# INTRODUCTION TO DEFENSE ACQUISITION MANAGEMENT

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# PREFACE

This third edition of the *Introduction to Defense Acquisition Management* supersedes the second edition published by the Defense Systems Management College (DSMC) in March 1993. Although the general format of the 1993 edition has been retained, this version has been significantly revised to reflect the latest (March 1996) acquisition management policies and procedures, the Department of Defense (DoD) 5000 Documents. A chapter addressing recent acquisition reform initiatives has been added, and there is expanded coverage of the key players and organizations (including Integrated Product Teams) involved in the acquisition management process.

The Handbook is designed to be a quick study guide to refresh the skilled and experienced acquisition management professional; as well as a comprehensive introduction to the world of systems acquisition management for the newcomer. It focuses on Department of Defense-wide applications rather than on the details of how specific weapons (or Automated Information System (AIS)) programs are managed.

We encourage your suggestions, comments, and inputs. For your convenience, at the back of this Handbook is a postage-paid Customer Feedback form. Please take a few minutes to fill it out and help us improve our publication.

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# ACKNOWLEDGMENTS

There are a number of individuals who played a significant role in making this *Third Edition* of the *Introduction to Defense Acquisition Management* a quality Handbook. I want to thank Mr. Greg Caruth, Director, DSMC Press and the members of the Press for their dedicated assistance in assembling and publishing the final product. Specifically, thanks to Mr. Jim Elmore for the new cover design and to Ms. Alberta Ladymon, editor Special Publications for her comprehensive review and editing of the manuscript.

I also want to recognize the valuable review and comments I received from the members of DSMC's Acquisition Policy and Principles of Program Management Departments; Mr. Bill Bahnmaier's thorough scrub of the final draft was especially helpful. Finally, I want to express my sincere appreciation to Mr. Chuck Cochrane, Chairman of DSMC's Acquisition Policy Department, for his advice and encouragement, and for letting me "use" his numerous teaching notes and illustrative charts in assembling this Handbook. Chuck's reputation as a prolific author is well known in the acquisition community, and I could not have completed this update without his help. Thanks, Chuck.

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# 1

# INTRODUCTION TO DEFENSE ACQUISITION MANAGEMENT

A basic understanding of defense acquisition begins with the following definition.

> *The defense acquisition system is a single uniform system whereby all equipment, facilities, and services are planned, developed, acquired, maintained, and disposed of by the Department of Defense (DoD). The system includes policies and practices that govern acquisition, identifying and prioritizing resource requirements, directing and controlling the process, contracting, and reporting to Congress.*

The defense acquisition system provides the framework for acquisition of weapons and automated information systems and other items used by the armed forces to meet threats to national security and to support the decision-making process. A weapon *system* is a system to assist the DoD in conducting its mission of deterring (or in the case deterrence fails, winning) war. Automated Information Systems (AISs) include a combination of hardware and computer software, data and/or telecommunications, that perform functions such as collecting, processing, transmitting, and displaying information used in the DoD decision-making process. An AIS specifically excludes computer resources, both hardware and software, that are physically parts of, dedicated to, or essential in real time to the mission performance of weapon systems (these are called *Mission Critical Computer Resources (MCCRs)* and are considered part of the specific weapon system). "Acquisition" includes research, development, test and evaluation (RDT&E), pro-

duction, procurement, and operations and support. The word "procurement", which is "the act of buying goods and services for the Government," is often (and mistakenly) considered synonymous with acquisition. The term "defense acquisition" generally applies only to weapons and management information systems processes, procedures, and end products. However, non-weapon and non-AIS items and services required by the DoD, such as studies, passenger vehicles, supplies, construction, and waste removal, are also "acquired" and thus considered part of the acquisition process. "Management" includes a set of tasks required to accomplish a specified project. Another way of looking at Systems Acquisition Management is by looking at some individual elements that comprise each of these terms.

| System | Acquisition | Management |
|---|---|---|
| • Hardware | • Determine Need | • Plan |
| • Software | • Design and Develop | • Organize |
| • Logistic Support | • Test | • Staff |
| • Manuals | • Produce | • Control |
| • Facilities | • Field | • Lead |
| • Personnel | • Support | |
| • Training | • Improve or Replace | |
| • Spares | • Dispose | |

## The Role Of Congress, The Executive Branch, And Industry In Defense Acquisition

The three principal participants (players) in defense acquisition include the Executive Branch of the Federal Government, the Congress, and industry (defense contractors). Each element plays a significant role and brings a unique perspective to the process. Each of these participants, in terms of perspectives, responsibilities, and objectives, is discussed briefly below.

## Executive Branch

Principal players within the Executive Branch include the President, the DoD, the Office of Management and Budget (OMB), the Department of State, and the National Security Council (NSC).

### Perspectives

- Formulate, direct, & execute national security policy
- Want to be reelected
- Patriotic
- Personal ambition

### Responsibilities

- Issue directives/regulations
- Contract with Industry
- Exercise command and control of unified commands through CJCS*
- Negotiate with Congress
- USD(A&T)** makes decisions on major defense acquisition programs
- Sign legislation into law

### Objectives

- Satisfy national security needs and objectives
- Maintain a balanced force structure
- Field weapon systems to defeat the threat
- Prevent undue Congressional interest/scrutiny
- Eliminate fraud, waste, and abuse in acquisition

* Chairman, Joint Chiefs of Staff

** Under Secretary of Defense (Acquisition and Technology)

## Legislative Branch

The Legislative Branch (Congress) includes: the two authorizing committees—the Senate Armed Services Committee (SASC) and the House National Security Committee (HNSC); and the two appropriations committees—the House Appropriations Committee (HAC) and Senate Appropriations Committee (SAC). Other elements of the Legislative Branch include the Senate and House Budget Committees; various committees having legislative oversight of defense activities; individual members of Congress; the Congressional Budget Office (CBO); and the General Accounting Office (GAO).

### Perspectives

- Represent interests of their constituents
- Two-party system
- Checks and balances
- Personal ambition
- Want to be reelected
- Patriotic
- Concerned for world peace

### Responsibilities

- Debate/vote/pass legislation
- Conduct hearings
- Set ceilings (manpower and equipment)
- Establish oversight committees
- Raise taxes/provide budget authority

### Objectives

- Balance defense and social needs
- Distribute “dollars” by district
- Control public debt
- Maximize competition

- Control industry profits
- Control fraud, waste, abuse, and mismanagement

**Industry**

The defense industry (contractors) includes large and small organizations providing goods and services to DoD.

**Perspectives**

- Represent interests of the owners or stockholders
- Capitalism
- Patriotism

**Responsibilities**

- Respond to solicitations
- Propose solutions
- Conduct independent R&D*
- Design systems
- Produce systems
- Upgrade/support systems

**Objectives**

- Profit and growth
- Cash flow
- Market share
- Stability
- Technological achievement

*Research and Development

Numerous external factors impact on and help shape every defense acquisition program, creating an environment over which no single person has complete control. These factors include forces, policies, decisions, regulations, reactions, and

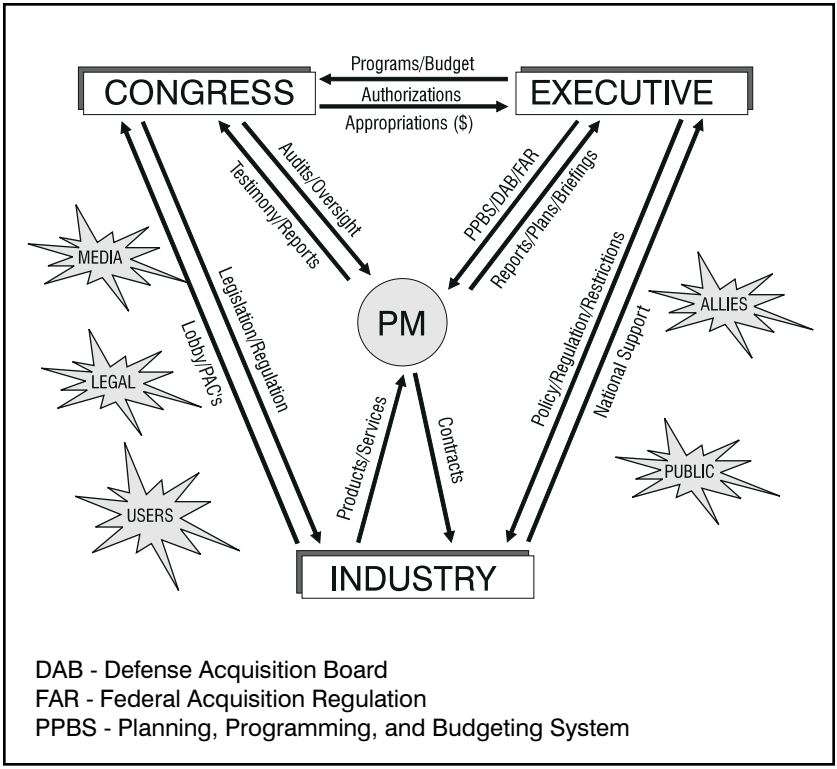


**Figure 1-1. The Program Manager's Environment**

emergencies. Other factors include Political Action Committees (PACs), the media, public sentiment and emotions, world opinion, and the ever present (and changing) threat to national security. Often these factors work at opposite purposes. Understanding and dealing with the environment they create is one of the greatest challenges for defense acquisition managers. Figure 1-1 illustrates some of the interrelationships among these key players. This figure also shows the Program Manager (PM) in the middle of this "tortured triangle," faced with the monumental task of coordinating among the principal participants and managing an acquisition program in the midst of many significant, diverse, and often competing, interests.

## Successful System Acquisition Program

A successful system acquisition program is one that places a capable and supportable system in the hands of a user when and where it is needed, and does so within the bounds of affordability. The ideal outcome necessary for successful long-term relationships among the participants in defense acquisition is "Win-Win," wherein each participant gains something of value for participating. Depending on your perspective, "success" can take many different forms.

> For the *PM*, success means a system that is delivered on time, within cost, and meets its technical requirements.
>
> For the *Office of the Secretary of Defense (OSD)* staff, success means a program that does not attract undue Congressional scrutiny, one that satisfies national security objectives, and provides a balanced force structure.
>
> For the *Congress*, success means a system that strikes a balance between defense and social needs, provides a fair distribution of defense dollars by state/district, and one that has not involved any scandals.
>
> For *industry*, success means a program that provides a positive cash flow, a satisfactory return on investment, and one that preserves the contractor's competitive position in the industry.
>
> For the *user*, success means a system that is effective in combat and easy to operate and maintain.

To a large extent, a person's (or organization's) perspective on what constitutes a successful program depends on their position. In other words, where you *stand* on "success" is largely a function of where you *sit*.

## Authority For Defense Systems Acquisition

The authority for DoD to conduct systems acquisition, i.e., to develop, produce, and field weapons systems, flows from four principal sources. These sources include the Law (legal basis), Executive Direction, OMB Circular A-109, and the Federal Acquisition Regulation (FAR). A brief synopsis of each of these follows.

### The Law

Statutory authority from Congress provides the legal basis for systems acquisition. Some of the most prominent laws are:

- Armed Services Procurement Act (1947), as amended, the original law, now essentially replaced by subsequent legislation;
- Small Business Act (1963), as amended;
- Office of Federal Procurement Policy Act (1983), as amended;
- Competition in Contracting Act (1984);
- DoD Procurement Reform Act (1985);
- DoD Reorganization Act of 1986 (Goldwater-Nichols);
- Federal Acquisition Streamlining Act (FASA) of 1994;
- Title 10, United States Code (U.S. Armed Forces and DoD Organization); and
- Annual authorization and appropriations legislation, which in recent years has contained substantial new or amended statutory requirements.

### Executive Direction

Authority and guidance also emanates from the Executive Branch in the form of executive orders, national security and presidential decision directives, and other departmental or agency regulations. Examples include:

- Executive Order (E.O.) 12352 (1982), which directed procurement reforms and establishment of the FAR;
- National Security Decision Directive (NSDD) 219 (1986), which directed implementation of recommendations of the President's Blue Ribbon (Packard) Commission on Defense Management; and
- National Security Review (NSR) 11 (1989), which directed the Defense Management Review (DMR) and subsequent Defense Management Report to the President.

**OMB Circular A-109**

This document defines the system acquisition process as a "sequence of acquisition activities starting from the agency's mission needs, with its capabilities, priorities, and resources (dollars), extending through introduction into use or successful achievement of program objectives." It establishes the basic acquisition policy for all federal agencies, particularly for major programs, and includes requirements to:

- Express needs and objectives in mission terms;
- Emphasize competitive exploration of alternative system design concepts;
- Communicate with Congress early (and frequently);
- Establish clear lines of management authority, and designate a PM for each major program;
- Designate an agency acquisition focal point; and
- Avoid a premature commitment to full scale development and production.

**Federal Acquisition Regulation (FAR)**

The FAR is the primary regulation for use by all federal agencies for the acquisition of supplies and services with appropriated funds. This document, published in 1984, consolidated the major procurement regulations of the various departments

and agencies. The intent was to standardize content and decrease the volume of regulatory guidance, while establishing a consistent set of procurement rules throughout the federal government. The FAR applies to the acquisition of all goods and services. It guides and directs the defense PM in many ways, including contract award procedures, acquisition planning, warranties, and establishing guidelines for competition. Besides the FAR, each federal agency has a supplement to describe its own particular ways of doing business. The DoD supplement is called the DFARS (Department of Defense Federal Acquisition Regulation Supplement).

# 2

# ACQUISITION REFORM

Since the establishment of the Department of Defense (DoD) by the National Security Act of 1947, there have been many attempts to reform and streamline the acquisition management process. Several executive branch commissions have studied the problems associated with defense acquisition, and a few of these made specific recommendations to modify or change the law regarding the system. Unfortunately, few of the recommendations proposed by these study groups actually resulted in legislation to affect DoD acquisition operations. The passage of the 1991 Department of Defense Authorization Act, however, was the first in a series of steps toward *real change* in the acquisition process. The law called for the establishment of a "panel" of experts, from government and private industry, to study the laws governing defense acquisition, and to propose to the Congress a set of "relevant acquisition laws." The Section 800 Panel (Public Law 101-510, section 800), as it was called, established a framework including the following goals.

- Streamline the defense acquisition process and prepare a proposed code of relevant acquisition laws.
- Eliminate acquisition laws that are unnecessary for the establishment and administration of the buyer and seller relationships in procurement.
- Ensure the continuing financial and ethical integrity of defense procurement programs.
- Protect the best interests of DoD.

With these goals as a foundation, the panel began their monumental task. The Section 800 report, submitted to the defense committees of Congress in January 1993, contained a recom-

mendation to repeal, delete, or amend almost 300 laws (of approximately 600 laws that were reviewed). The panel concentrated on changes that would help streamline the acquisition process throughout the 1990s, an era characterized by a declining DoD budget, smaller workforces, and significant changes in the threat to national security. Specific areas of concentration, which led to several far-reaching changes in the DoD acquisition process, included an emphasis on streamlining (fewer and more understandable laws), the use of commercial items wherever possible, and implementation of a set of simplified acquisition procedures (reducing the administrative overhead associated with "small" purchases).

Many of the panel's recommendations were implemented via subsequent legislation, the most notable examples being the 1994 Federal Acquisition Streamlining Act (FASA) and the 1996 National Defense Authorization Act. The FASA, signed by President Clinton on 13 October 1994, made numerous changes in the acquisition process. Many of the changes have a significant impact on contracting procedures. Some of these changes include emphasizing the use of Electronic Data Interchange (EDI) for the solicitation and award of government contracts, and raising the small purchase threshold (enabling the use of simplified acquisition procedures) to $50,000 ($100,000 if certified for the use of EDI). Other changes in FASA have a direct impact on Program Managers (PMs) in structuring their acquisition strategies. Areas affecting PMs include a limit on the number of articles (no more than ten percent) that can be procured under the auspices of Low Rate Initial Production (LRIP), the elimination of statutory requirements for competitive prototyping and competitive alternative sources, and an emphasis on the use of commercial items to satisfy requirements.

The fiscal year (FY) 1996 National Defense Authorization Act contains additional reform measures. Four of the more significant reform measures are:

- Repealing the Brooks Act (requiring procurement of commercial computer equipment through the General Services Administration (GSA));
- Clarifying and simplifying procurement integrity standards;
- Simplifying procurement procedures for commercial items; and
- Restructuring the DoD acquisition organization and workforce (including a 25 percent reduction over the next five years).

In addition to the reform measures contained in these laws, Secretary of Defense (SECDEF) William Perry has taken a number of steps to improve the DoD acquisition process. A series of Process Action Teams (PATs) were chartered over the past three years to investigate a variety of acquisition topics.

- Electronic Commerce/EDI
- Specifications and Standards
- Defense Acquisition Board (DAB) Oversight and Review
- Contract Administration Reform
- Procurement Process Reform
- Automated Acquisition Information
- DoD 5000 Series Rewrite

These PATs have completed their work and recommendations either have been, or are now being implemented. Other PATs with work currently in progress include:

- Open Systems Joint Task Force, and
- Nongovernment Standards

Policy memos from the Under Secretary of Defense (Acquisition and Technology) (USD(A&T)) implement many of the SECDEF's policies to streamline the acquisition process. These

include the institutionalization of Integrated Product and Process Development (IPPD) and Integrated Product Teams (IPTs), emphasis on the use of commercial specifications and standards, implementation of performance-based specifications, and recognition of Cost as an Independent Variable (CAIV). The March 15, 1996 memorandum, *Update of the DoD 5000 Documents*, (refer to Chapter 3) incorporates the majority of the USD(A&T)'s policy memos.

Why have recent acquisition reform efforts been successful? Many would say it was the result of an end to the Cold War. Others cite the change in the political climate as a result of the 1992 Presidential and 1994 Congressional elections. Still others recognize the efforts of the Deputy Under Secretary of Defense for Acquisition Reform (DUSD (AR)), as the major force behind acquisition reform. All three factors certainly played a part in recent acquisition reform measures. Clearly the way the DoD does business is changing. Acquisition processes will continue to evolve as DoD strives to provide the warfighters the best products at the best dollar value in the most timely manner possible.

# 3

# DEPARTMENT OF DEFENSE ACQUISITION POLICY

The Department of Defense (DoD) has implemented the provisions of OMB Circular A-109 via the March 1996 *Update of the DoD 5000 Documents*. Two documents guide defense acquisition:

1. DoD Directive (DoDD) 5000.1, *Defense Acquisition*, as approved and signed by the Secretary of Defense (SECDEF), is a broad policy directive that states policies and principles for all DoD acquisition programs and identifies the department's key acquisition officials and forums.

2. DoD Regulation 5000.2-R, *Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs*, as approved and signed by the Deputy SECDEF, specifies *mandatory* policies and procedures for MDAPs and MAISs and, where specifically stated, for other than MDAPs and MAISs.

**DoDD 5000.1**

This directive identifies several broad principles that guide **all** defense acquisitions, including major and nonmajor programs, automated information management, and highly sensitive and classified programs. The DoDD 5000.1 describes an *integrated management framework*, formed by DoD's three primary decision support processes, the Requirements Generation System; the Planning, Programming, and Budgeting Sys-

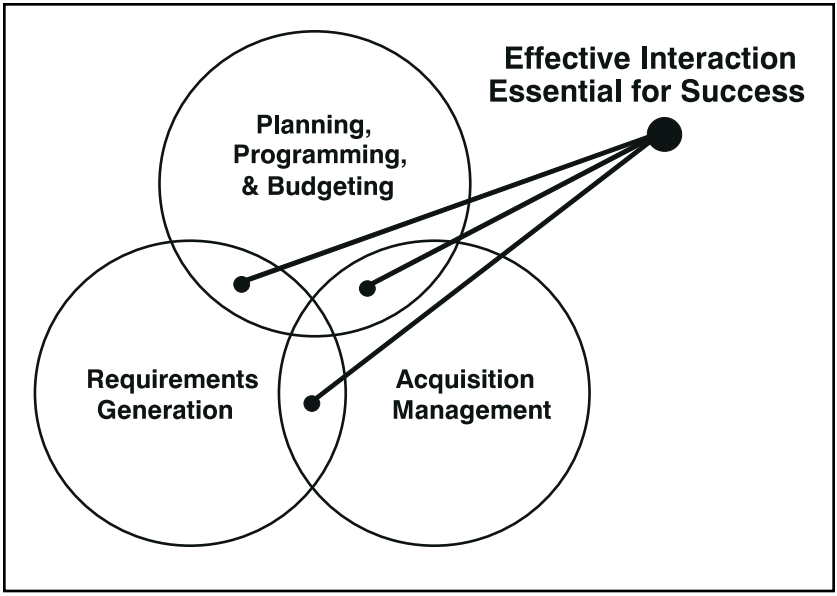


**Figure 3-1. Three Major Decision Support Systems**

tem (PPBS); and the Acquisition Management System. This *integrated management framework* is depicted in Figure 3-1.

Requirements generation, governed by Chairman of the Joint Chiefs of Staff Memorandum of Policy Number 77 (CJCS MOP 77), is the system that results in identification of needs, i.e., warfighting deficiencies or technological opportunities. The acquisition management system, governed by the DoD 5000 Documents, provides for a streamlined management structure (based on an event-driven process) which links formal milestone decisions to demonstrated accomplishments. The PPBS, governed by DoDD 7045.14, as changed May 22, 1984, prescribes the process for making informed resource decisions within the DoD, including decisions regarding acquisition programs. These three systems operate continuously and must interface on a regular basis to enable the DoD leadership to make informed decisions regarding the best allocation of scarce re-

sources. This Handbook details these decision making systems or processes separately in Chapters 5, 6, and 7 respectively.

The DoDD 5000.1 describes three major principles that guide all defense acquisition programs.

1. Translating operational needs into stable, affordable programs. This principle is based on the following nine supporting elements:

    - Integrated Management Framework,
    - Integrated Product and Process Development,
    - Program Stability,
    - Risk Assessment and Management,
    - Total Systems Approach,
    - Cost as an Independent Variable (CAIV),
    - Program Objectives and Thresholds,
    - Non-Traditional Acquisition, and
    - Performance Specification.

2. Acquiring Quality Products. This principle is supported by the following 12 elements:

    - Event Oriented Management,
    - Hierarchy of Material Alternatives,
    - Communications with Users,
    - Competition,
    - Test and Evaluation,
    - Modeling and Simulation,
    - Independent Assessments,
    - Innovative Practices,
    - Continuous Improvement,
    - Legality of Weapons Under International Law,
    - Software Intensive Systems, and
    - Environmental Management.

3. Organizing for Efficiency and Effectiveness. This principle is based on the following seven supporting elements:

- Streamlined Organizations,
- Acquisition Corps,
- Teamwork,
- Limited Reporting Requirements,
- Tailoring,
- Automated Acquisition Information (AAI), and
- Management Control.

In addition to the three major principles, DoDD 5000.1 also identifies and describes the responsibilities of key acquisition officials and key forums.

**Key Officials** (responsibilities are identified in Chapter 4 of this Handbook).

Deputy Secretary of Defense
Under Secretary of Defense for Acquisition and Technology (USD(A&T))
Under Secretary of Defense (Policy) (USD(P))
Under Secretary of Defense (Comptroller) (USD(C))
Secretaries of the Military Departments
Heads of DoD Components
Vice Chairman of the Joint Chiefs of Staff (VCJCS)
Director, Operational Test and Evaluation (DOT&E)
Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD($C^3$I))
Director, Program Analysis and Evaluation (DPA&E)
Component Acquisition Executives (CAEs)
Program Executive Officers (PEOs)
System Command (SYSCOM)/Designated Acquisition/Materiel Command Commanders
Program Managers (PMs)
Overarching Integrated Product Team (OIPT) Leaders

**Key Forums** (discussed in Chapter 4).

Defense Resources Board (DRB)
Defense Acquisition Board (DAB)
Major Automated Information System Review Council (MAISRC)
Joint Requirements Oversight Council (JROC)
Cost Analysis Improvement Group (CAIG)
Integrated Product Teams (IPTs)

**DoD 5000.2-R**

The DoD 5000.2-R establishes a simplified and flexible management framework for translating mission needs into stable, affordable, and well-managed MDAPs and MAIS acquisition programs. The regulation sets forth mandatory procedures for managing MDAPs and MAISs and, specifically where stated, for other than MDAPs and MAISs. Non-MDAPs and non-MAISs *generally* follow the same process as MDAPs and MAISs; however, the Milestone Decision Authority (MDA) tailors the process as appropriate (and consistent with statutory requirements) to best match the conditions of individual nonmajor programs. The general model consists of four major milestones and four phases of life cycle management (refer to Chapter 6 of this Handbook).

DoD Regulation 5000.2-R is divided into six parts.

- **Part 1 - Acquisition Management Process:** Establishes a general model for managing both MDAPs and MAIS acquisition programs, recognizing that every program is different.

- **Part 2 - Program Definition:** Describes mandatory procedures for translating broadly stated mission needs into a set of more sharply defined performance specifications.

- **Part 3 - Program Structure:** Describes the elements necessary to structure a successful MDAP or MAIS acquisition program.

- **Part 4 - Program Design:** Establishes the basis for a comprehensive and disciplined approach to designing MDAPs and MAIS acquisition programs.

- **Part 5 - Program Assessments & Decision Reviews:** Establishes mandatory procedures for conducting assessments and milestone decision reviews of MDAPs and MAIS acquisition programs.

- **Part 6 - Periodic Reporting:** Describes periodically prepared mandatory reports to provide acquisition executives (AEs) and Congress with adequate information to oversee the acquisition process and make necessary decisions.

The DoD 5000.2-R also includes six appendices that specify mandatory formats in the below listed areas. A Glossary will be published as Change 1 to the Regulation.

- Operational Requirements Document (ORD)
- Consolidated Acquisition Reporting System (CARS)
- Test and Evaluation Master Plan (TEMP)
- Live-Fire Test and Evaluation (LFT&E) Plan
- Major Automated Information System Quarterly Report
- Cost/Schedule Control Systems Criteria (C/SCSC)

In addition to DoDD 5000.1 and DoD 5000.2-R, an *Acquisition Deskbook* is being implemented[1]. The Acquisition Deskbook is an automated reference tool that will provide, via an on-line capability, DoD acquisition information for all

[1] The Acquisition Deskbook is under development as of the date of this Handbook.

services, across all functional disciplines. The Deskbook will be an easy-to-use, automated information retrieval system, providing real-time access to the most current acquisition information through three key elements, a reference set, a software tool catalog, and an acquisition management bulletin board. The reference set will contain information organized into three main categories—mandatory direction, discretionary practices, and advice. The reference set will be issued on CD-ROM, with updates on a quarterly basis. The software tool catalog will consist of a database listing of available or under-development software tools and descriptive information. The acquisition management bulletin board, located on the World Wide Web, will provide the medium for the exchange of ideas and experiences among members of the acquisition workforce, and should facilitate communication up and down the acquisition chain of command. The Acquisition Deskbook will also contain a complete on-line version of DoDD 5000.1, DoD 5000.2-R, the Federal Acquisition Regulation (FAR) and the DoD Federal Acquisition Regulation Supplement (DFARS). The purpose of the Deskbook is to be a convenient source of information to which PMs and other acquisition participants may turn for assistance in implementing guiding principles and mandatory procedures.

The recently reissued documents and on-line information repository discussed above accomplish four major objectives.

- Incorporate new laws and policies that have been enacted since the last update (Feb 1991), including the provisions of the Federal Acquisition Streamlining Act (FASA) of 1994 and the institutionalization of IPTs.

- Separate mandatory policies and procedures from discretionary practices.

- Respond in two ways to the perception that the acquisition policy documents have grown unwieldy and too

complex: (1) the revised directive and regulation are, for the first time, available on-line to the acquisition community; (2) the volume and complexity of regulatory guidance have been significantly reduced.

- Integrate the acquisition policies for both weapon systems and automated information systems (AISs).

# 4

# DEFENSE ACQUISITION MANAGEMENT ORGANIZATIONS

## Background

### Packard Commission

The 1985-86 President's Blue Ribbon Commission on Defense Management was chaired by former Deputy Secretary of Defense David Packard, and involved a comprehensive review of the overall defense acquisition process. Reporting to the President in mid-1986, the Packard Commission recommended creation of a single position responsible for acquisition and establishment of a streamlined reporting chain from the Program Manager (PM) to the milestone (acquisition) decision authority (MDA) within the Department of Defense (DoD) (the Under Secretary of Defense for Acquisition and Technology (USD(A&T)). President Reagan approved the Commission's recommendations, and he directed their implementation via National Security Decision Directive (NSDD) 219 in 1986.

### Defense Management Review (DMR)

A follow-on assessment of defense acquisition management was initiated by President Bush in 1989. The DMR reiterated the Packard Commission findings. One of the major recommendations from the Packard Commission and the subsequent DMR was to streamline the PM's reporting chain. The resultant *four-tier* reporting chain provides for no more than two levels of management oversight between the PM and the MDA, for all acquisition programs. The specific reporting chain for

any particular program is a function of the program's size and acquisition category (ACAT) (discussed later in this chapter).

This structure provides a clear line of authority running from the USD(A&T) through full time component acquisition executives (CAEs) and full time Program Executive Officers (PEOs) to the individual PMs of Major Defense Acquisition Programs (MDAPs). The services have chosen somewhat different approaches for implementing this policy. For Automated Information Systems (AISs), the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD($C^3$I)), as the DoD's Chief Information Officer (CIO), serves as the acquisition executive (AE), or MDA. In this capacity, the AE makes decisions and establishes acquisition policies and procedures unique to AISs.

The reporting structure for ACAT ID (MDAPs) and ACAT IAM (MAIS acquisition programs) is illustrated in Figure 4-1.

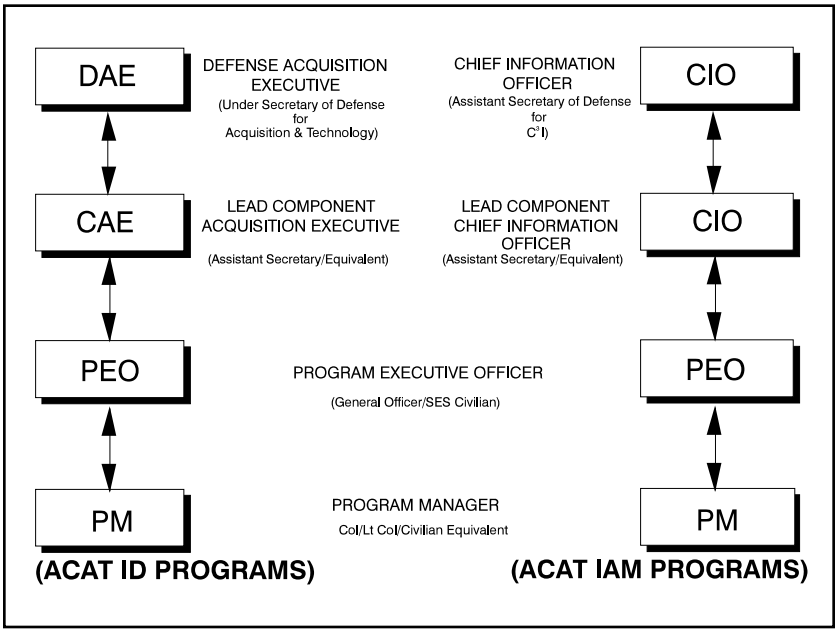


**Figure 4-1. DoD Acquisition Authority Chain**

## PEOs

The position and function of the PEO was established in 1986, based on the Packard Commission report. The Army took the lead in creating the PEO structure, shortly after the Packard Commission findings were released. There have been some refinements of the Army's PEO structure since 1987, and the Army currently has nine PEOs, and two direct-reporting Program Managers (DRPMs) who report directly to the Army Acquisition Executive (AAE). The Navy implemented the PEO structure in 1986 by dual-hatting its Systems Command (SYSCOM) Commanders as PEOs for assigned programs. In order to comply with the 1989 DMR, the Navy now has nine PEOs independent from the SYSCOMs, and three DRPMs. The Air Force, like the Navy, had originally dual-hatted its Product Center Commanders as PEOs. In order to comply with the DMR, the Air Force subsequently established six PEOs (separate from the Product Center structure).

## Service (Component) Acquisition Executives (SAEs/CAEs)

The senior official in each service responsible for acquisition matters under the Service Secretary is the SAE, also known as the CAE. The SAE in the Army is the Assistant Secretary of the Army for Research, Development, and Acquisition (ASA(RD&A)). The Navy's (and Marine Corps') AE is the Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN(RD&A). In the Air Force, the SAE is the Assistant Secretary of the Air Force for Acquisition (ASAF(A)). The SAE's role is similar to that of the Defense Acquisition Executive (DAE) at the Office of the Secretary of Defense (OSD) level (see Figure 4-1). The SAE reports to the Service Secretary administratively and to the DAE for acquisition management matters. Each SAE also serves as the Senior Procurement Executive (SPE) for their military department. In this capacity, they are responsible for management direction of their respective service procurement system, in-

cluding implementation of unique procurement policies, regulations, and standards. Other DoD components, including the Defense Information Systems Agency (DISA) and the United States Special Operations Command (USSOCOM), also have CAEs who make acquisition decisions for their component's programs.

Both MDAPs destined for review/approval by the USD(A&T) and other programs reviewed by the services follow the same basic management oversight process, but the final decision authority is at a lower level for the latter programs. Similarly, less than MAIS acquisition programs follow an oversight process that parallels that of the Major Automated Information System Review Council (MAISRC), but decisions for these programs are made at a lower level. For other than MAISs (for which the ASD($C^3$I) is the MDA), the DoD Component CIO serves as the MDA.

**USD(A&T)**

Title 10, United States Code (USC), §133 established the position of Under Secretary of Defense for Acquisition (USD(A)). The 1994 National Defense Authorization Act subsequently changed the USD(A) title to USD(A&T). The USD(A&T) serves as both the principal acquisition official to the DoD and the principal acquisition advisor to the Secretary of Defense (SECDEF). The USD(A&T) serves as the DAE for the department, and as the SPE for the agencies that report directly into the OSD staff. For acquisition matters, the USD(A&T) takes precedence over the Secretaries of the Services and ranks number three within the DoD (directly below the SECDEF and Deputy SECDEF). The USD(A&T) is the DoD AE for MDAPs. This person is responsible for establishing acquisition policies and procedures for weapons systems acquisition programs.

The **USD(A&T)** also:

- Supervises the entire DoD acquisition system,
- Chairs the Defense Acquisition Board (DAB),
- Develops acquisition program guidance and ensures compliance with established acquisition policy and procedures,
- Serves as National Armaments Director and SECDEF representative to the Four Power Conference,
- Administers the Defense Acquisition Executive Summary (DAES) and the Cost/Schedule Control Systems Criteria (C/SCSC) systems, and
- Establishes policy for the training and career development of acquisition personnel.

Other key players within the USD(A&T) organization include:

- *Principal Deputy USD(A&T):* Serves as chief advisor to USD(A&T), acts in the USD(A&T)'s absence, oversees the DAB and DAES functions, and other issues related to systems acquisition.
- *Director, Defense Research and Engineering (DDR&E):* Principal advisor to the USD(A&T) for scientific and technical matters. Responsible for oversight of DoD basic research, exploratory development, and advanced development.
- *Director, Test, Systems Engineering, and Evaluation (DTSE&E):* Responsible for developmental test and evaluation (DT&E) policies and procedures, systems engineering (SE) policies, and the Foreign Compara-

tive Testing (FCT) program.

- *Deputy Under Secretary of Defense for Advanced Technology (DUSD(AT)):* Manages Advanced Concept Technology Demonstration (ACTD) efforts.

- *Deputy Under Secretary of Defense for Acquisition Reform (DUSD(AR)):* Responsible for identifying and implementing ways to streamline the acquisition process. Also responsible for the education and training of acquisition personnel.

- *Deputy Under Secretary of Defense for Environmental Security (DUSD(ES)):* Responsible for oversight of all environmental issues associated with defense acquisition, to include compliance, cleanup, conservation, and pollution prevention. Also responsible for environmental technology development.

- *Assistant Secretary of Defense for Economic Security (ASD(ES)):* Responsible for industrial base policy, dual use technology, international programs, base realignment and closure, reinvestment, and economic adjustments.

- *Deputy Under Secretary of Defense for Logistics (DUSD(L)):* Oversees logistics, transportation, Continuous Acquisition Life Cycle Support (CALS), and resource management issues.

- *Deputy Under Secretary of Defense for Space (DUSD(Space)):* Provides policy guidance and oversight concerning development of integrated space architectures consistent with the National Military Strategy (NMS), the Defense Planning Guidance (DPG), and fiscal guidance.

Other officials which report to the USD(A&T) include:

- Executive Director, Defense Science Board (DSB),
- Director, Special Programs,
- Director, Small and Disadvantaged Business Utilization Program (SDBUP),
- Assistant to the Secretary of Defense for Atomic Energy (ASD(AE)),
- Director, Ballistic Missile Defense Organization (BMDO), and
- Director, Defense Logistics Agency (DLA).

In addition to these offices, there are several other DoD organizations that play a critical role in defense acquisition management. These are briefly discussed below.

*ASD($C^3I$):* As the CIO for DoD, serves as the Department's AE for MAIS acquisition programs and establishes acquisition policies and procedures unique to AISs.

*Director, Operational Test and Evaluation (DOT&E):* Responsible for DoD operational and live fire test and evaluation (LFT&E) policy and procedures. Analyzes results of operational test and evaluation (OT&E) conducted on MDAPs and reports to the SECDEF, the USD(A&T), and the Senate and House Committees on Authorizations and Appropriations as to whether test results indicate the system is operationally effective and suitable. Also monitors and reviews the results of DoD LFT&E activities.

*Defense Resources Board (DRB):* As the DoD's principal resource management organization, the DRB plays a major role in the Planning, Programming, and Budgeting System (PPBS) (see Chapter 7). It reviews the service and defense agency Program Objectives Memoranda (POMs) and conducts program execution reviews. Chaired by the Deputy Secretary of Defense, key members of the DRB include the USD(A&T); Un-

der Secretaries of Defense for Policy (USD(P)) and the Comptroller (USD(C)); the Director of Program Analysis and Evaluation (DPA&E); and the DDR&E.

*Joint Requirements Oversight Council (JROC):* The role of the JROC has increased significantly as a result of the DMR. The JROC reviews MDAPs (and selected MAIS programs) at each milestone prior to the DAB (or MAISRC), and are primarily concerned with requirements and performance baseline issues. The JROC allows the users (including unified commands) direct access into the DoD acquisition process. The JROC is chaired by the Vice Chairman of the Joint Chiefs of Staff (VCJCS) and includes the following members:

- Vice Chief of Staff, U.S. Army (VCSA);
- Vice Chief of Staff, U.S. Air Force (VCSAF);
- Vice Chief of Naval Operations (VCNO); and
- Assistant Commandant, U.S. Marine Corps (ACMC).

In addition to his role as Chairman of the JROC, the VCJCS also serves as Vice Chairman of the DAB.

*Cost Analysis Improvements Group (CAIG):* The CAIG is an ad hoc group chartered by the DPA&E. Its function is to provide an assessment, prior to each milestone review of MDAPs, of the program life cycle cost (LCC) estimate, and the service independent cost estimate.

## ACATs, IPTs, the DAB, and the MAISRC

### ACATs

Defense acquisition programs are grouped into one of six ACATs based principally on their dollar value and MDA as illustrated in Figure 4-2.

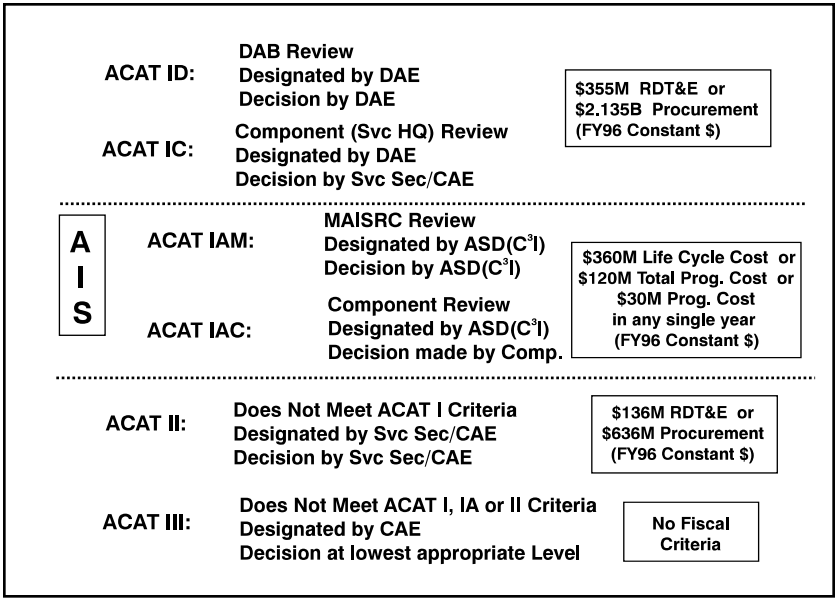


**Figure 4-2. Acquisition Categories (ACATs)**

ACAT I programs are MDAPs. There are two subcategories of ACAT I programs:

- *ACAT ID*, for which the MDA is the USD(A&T). The "D" refers to DAB . Sponsoring service/defense agencies first review/approve ACAT ID programs. Forward movement of the program involves review by the appropriate Overarching Integrated Product Team (OIPT) and the DAB. The DAE makes the final decision.

- *ACAT IC*, for which the MDA is the DoD component head, or if delegated, the CAE. The "C" refers to Component. Initially, services and defense agencies review their respective ACAT IC programs. The corresponding SAE or CAE makes the final milestone decisions.

ACAT IA programs are MAIS acquisition programs. The "A" distinguishes major AIS acquisition programs from MDAPs. There are two subcategories of ACAT IA programs:

- *ACAT IAM*, for which the MDA is the ASD($C^3I$). The "M" refers to MAISRC. First reviews of the ACAT IAM programs occur by the sponsoring service/agency. Next, the Information Systems OIPT and MAISRC, respectively, review the programs. Final decision authority lies with the DoD CIO (ASD($C^3I$)).

- *ACAT IAC*, for which the MDA is the DoD Component CIO. The "C" refers to Component. Initially, service and defense agency levels review the ACAT IAC programs. The component CIO makes the final milestone decisions.

*ACAT II programs* are those programs that do not meet the criteria for an ACAT I program but do meet the criteria for a major system. The MDA for these programs is the CAE (or SAE). The management oversight and review process for these programs is similar to that of the ACAT IC programs discussed above.

*ACAT III programs* are those programs that do not meet the criteria for ACAT I, ACAT IA, or ACAT II programs. The MDA is designated by the CAE and shall be at the lowest appropriate level. Milestone decisions for these programs *may be made at the SAE* level, but most of these programs are reviewed (and decisions are made) at the Systems Command (Navy and Marine Corps), Major Subordinate Command (Army), or Product or Air Logistics Center (Air Force) level. Some ACAT III programs may be assigned to a PEO for milestone/program decisions. This category also includes less than major AISs.

## IPTs

Integral to the defense acquisition oversight and review process are IPTs. Their purpose is to facilitate decision making by making recommendations based on timely input from the entire team. IPTs are composed of representatives from all appropriate functional disciplines working together to build successful programs and enabling decision makers to make the right decisions at the right time. Each IPT operates under the following broad principles:

- Open discussions with no secrets;
- Qualified, empowered team members;
- Consistent, success-oriented, proactive participation;
- Continuous "up-the-line" communications;
- Reasoned disagreement; and
- Issues raised and resolved early.

For ACAT ID and ACAT IAM programs, there are generally two levels of IPTs above the program office—an OIPT and Working-Level IPTs (WIPTs). The following paragraphs discuss the roles and responsibilities of these IPTs in the defense acquisition process.

*OIPTs:* Each MDAP (ACAT ID) is assigned to an OIPT for management oversight. The primary role of the OIPT is to provide strategic guidance and to help resolve issues early as a program proceeds through its acquisition life cycle. OIPTs for ACAT ID programs are led by the appropriate OSD official[2]; the Deputy Assistant Secretary of Defense ($C^3I$ Acquisition) will designate the OIPT Leader for each ACAT IAM program. OIPT members include the PM, the PEO, component staff, USD(A&T) staff, the Joint Staff, and other OSD principals

[2] Typically the Director of Strategic and Tactical Systems, the Assistant Deputy Under Secretary of Defense (Space and Acquisition Management), or the Deputy Assistant Secretary of Defense ($C^3I$ Acquisition).

(e.g., Comptroller, PA&E, CAIG, DOT&E, etc.) or their representatives involved in oversight and review of a particular ACAT ID or ACAT IAM program. The OIPT will normally convene two weeks in advance of an anticipated review by the DAB or the MAISRC to assess information and the recommendations being provided to the MDA. The OIPT Leader, in coordination with the appropriate CAE, makes a recommendation to the MDA as to whether the anticipated review should go forward as planned.

There are four broad categories of OIPTs—Space Systems, Weapons Systems, $C^3I$ Systems, and Information Systems. The first three categories support the DAB and the Information Systems OIPT supports the MAISRC.

*WIPTs:* The WIPTs meet as required to help the PM plan program structure and documentation and resolve issues. The leader of each IPT is usually the PM or the PM's representative. Specific roles and responsibilities of all WIPTs include the following:

- Assist the PM in developing strategies and in program planning, as requested by the PM.
- Establish an IPT plan of action and milestones.
- Propose tailored document and milestone requirements.
- Review and provide early input to documents.
- Coordinate WIPT activities with the OIPT members.
- Resolve or elevate issues in a timely manner.
- Assume responsibility to obtain principals' concurrence on issues, as well as with applicable documents or portions of documents.

**DAB**

The DAB is the DoD's senior-level forum for advising the USD(A&T) on critical issues concerning ACAT ID programs. It is the name given to the life cycle decision-making process through which major programs proceed from requirements and concept definition through production and deployment. The DAB provides the formal oversight/management mechanism for many MDAPs. It replaced the former Defense Systems Acquisition Review Council and Joint Requirements Management Board review processes. Formal meetings may be held at each milestone (for ACAT ID programs) to review accomplishments of the previous life cycle phase and assess readiness to proceed into the next phase. Typical issues addressed at the DAB include cost growth, schedule delays, technical threshold breaches, supportability issues, acquisition strategy, threat assessment, test and evaluation highlights, cooperative development/joint service concerns, manpower evaluation, and operational effectiveness and suitability. The DAB is *issue-oriented*, and the result of a DAB review is a go or no-go decision from the USD(A&T), which is documented in an Acquisition Decision Memorandum (ADM). Approximately one week prior to a scheduled DAB review, a DAB Readiness Meeting (DRM) is held to pre-brief the USD(A&T), VCJCS, and the other DAB participants, including the cognizant PEO(s) and PM(s). The purpose of the DRM is to update the USD(A&T) on the latest program status and to inform the senior acquisition officials of any outstanding issues. If the outstanding issues are resolved at the DRM (or if there were no outstanding issues), the USD(A&T) may decide that a formal DAB is not required and will issue an ADM following the DRM.

**Note:** The DAB review (and USD(A&T)'s milestone decision) only approves a program to proceed; it has no direct role in the resource allocation process, although the USD(A&T) can direct the comptroller to withhold funds from a program.

*DAB members include:*

- USD(A&T), Chairman
- VCJCS, Vice Chairman
- Principal Deputy USD(A&T)
- CAEs or SAEs - Army, Navy, Air Force
- USD(C)
- Assistant Secretary of Defense (Strategy and Requirements)
- DPA&E
- DOT&E
- DAB Executive Secretary
- OIPT Leader
- PEO
- PM

The DAB (as a review body) reviews about 50 MDAPs (ACAT ID); another 50 or so ACAT IC programs are managed at the CAE or SAE level.

**MAISRC**

The MAISRC is the DoD's senior level forum for advising the ASD($C^3$I) on critical decisions concerning ACAT IAM programs. It is chaired by the ASD($C^3$I) who is routinely supported by senior advisors from the OSD staff. Principal members of the MAISRC include representatives from the offices of the USD(C), the JCS, the DOT&E, the DTSE&E, the Director of Acquisition Program Integration (API), the Deputy ASD($C^3$I), the user representatives, and the cognizant component CIO (or CAE, as appropriate). The decision authority for less than major AISs is the component CIO.

Each service and defense agency has its own version of the life cycle process which parallels the DAB and MAISRC processes. These parallel processes (to include the use of IPTs) are used for managing programs that do not require USD(A&T) (or

ASD($C^3I$)) decisions, and for reviewing ACAT ID (or ACAT IAM) programs prior to a DAB (or MAISRC). Following is a summary of the individual service level reviews and their respective chairman (service level review authority).

| Service Level Review | Chaired By |
|---|---|
| • Army Systems Acquisition Review Council (ASARC) | • ASA (RD&A) |
| • Air Force Acquisition Board (AFAB) | • PDASAF[3] (Acquisition) |
| • Program Decision Meeting (Navy) | • ASN (RD&A) |
| • Program Decision Meeting (Marine Corps) | • ASN (RD&A) |

The reviews discussed above apply primarily to weapons systems programs, although the process for AISs is similar. For ACAT IAM programs, the MAISRC is the senior review body, and is chaired (and milestone decisions are made) by the ASD ($C^3I$). For ACAT IAC programs, reviews are held at the service (component) level and the MDA is the component's CIO.

[3] The Principal Deputy Assistant Secretary of the Air Force chairs the Air Force Acquisition Board, as required.

# 5

# REQUIREMENTS GENERATION PROCESS

Requirements generation is based on a continuing process of assessing the capabilities of the current force structure (people and materiel) to meet the projected threat, while taking into account opportunities for technological advancement, cost savings, and changes in national policy or doctrine. The requirements generation process involves the identification of needs based on mission area responsibilities, called mission area assessment (MAA). Mission areas are broad categories of warfighting responsibility, such as fire support for the Army, amphibious warfare for the Marine Corps, air support and interdiction for the Air Force, and strategic sealift/protection for the Navy. The Training and Doctrine Command (TRADOC) in the Army, the Center for Naval Analysis (CNA) and/or the Office of the Chief of Naval Operations (OPNAV) staff in the Navy, the Marine Corps Combat Developments Command (MCCDC) in the Marine Corps, and the operational commands (e.g., Air Combat Command, Air Mobility Command, etc.) in the Air Force conduct MAAs.

Two documents are used in the Department of Defense (DoD) to describe requirements, the mission need statement (MNS) and the operational requirements document (ORD). The MNS is generated first, based on an analysis of warfighting mission areas. It describes a warfighting deficiency, or an opportunity to provide new capabilities, in broad operational, not system specific, terms. Once alternatives to satisfy the mission need are studied and a system concept selected, an ORD is prepared to describe the system solution.

The study and analysis of mission areas, assessment of alternative solutions (called analysis of alternatives (AA)), and the development of system level requirements are key elements of a resource intensive process. Users are frequently assisted and/or represented by headquarters and other commands. In the Army, the process of developing requirements is called "combat developments" and is handled by TRADOC. Navy fleet commanders provide requirements to the OPNAV staff, who, in turn, prepare and staff fleet requirements for approval. For the Marine Corps, MCCDC performs a function similar to the Army's TRADOC. Air Force operational commands develop requirements for the Air Force.

Once identified, deficiencies (i.e., mismatches between current and projected capabilities and the future threat) need to be resolved, and the first choice is a change in doctrine or tactics, or perhaps additional training. These alternatives, often called "nonmateriel alternatives," are investigated first because of their relatively low cost and ease (i.e., speed) of implementation. Should nonmateriel alternatives prove incapable of resolving the deficiency, we are forced to look for materiel solutions. The requirement for a materiel solution is documented in a MNS.

A MNS is written for all mission needs that may result in an acquisition program, regardless of acquisition category (ACAT). MNSs are not written for mission needs that can be resolved by nonmateriel solutions; they are prepared in accordance with guidance contained in Chairman of the Joint Chiefs of Staff Memorandum of Policy Number 77 (CJCS MOP 77). The overall requirements generation process is depicted in Figure 5-1.

Since a MNS describes a warfighting deficiency or technological opportunity, descriptions of specific performance characteristics or specific system solutions are not appropriate. A requirements validation authority reviews, validates, and ap-

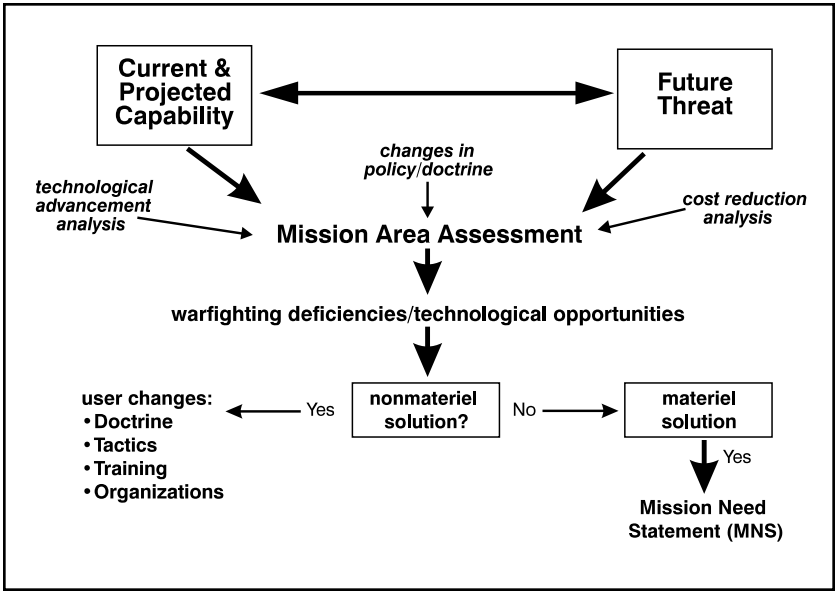


**Figure 5-1. Mission Need Determination**

proves MNSs. Validation confirms that the need exists and cannot be resolved by a nonmateriel solution. Approval means the validation process is complete and the need is valid. The validation authority also determines joint service potential, and then forwards approved MNSs to the appropriate Milestone Decision Authority (MDA) for a Milestone 0 review. Disapproved MNSs are returned to the originator, who notifies the user. The flow of a MNS from originator to a Milestone 0 is shown in Figure 5-2.

The Joint Requirements Oversight Council (JROC) is the validation and approval authority for MNSs with the potential to lead to Major Defense Acquisition Programs (MDAPs) (ACAT I). For potential non-MDAPs (ACAT II and ACAT III), the chiefs of the military services, heads of defense agencies, and commanders-in-chief (CINCs) of unified commands validate and approve their own MNSs. Once the JROC validates and approves a MNS it is sent to the Under Secretary of Defense

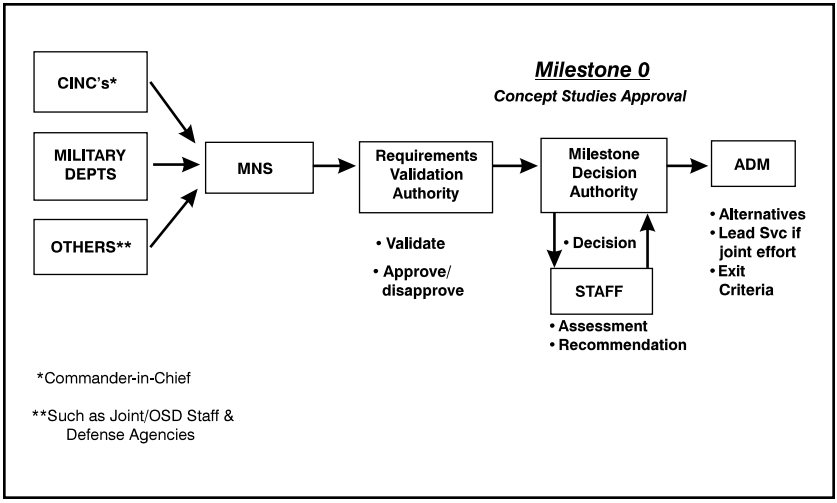


**Figure 5-2. Mission Need Statement (MNS) Flow**

(Acquisition and Technology) (USD(A&T)) for a Milestone 0 decision. Each MNS that could result in a non-MDAP (ACAT II and ACAT III) is sent to the respective service or component acquisition executive (SAE or CAE) for a Milestone 0 decision.

If the requirement could result in a Major Automated Information System (MAIS) acquisition program (ACAT IA), the MNS is validated and approved by the appropriate Office of the Secretary of Defense (OSD) Principal Staff Assistant (PSA) and/or the JROC. Milestone 0 decisions for these efforts are made by the DoD Chief Information Officer (CIO), the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD($C^3$I)). Requirements that could result in less than MAIS acquisition programs are sent to the service or defense agency CIO for a Milestone 0 decision.

A favorable Milestone 0 decision marks the transition from the requirements generation process to the acquisition management process. Studies and analysis of all feasible alterna-

tive concepts are undertaken, based on the following order of precedence.

- Use or modification of an existing U.S. military system.
- Use or modification of an existing commercially developed or Allied system (nondevelopmental item (NDI) approach).
- Cooperative research and development program with one or more Allied nations.
- New Joint-Service program.
- New service-unique development program.

During this first phase, concept exploration (CE), of the acquisition life cycle, the user will develop an ORD to describe objectives and minimum acceptable requirements (thresholds) for operational performance of the proposed system concept. As the preferred concept is selected (for program initiation) and moves forward through the design, development, and production process, the ORD will continue to evolve. The initial broad objectives and minimum acceptable requirements will become more detailed (in number and specificity) as a result of cost-schedule-performance trade-offs during each phase of the acquisition life cycle (discussed in Chapter 6).

# 6

# ACQUISITION MANAGEMENT (LIFE CYCLE) PROCESS

All programs, including highly sensitive classified, cryptologic, and intelligence programs must accomplish certain activities. The framework in which these activities occur is called the Acquisition Life Cycle. The generic model for this process was introduced briefly in Chapter 3 and is graphically depicted in Figure 6-1.

The life cycle process consists of decision points, or milestones, and periods of time, or phases. The life cycle of a program begins with planning before the program is approved or officially begins (pre-Phase 0 activities), and takes the program through research, development, production, deployment, support, upgrade, and finally, demilitarization and disposal (post-Phase III activities). References to "life cycle" in the acquisition business, such as total life cycle costs (LCC) of developing, producing, deploying, supporting, and disposing of a sys-

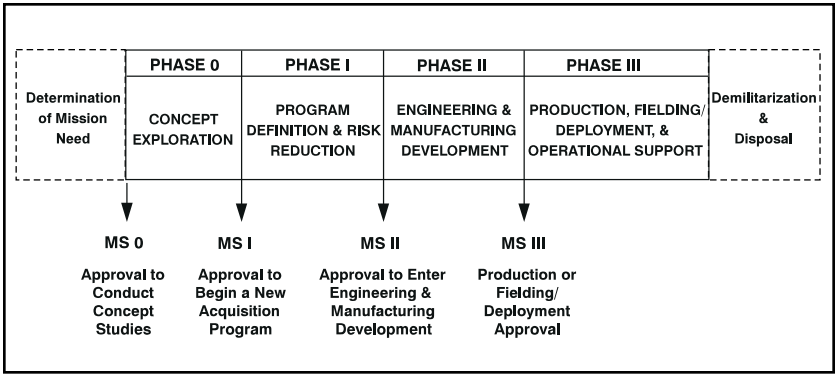


**Figure 6-1. Acquisition Milestones and Phases**

tem include all costs associated with the system, literally from "cradle to grave." Major defense systems may take from 12-15 years from identification of a deficiency (or technological opportunity) to fielding of a system to satisfy the requirement. Completion of a program often connotes deploying, or fielding, the system so that a predetermined number of operational forces have the system and the capability of using it, a point called initial operational capability (IOC). During those 12-15 years the program is controlled through a series of steps involving periodic business and technical decisions. These decisions are scheduled into the overall strategy (i.e., the acquisition strategy) to acquire the system. They provide both the program manager (PM) and senior officials in the service/agency, and Office of the Secretary of Defense (OSD) officials such as the Under Secretary of Defense (Acquisition and Technology) (USD(A&T)) and the Assistant Secretary of Defense for Command, Control, Communications and Intelligence (ASD($C^3$I)), the framework with which to review major programs, monitor and administer progress, identify problems, and make corrections.

**Note:** Production, fielding/deployment, and operational support are all in one phase. Remember that the production of a system could last for many years, and that the support for a system must begin with initial system fielding and continue throughout the system's life. Modifications to a program may occur at any time, but are most prevalent during the production, fielding/deployment, and operational support phase. Any modification that could (by itself) qualify as an acquisition category (ACAT) I or ACAT IA program will generally be handled as a separate acquisition effort for management purposes. Modifications that do not exceed the ACAT I or ACAT IA dollar thresholds are considered to be part of the program being modified.

Most programs follow the process illustrated in Figure 6-1. However, if a new system essentially is an updated version of

an existing one, or is one in which a proven or available technology or system is to be used (e.g., nondevelopmental item (NDI)), such a program would probably omit a milestone(s) or phase(s), or accomplish multiple phases or technical functions simultaneously (called concurrency) to accelerate the process. This process (of adjusting the life cycle model to fit a particular set of programmatic circumstances) is often referred to as "tailoring." The number of phases and decision points are tailored by the PM based on an objective assessment of the program's ACAT, risks, and the urgency of the user's need. Milestone decisions for major weapons programs are made by the USD(A&T) after program review by the respective Overarching Integrated Product Team (OIPT) and the Defense Acquisition Board (DAB). For major automated information systems (MAISs), the milestone decisions are made by the ASD($C^3$I) following a review by the Information Systems OIPT and the Major Automated Information System Review Council (MAISRC).

Following is a brief discussion of each of the phases and milestones of the life cycle process model. Note that pre-Phase 0 activities, including the identification of deficiencies and determination of mission needs, were discussed in Chapter 5.

*Milestone 0, Approval to Conduct Concept Studies.* Authorizes entry into concept exploration (CE) (Phase 0). The Milestone Decision Authority (MDA) will specify the minimum set of alternatives to be examined, the lead organization, and exit criteria for Phase 0. The USD(A&T) is the MDA for potential ACAT I programs. (Note that a favorable Milestone 0 decision does not initiate a new acquisition program.) For ACAT IA programs, the Joint Requirement Oversight Council (JROC), or the cognizant OSD Principal Staff Assistant (PSA), validates the mission need in compliance with Department of Defense Directive (DoDD) 8000.1, and the ASD($C^3$I) convenes a Milestone 0 MAISRC. Milestone 0 decisions for potential less-than major defense acquisition programs (MDAPs) are

made by the respective Component Acquisition Executive (CAE). For potential less-than major automated information system (MAIS) acquisition programs, the Milestone 0 decision is made by the service or component chief information officer (CIO).

*Phase 0, Concept Exploration (CE).* Competitive, parallel, short-term studies are conducted. The focus of these efforts is to define and evaluate the feasibility of alternative concepts and to provide a basis for assessing the relative merits of these concepts at the next milestone decision point. Phase 0 is generally short (1-2 years in duration) and relatively low cost.

*Milestone I, Approval to Begin a New Acquisition Program.* Approval for initiation of a new program and entry into Phase I, Program Definition and Risk Reduction. The acquisition strategy and concept baseline are approved. Exit criteria that must be accomplished during Phase I are established, and Cost as an Independent Variable (CAIV) objectives are identified.

*Phase I, Program Definition and Risk Reduction.* Characterized by measures designed to reduce the risk of incorporating new and emerging technologies. Early prototyping and testing is possible. Phase I is typically 2-3 years in duration, although programs involving prototype development can spend 5 years or longer in this phase (e.g., Air Force's Advanced Tactical Fighter). Cost drivers, cost-performance trades, interoperability, and acquisition strategy alternatives are considered, to include evolutionary and incremental software development.

*Milestone II, Approval to Enter Engineering and Manufacturing Development (EMD).* Approves entry into EMD (Phase II). The acquisition strategy, development baseline, and CAIV objectives (revised, as required) are approved. Exit criteria that must be accomplished during Phase II are established and low rate initial production (LRIP) quantities are identified.

*Phase II, Engineering and Manufacturing Development (EMD).* Phase II is focused on finalizing the system design and ensuring it is ready for production. Manufacturing and production processes are validated. There is a heavy emphasis on testing—developmental test and evaluation (DT&E) to ensure specifications are met, and operational test and evaluation (OT&E) to ensure the system is operationally effective and operationally suitable. Following a favorable decision, LRIP (if it is a part of the program acquisition strategy) begins.

*Milestone III, Production or Deployment Approval.* Approval for entry into production for a MDAP and into deployment for an ACAT IA program. Acquisition strategy and production baseline are approved. Exit criteria that must be accomplished during Phase III are established. Initiation of full rate production will be based on further approval from the MDA. **Note** that for ACAT ID programs, there is normally only one production decision (i.e., low-rate or full-rate) at the DAB level.

*Phase III, Production, Fielding/Deployment, and Operational Support.* This phase often overlaps Phase II, especially in cases where LRIP is a part of the program acquisition strategy. The system is produced and delivered (along with support infrastructure) to the field for operational use. Follow-on Operational Test and Evaluation (FOT&E) may be conducted, to assess performance and quality, compatibility, and interoperability. System status is monitored to ensure the system continues to meet the user's needs. During deployment and throughout operational support, the potential for modifications to the fielded system continues. Modifications that are of sufficient cost and complexity to qualify as ACAT I or ACAT IA programs may be managed as separate acquisition efforts. Modifications that do not cross the ACAT I or ACAT IA threshold are considered part of the program being modified.

*Post-Phase III Activities.* At the end of a system's useful life it must be demilitarized and disposed. During this portion of the

system life cycle, the PM must ensure the materiel requiring demilitarization is controlled. The PM must also ensure disposal minimizes DoD's liability due to environmental, safety, security, and health issues.

# 7

# RESOURCE ALLOCATION PROCESS (RAP)

Resources for Department of Defense (DoD) activities, whether weapon (or information) systems or personnel costs, are provided through the RAP. Resources include dollars (funds), material, people, facilities, and equipment. The four phases of the RAP are:

- Phase 1 - Planning, Programming, and Budgeting System (PPBS),
- Phase 2 - Enactment,
- Phase 3 - Apportionment, and
- Phase 4 - Execution.

From the standpoint of developing, producing, fielding, and supporting weapon systems, the PPBS is the focus of attention in the service and defense agency headquarters activities, while Program Managers (PMs) and their Program Executive Officers (PEOs) are equally concerned with execution. Following is a brief discussion of these four phases, which are depicted in Figure 7-1.

## PHASE I - PPBS

The PPBS is the official management system which ultimately produces DoD's portion of the President's Budget. It is unique to the DoD and was originally introduced by Secretary of Defense Robert McNamara in 1962. The PPBS is a cyclic process with three distinct but interrelated phases, planning, programming, and budgeting. These phases provide a formal, systematic structure for making decisions on policy, strategy, and the

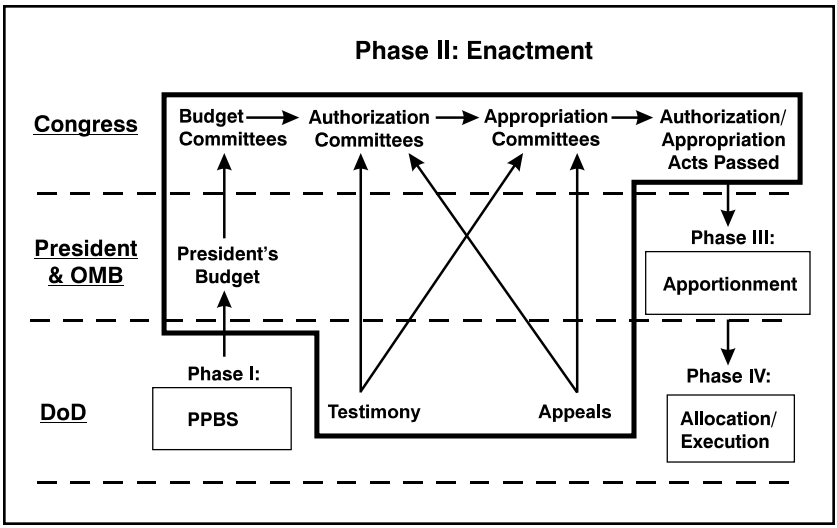


**Figure 7-1. Resource Allocation Process (RAP)**

development of forces and capabilities to accomplish anticipated missions. The PPBS provides for a time-phased allocation of resources and submission of supporting documentation. The PPBS objective is to provide operational commanders with the best mix of forces and support in view of real fiscal constraints.

The Deputy Secretary of Defense (DEPSECDEF) manages the PPBS with the advice and assistance of the Defense Resources Board (DRB), which he chairs. The DRB includes the Under Secretaries of Defense (Acquisition and Technology) (USD(A&T)), for Policy (USD(P)), and the Comptroller (USD(C)), and the Director, Program Analysis and Evaluation (DPA&E). The PPBS is the calendar-driven process through which DoD prepares its annual budget. Beginning in 1986 with submission of the first two-year defense budget (for fiscal years 1988-89), PPBS became a nominal biennial process. PPBS also results in periodic updates to the Future Years Defense Program (FYDP). The FYDP reflects requirements for the out-years (years beyond the next budget year) based

on DoD planning to meet national defense objectives. It represents those programs approved by the Secretary of Defense (SECDEF) (via the DEPSECDEF and the DRB). A brief description of each of the segments of the PPBS follows.

*Planning.* This phase is the responsibility of the USD(P). The planning phase starts in the fall and ends in the spring with publication of the *Defense Planning Guidance (DPG).*

*Programming.* This phase is managed by the DPA&E. It is the bridge between planning (with broad fiscal guidance) and budgeting (which meticulously prices each program element). It begins with the issuing of the draft DPG early in the year and ends with the submission of the service and defense agency Program Objectives Memoranda (POMs) in mid-summer. Military departments, defense agencies, and the Commander-in-Chief (CINC) of U.S. Special Operations Command (USSOCOM)) prepare POMs based on guidance contained in the DPG. The POM is the service (or defense agency) request for resources to accomplish its mission(s).

*Budgeting*. The USD(C) is responsible for this phase. Based on Office of the Secretary of Defense (OSD) review/comment on the POMs, budget estimate submissions (BESs) are prepared and forwarded (in September) to OSD by the military departments and defense agencies. Service and defense agency budgets are reviewed and the final DoD budget then goes to the Office of Management and Budget (OMB) to be incorporated into the President's Budget submission to Congress in February, thus ending the budgeting phase.

The following table summarizes the responsible agency and key product of each PPBS segment.

**Table 7-1. Key Aspects of the PPBS**

| SEGMENT | OSD ACTION AGENCY | PRODUCT |
|---|---|---|
| Planning | USD(P) | DPG |
| Programming | DPA&E | Approved POM |
| Budgeting | USD(C) | DoD portion of the President's Budget |

## PHASE II - ENACTMENT

Enactment is the process through which the Congress reviews the President's Budget, conducts hearings, and passes legislation. Enactment begins when the President submits the annual budget to the Congress at the beginning of each calendar year (by law on the first Monday in February) and ends when the President signs the annual authorization and appropriation bills approximately nine months later. "Authorization" approves programs and specifies maximum funding levels and quantities of systems to be procured. The "appropriations process" provides the budget authority with which to incur obligations (i.e., obligate) and expend and outlay funds. Even though DoD has complied with biennial budgeting since January 1987, Congress authorizes most programs and funding on an annual basis and appropriates funds on an annual basis. There are a few exceptions. The most notable are programs for which multiyear (rather than annual) procurements have been authorized. However, even multiyear procurements must be funded by annual appropriations.

## PHASE III - APPORTIONMENT

Once the authorization and appropriations legislation is signed into law by the President, funds are made available for DoD and other federal agencies. “Apportionment” occurs when OMB provides these funds to DoD and other federal agencies. Subsequently, DoD allocates funds within the department through action by the USD(C) and each counterpart in the services and defense agencies.

## PHASE IV - EXECUTION

The execution phase occurs when appropriated funds are spent on defense programs. In other words, it is the process of “obligating” funds (awarding contracts) and “expending” funds (writing checks to pay bills). Outlays occur when government checks are cashed and money flows out of the U.S. Treasury.

The four phases of the RAP overlap (see Figure 7-2).

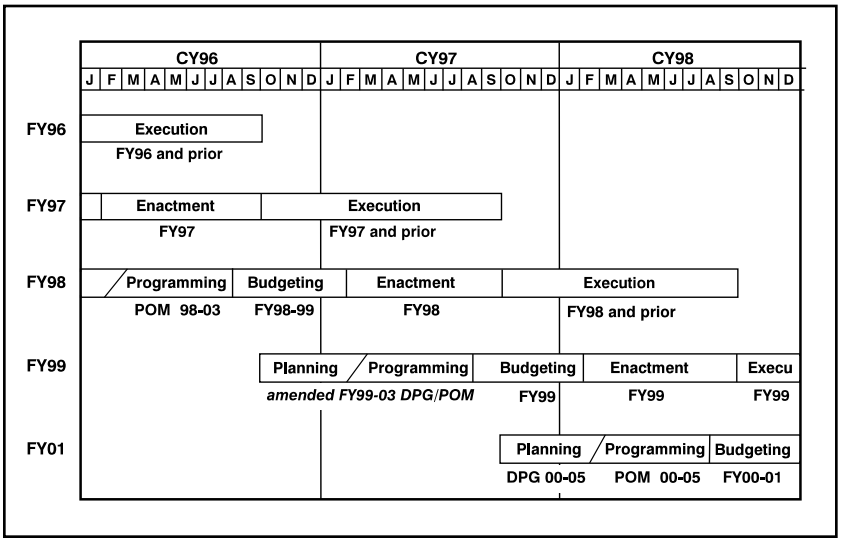


**Figure 7-2. Resource Allocation Process (RAP) - Overlap**

The current fiscal year budget is being executed while enactment of next year's is underway, and programming for the following budget is in process. Planning is essentially a continuous process.

It is incumbent on PMs and other officials responsible for any aspect of RAP to be aware of the sequence of activities and to understand where they are at all times. Further, because the Defense Acquisition Board (DAB) and PPBS truly are independent processes, it is possible for a program to be approved to enter the next phase in the life cycle but have insufficient funds to execute that phase. Note that the PPBS is a calendar driven system and that the acquisition life cycle is event driven. Avoiding a mismatch or disconnect between programmatic requirements and available funding demands close attention on the part of PMs. This may be the most challenging part of a PM's job, and the greatest single source of program instability.

# 8

# BUSINESS AND TECHNICAL ASPECTS OF SYSTEMS ACQUISITION

Management of the systems acquisition process not only involves mechanisms for decision making, funding, and responding to congressional oversight, but also the daily tasks of managing the business and technical aspects of the program. The acquisition program manager (PM) must attend to frequent external influences of oversight and funding, many of which are beyond direct control.

## Business and Financial Functions

The procurement contract for goods and services is the heart of the acquisition process. Business and financial functions, the latter including management of acquisition funds, include:

- Preparing the acquisition plan (the contracting "checklist") and acquisition strategy (the overall "roadmap");
- Developing and coordinating the acquisition program baseline (APB);
- Preparing the Request for Proposal (RFP);
- Conducting the source selection;
- Selecting contract type, awarding, and monitoring the contract(s);

- Performing contractor surveillance;
- Cost estimating;
- Formulating input for the Program Objectives Memorandum (POM), the budget, and other programmatic or financial documentation in support of the Planning, Programming, and Budgeting System (PPBS);
- Executing the budget (obligating funds and paying the bills);
- Handling program office administration and personnel; and
- Obtaining rights to technical data.

The acquisition planning phase of the contracting process includes determining the system requirement (need), defining/refining the requirement and specification, and preparing the procurement request. Once potential contractors are notified through the formal procurement announcement, the source selection process moves through solicitation, receipt and evaluation of proposals, negotiation, and contract award. The contract is then administered and monitored for compliance to ensure product(s) and services are delivered as stipulated in the contract.

**Technical Management Functions**

Technical management is a broad term including the management of a totally integrated effort of system engineering (SE), test and evaluation (T&E), production, and logistics support over the system life cycle. Its goal is timely deployment of an effective system, sustaining it, and satisfying the need at an affordable cost. Technical management involves balancing a system's cost, schedule, and performance. Cost includes all

funds required to design, develop, produce, operate, support, and dispose of a system. Schedule includes the time it takes to design, develop, produce, and deploy a fully supported system. Performance is the degree to which a system can be expected to achieve a set of specific mission requirements, and includes both effectiveness (i.e., does it do the job required) and suitability (i.e., can the user employ the system) criteria. Technical management includes:

- Defining the system/product (establishing the configuration management baseline);
- Developing the APB;
- Conducting design engineering;
- Performing SE (system cost, schedule, and performance trade-offs);
- Developing/acquiring computer resources, including software;
- Planning for acquisition logistics;
- Conducting developmental test and evaluation (DT&E);
- Conducting operational test and evaluation (OT&E) (including live fire test and evaluation (LFT&E));
- Identifying and tracking reliability, availability, and maintainability (RAM) requirements;
- Transitioning from development to production;
- Addressing standardization and specifications (e.g., performance specifications);

- Establishing a configuration management (CM) process;
- Ensuring producibility of the final design;
- Defining manufacturing processes and controls;
- Planning for system or product disposal; and
- Investigating the potential for Pre-Planned Product Improvement ($P^3I$).

Technical management can be described as an input, process, and output. The *input* is the need or requirement. The *process* is how the technical activities are managed. The *output* is the end item. Linking this is a *feedback loop* which improves the end item based on customer (user) comments and recommendations.

# 9

# PROGRAM MANAGEMENT IN DEFENSE ACQUISITION

Department of Defense (DoD) policy calls for the systems acquisition process to be directed by a responsible manager under the concept of program management. The terms program, product, and project are used interchangeably. The role of the program manager (PM) (or product or project manager) is to direct the development, production, and initial deployment (as a minimum) of a system. This must be done within limits of cost, schedule, performance, and logistics support objectives approved by the Under Secretary of Defense (Acquisition and Technology) (USD(A&T)) or head of the military department (service) or defense agency, or designee. The PM's role, then, is to be the agent of the service or defense agency in the management of a weapon system or automated information system (AIS) acquisition program within the defense acquisition process.

## Definition of Program Management

> *The process whereby a single leader exercises centralized authority and responsibility for planning, organizing, staffing, controlling, and leading the combined efforts of participating/assigned civilian and military personnel and organizations, for the management of a specific defense acquisition program or programs, through development, production, deployment, operations, support, and disposal.*

Program management must first take into account diverse interests and points of view. Second, it facilitates tailoring the

management system and techniques to the uniqueness of the program. Third, it represents integration of a complex system of differing but related functional discipline areas which must work together to achieve program goals.

**Program Manager's Perspective**

The effective PM should have the "big picture" perspective of the program, including in-depth knowledge of the interrelationships among its elements. An effective PM:

- is a leader and a manager, not primarily a task "doer."

- understands the requirements, environmental factors, organizations, activities, constraints, risks, and motivations impacting the program.

- knows and is capable of working within the established framework, managerial systems, and processes that provide funding and other decisions for the program to proceed.

- comprehends and puts to use the basic skills of management—planning, organizing, staffing, leading, and controlling—so people and systems harmonize to produce the desired results.

- coordinates the work of defense industry contractors, consultants, in-house engineers and logisticians, contracting officers, and others, whether assigned directly to the program office or supporting it thorough some form of matrix (or integrated product team (IPT)) arrangement.

- builds support for the program and monitors reactions and perceptions which help or impede progress.

- serves both the military needs of the user in the field and the priority and funding constraints imposed by managers in the Pentagon and service/defense agency headquarters.

**Why is Program Management Used in Defense Acquisition?**

Program management provides a single point of contact who is the major force for directing the system through its evolution, including design, development, production, deployment, operations and support, and disposal. The PM, while perhaps being unable to control the environment, has management authority over business and technical aspects of a specific program. The PM has only one responsibility—managing that program—and accountability is clear. For defense acquisition programs, industry follows a process similar to that used by the DoD. Often contractors will staff and operate their program office to parallel that of the military program office for whom they are performing their contractual effort.

**IPTs and Integrated Product and Process Development (IPPD)**

An IPT is composed of representatives from all appropriate functional disciplines (i.e., multidisciplinary) working together with a team leader to structure and execute programs. IPTs exist at both the oversight and review levels as well as at the PM (working) level. Following contract award, program IPTs often include contractor participation. The IPPD is a management concept that simultaneously integrates all essential acquisition activities through the use of multidisciplinary teams (i.e., IPTs) to optimize the design, manufacturing and supportability processes.

The DoD has recognized the importance of working as cross-functional or integrated teams, a process which maximizes overall performance, not just the performance of individual func-

tional areas. Our acquisition system should be one which capitalizes on the strengths of all its participants. By working together as a team, we can identify and resolve problems early and thus ensure the highest probability of success for our programs.

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