizational goals into the capital decision-making process, (2) evaluate and select capital assets using an investment approach, (3) balance budgetary control and managerial flexibility when funding capital projects, (4) use project management techniques to optimize project success, and (5) evaluate results and incorporate lessons learned into the decision-making process. To provide

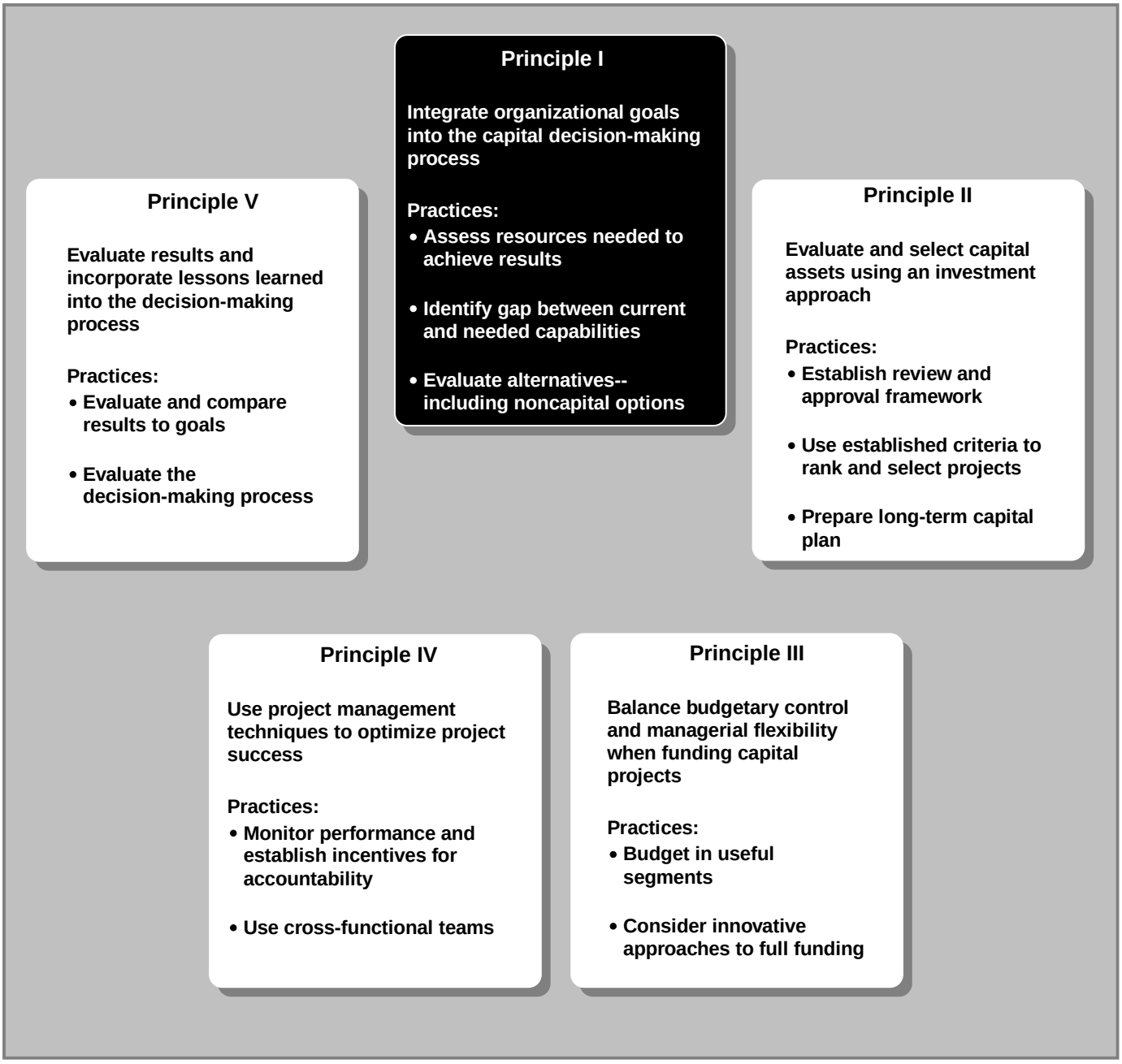
more concrete examples of how agencies and the Congress can apply these principles, we identified practices used by the leading organizations which best demonstrate each principle.

This guide is composed of five principles divided into 12 practices, as illustrated in figure 2.

Figure 2: Principles and Practices



Integrate Organizational Goals Into the Capital Decision-Making Process



- Assess resources needed to achieve results
- Identify gap between current and needed capabilities
- Evaluate alternatives--including noncapital options

Leading organizations begin the capital decision-making process by defining the organization's overall mission in comprehensive terms and results-oriented goals and objectives. This enables managers to identify the resources needed to satisfy the organization's program requirements based on the program's goals and objectives. To do this, an organization must have identified its mission and goals through a strategic planning process. To assist with identifying any gap between an organization's resource needs and its existing capital capabilities, leading organizations maintain systems that capture and report information on existing assets and facilities. This information is frequently updated and accessible to decisionmakers when needed. Leading organizations also consider a full range of possible ways to achieve the organization's goals and objectives, including examining both capital and noncapital alternatives.

Practice 1: Conduct Comprehensive Assessment of Needs to Meet Mission and Results-Oriented Goals and Objectives

Conducting a comprehensive needs assessment or analysis of program requirements is an important first step in an organization's capital decision-making process. A comprehensive needs assessment considers an organization's overall mission and identifies the resources needed to fulfill both immediate requirements and anticipated future needs based on the results-oriented goals and objectives that flow from the organization's mission.

Many leading organizations we studied conduct a comprehensive needs assessment to identify and document needed resources. This process is variously referred to as needs determination, needs study, or mission analysis and is often the first step in an organization's capital planning and budgeting process. To begin the needs assessment process, leading organizations assess the extent to which stated goals and objectives are aligned with the organization's mission. Results-oriented goals and objectives outline how the organization intends to fulfill its mission. The goals describe, in general terms, the organization's policy intent and define its direction, while objectives serve to move the organization from broad

general goals to specific, quantifiable results and time-based statements of what the organization expects to accomplish. The needs assessment is results-oriented in that it determines what is needed to obtain specific outcomes rather than what is needed to maintain or expand existing capital stock. The focus placed on results drives the selection of alternative ways to fulfill a program's requirements.

When conducting a needs assessment, leading organizations assess internal and external environments. They examine the organization's primary role and purpose, its organizational structure, its inherent characteristics including strengths and weaknesses, and its current activities and how they are accomplished. They also examine external factors that affect or influence the organization's operations, such as existing and potential future mandates and the expectations of its customer groups. Leading organizations also define the period of time a needs assessment should cover and how often it is to be updated. In organizations we studied, assessments usually cover a 5- or 6-year period into the future and are updated frequently as part of the organization's budget cycle. Some organizations establish dedicated management teams to conduct the needs assessment.

The federal agency we studied, the U.S. Coast Guard, goes through an analogous process. It conducts a comprehensive needs assessment through what it calls its mission analysis process. Mission analysis is the starting point for determining the resources needed to fulfill the agency's mission and satisfy its requirements. This agency is very capital intensive and, according to agency officials, many of its cornerstone assets purchased in the 1960s and 1970s are deteriorating and need replacement. Until recently, agency managers mostly replaced existing assets on a one-for-one basis without looking at alternatives. Budget pressures and recent requirements to improve performance have driven the agency to make significant changes in its capital planning process. This process, which the agency describes as "requirements driven," is similar to those described by other leading organizations we studied. Agency managers now look at the agency's mission and its goals, analyze the gaps between its needs and what currently exists, and consider alternative ways to fill these gaps. Agency officials say that mission analysis is an ongoing process that validates existing inventory and aids in analyzing options to satisfy capital needs, such as modifying an existing asset. Mission analysis is based on broad functional capabilities. For example, some of the functions which the agency must be capable of performing are search-and-rescue activities 100 to 200 miles offshore, transporting

persons, and communicating efficiently among all of its operational units. These broad functions drive the mission analysis rather than analyses of each individual program's or facility's needs. Although the mission analysis process has not been completed for all of the agency's functions, the agency has determined that it can reduce the number of assets needed to support one of its critical functions. As a result of mission analysis, technological changes, and other recent changes to its capital planning process, the agency was able to reduce the number of buoy cutters from 37 to 30 and thus reduce costs. Upon completion of the mission analysis process, a mission analysis report and mission needs statement are prepared. The approved mission needs statement must support the need for a project before the project can go on to the acquisition phase.

As described in the following case study (figure I.1), one state government in our study conducts a comprehensive issues and needs assessment as part of its performance budgeting process. The most recent assessment began with an examination of the state's core mission and internal and external factors affecting the state's operations. The assessment resulted in the identification of 99 programs and activities that could be privatized, reorganized, or in some cases, eliminated. See figure I.2 for a graphic depiction of this process.

Figure I.1: Case Study—Assessing Resources Needed to Meet Mission, Goals, and Objectives

One state government recently implemented a performance budgeting process that required each state agency to conduct an issues and needs assessment. The assessment was the first step in the budget development process for that budget cycle. The state's planning and budget department coordinated the issues and needs assessment, providing agencies with specific guidance and training and making budget analysts and managers available to answer questions. While various methods were used to conduct the individual assessments, the state required each agency to dedicate a management team to the effort and produce specific outcomes. For example, each agency was required to prepare an updated listing of its functional activities in priority order. Upon completion of the assessment, agency managers were required to formally present the assessment results to selected members of the governor's cabinet, staff from the governor's office, and the planning and budget department.

The management teams were directed to assess the full range of internal and external factors that affect their agency's operations. In doing so, they examined internal factors such as past agency accomplishments and areas for improvement, the agency's mission and primary activities, its organizational structure, agency strengths and weaknesses, and physical space needs and maintenance requirements. The external factors reviewed included major federal and state mandates, the governor's initiatives and priorities, and customer groups and their requirements.

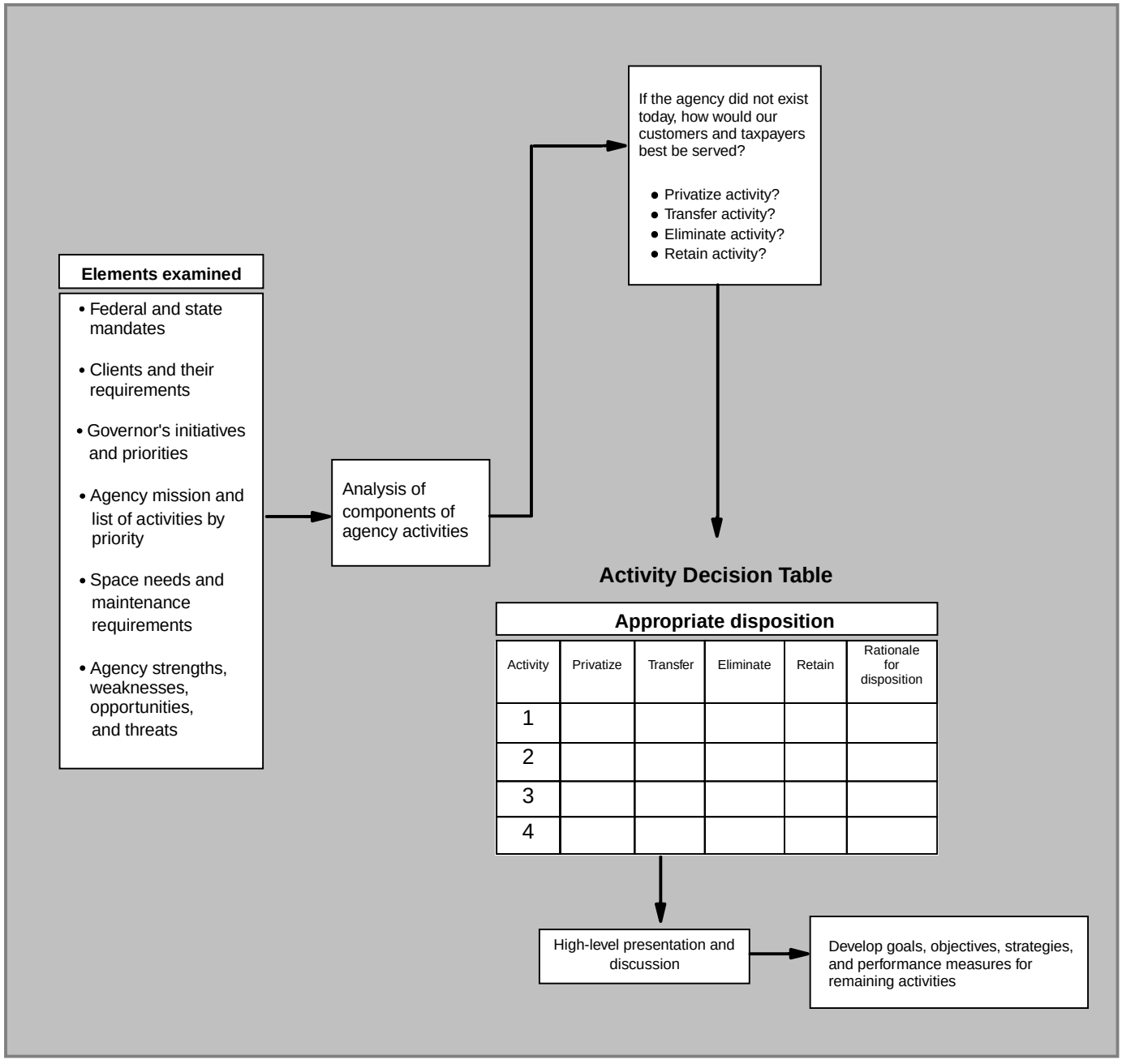
A thorough discussion of past agency accomplishments and of areas identified for improvement provided a useful starting point for conducting the needs assessment. A list of accomplishments was prepared and examined to decide which accomplishments were most significant. The management team then made a comparison of what the agency had planned to achieve at the start of the previous budget cycle and what was actually achieved, and the gaps were documented as areas for improvement. Agency managers reviewed the agency's mission statement focusing on its current purpose, why it exists, and the role that it fulfills within state government. The list of primary agency activities was also scrutinized to determine if modifications were needed, including a review of how the activities were being accomplished at that time. Examining the agency's organizational structure included assessing the impact of recently enacted budget and personnel policies and examining the agency's physical plant, including surveying space needs and current and future maintenance requirements.

To assess the agency's external environment, the management team began with a re-examination of the federal and state mandates resulting from various laws, regulations, and state policies. For each mandate, the team assessed the estimated cost associated with meeting the mandate and the benefits received by citizens. The team then identified the specific agency programs and activities that were critical to achieving the governor's initiatives and priorities. Finally, agency managers generated a list of the agency's primary customer groups, ranked the list in priority order, and evaluated how well the agency has done in serving its customer needs.

Information from the issues and needs assessment was used to proceed to the next step in the state's budget development process. This step required each agency to ask the question, If the agency did not exist today, how would our customers and taxpayers best be served? The possible responses to this question were: transfer the activity to another agency (indicating which agency), privatize the activity, or eliminate the activity. The management team was required to determine the five most viable candidates in each category. For each candidate, the cost savings, efficiency benefits, and restructuring opportunities, along with the economic, political, and social ramifications, were examined. This analysis resulted in 53 programs in 30 agencies being identified for privatization and 46 programs in 31 agencies identified for reorganization or right-sizing, including some elimination. These changes are expected to result in an estimated $105.9 million in budget savings. In addition, the Department of Transportation was able to privatize over $100 million in multi-year transportation road maintenance projects.

Using the information gathered from both the issues and needs assessment and the activity analysis, agencies were able to identify their needed resources, including capital requirements.

Figure I.2: Issues and Needs Assessment



Practice 2: Identify Current Capabilities, Including the Use of an Inventory of Assets and Their Condition, and Determine If There Is a Gap Between Current and Needed Capabilities

Leading organizations gather and track information that helps them identify the gap between what they have and what they need to fulfill their goals and objectives. To help assess current capabilities and establish a baseline, such organizations maintain systems that track the use and performance of existing assets and facilities. This is an area where current and accurate information is essential. Some functions performed by asset inventory and tracking systems include (1) identifying asset and facility location and status, (2) tracking and reporting asset and facility condition and deferred maintenance needs, and (3) tracking user satisfaction. Federal accounting standards now require agencies to report information on the deferred maintenance of federal assets. A critical step in making deferred maintenance estimates is taking a complete and reliable inventory of capital assets as a basis for assessing maintenance needs.

The organizations we studied use a variety of automated systems that provide decisionmakers with information needed to assess the availability and condition of assets and facilities. Asset and facility inventory systems are maintained and frequently updated to provide managers with timely, current, and useful information with which the managers can determine the status of assets under their control. Some organizations maintain inventory systems that also capture data used to track asset and facility maintenance needs, while other organizations maintain separate automated systems for this purpose. For example, one state government we studied maintains an inventory system that includes not only the list of capital assets but also each asset's current condition. Asset condition information from this database is used in making decisions about the allocation of maintenance and repair funds to agencies. In contrast, a local government we studied maintains both an inventory system and a separate database of deferred maintenance needs. The different approaches used by these governments have both proven to be effective in providing the necessary information to decisionmakers.

Routinely assessing the condition of assets and facilities allows managers and other decisionmakers to evaluate the capabilities of current assets, plan for future asset replacements, and calculate the cost of deferred maintenance. Leading organizations evaluate the performance of assets and facilities as well as the physical condition of assets. One state government we studied maintains a computerized inventory of state buildings and requires agencies to complete a structured audit survey—assessing both the physical condition of state buildings and the physical condition and performance of the assets within the building. The survey data are used to determine whether existing facilities can be

modified to satisfy capital requests. This state also uses survey data to calculate its unfunded deferred maintenance and "deferred renewal" costs. With such costs conservatively estimated at $1.5 billion, the state recently implemented a new program to manage these costs and has designated a specific budget account to accumulate and disburse funds earmarked to reduce what the state considers to be an unfunded liability. Another state government we studied has created a maintenance reserve fund to finance and increase management attention to its maintenance needs. Voters in this state passed a constitutional amendment to ensure that adequate funds are set aside for maintenance, repair, and renovation of state facilities.

Leading organizations also stress the importance of having qualified personnel with a strong working knowledge of the asset or facility perform asset condition assessments. For example, one state government we studied recommends that agencies use a building's facility manager, plant engineer, or maintenance personnel to assess the building's condition. Officials believe that facility condition information obtained from persons most familiar with the facility is more accurate and complete. In addition, facility managers are able to provide a more detailed history of the facility and its components.

By comparing the organization's resource needs information with data on current asset capabilities, leading organizations identify any gaps between what is needed to fulfill their objectives and what resources are currently available. Figure I.3 describes the systems used by one state government to track its assets and assess current capabilities.

Figure I.3: Case Study—Identify Current Capabilities and Determine Any Gap Between Current and Needed Capabilities

One large state government maintains three levels of inventory systems to identify and control its capital assets and facilities: a statewide inventory, individual agency inventories, and an inventory of deferred maintenance. The state also requires routine asset and facility condition assessments and uses the resulting information to track deferred maintenance needs and budget for repair and replacement costs.

The statewide inventory is maintained through the state's fixed asset accounting and control system. This database of capital assets is updated at least annually to reflect new assets acquired and old assets disposed of. It includes information such as the cost or value of an asset, its estimated useful life, and depreciation. Reports generated by the statewide inventory system identify assets within an agency that are available for use by other departments or divisions and surplus assets within the state that may be available for any agency. Individual agency inventory systems supplement the statewide inventory to provide a complete listing. State agencies are required to include in the statewide inventory all assets with a historical cost or value of $5,000 or more. Agencies have the discretion to include assets valued at less than $5,000 in the statewide inventory or develop their own tracking and control system. Some agency inventory systems also contain asset condition assessment information in addition to data on asset existence. Using information from these inventory systems, agency managers can identify capital assets and facilities that are aging and that may require maintenance, upgrade, or replacement in the near term or in the future.

Some agency managers assess the condition of their capital assets and facilities annually, while other agencies perform this assessment at a minimum of every 2 years. Agencies include information from asset condition assessments when submitting their capital project requests to the state's planning and budget department. When requesting funding for new assets or facilities, agency managers must fully describe the agency's current assets and facilities, including information on the adequacy of existing assets and facilities to meet current and future program demands. Supporting information includes age and condition of the current asset or facility, an analysis of staff hours invested annually in repairs, interruptions or backlogs of services caused by aging or inadequate assets, and any health and safety code violations. Information from capital inventory systems and condition assessments is useful to agency managers because it provides the basis on which to plan for future asset replacements.

Information from the inventories and condition assessments is also used to update an agency's maintenance reserve plan, a process that began in the early 1980s and is unique to this state government. Each agency is required to submit a plan to the state's planning and budget department showing all assets and facilities that require maintenance during the upcoming 6 years. Agencies are required to update their maintenance reserve plans biennially as part of the budget process. The planning and budget department bases its maintenance reserve funding recommendations on the biennial update of the agency's maintenance reserve plan. The maintenance reserve plan also serves as an inventory of deferred maintenance projects. According to state officials, maintenance of capital assets and facilities is the state's first priority--before acquisition or construction of new assets--and the maintenance reserve process enables the state to identify high cost maintenance requirements, group similar needs as umbrella projects, and budget for such projects as capital items rather than relying on operating budget funds for this purpose. At the end of the fiscal year, agencies are required to report to the planning and budget department on the manner in which they have used their maintenance reserve allocations and on the completed projects.

Practice 3: Decide How Best to Meet the Gap by Identifying and Evaluating Alternative Approaches (Including Noncapital Approaches)

Leading organizations consider a wide range of alternatives to satisfy their needs, including noncapital alternatives, before choosing to purchase or construct a capital asset or facility. Managers carefully consider options such as contracting out or divesting the activity the asset would support. When it is determined that capital is needed, managers also consider repair and renovation of existing assets. When evaluating alternatives, prudent decisionmakers also consider the various funding options available to them. They weigh the different impacts of debt financing, engaging in joint-venture projects, or using current-year appropriations. Under Principle III, we discuss some innovative funding approaches used by leading organizations.

Organizations we studied examine their needs and seriously consider whether capital is needed to fulfill their requirements. They look at two primary issues in trying to evaluate the options available to them: (1) whether or not the function is essential to fulfilling the organization's core responsibilities and (2) whether or not the organization has the specific expertise to perform the function well and cost-effectively. Managers and decisionmakers in successful organizations consider alternatives such as leasing, privatizing the activity, or engaging in joint-venture projects with other organizations to minimize the amount invested and reduce their risk. For example, two private sector companies we studied do a considerable amount of outsourcing. One company is also a partner in many joint-venture projects. As a result of its evaluation of available options, one state government we studied recently identified numerous programs for privatization resulting in significant estimated budgetary savings.

If a capital asset is needed to fulfill an organization's requirements, leading organizations we studied first consider the use of existing assets before deciding to purchase or construct new assets. Using information from an organization's inventory and deferred maintenance systems helps with deciding whether existing assets are capable of fulfilling a need. One local government looks at many alternatives, such as new construction or leasing to fulfill its needs, although renovating or expanding an existing facility is the option used most frequently. Figure I.4 describes how two state governments evaluate alternative approaches to satisfying capital needs.

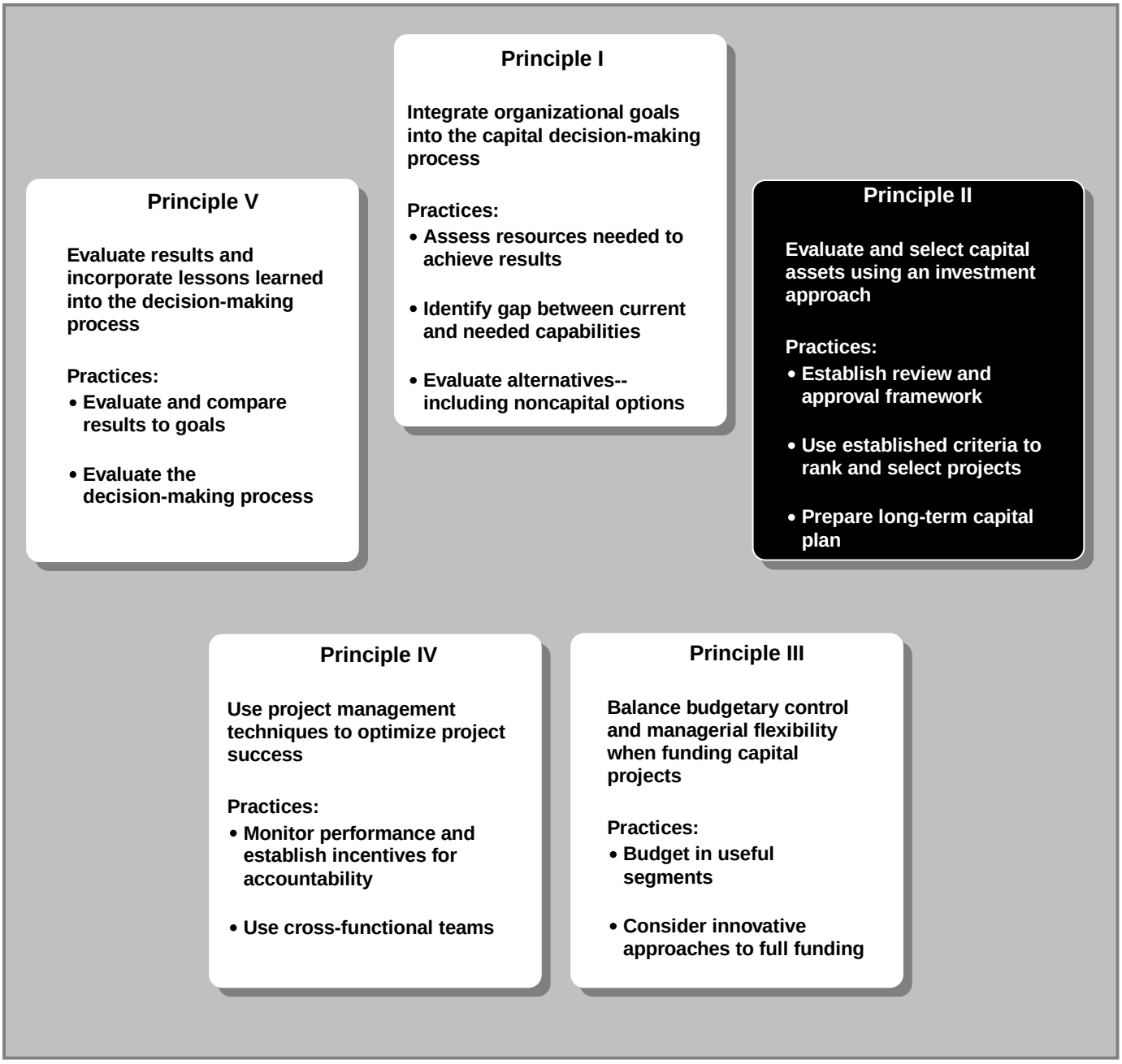
Figure I.4: Case Study—Identifying and Evaluating Alternative Approaches to Meeting the Gap Between Current and Needed Capabilities

One state government we studied conducts a series of capacity planning studies of state institutions. These reviews, which seek to achieve the optimal use of state facilities, evaluate alternatives such as conversion, expansion, and consolidation. Optimal use is achieved through identifying and implementing the best use of existing facilities and identifying the best way to build new quality facilities at the lowest cost.

Capacity planning studies typically target state institutions that experience high growth in capital costs, such as juvenile rehabilitation, and those that serve different classifications of people, such as corrections, where adult inmates are divided into minimum, medium, and maximum security populations. Varying needs of the different security populations result in significantly different capital and operating costs. Construction costs for minimum security facilities average $17,000 per capita, while costs for maximum security facilities that have larger space and higher security requirements average $120,000 per capita. Converting certain medium security facilities that meet the space and security configuration of maximum security facilities into maximum security facilities could result in tremendous savings when compared to building a new facility. For example, the state recently converted a 692-bed single-bunked medium security facility to maximum security for $3 million, while new construction costs for a similar facility would have exceeded $70 million. Medium security beds will be replaced with double-bunked, highly efficient housing units at approximately $50,000 per bed. The capacity planning study for the Department of Corrections also led to the expansion of minimum security camps to 400 beds to take advantage of economies of scale and led to the consolidation of smaller women's inmate housing into larger units to lower the ratio of security staff to inmates.

Another state government we studied uses information obtained from asset and facility condition assessments to help determine whether existing assets can satisfy its capital needs. The state recently considered tearing down and rebuilding two of its prisons. After careful evaluation, decisionmakers decided it was more cost-effective to upgrade the infrastructure of the existing facilities and enhance their useful life. Funding was provided for new heating systems, overhead sprinkler systems, and asbestos removal, among other things. Although the cost amounted to several million dollars, it would have cost far more to construct new prisons.

Evaluate and Select Capital Assets Using an Investment Approach



- Establish review and approval framework
- Use established criteria to rank and select projects
- Prepare long-term capital plan

An investment approach builds on an organization's assessment of where it should invest its resources for the greatest benefit over the long-term. Establishing a decision-making framework which encourages the appropriate levels of management review and approval is a critical factor in making sound capital investment decisions. These decisions are supported by the proper financial, technical, and risk analyses. We found that leading organizations not only establish a framework for reviewing and approving capital decisions, they also have defined processes for ranking and selecting projects. The organizations we studied also develop long-term capital plans that are based on the long-range vision for the organization embodied in the strategic plan. Long-term planning allows an organization to establish priorities and assist with developing current and future budgets.

When choosing between alternative capital investments, leading private organizations focus on investment methods such as payback or net present value, which draw attention to cash flows associated with potential investments. In addition, they also consider the strategic fit of the investment with the organization's overall goals. Leading public organizations we studied have begun to focus on the investment's fit with the organization's goals, but they have not focused as heavily on quantifying the benefits and identifying which investments provide the most value. Federal agencies have displayed similar behavior. A GAO review of five agencies'[1] information technology (IT) investment processes concluded that, while some agencies' decision-making policies and procedures have elements of an investment approach, none of the five agencies had implemented a complete, institutionalized investment approach that would fulfill the requirements of the Clinger-Cohen Act. The GAO study found that IT investment decision-making at these five agencies was often inconsistent and cost-benefit and risk analyses were rarely updated as projects proceeded and were not used for managing project results. Also, the mission-related benefits of implemented systems were

[1]GAO/AIMD-96-64, September 30, 1996. The five agencies studied were the National Aeronautics and Space Administration, the Internal Revenue Service, the National Oceanic and Atmospheric Administration, the U.S. Coast Guard, and the Environmental Protection Agency.

often difficult to determine since agencies rarely collected or compared data on anticipated versus actual costs and benefits.

We found that leading organizations have decision-making processes in place to help them assess where they should invest their capital for the greatest benefit. In general, when evaluating investments, these organizations address three basic questions:

- Does the investment support the organization's goals?
- Is the organization obtaining the greatest benefits for the least cost?
- Are current investments meeting the organization's expectations or should alternative investments be considered?

Practice 4: Establish Review and Approval Framework Supported by Analyses

We found that establishing a decision-making framework that encourages the appropriate levels of management review and approval, supported by the proper financial, technical, and risk analyses, is a critical factor in making sound capital investment decisions. A well-thought-out review and approval framework can mean capital investment decisions are made more efficiently and are supported by better information. Some leading organizations have review processes in place that determine the level of analysis and review that will be conducted based on the size, complexity, and cost of the project. Projects that are expensive, span a number of years, or are crucial to the organization's strategy or structure usually require more analysis, support, and review than projects that cost less, have shorter time frames, or have less organizationwide impact.

For example, one large multinational company we studied has various levels of review that are based on the business and economic significance of proposed projects. This company has a corporate executive council (CEC), which meets quarterly to make short- and long-term strategy decisions. These decisions in turn drive the CEC's allocation of varying amounts of capital funds to the business groups within the organization. After the funds are allocated to the groups, capital funding decisions are made at various levels within the groups depending on the cost and type of project being proposed. In general, the chief executive Officer (CEO) does not become directly involved in the capital investment decisions made by the business groups; however, the CEO does become directly involved when projects are of strategic significance to the company as a whole or are very large and capital intensive.

This organization categorizes projects as "mandatory," "necessary," or "would like to do." Mandatory projects require less up-front analysis and management review because the company is usually required to make the investment by law, often because of a regulatory mandate. Necessary projects are usually more strategic in nature and either involve benefits to the organization or cost savings. Depending on the scope of the project and the risk involved, this type of project would generally require a greater level of analysis and review before the company would decide to undertake this type of project. This would also hold true for "would like to do" projects, which are projects that managers would like to do, but are not necessarily critical to the organization's goals.

A midwestern state we studied, uses both a collaborative decision-making process and extensive communication as part of its budgeting process. The state's Office of Administration works closely with the executive officials of the state government's various departments. These officials also serve on the governor's cabinet and participate in establishing the administration's priorities. As part of the process, the Office of Administration reviews all projects for technical merit and then meets with cabinet members to narrow down the list of requested projects to a manageable funding level. At the meetings, the Office of Administration gives an overview of the governor's priorities and the state's fiscal position. Each agency head is then given the opportunity to present his agency's priorities. The state officials we interviewed said that the process has been successful beyond expectation because the meeting generates a high degree of consensus among cabinet members as to the state's priorities. Furthermore, every agency official leaves the meeting knowing the priority of their projects and why a project might not be funded. As one official said, "You might not win, but you understand why you lost."

As part of the capital review and approval process, leading organizations develop a decision or investment package to justify capital project requests. Although different organizations use different names for these decision packages—such as business cases or project requests—the packages generally include documents and analyses to support a proposed investment. The supporting documentation might include an environmental impact statement for a proposed building site or a statement of compliance with an endorsed standard architecture for a proposed information system. Leading organizations also include some common categories of information in the packages, such as links to organizational objectives, solutions to organizational needs, project resource estimates and schedules, and project costs, benefits, and risks.

Decision packages provide decisionmakers with a valuable tool for analysis and planning at the time the investment proposal is being considered. A decision package also should place the justification and documentation for the investment in a strategic context, clearly showing how an investment is linked to strategic goals. Thus it would help managers to assess critical factors associated with strategic investment decisions. Figure II.1 discusses the review and approval framework and how the decision package is used by one global corporation.

Figure II.1: Case Study—Prepare Project Justification and Establish Appropriate Levels of Review

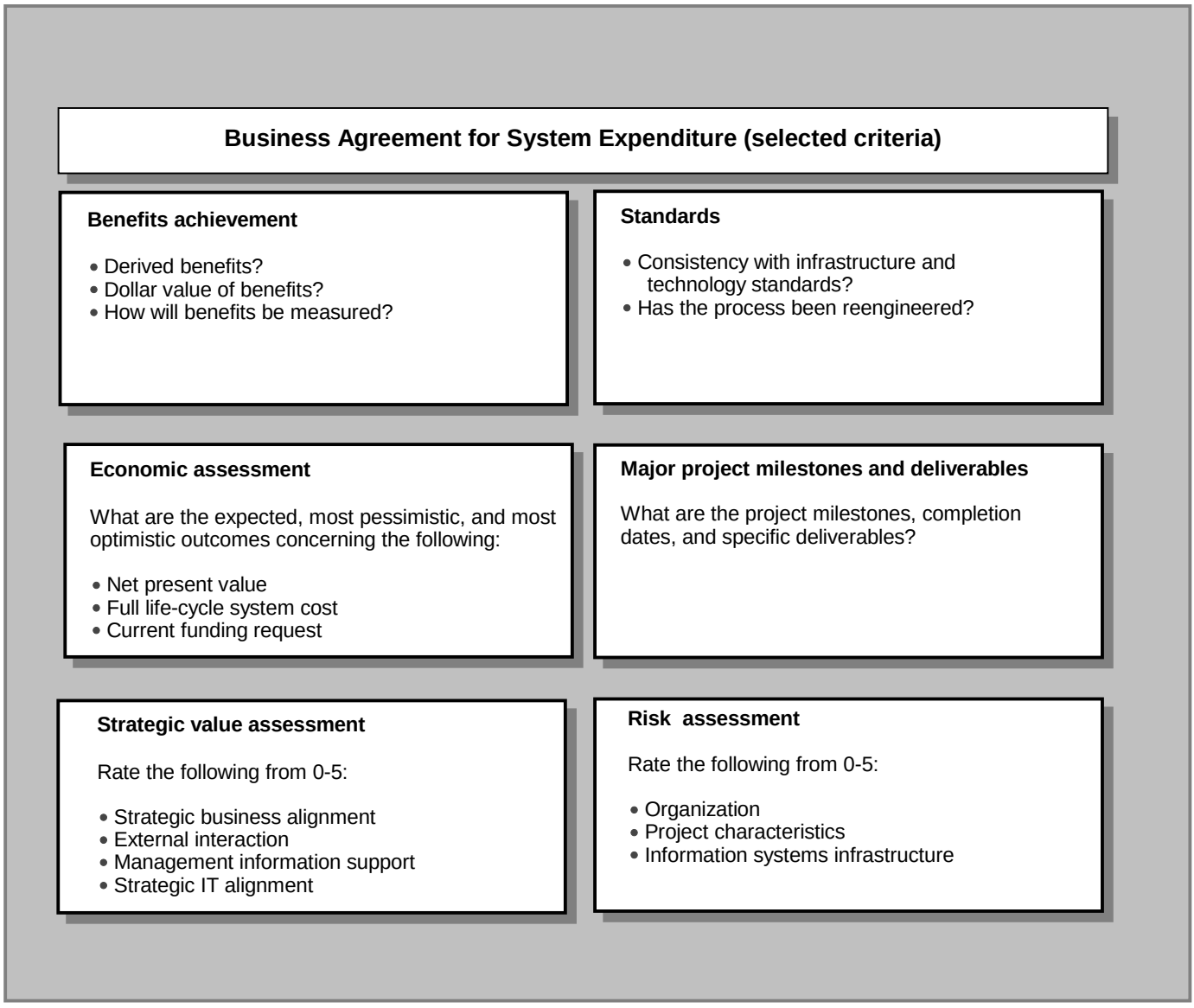
This global company was having difficulty meeting its financial targets in the early 1980s. This led the company's management to evaluate its current planning and business processes and to refine the company's decision-making approach. According to company officials, a critical factor in this company's recent turnaround has been its top management's involvement in defining the future direction for the company. As part of this turnaround, the chief executive officer and the top-level officers are now more involved in communicating the company's vision and financial targets (the "why" and the "what" in overall terms) downward to the company's core business managers. Based on this communication, managers at all levels now have a better understanding of what is required and work to produce integrated plans and capital initiatives that outline their particular group's strategies.

In the area of information technology (IT), this company has worked to make the IT investment decision-making process a less bureaucratic and more meaningful process for its managers. It did this by streamlining the approval process and by getting greater input from its IT managers. The organization has three major levels of review and approval for IT proposals. At the lowest level, IT approvals are made by a unit's senior management team. The team has the authority to approve IT investments under $50,000. The review and approval at this level is facilitated by senior IT managers assigned to every unit's senior management team. Better decisions are made because the IT managers bring functional knowledge to the process. In addition to reviewing and approving less costly projects, the teams also make recommendations to the company's IT Council. The company's Chief Information Officer as well as members from the various senior management teams serve on the company's IT Council. The IT Council reviews and approves IT acquisitions that have expenditures ranging between $50,000 and $30 million. IT projects that exceed this range must be approved by one of the company's two executive committees which align with specific business areas. These executive committees are represented by top-level management officers that have both diverse corporate functional knowledge and experience. Each committee acts both as a portfolio manager and investor and makes investment decisions for the specific business area it represents.

As part of the IT review and approval process, each unit or manager proposing an IT project must prepare a decision package referred to as a Business Agreement for System Expenditure, as illustrated in figure II.2. Each business agreement includes

- full disclosure of all system life-cycle costs—from project initiation through implementation and ongoing operation and maintenance expenditures,
- a detailed business justification defining the system's ability to deliver hard dollar cost reductions or increases in revenue,
- a formal model assessing the strategic value of the system which recognizes that strategic benefits may not be quantifiable,
- quantification of the risks associated with the project (rewards must be balanced against risks), and
- documentation describing the system's compliance with the company-endorsed standard architecture and long-term strategic vision for IT.

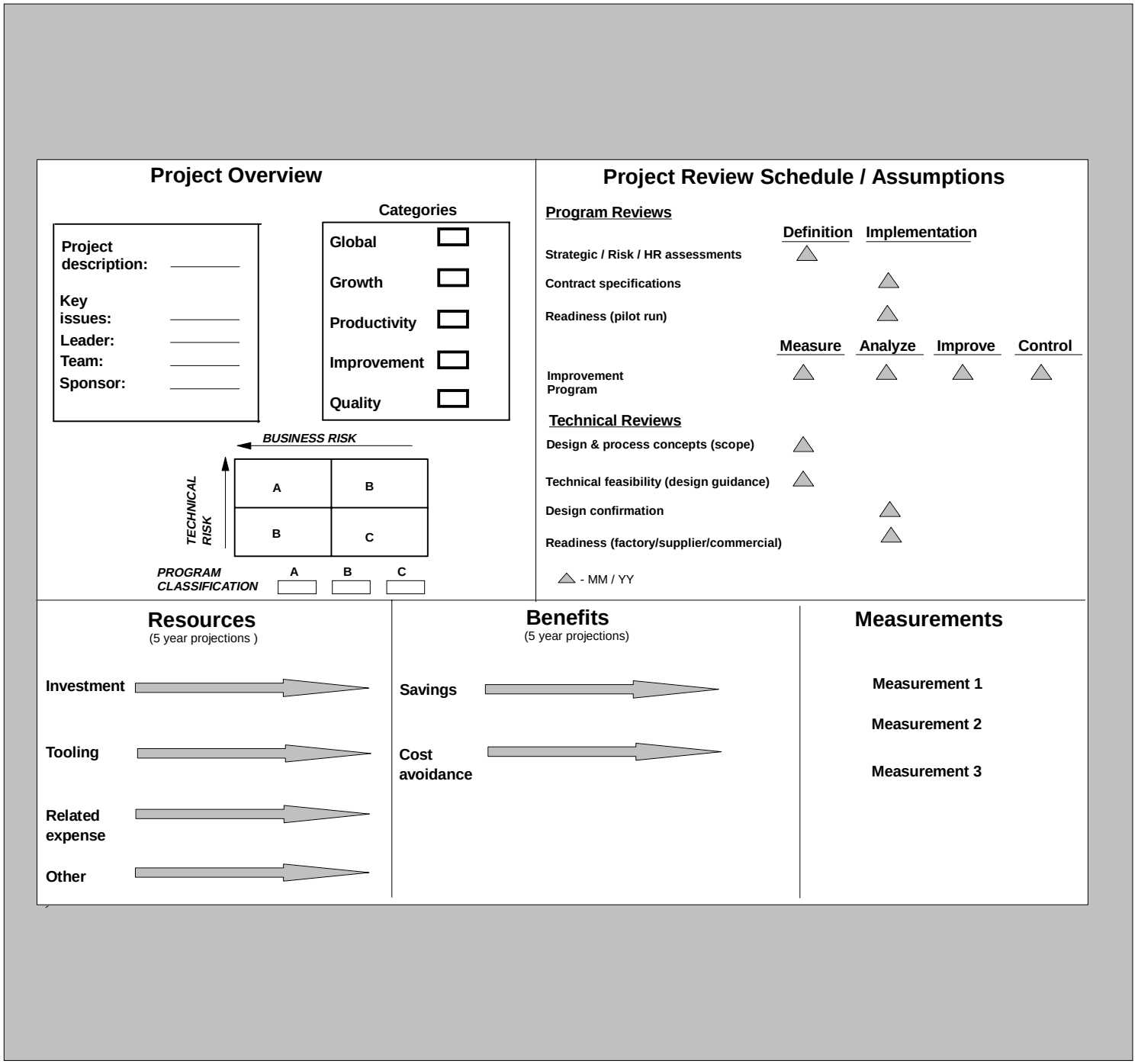
Figure II.2: Elements of a Decision Package



Within leading organizations, a summary of the information contained in the decision package is generally presented to top-level management in a simple, easily understood format that facilitates management decision-making. At one organization we visited, executives review a corporate business plan—a high-level outlook that integrates information from specific proposals. The executives focus more on the organization's overall strategy than the individual projects.

Another corporation we studied has a project summary form on which a project's description, costs, benefits, risks, proposed schedules, and measurements are summarized. This permits the managers to quickly assess the project's potential. The form used by this company has five informational categories: project overview, project review schedule/assumptions, resources, benefits, and measurements. (See figure II.3.) *Project overview* provides a general description of the project and the management team involved. The project sponsor must also indicate which of five company priorities the project is attempting to address: global interests, growth, productivity, improvement and quality. *Project overview* also has a risk classification that rates projects on business and technical risk. The second category, *project review and schedule/assumptions*, lists all the planned project and technical reviews for the proposed project by date. The third category, *resources*, projects capital and related expenses by year for 5 years. Similarly, under the *benefits* category, savings and benefits from cost avoidance, are projected by year for 5 years. The last category, the *measurements* category, contains the three major proposed performance measurements the project sponsor plans to use to measure the progress and success of the proposed project.

Figure II.3: Project Summary Form



Decision packages are supported by detailed economic and financial analyses. These types of analyses ranged from a complete cost-benefit analysis—which includes full life-cycle costing,[2] estimating, and discounting cash flows, and determining the return on the investment (ROI) based on a specified discount rate—to an analysis that compared alternatives and recommended the most cost-effective option.

One large corporation we studied uses a variety of tools and techniques (e.g., cost-benefit analysis and discounted cash flow analysis) to support its project business package. The company uses outside experts to prepare financial projections for some projects. Once the analysis is completed and a business package prepared, the business package is used at all levels of the organization to make both strategic and tactical decisions. For example, at the business unit or tactical level, special emphasis is placed on the project's financial potential and return. However, at the top management level, review of financial information is secondary to the executive's interest in how the investment fits into the company's overall strategy. A high-level official noted that managers need to "work around the financials" and identify the key things that are likely to make the project successful. The official said, "It is not the money you spend on an investment that makes it successful, it is understanding the business well enough to understand what makes it work and then measuring that."

One leading organization uses an "unbundling" process to assess a project's value and its return on capital expended. Unbundling, as described by a company manager, involves separating a proposed project into various components and assessing the value and return of these components. Different components of the project are assessed in different combinations to determine which combination of components provides the highest return with the least amount of capital. To illustrate, a company manager gave an example of a proposed project that initially required capital costs of $100 million and had an ROI of $30 million (30 percent). Through discussions and brainstorming, managers were able to eliminate certain project components considered nonessential to the project and therefore reduced the up-front capital costs from $100 million to $60 million; this resulted in an estimated ROI of $25 million (41 percent). The manager we interviewed said that "managers need to look at the project in the aggregate and then unbundle it into component project parts. They then need to ask themselves what they really expect to obtain from the project at the end."

[2]OMB's Capital Programming Guide defines life-cycle costs of an asset as all direct and indirect initial costs, including planning and other cost or procurement, all periodic or continuing costs of operation and maintenance, and cost of decommissioning and disposal.

Another approach used by a state government we studied is "value analysis." Value analysis refers to a systematic and orderly problem-solving approach that emphasizes improved value, quality, and performance. This state refers to its approach as "value methodology" and uses it to uncover potential construction problems. The state budgets for major construction projects in three phases—predesign, design, and construction. To obtain additional assurance that projects are adequately planned for during predesign, and properly implemented during design, the state adopted a value methodology approach to project review.

In this state, value methodology encompasses two processes—the Budget Evaluation Study Team (BEST), which reviews the predesign phase, and a value engineering study, which occurs during the design development phase, after approval of the schematic design. BEST seeks to achieve quality by ensuring that agency planners and their consultants have dealt with "big picture" issues such as the overall problem to be solved and the overall cost of the project. A value engineering study seeks to determine if the project's design is technically sound and if the materials and method suggested for completing the project meet requirements for value and quality.

The BEST team consists of architects, engineers, and cost estimators tailored to each type of project. The review involves intense study of predesign documents, site visits, and meetings with the predesign team. BEST is intended to confirm that the project's concept and budget are realistic, to control future costly scope creep, and to ensure that chosen projects are those with the lowest life-cycle costs. Similarly, at the completion of schematic design, a multidiscipline team of design and construction experts meet to evaluate the design. Projects that undergo BEST and/or value engineering studies are selected from major projects that are estimated at $5 million or more, or that have a high profile or are very complex.

Practice 5: Rank and Select Projects Based on Established Criteria

Leading organizations also have defined processes for ranking and selecting projects. The selection of projects is based on preestablished criteria and a relative ranking of investment proposals. Leading organizations determine the right mix of projects by viewing all proposed investments and existing capital assets as a portfolio. Organizations generally find it beneficial to rank projects because the number of requested projects exceeds available funding.

Several organizations we studied use the organization's strategic objectives as a basis for establishing decision-making criteria. These criteria, such as increased cost savings, market growth, and link to organizational strategies, are used to rank projects. In addition, sound criteria help link potential investments to program priorities and desired results. Top-level managers are involved in developing the decision-making criteria as well as in communicating the criteria throughout the organization. At the organization's highest levels, criteria, such as strategic fit and political implications, may be used to determine what policy initiatives or business areas to pursue. At that level, decisions are directed at issues, such as how to get the most out of limited resources and how to allocate those resources across different divisions or businesses. At lower organizational levels, capital investment decisions generally require managers to identify alternative strategies which align with organizational goals and then choose the alternative with the highest benefit or return.

Several organizations we studied, developed a ranked listing of projects based on analysis and established criteria. Organizations use these rankings to help make selections among competing projects. One city we studied uses a ranking technique to choose among competing projects within and across functional areas. The city ranks and makes trade-offs between six different city functional areas when deciding which capital projects to fund. As part of this community's selection process, a citizen advisory board appoints both citizens and agency officials to six subcommittees. Each subcommittee is responsible for establishing criteria and ranking projects for a specific functional area. Based on the subcommittees' rankings, the board votes and selects projects. The process is structured so that decisions about which projects will be funded are made across functional areas. Choices are made between the highest ranking project in each function. The project that receives the most votes is funded and the second-place project in that function moves up to be the first-place project in that category; it then competes in the next round of voting with all the first-place projects in the other functions. The board voting continues until all projects have been ranked. It is possible that the community's priorities could result in all projects in a particular function receiving funding before any projects in other functional areas. Before this process was adopted, community capital projects were only ranked and selected within each functional area; no trade-offs were made across functions. The process change was made in response to citizen dissatisfaction. The new process has increased citizen satisfaction, prompted in part by the greater understanding of how and why certain

decisions are made. Figure II.4 describes the process used by one state government that links criteria to state goals.

Figure II.4: Case Study—Link Criteria to Organizational Goals and Objectives

One state uses criteria based on the governor's strategic goals and objectives to score and support decisions on capital investment projects. As part of the state's budgeting process, every agency is required to submit its proposed capital projects to the Department of Finance. The Department of Finance reviews and scores every project based on predetermined strategic and technical criteria, as illustrated in figure II.5. Projects can receive scores ranging from 0 to 700 points in the specified increments as shown. As illustrated, the maximum score of 700 is possible either for projects of a critical nature or for those meeting all requirements of specified strategic scoring criteria. Critical projects include those which address life safety emergencies or legal obligations. Only one critical dimension can be selected, thus each dimension can receive a score of either 700 or 0. Strategic scoring criteria are applied to noncritical projects and include, for example, (1) how closely the request is linked to the agency's strategic mission, (2) the priority assigned to the project by the requesting agency, and (3) if the project results in operating savings or increased efficiencies. According to a state official, good, noncritical projects typically have a strategic score between 300 to 400 points.

Based on the scoring results, the Department of Finance recommends a list of capital projects to the governor and the legislature for use in the capital decision-making process. Although the scoring process ranks all projects across all agencies, it is not a guarantee as to which projects will receive funding. Instead, the process provides a generally neutral evaluation of each project that can be used as input in the overall decision-making process. Also, by providing visibility, the process makes obvious when other selection criteria are applied instead of the rankings. Officials stated the scoring process also provides political cover for decisionmakers when denying funding for specific projects.

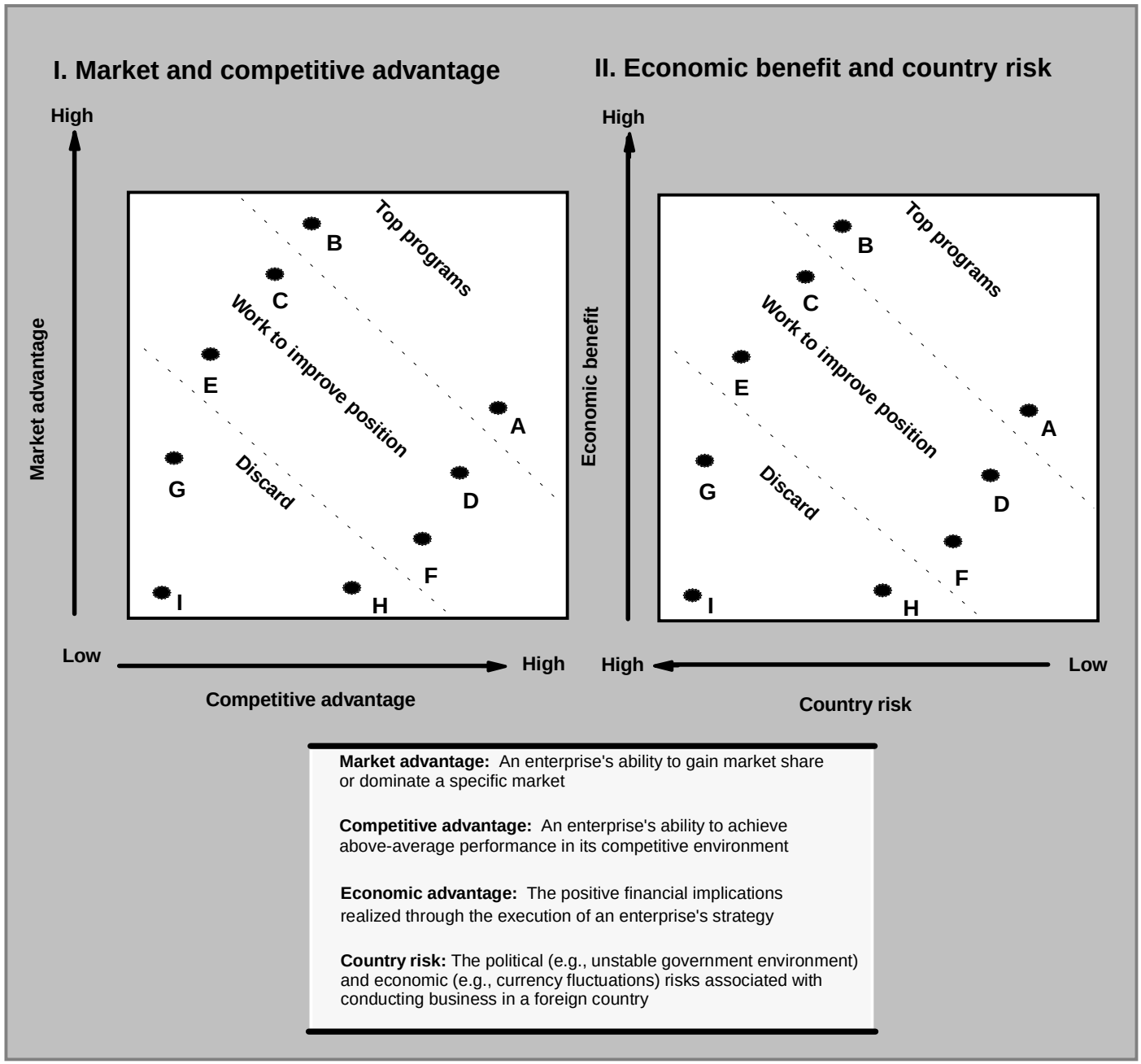
Figure II.5: Linking Criteria to Goals and Objectives

Capital project scoring criteria	Possible values	Maximum score
I. Critical (Choose only one of the following: a, b or c)		
a. Critical life safety emergency	700/0	700
b. Critical legal liability	700/0	700
c. Prior binding commitment	700/0	700
Maximum critical score		***700***
II. Strategic		
a. Strategic linkage	0/40/80/120	120
b. Safety concerns	0/35/70/105	105
c. Customer services/statewide significance	0/35/70/105	105
d. Agency priority	25/50/75/100	100
e. User and nonstate financing	0-100	100
f. Asset management	0/20/40/60	60
g. Operating savings or efficiencies	0/20/40/60	60
h. Contained in statewide 6-year plan	0/50	50
Maximum strategic score		***700***

We also found that leading organizations identify and assess project risks when selecting projects. One manager stated that all projects have some degree of risk either because of the project assumptions and/or because of the environment in which the project is being undertaken. In one large multinational company we studied, risk is one of many factors senior management considers when approving certain investment proposals. To deal with risk, this company requires that project risks be clearly identified, the potential impact of the risks be assessed, and risk mitigation strategies be considered.

This company uses a portfolio management technique to rank and make trade-offs among competing projects. As illustrated in figure II.6, new investment opportunities, primarily new venture projects, are positioned on two different matrices. Matrix 1 displays market and competitive advantage, while matrix 2 displays economic benefit and business environment risks, such as country risk. How the investment options are distributed across these matrices helps managers rank projects and points out weaknesses and risks in the portfolios and suggests potential trade-offs. As illustrated, the two dimensional framework and project rankings allow managers to make trade-offs between defined criteria and risks when they attempt to select a diverse portfolio of projects. Investment decisions regarding programs that fall into either the "top programs" category or the "discard" category are relatively easy for managers to make since the program is considered either a clear winner or a clear loser. The difficulty arises when, because of limited capital funds, decisions and trade-offs have to be made among programs falling into the "work to improve" category. In such circumstances, management balances the established criteria and risks with management judgment and experience.

Figure II.6: Example of Portfolio Management



The risk of cost overruns is addressed by a medium-sized organization by requiring managers to develop a series of increasingly more accurate cost estimates before it selects and develops projects. The company refines the scope and cost estimates of its projects at different phases of the project life-cycle. An initial rough cost estimate, known as a "class-40" estimate, is developed in order to have the project included in the company's facility plan. A class-40 estimate is defined as an estimate where there is a 95 percent probability that the actual costs will not exceed the estimate by more than 40 percent. Once the project is in the facility plan, the next step is to develop an estimate sufficient to support an actual request for funding. This estimate is known as a "class-20" estimate—meaning there is a 95 percent probability that the actual costs will not exceed the estimate by more than 20 percent. Project funding decisions are made based on the class-20 estimate; however, before the project construction phase can begin, a "class-10" estimate must be developed and approved.

Practice 6: Develop a Long-Term Capital Plan That Defines Capital Asset Decisions

Once projects are ranked, they are put into a long-term capital plan. Leading organizations develop long-term capital plans to guide implementation of organizational goals and objectives and help decisionmakers establish priorities over the long term. While the plans must be responsive to changing requirements, they are based on the long-range vision for the organization embodied in the strategic plan. Therefore, any year-to-year changes should be driven by strategic decisions.

Leading organizations we studied prepare long-term capital plans to document specific planned projects, plan for resource use over the long term, and establish priorities for implementation. These capital plans usually cover a 5-, 6-, or 10-year period and are updated either annually or biennially. Long-term planning requires that decisionmakers rank capital needs in priority order and promotes the making of informed choices about managing the organization's resources and debt. Officials in one state told us that requiring agencies to develop capital plans encourages them to think about the long term and reduces the number of surprise projects. Long-term planning also requires the organization to weigh and balance the need to maintain existing capital assets against the demand for new assets. Some leading organizations prepare long-term asset and facility maintenance plans that are incorporated into their long-term capital plans. This helps decisionmakers determine whether and when to purchase a new capital asset or to continue to maintain an existing one.

Most state governments we studied require that all capital project requests be included in an agency's long-term capital plan. In leading private sector companies, planned capital expenditures are aligned with long-range business plans. The business plans are usually based on a product's life cycle, market conditions, or corporate goals and objectives.

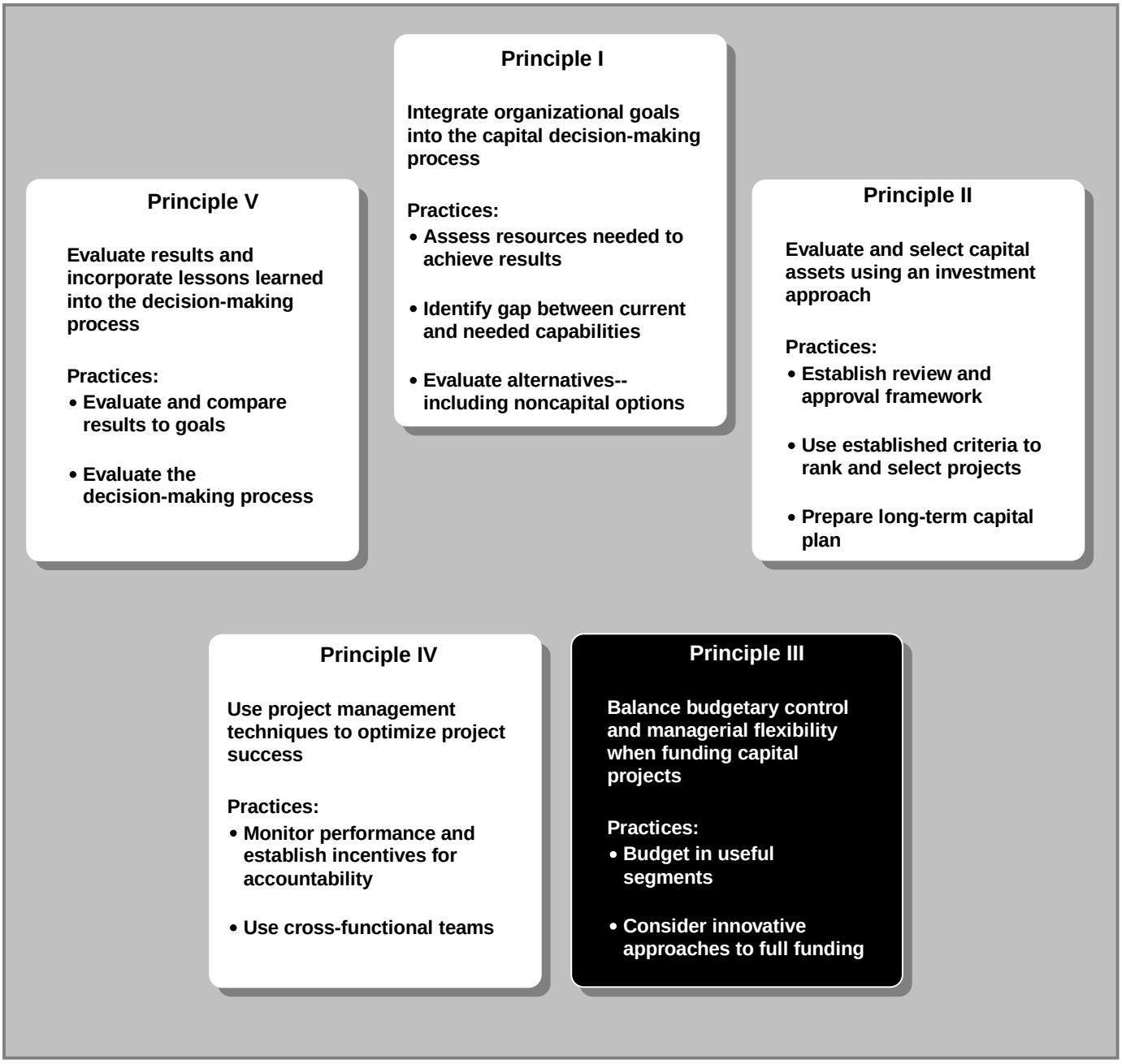
Developing long-term capital plans also enables organizations to review and refine a proposed project's scope and cost estimates over several years, which helps to reduce cost overruns. While out-year cost estimates are preliminary, they help provide decisionmakers with an overall sense of a project's funding needs. As projects move closer to the year of implementation, project scope becomes more clearly refined and cost estimates also can be refined to more accurately reflect actual project costs. Figure II.7 provides an example of how one state government uses this process.

Figure II.7: Case Study—Develop a Long-Term Capital Plan That Defines Capital Asset Decisions

One medium-sized state government we studied prepares a 5-year capital plan that assists the government in refining the scope and cost estimate of individual project requests. This state finances most of its capital projects through bond issues and generally requires agencies to submit applications for initial project design funding 5 years prior to the budget year--that is, in year 5 of the 5-year capital plan. While there are some exceptions to this, approximately 70 percent of the requests for initial design funding are made for year 5, with the remainder of the requests primarily made for years 3 or 4 of the plan. The agencies are required to resubmit an application and receive approval for the project in each year of the plan. Resubmission of project requests is the only way a project can move forward from year 5 to year 4, and from year 4 to year 3, etc., until it reaches the first year of the capital plan, which is the budget request for the upcoming budget year. Only small project requests generally appear for the first time in the budget year. Projects that go into the capital plan in year 5 generally take about 7 years to be funded. According to officials, approximately 85 percent of the projects included in the capital plan eventually receive funding.

The annual review of capital project applications allows the state budget office to determine if a project request continues to meet the goals and objectives outlined in the agencies' strategic or master plans. It also allows the project's cost and scope to be refined each year over a 5-year period, which keeps project costs within specified resource limits. State officials believe that this up-front planning and continuous review are key factors in why the state has limited cost overruns and few surprises once project funding is approved.

Balance Budgetary Control and Managerial Flexibility When Funding Capital Projects



- Budget in useful segments
- Consider innovative approaches to full funding

Officials at leading organizations we studied agree that good budgeting requires that the full costs of a project be considered when making decisions to provide resources. At the federal level, this calls for a balance between congressional budgetary control and agency flexibility in financing capital. From the congressional perspective, budgetary control is enhanced if budget authority for the full cost of a capital acquisition is enacted in advance so that the full cost of capital projects is considered at the time decisions are made to provide resources. Budgeting for the full cost of an asset in advance permits the Congress to compare the long-term costs of spending alternatives and to better understand the budgetary and programmatic impact of its decisions.

In contrast, when capital projects are funded incrementally, the acquisition may not be fully analyzed or justified, major projects may be canceled and the associated sunk costs may be lost. For example, a recent GAO review of an agency's major system acquisitions identified incremental funding as one of the key factors in the high rate of cost overruns, schedule slippages, and terminations.[1] When incremental funding is used, funds to continue a project must be requested each year. For many projects, particularly in their first years of development and construction, the funding received is considerably below the amount requested. This causes project schedules to slip and costs to rise. Charges, such as contractor costs and certain administrative costs, generally would be incurred each month no matter what the progress. By knowing that the funding will be available when needed, organizations and their contractors should be better able to stay within cost estimates and keep the projects on schedule.

From a federal government agency's point of view, however, full funding can be problematic, especially under periods in which budget caps

[1]Department of Energy: Opportunity to Improve Management of Major System Acquisitions (GAO/RCED-97-17, November 26, 1996).

constrain spending.[2] An agency or program generally must absorb the entire cost of a relatively expensive acquisition in a single year's budget even though the benefits may accrue over many years. As GAO explained in another 1996 report,[3] however, some strategies currently exist at the federal level that allow agencies a certain amount of flexibility in funding capital projects without a loss of fiscal control. These strategies include budgeting for stand-alone stages, as well as more innovative approaches, such as using an investment component and outsourcing capital-intensive services.

Decision-making based on good, firm cost estimates of the full cost of a project also helps agencies to fully fund projects up front. Having a good estimate of the cost of a project before committing resources to it allows decisionmakers to make more informed decisions and allocate funding more accurately and effectively.

We have found that it is not only the federal government that is concerned about maintaining control over capital expenditures while allowing flexible funding options. Most of the other organizations we studied make a commitment to the full cost of a capital project up front and have developed their own alternative methods for maintaining budgetary control while allowing flexibility in funding.

Practice 7: Budget for Projects in Useful Segments

One strategy that has proven useful to organizations in dealing with the problems posed by full funding in a capped budget environment is to budget for projects in useful segments. This means that when a decision has been made to undertake a specific capital project, funding sufficient to complete a useful segment of the project is provided in advance. OMB has defined a useful segment as a component that either (1) provides information that allows the agency to plan the capital project, develop the design, and assess the benefits, costs, and risks before proceeding to full acquisition (or canceling the acquisition) or (2) results in a useful asset for which the benefits exceed the costs even if no further funding is appropriated.[4]

[2]The Balanced Budget and Emergency Deficit Control Act of 1985, as amended, sets limits on budget authority and outlays for discretionary spending programs for fiscal years 1998 through 2002. Discretionary programs are those that receive their budgetary resources in appropriations acts. Constrained discretionary spending has played a major role in reducing the deficit since 1991 and new statutory limits on discretionary spending are particularly tight after the year 2000.

[3]Budget Issues: Budgeting for Federal Capital (GAO/AIMD-97-5, November 12, 1996).

[4]Principles of Budgeting for Capital Asset Acquisitions, Budget of the United States Government, Fiscal Year 1998.

For full up-front funding and the funding of useful segments to be effective, organizations must be able to develop good, firm cost estimates of the full cost of either the project or the segment early in the life of the project. The organization must have good information and data systems in place in order to be able to develop these estimates. Many of the state and local governments we studied used a process called "predesign" to determine and provide decisionmakers with detailed information about cost estimates and the scope of work of a planned project before committing substantial resources to the project. For example, in one medium-sized state, all major projects greater than $5 million must go through a predesign process before submitting an application for design and construction funding. Officials also recommend that projects of less than $5 million include a predesign phase when, for example, the project has significant policy implications to a program or involves new state-of-the-art technology. The predesign application should include a description of the project, an analysis of the effects of demographic and policy changes on capital needs, an explanation of the process used to develop the capital request, an identification of the operating cost impact, and a project cost plan, which includes information about project scope and schedule. The predesign application must also communicate the relationship of the capital project to the agency's strategic plan. The development of reasonable initial cost estimates early on in the planning process has resulted in minimal scope and cost changes during later phases of a project.

Several states and localities we studied fund capital projects in useful or meaningful phases by breaking up their capital planning and budgeting cycle into segments, such as predesign, design, construction, and—in some cases—post-construction evaluation. Funding is provided for one of these segments at a time and generally is not guaranteed from one phase to the next. For example, two states we studied by law cannot award a construction contract until the funds for the contract are appropriated in full. One of these states contracts for useful phases with contract options for each useful follow-on phase. For example, it may contract for the design phase with an option for construction as a second phase. The state finds that this approach is better than making a commitment to the entire project and then concluding, after the design is completed, that it prefers not to go to the second phase.

The Coast Guard sometimes divides capital acquisitions into stand-alone stages and may request full funding for each stage over a period of years. For example, if the project is to procure 30 vessels, the agency may write a

base-year contract for a lead ship and spare parts (a useful segment) that also includes options to purchase the remaining vessels over a period of years. The agency is only committed to the base-year acquisition and need not exercise any of the options. In the first year of the project, the agency would request funds for the base-year contract. In each subsequent year, the agency would decide whether to request funds to exercise a contract option and, if it did, the Congress would decide whether to provide such funding. Even if no further funds are provided, the vessel already funded would be a useful asset for the agency. Figure III.1 describes how one state government budgets in useful segments.

Figure III.1: Case Study—Budgeting for a University Campus in Useful Segments

A state university is constructing a new campus for one of its colleges. The state is funding the project in discrete and stand-alone phases so that a completed building can be occupied and the school can function while other phases of construction continue. The first building to open will contain faculty offices, classrooms, and the computer sciences department. This building will be occupied upon completion and the second phase of the project will commence. A university official said that this phased approach also accommodates enrollment growth. The university's enrollment is increasing but it currently does not need to use all of the planned space on the campus. The university expects to need the space as the campus is completed. A university official stated that it did not make sense to devote resources all at once to capital projects that will not be needed until the future. If funding for the campus is discontinued for some reason, the state will still have usable buildings that it can occupy, lease, or sell.

Practice 8: Consider Innovative Approaches to Full Up-Front Funding

Alternative strategies used by some leading organizations and federal agencies to accommodate full funding of capital projects in a constrained budget environment include contracting out for capital-intensive services, using an investment component that is similar to a savings account, and developing public/private partnerships. These strategies enhance an organization's flexibility to finance the full costs of capital projects without compromising top management's (or, in the federal arena, the Congress') ability to make decisions based on full costs. However, it should be noted that agencies must obtain authority from the Congress to establish an investment component.

One private sector company we studied selectively uses outsourcing as an alternative to capital investment. This company outsources most of its chip manufacturing, which is a capital-intensive process. The company must address two questions before deciding to outsource a specific function. The first is whether the company can perform the function better or at a lower cost than other organizations, and the second is whether the function is essential to the company's core competencies. If the answer is no to both questions, then the company will outsource the function.

Managers said that while the company does lose some control by outsourcing, it attempts to monitor the outsourcing decision by asking throughout the decision-making process whether or not the company is creating shareholder value. This company will not outsource a function unless it believes shareholder value will be created. Because a decision has been made not to own the assets needed to manufacture the chips, the organization now does not have to pay for all of the costs associated with this large and expensive investment.

In the federal arena, permitting agency managers to save for the purchase of some needed capital investments may promote better planning and make it possible for agencies to budget for the full cost of such investments within constraining caps. In at least one case, the Congress provided an agency with authority to establish an investment component, similar to a savings account, in its working capital fund, allowing managers who comply with specified requirements regularly to set aside and save annual appropriations for future purchases of expensive equipment. This gives managers an incentive to plan and save some otherwise annually expiring funds for future capital needs. However, as GAO noted in an earlier report,[5] this "savings account" approach should be accompanied by detailed investment plans to ensure that funds are spent as the Congress intended. This particular agency has placed restrictions on the use of its investment component to reflect congressional intentions regarding use of the agency's working capital fund.

In a public/private partnership, the private sector generally shares the risk as well as the financing with the government. This type of partnership can accommodate full funding because the government is required to pay for less of the investment up front, thereby freeing current resources for other projects. The private sector pays for a portion of the project and both sectors may be reimbursed through user fees. Figure III.2 discusses some of the different types of public/private partnerships that are currently being implemented.

[5]GAO/AIMD-97-5, November 12, 1996.

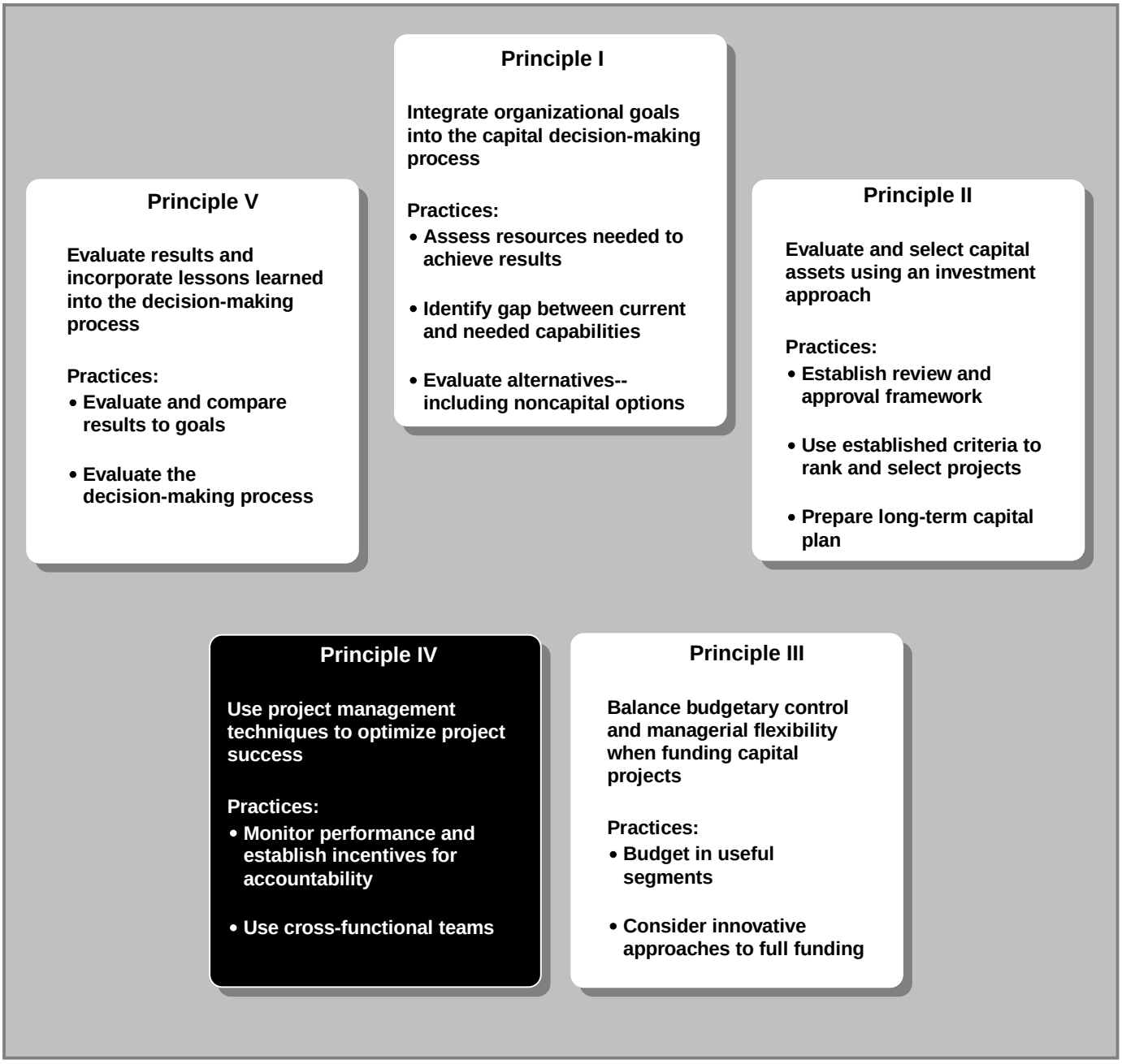
Figure III.2: Case Study—Using Public/Private Partnerships to Accommodate Full Funding

A state department of transportation (DOT) wanted to build and operate a high-speed rail line but did not have the financial resources to build the system on its own. By entering into a public/private partnership with a private consortium, the state is now able to share the costs of the new transportation system with the private sector and use the expertise of private companies in the construction and operation of an advanced technology system. The private consortium has the exclusive right to construct and operate the system in partnership with the state DOT. The infrastructure will be financed with revenue bonds and further supported by state DOT and federal funds. Private sector equity financing will provide the rolling stock. Both the state and the private sector organization have an equity share in the system and terms and conditions have been established to balance the allocation of financial risk between the public and private sectors based on the ability of each sector to shoulder such risk.

The Congress has also authorized federal agencies to participate in a number of public/private partnerships. For example, one agency is sharing the renovation and maintenance costs of a historical federal facility with public and private partners. The partners are responsible for restoring the historical building in return for a long-term lease.

Another federal agency recently received congressional approval to enter into certain limited equity partnerships and to offer loan guarantees to private sector developers. By underwriting the cost to the developer, agency officials believe that employee housing can be obtained for considerably less than if the agency were to build it directly. Under the equity partnership arrangement, the agency would pay up to one-third of the cost rather than the full cost of construction. Both the developer and the government would recoup their investment through user charges. Under the loan guarantee program, the agency would guarantee loans made to a developer if the proceeds were used to acquire or construct certain employee housing for the agency. Under the Federal Credit Reform Act of 1990, funds for federal loans and loan guarantees are budgeted up front to cover the full net present value cost to the government, including the risk of default or nonpayment of a loan.

Use Project Management Techniques to Optimize Project Success



- Monitor performance and establish incentives for accountability
- Use cross-functional teams

In order for projects to be successfully implemented, they must be well managed. Many organizations apply a variety of project management techniques to optimize project success and enhance the likelihood of meeting project-specific as well as organizationwide goals. These techniques include monitoring project performance, establishing incentives to meet project goals, and developing a project management team with the right people and the right skills. This can help avert cost overruns, schedule delays, and performance problems that have characterized some major federal capital projects.

Our case studies have stressed the importance of developing performance measures and linking capital projects and their expected outcomes to unit and strategic goals and objectives. As one private sector official said, "overarching goals for the project, business unit, and organization are translated to individual groups and managers and the results are fed back up the line." We also found that successful organizations monitor project performance and establish incentives for accountability, and use cross-functional teams to involve those with the technical and operational expertise necessary to plan and manage the project.

Practice 9: Monitor Project Performance and Establish Incentives for Accountability

Successful implementation of a capital investment project is determined primarily by whether the project was completed on schedule, came in within budget, and provided the benefits intended. As noted previously, however, the first step is to provide decisionmakers with good information about cost estimates, risks, and the scope of a planned project *before* committing substantial resources to it. This, in combination with full up-front funding, can help to prevent cost overruns, project cancellations, and projects that fail to meet completion schedules. By monitoring project performance against cost, schedule, and technical performance goals, as well as establishing incentives to meet those goals, organizations can increase the likelihood that a project will be successfully completed.

Identifying and managing risks such as changes in scope and poor cost estimates limits the number of projects that will not meet established goals. The risk of failing to meet cost and schedule goals can be reduced by periodic monitoring of whether interim goals are being met. Early recognition of problems allows for prompt intervention, which increases the likelihood that corrective action will get the project back on track before significant deviation from goals occurs. In addition, early awareness of cost overruns or schedule slippages may aid in identifying serious underlying problems. For example, cost overruns during initial project implementation may be symptomatic of poor cost estimation.

Typically, a project plan is used to manage and control project implementation and includes performance measurement baselines for schedule and cost, major milestones, and target dates and risks associated with the project. By tracking cost, schedule, and technical performance, a project team is aware of potential problem areas and is able to determine any impact of the deviation and decide if corrective action is needed.[1] Regular review of the status of cost, schedule, and technical performance goals by individuals outside the project team allows for an independent assessment of the project and verification that the project is meeting stated goals. Leading organizations also establish incentives to encourage teams to meet project goals.

Leading organizations we studied generally hold project managers accountable for meeting cost, schedule, and performance goals. Some of these organizations allow individual project managers to decide what management tools best meet their needs to monitor and track project milestones and to identify cost and schedule variances from the project plan. Typically, actual cost and schedule are measured against a baseline established in the project plan used to obtain funding. Deviations from the plan are investigated to identify problems, and, if necessary, to revise scheduled start and finish dates or rebaseline the entire project. However, an official noted that it is important to distinguish between variations that should have been avoided and legitimately unavoidable/unforeseen overruns. This is particularly important if meeting project costs is part of a reward system. As one corporate executive noted, no matter how good

[1]The Federal Acquisition Streamlining Act of 1994, Public Law 103-355, Title V, 108 Stat. 3349-3351, requires agencies to establish and track major acquisitions against cost, schedule, and performance goals. The head of each civilian agency is required to approve or define the cost, performance, and schedule goals for major acquisition programs of the agency, while the Secretary of Defense is required to approve or define the cost, performance, and schedule goals for major defense acquisition programs of the Department of Defense and for each phase of the acquisition cycle of such programs.

cost estimates are, there may still be overruns; for example, if it rains all month project construction will not start on time.

Leading organizations we studied pointed to a number of built-in incentives for managers and teams to meet project goals. Among them were the reporting of project status to individuals or groups in positions of authority outside the particular project, the difficulty of asking for additional funds, and the use of the project manager's overall performance in determining the assignment of future projects. For example, leading private sector companies generally must report the status of projects to either their boards of directors or executive-level committees. Such oversight makes the projects accountable to an authority outside of the project teams and provides pressure to meet established cost, schedule, and technical performance goals. In addition, management consequences typically are invoked if a project does not meet its established goals. For example, the project manager's responsibilities may be downgraded to projects with less strategic importance, or a division manager may be reassigned or fired. If a project is of significant strategic importance, failure may put the viability of the entire organization at risk.

At the state and local government level, periodic reporting of project status to an entity outside the project team is often required. As with private sector companies, this independent oversight of progress toward project goals is one incentive for managers and projects teams to meet their goals. In one local government, the executive committee of the Citizen's Bond Committee, which is a citizens' group composed of approximately 250 private citizens, annually reviews the city's capital plan in conjunction with the city's budget and research department. The objectives of the review are to ensure that projects are fiscally sound and continue to meet the voters' intent. The reviews also track project cost and schedule and the accuracy of revenue assumptions used to carry out the projects. This local government also created an incentive for program managers to meet cost goals by setting a precedent of denying additional funding beyond that in the approved budget. For example, the construction of a local library had exceeded its budget prior to furnishing one of the floors. Despite requests for additional funding, the city council did not authorize any more funds to complete the floor. It is currently being completed through private donations.

Another incentive to meet project goals is the use of a team's performance on a completed project as a criterion in assigning team members to future projects. For example, a state agency matches managers' experience and

qualifications with the complexity and difficulty of the projects to which they are assigned. The agency tends to staff large complex projects with project managers who have proven their abilities. Project managers less experienced or less capable are assigned to less complex projects. In addition to documenting and using internal performance, this agency has developed performance guidelines for its contractors. If these guidelines are not met, the agency does not hire the contractor for future projects.

Our federal case study organization, the Coast Guard, incorporates operating savings expected from the implementation of a capital project into its operating budget. Since a less costly operating budget is reflected in the agency's budget request to OMB and the Congress, upper-level management, OMB, and the Congress expect these savings to materialize. This creates a strong incentive for the project team to carefully manage the schedule and technical performance of the project and for upper-level management to monitor performance so that corrective action can be taken if problems arise. Figure IV.1 describes a project monitoring and accountability process used at a state university.

Figure IV.1: Case Study—Monitor Project Performance and Establish Incentives

At one state university, the project manager's primary responsibilities are to ensure that the project is within budget and on time. The project manager can choose from a variety of management tools to monitor the project so that he can be alerted to potential problems in time to take corrective actions. In addition, the construction executive, a university employee, monitors and controls all of the university's capital projects. The construction executive investigates variations from planned cost and schedule in order to quickly identify problems and get the necessary people together to resolve the problem. Quarterly reports on all capital projects show the status of each project, including the cash flow. If the quarterly report indicates there are problems--such as a significant change (e.g., a 10 percent change) in the scope or cost, the board of regents must be notified. Although most changes involving the need for additional funds are handled with contingency funds, if the change requires a large amount of additional funds, a request for a capital budget amendment would be needed. It is highly unusual, however, for the university to go back to the legislature and ask for additional funding. If additional funds are needed, the board of regents is notified and may approve the use of additional funds to meet the funding shortfall. The legislature must be notified if internal university funds are used to augment the project. Asking the board of regents for additional funds is also held to a minimum because doing so makes the university staff appear as if they cannot manage projects.

Practice 10: Use Cross-Functional Teams to Plan for and Manage Projects

Leading organizations use multidisciplinary teams, consisting of individuals from different functional areas and led by a project manager, to plan and manage projects. Team members may change somewhat for different phases of the project, but members typically represent those who have a major interest in the project and include people from the user community and from the organization's budget, accounting, engineering, procurement, and other functions. Typically, a core project team is established early in the life cycle of a project and additional individuals

with particular technical or operational expertise are incorporated during appropriate phases of the project. For example, the user group component of the team may be heavily involved in determining requirements during the planning stage, but during project implementation may only be consulted when needed, such as for reviewing the impact of proposed changes. The team must not only possess technical and operational expertise, but, as an executive explained, it must also be composed of the "right" people. The selection of the team members is critical—they must be knowledgeable, willing to trade off leadership roles, and able to plan work and set goals in a team setting. He added that successful teams typically have spirit, trust, and enthusiasm.

These cross-functional teams begin their work, in some instances, by analyzing mission needs and alternative investments, and they continue through the project development and implementation stages. One official stated that a sense of ownership and the drive of the team committed to a project were key factors in the successful completion of a project. This integrated and comprehensive approach improves communication between upper management and project managers and among the various stakeholders in the project. It also increases the likelihood that potential problems will be identified and resolved quickly, thus increasing the likelihood that the project will remain on schedule and within budget.

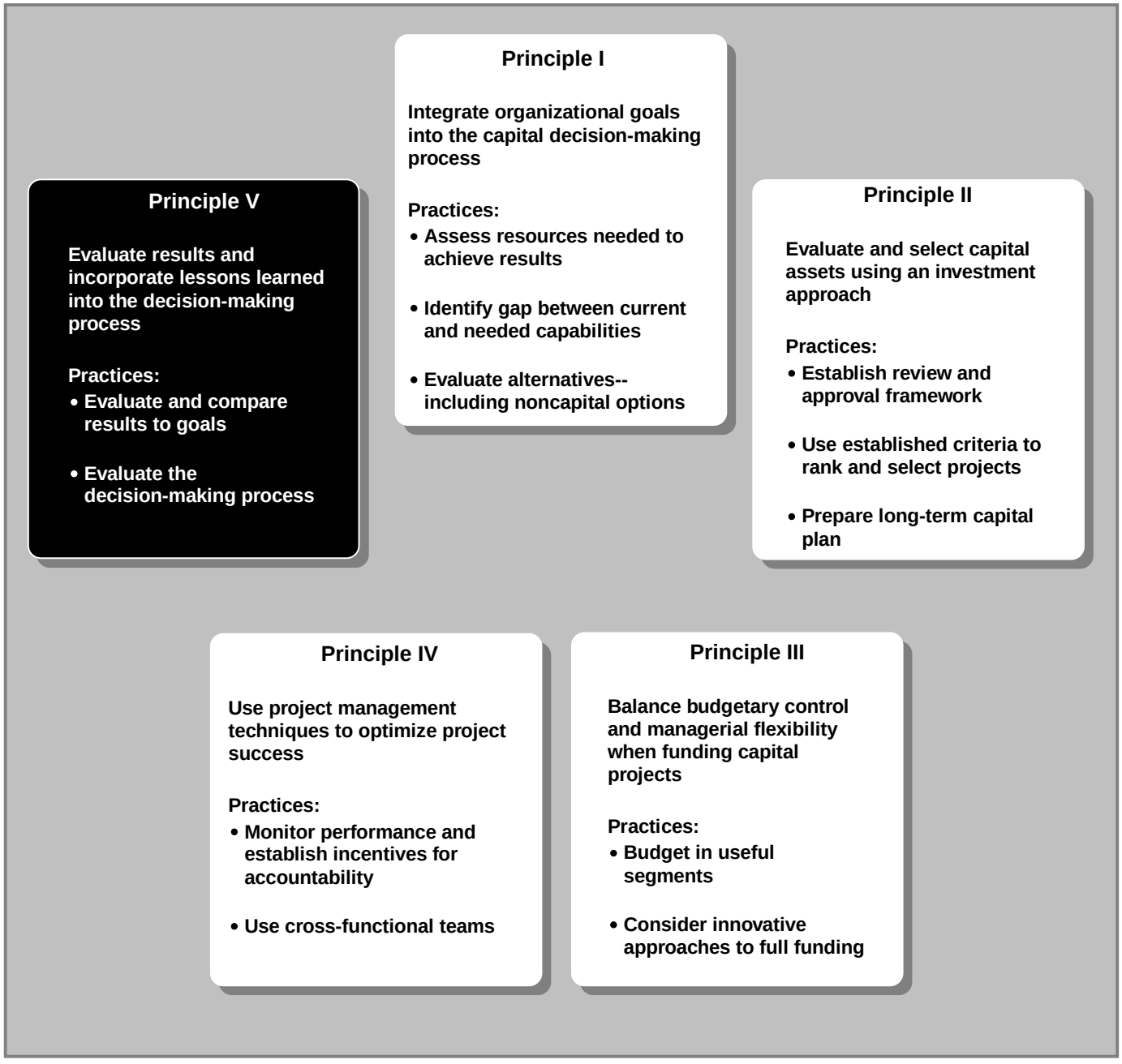
All of our private sector case study organizations use project teams to manage their capital projects. In one private sector company, the team members remain together from one project to the next so that lessons learned from one project can be incorporated into the next project.

The Coast Guard also uses project teams made up of people drawn from different functional areas. These project teams typically include members from engineering, acquisition, operations, personnel, logistics, and testing. Once selected, project managers are required to attend a 20-week training course on project management. Figure IV.2 describes how one state government uses cross-functional teams to plan for and manage capital projects.

Figure IV.2: Case Study—Use Cross-Functional Teams to Manage Projects

For major projects, one state government uses project management teams to ensure swift project execution and prompt resolution of problems. These core project teams are established early in the capital planning and budget process and work together throughout the life of the project. Each project management team within this state government consists of agency staff, a planning and budget analyst, a legislative analyst, real property management staff, general services department engineering staff, a treasury representative, and others. Project management teams can consist of different persons during different phases of the project's life cycle. Key staff, however, such as planning and budget analysts and general services engineering staff, are part of the initial project team and remain on the team until the project is completed. The goals of project management teams include defining the project's scope and developing cost estimates. Potential cost problems or undesirable features are identified and resolved quickly. State officials believe that the use of project management teams improves communication, holds down costs, and reduces the need for costly redesigns.

Evaluate Results and Incorporate Lessons Learned Into the Decision-Making Process



- Evaluate and compare results to goals
- Evaluate the decision-making process

Project implementation is often seen as the end point of the capital decision-making process. However, leading organizations continue to track projects after implementation. For example, they monitor results to ensure that goals have been met and that resources have been used efficiently and appropriately. These organizations use evaluation to improve the performance of future projects through a modification of the existing process.

Leading organizations have a common trait—a desire to assess and improve their performance. Some of the organizations we studied have implemented systematic procedures for evaluating project results, while others have taken a broader approach and reevaluated their capital decision-making processes as a whole. One way to evaluate project performance is to measure the extent to which project outcomes have contributed towards goals and objectives that were established when the project was approved. This type of evaluation can be incorporated into an organization's capital decision-making process through a performance measurement system or through postcompletion evaluations or audits.

Some entities we studied chose to review the capital decision-making process itself, which often resulted in major revisions to their processes. These organizations were willing to take a critical look at themselves and how decisions were being made, and were open to what, in some instances, were significant structural and cultural changes. The federal government is now, with the new emphasis from OMB and the Congress, beginning to show the same willingness to assess its processes and begin to make changes.

Practice 11: Evaluate Results to Determine If Organizationwide Goals Have Been Met

One way of determining if a capital investment achieved the benefits that were intended when it was selected is to evaluate its performance using measures that reflect a variety of outcomes and perspectives. By looking at a mixture of hard and soft measures, e.g., financial improvement and customer satisfaction, managers are able to assess performance based on a comprehensive view of the needs and objectives of the organization. To

implement this balanced approach to performance measurement, leading organizations we studied developed financial and nonfinancial criteria for success that link to the organization's overall goals and objectives. Unit managers then develop project-specific performance measures that are tied to these criteria and which are used as the basis for developing unit performance measures and goals. The unit measures are ultimately rolled up into a divisionwide or organizationwide "scorecard," which measures how well the organization is meeting its goals and objectives. The scorecard allows managers to determine if a unit and, ultimately, if a project has achieved the goals that an organization has determined are important for its success and, if not, where the weak areas and projects can be found. Because unit scorecards are generally linked to employee compensation, a balanced approach to performance measurement provides a clear way of connecting individual performance to the achievement of organizationwide goals. Figure V.1 describes how a balanced approach to performance measurement was used within a large corporation.

Figure V.1: Case Study—Use a Balanced Approach to Evaluate Results

One division within a large international corporation began using a balanced approach to performance measurement in 1994. This balanced approach allows managers to capture the contributions that projects at each level of the division make towards specific divisionwide strategic goals by translating organizational strategies into specific measurable objectives and linking project, unit, and organizationwide performance to these objectives.

Each business unit within the division develops project-based performance measures that are linked to strategic categories established at the division level. These categories include: financial performance, customer satisfaction, internal business practices, and growth and learning. A manager stressed, however, that some of the most important measures may be difficult to quantify. Division and unit managers need to be willing to discard old measures and develop new ones if the first measures developed do not adequately measure a particular category.

Project performance measures are used to develop business unit performance measures and goals. Based on negotiations with the executive leadership team of the division, each unit's measures and goals are generally aligned with those of all of the other units using what is called a "scorecard"; however, each unit may customize its scorecard so that it is meaningful for the individual unit employee. These scorecards have a direct link with compensation and are tied to the contributions of individual employees or employee teams. (See figure V.2 for an illustration of the balanced approach.)

Unit scores are rolled up into a divisionwide scorecard that gauges division performance. The division scorecard is used to determine if the division is meeting its objectives, which are linked to overall strategic goals. If the division is not meeting its objectives, the scorecard allows division management to determine which units within the division are not meeting their unit-specific objectives and in which categories. The unit scorecard then allows the units to identify which projects are not meeting their targets.

Managers stated that the use of a balanced approach has turned their division around. In 1992, the year in which it instituted the scorecard, the division was a money loser. By 1996, the division was making money, which was attributed directly to the use of a balanced approach. The balanced approach identifies problems, which permits the division and/or the unit to refine and improve specific areas or projects. And, because outcomes are linked to compensation, it also provides direct incentives to employees to improve performance.

Figure V.2: Using a Balanced Scorecard

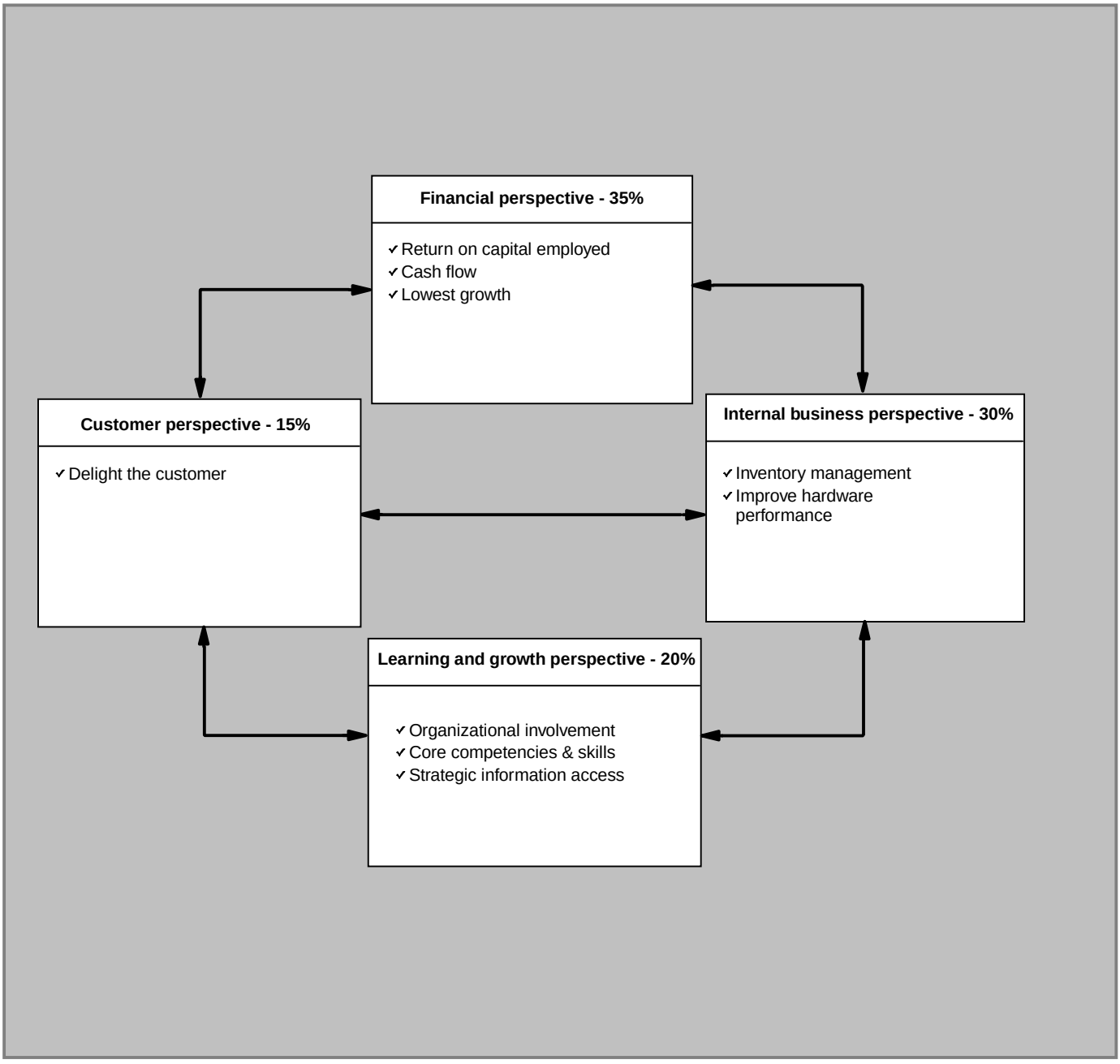
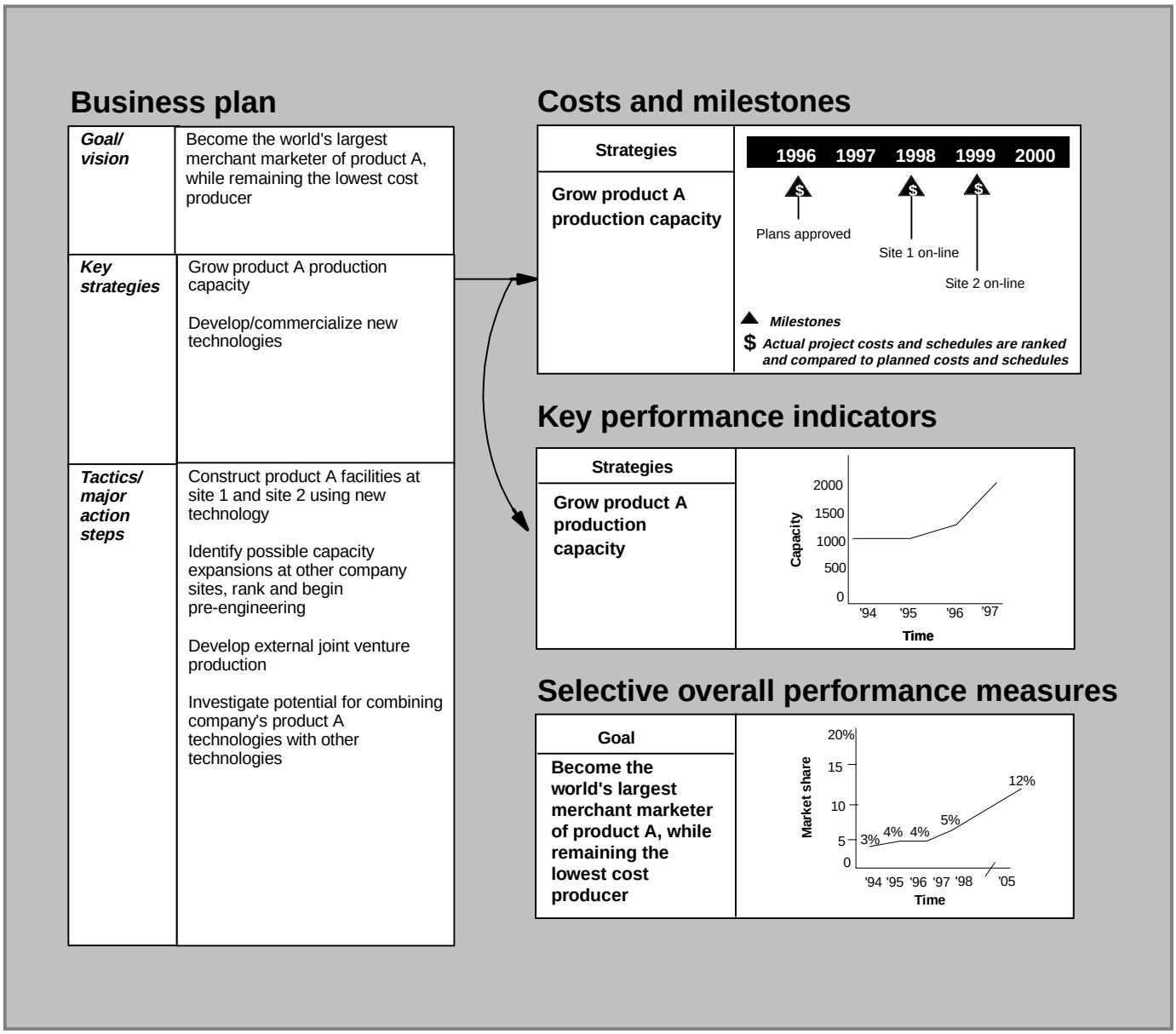


Figure V.3 provides another illustration of how performance measures can be used to determine if an investment has achieved its intended benefits. One leading private sector company closely links project performance expectations to the broader goals and objectives of both the division and organization. The planned costs and milestones for several related projects are shown along with the expected impact on key performance indicators and overall performance measures. The goal in this case is to become the world's largest marketer of product A. One key strategy to achieve this is to increase product A's production capacity. To accomplish this goal, new production sites must be added and their construction must be on schedule and within cost. Performance indicators measure the impact of this specific strategy, while overall performance measures determine whether the execution of a set of strategies has achieved the desired results, such as increasing the market share of product A. Both of these types of measures aid in monitoring progress toward achieving the goal of becoming the world's largest marketer of product A while remaining the lowest cost producer.

Figure V.3: Linking Performance Measures to Strategies and Goals



Another method for determining if an investment is contributing to the success of an organization's goals and objectives is to conduct an audit after the project is completed. The primary focus of this method is not to evaluate the technical aspects of the project, but rather to evaluate the process and whether the end users are satisfied. A state university we studied requires that its Office of Facilities Planning conduct a formal postcompletion audit for all capital projects. The audit is conducted through survey forms provided to (1) personnel with substantial managerial responsibility for the project, (2) project architects/engineers, (3) the general contractor, and (4) end users of the facility. Survey questions include:

- How well does the facility meet the end user's program needs?
- How effective was the management of the bid and the contract award process?
- How accessible were key decisionmakers?

The lessons learned from the audit are incorporated into the design and construction of the next project with the goal of improving the quality of the university facilities and the services provided for students, faculty, staff, and visitors.

Closely related to postcompletion audits are surveys that focus primarily on customer satisfaction. One private sector company we studied interviews customers and asks them to rate the company. It also distributes detailed questionnaires to obtain specific feedback on company performance. The governor in another state we studied issued an executive order requiring departments to define customer satisfaction requirements and measure customer satisfaction. The state is currently developing a customer satisfaction survey to determine if completed facilities are fulfilling program needs.

Practice 12: Evaluate the Decision-Making Process: Reappraise and Update to Ensure That Goals Are Met

Although some organizations evaluate their capital decision-making process on an ongoing basis, we found in our study that this was not the norm. Leading organizations seemed generally to revise their processes in response to an internal crisis or to a perception of changing needs and/or a changing environment. In such situations, these entities felt that they had to conduct difficult self-assessments and undergo major changes in their capital decision-making practices in order to continue successful operation. The following case study (figure V.4) describes a state that revised its capital decision-making process in response to an internal crisis.

Figure V.4: Case Study—Evaluating and Updating the Decision-Making Process

One state in our study reformed its capital decision-making process in response to a period of financial crisis. Prior to this reform, decisionmakers were provided minimal information about potential and ongoing projects, cost estimates were unreliable, strategic plans were not in place, and there was no strict justification process for project selection. There was an overall consensus that the needs of the state were not being met. The fiscal crisis provided an impetus to respond. State legislative and executive leaders formed a capital budget reform group composed of government representatives and outside groups with experience in capital planning to research and recommend changes in the process. The goal of the reform was to enable the state to make informed investment decisions and to effectively manage the resulting assets. Specific objectives included

- a long-term strategic plan,
- a constant level of capital investment,
- integration of the capital and operating budgets,
- preservation of existing assets, and
- better out-year planning estimates.

Since 1994, this state has implemented important changes. The state now has a 6-year planning horizon and capital plans must be linked to strategic plans. To introduce discipline to the capital requests, agencies are required to explain how each request fits in with the agency strategic plan and to rank individual projects based, in part, on how much they contribute to meeting strategic goals. The state has also implemented a performance-based budgeting system, which integrates strategic planning, performance measurement, and budgeting. In addition, the state has asked agencies to identify the operating impact of capital requests over a 6-year period and has developed an inventory of fixed assets that tracks information pertaining to location, structural integrity, and the condition of state-owned assets.

One state government we studied revised not only its capital decision-making but also its budgeting process in an effort to increase efficiency and accountability. Prior to 1992, the capital planning horizon in this state was only 2 years. As the result of an effort to develop a comprehensive approach to managing capital planning, the state developed a 6-year capital plan, which is now the basis for capital budget requests. Then in 1994, the state evaluated its new capital outlay process. This study found that agencies still often took a piecemeal approach to project planning, and the study identified the need for improved communication between the agencies and the central departments that review project requests. The state also reviewed its budget process and determined that it needed a mechanism to establish priorities and focus scarce state resources on the programs that demonstrate the best results. In response to these evaluations, the state implemented the use of project management teams and began a performance budgeting process linking strategic planning and performance measurement, of both capital and noncapital activities, to budget development. The state's new performance budgeting process was selected as a benchmarking model by the National Performance Review.

As stated in Principle I, the Coast Guard is significantly changing its capital planning process in response to budget constraints and requirements related to implementation of the Results Act. The agency had already begun implementing the Results Act when it began changing its capital decision-making process. Officials stated that this prior implementation of the Results Act is making it easier for the agency to convert to a new capital decision-making process focusing on results. The agency chartered an internal working group to develop a long-term agency capital plan similar to the plan recommended in the OMB Capital Programming Guide. The capital plan will reflect changes that the Coast Guard has made in its planning process over the past several years. Until recently, this agency incrementally selected and replaced outdated assets, but, as stated earlier, it is now beginning to view its assets as interrelated and as part of a single, coherent system. Units within the agency are now planning for projects with the goal of getting the best *system* performance at the lowest system cost. Coast Guard officials believe that this new process will result in a more efficient use of resources and funding and will enable the agency to meet its goals more effectively. It is too early to evaluate whether the new process has in fact had these results.

Major Contributors to This Executive Guide

Accounting and Information Management Division, Washington, D.C.

Christine Bonham, Assistant Director
Hannah Laufe, Evaluator-in-Charge
Trina V. Lewis, Evaluator-in-Charge
Sheri Powner, Senior Evaluator
David L. McClure, Associate Director
Tomas Ramirez, Senior Analyst

Seattle Field Office

Tuyet-Quan Thai, Senior Evaluator
Margaret Buddeke, Evaluator

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