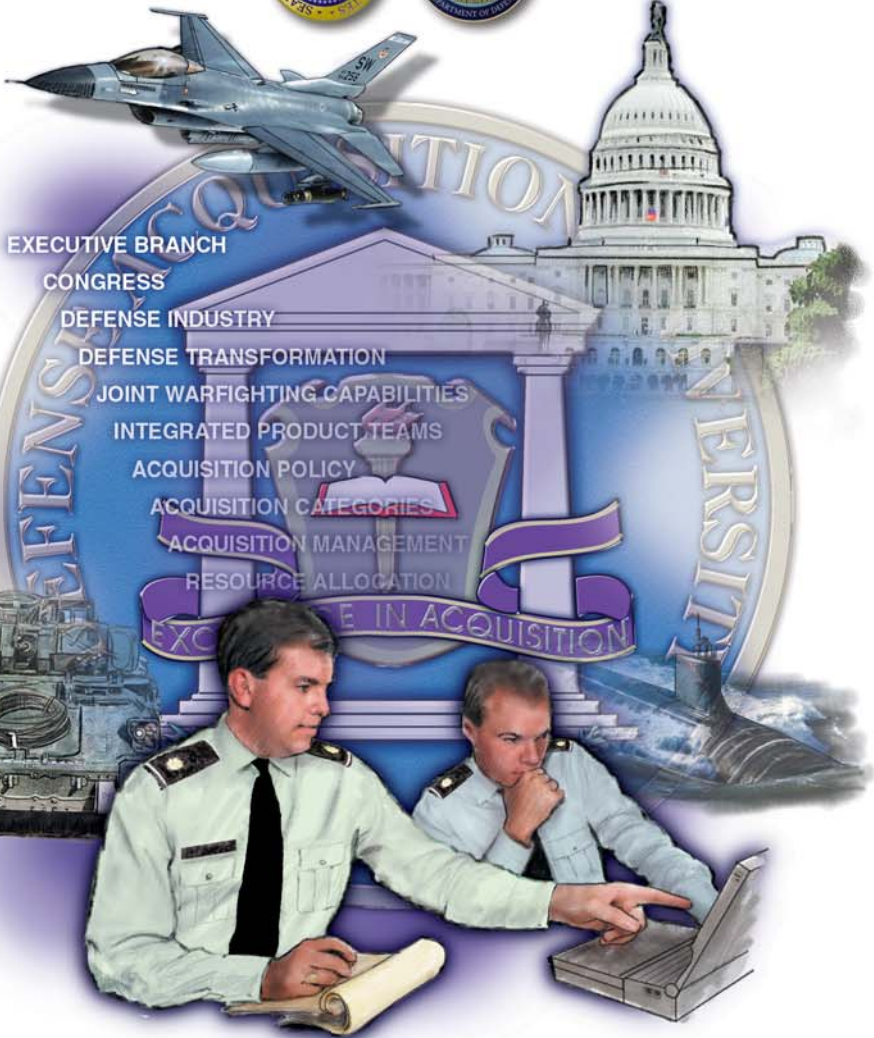




# INTRODUCTION TO DEFENSE ACQUISITION MANAGEMENT



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# **INTRODUCTION TO DEFENSE ACQUISITION MANAGEMENT**

**SIXTH EDITION**



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# PREFACE

This sixth edition of *Introduction to Defense Acquisition Management* provides an update of the regulatory framework from the May 2003, *Department of Defense Directive 5000.1* and *Department of Defense Instruction 5000.2*, governing the defense acquisition system. In addition, information about the Joint Capabilities Integration and Development System from the June 2003 Chairman of the *Joint Chiefs of Staff Instruction 3170.01C* and information about the new Department of Defense Planning, Programming, Budgeting and Execution (PPBE) process are also provided.

This publication is designed to be both a comprehensive introduction to the world of defense systems acquisition management for the newcomer and a summary-level refresher for the practitioner who has been away from the business for a few years. It focuses on Department of Defense-wide management policies and procedures, not on the details of any specific defense system.

This publication is based on numerous source documents. For the reader who wishes to dig deeper into this complex area, a list of World Wide Web Internet sites is provided after the last chapter.

Every attempt has been made to minimize acronyms. Commonly used terms are spelled out the first time they are used in each chapter. More difficult or rarely used terms are spelled out each time for ease of reading.

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

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The authors appreciate the comments of interested readers and Defense Acquisition University faculty in providing suggestions for this sixth edition of *Introduction to Defense Acquisition Management*.

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# 1

## BASICS

A basic understanding of the Department of Defense (DoD) acquisition system begins with the following overview:

*The Defense Acquisition System exists to manage the nation's investments in technologies, programs, and product support necessary to achieve the National Security Strategy and support the United States Armed Forces. The investment strategy of the Department of Defense shall be postured to support not only today's force, but also the next force, and future forces beyond that. The primary objective of defense acquisition is to acquire quality products that satisfy user needs with measurable improvements to mission capability and operational support, in a timely manner, and at a fair and reasonable price. (DoD Directive 5000.1)*

### Definitions

*Acquisition* includes design, engineering, test and evaluation, production, and operations and support of defense systems. As used herein, the term “defense acquisition” generally applies only to weapons and information technology systems, processes, procedures, services, and end products. The word *procurement*, which is the act of buying goods and services for the Government, is often (and mistakenly) considered synonymous with acquisition; it is, instead, but one of the many functions performed as part of the acquisition process. For example, non-weapon and non-information technology items required by the DoD, such as passenger vehicles, office supplies, and waste removal, are “procured”; they are not subject to the full range of functions inherent in the acquisition process of weapons and information technology systems and, thus, are not described in this publication.

*Acquisition programs* are directed and funded efforts designed to provide a new, improved, or continuing materiel<sup>1</sup>, weapon, or information system or service capability in response to an approved need.

A *weapon system* is an item that can be used directly by the Armed Forces to carry out combat missions.

*Information technology systems* include both *National Security Systems* and *Automated Information Systems*. Used for intelligence and cryptologic activities and command and control of military forces, national security systems are integral to a weapons system or critical to the direct fulfillment of a military or intelligence mission. Automated information systems are usually associated with the performance of routine administrative and business tasks such as payroll and accounting functions.

*Management* includes a set of tasks required to accomplish a specified project. One way of looking at systems acquisition management is by looking at individual elements that comprise each of these terms as noted below:

System	Acquisition	Management
<ul style="list-style-type: none"> <li>• Hardware</li> <li>• Software</li> <li>• Logistics Support               <ul style="list-style-type: none"> <li>– Manuals</li> <li>– Facilities</li> <li>– Personnel</li> <li>– Training</li> <li>– Spares</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Design and develop system</li> <li>• Test</li> <li>• Produce</li> <li>• Field</li> <li>• Support</li> <li>• Improve or replace</li> <li>• Dispose of</li> </ul>	<ul style="list-style-type: none"> <li>• Plan</li> <li>• Organize</li> <li>• Staff</li> <li>• Control</li> <li>• Lead</li> </ul>

### **The Role of the Congress, the Executive Branch, and Industry in Defense Acquisition**

At the national level, three major top-level participants in defense acquisition include the executive branch, the Congress, and defense industry. The perspectives, responsibilities, and objectives of these participants are summarized in this Chapter.

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<sup>1</sup> *Materiel* is a generic word for equipment. It is inherently plural. It is distinguished from *material*, which is what things are made of. Material can be singular or plural. For example, aircraft are materiel; the materials aircraft are made of include aluminum, steel, and glass.

## Executive Branch

Major participants who have major impact on defense acquisition programs within the executive branch include the President, the Office of Management and Budget, the National Security Council, and the Department of Defense. Chapter 5 contains a more detailed discussion of organizations and positions below this top level.

Perspectives	Responsibilities	Objectives
<ul style="list-style-type: none"> <li>• Formulate, direct, &amp; execute national security policy</li> <li>• Patriotism</li> <li>• Personal ambition</li> <li>• Reelection</li> </ul>	<ul style="list-style-type: none"> <li>• Sign legislation into law (President)</li> <li>• Commander-in-Chief (President)</li> <li>• Negotiate with the Congress</li> <li>• Make decisions on major defense acquisition programs (Under Secretary of Defense (Acquisition, Technology and Logistics))</li> <li>• Issue directives/regulations</li> <li>• Contract with industry</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfy national security objectives</li> <li>• Maintain a balanced force structure</li> <li>• Field weapon systems to defeat threats to national security</li> <li>• Prevent undue congressional interest/scrutiny</li> <li>• Eliminate fraud, waste, and abuse in Federal procurement</li> </ul>

## The Congress

The legislative branch (Congress) includes the two committees that authorize Defense programs, the Senate Armed Services Committee and the House Armed Services Committee; the two committees that appropriate dollars for Defense programs, the House Appropriations Committee and Senate Appropriations Committee; the two committees that set spending limits for national defense, the Senate and House Budget Committees; various committees having legislative oversight

of Defense activities; individual members of the Congress; the Congressional Budget Office; and the General Accounting Office.

Perspectives	Responsibilities	Objectives
<ul style="list-style-type: none"> <li>• Constituent interests</li> <li>• Two-party system</li> <li>• Checks and balances</li> <li>• Patriotism</li> <li>• Personal ambition</li> <li>• Reelection</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct hearings</li> <li>• Raise revenue; allocate funds</li> <li>• Pass legislation</li> <li>• Oversight and review</li> </ul>	<ul style="list-style-type: none"> <li>• Balance national security and social needs</li> <li>• Distribute Federal dollars by district/state</li> <li>• Maximize competition</li> <li>• Control industry profits</li> <li>• Control fraud, waste, and abuse</li> </ul>

### Defense Industry

Industry (contractors) includes large and small organizations (both U.S. and foreign) providing goods and services to the DoD.

Perspectives	Responsibilities	Objectives
<ul style="list-style-type: none"> <li>• Stockholders' interests</li> <li>• Capitalism</li> <li>• Patriotism</li> </ul>	<ul style="list-style-type: none"> <li>• Respond to solicitations</li> <li>• Propose solutions</li> <li>• Conduct independent research &amp; development</li> <li>• Design, produce, support, and upgrade defense systems</li> </ul>	<ul style="list-style-type: none"> <li>• Profit and growth</li> <li>• Cash flow</li> <li>• Market share</li> <li>• Stability</li> <li>• Technological achievement</li> </ul>

Numerous external factors help shape and impact every acquisition program, creating an environment over which no single person has complete control. These factors include policies, decisions, reactions, emergencies, the media, public sentiment/emotions, world opinion, and the ever present (and changing) threats 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 program managers. Figure 1-1 illustrates some of the

interrelationships among these key players. This figure also shows the program manager in the middle of a complex triangle of relationships, faced with the challenge of managing a defense acquisition program in the midst of many significant, diverse, and often competing interests.

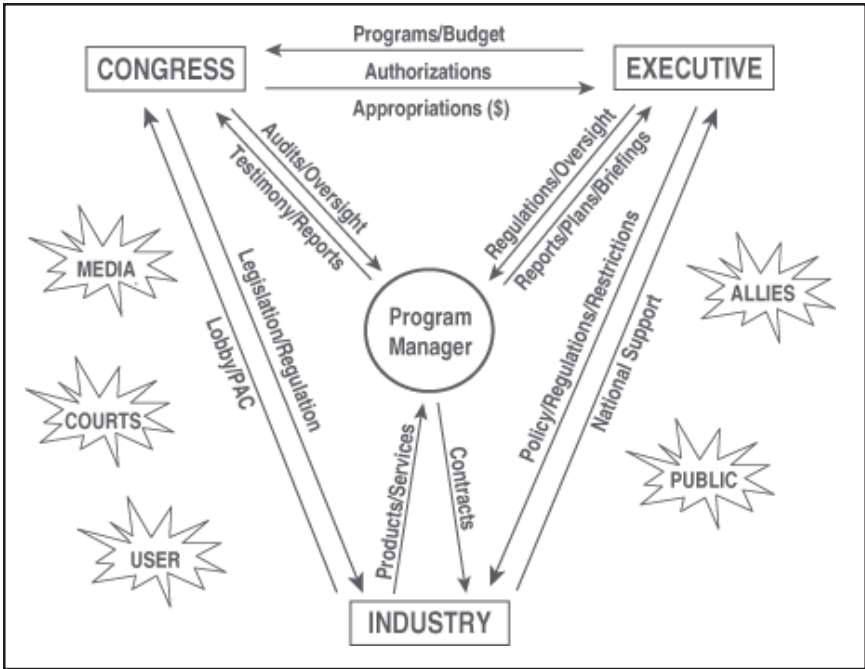


Figure 1-1. The Program Manager's Environment

### Successful Defense Acquisition Program

A successful defense acquisition program places a capable and supportable system in the hands of a user (the warfighter or those that support the warfighter) when and where it is needed and at an affordable price. 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 *Program Manager*, success means a system that is delivered on time and within cost and meets the warfighter’s requirements.
- For the *Office of the Secretary of Defense*, success means a program that satisfies national security objectives, provides a balanced force structure, and does not attract undue congressional scrutiny.
- For the *Congress*, success means a system that strikes a balance between defense and social needs and provides a fair distribution of Defense dollars by state/district.
- For *industry*, success means a program that provides a positive cash flow, offers a satisfactory return on investment, and preserves the contractor’s competitive position in the industry.
- For the *warfighter*, success means a system that is effective in combat and easy to operate and maintain.

### **Authority for the Defense Acquisition System**

The authority for DoD to conduct defense acquisition, i.e., to develop, produce, and field weapons and information technology systems, flows from two principal sources: public law (legal basis) and executive direction. Executive direction flows from the authority of the President and the Federal Government’s executive agencies to issue orders and regulations to both enforce and facilitate the law and to help carry out the constitutional duties of the executive branch.

#### **Public Law**

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

- *Small Business Act (1963)*, as amended
- *Office of Federal Procurement Policy Act (1983)*, as amended



- *Competition in Contracting Act (1984)*
- *Department of Defense Procurement Reform Act (1985)*
- *Department of Defense Reorganization Act of 1986 (Goldwater-Nichols)*
- *Government Performance and Results Act (1993)*
- *Federal Acquisition Streamlining Act of 1994*
- *Annual Authorization and Appropriations Legislation.* Annual authorization and appropriation legislation may contain substantial new or amended statutory requirements (like the Clinger-Cohen Act of 1996).

Most provisions of the laws listed above have been codified in Title 10, United States Code, Armed Forces.

### **Executive Direction**

Authority and guidance also come from the executive branch in the form of executive orders and national security decision directives issued by the President and other agency regulations. Examples of executive direction follow:

- *Executive Order 12352 (1982)* directed procurement reforms and establishment of the Federal Acquisition Regulation (FAR).
- *Federal Acquisition Regulation (1984)* provided uniform policies and procedures for the procurement of all goods and services by executive agencies of the Federal Government. Additional guidance for defense acquisition programs is provided in the DoD Federal Acquisition Regulation Supplement (DFARS).
- *National Security Decision Directive 219 (1986)* directed implementation of recommendations made by the President's Blue Ribbon Commission on Defense Management.
- *Executive Order 13101 (1998)* implemented the provisions of the Resource Conservation and Recovery Act to ensure Federal agency

use of environmentally preferable products and services and directed the use of cost-effective procurement preference programs (sometimes called “green procurement”) favoring the purchase of these products and services.

- *Office of Management and Budget Circular A-11 (2002)* describes the process for preparation and submission of budget estimates; strategic plans; annual performance plans; and the planning, budgeting, and acquisition of capital assets for all executive departments.

# 2

## THE ACQUISITION ENVIRONMENT

### Transformation of the Department of Defense

The war on terrorism has taught us that future threats to our national security may come from many diverse areas—domestic and international terrorists, computer hackers, state-sponsored subnational groups, nation-states, and others.

To help prepare for an uncertain and dangerous future, the *Transformation Planning Guidance*<sup>2</sup> for the Department provides a strategy for transforming “how we fight, how we do business, and how we work with others.” The guidance provides the strategic imperative for transformation:

*Transformation is necessary to ensure U.S. forces continue to operate from a position of overwhelming military advantage in support of strategic objectives. We cannot afford to react to threats slowly or have large forces tied down for lengthy periods. Our strategy requires transformed forces that can take action from a forward position and, rapidly reinforced from other areas, defeat adversaries swiftly and decisively while conducting an active defense of U.S. territory.*

### Transforming How We Fight

Transforming how we fight hinges on the development of future Joint warfighting concepts and includes the full range of military capability areas: Doctrine, Organization, Training, Materiel, Leadership, Personnel,

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<sup>2</sup> *Transformation Planning Guidance*, Secretary of Defense Donald H. Rumsfeld, April 2003.

and Facilities (DOTMLPF). Chapter 6, *Joint Capabilities Integration and Development System*, addresses the role of the acquisition workforce in DOTMLPF, specifically the acquisition of defense systems for the *materiel* capability area. The focus is on investing in capabilities based on Joint operating concepts.

## **Transforming How We Do Business**

A priority for the transformation of the Department is the streamlining of the acquisition process. The latest acquisition policies and procedures, summarized in Chapters 4 and 6, provide insight on the implementation of evolutionary acquisition and spiral development to reduce cycle time and field an initial increment of warfighting capability as fast as possible. The Department has also aligned the acquisition process with a new capabilities-based resource allocation process (see Chapter 8).

Most of the transformation tasks outlined in the *Transformation Planning Guidance* will impact the acquisition of defense systems in many ways. Some of these tasks are listed below:

- *Concept Development and Experimentation Programs* was established by the combatant commands and the military services to conduct experiments to evaluate new Joint operating concepts.
- *Transformation Research, Development, Test and Evaluation*. Starting in 2005, the Department will initiate research, development, test, and evaluation programs with “greater flexibility and rapidity.”
- *Joint Rapid Acquisition Programs*. These initiatives are envisioned to grow out of the coevolution of Joint operating concepts and technologies in activities such as Joint warfare experiments, advanced technology demonstrations, and advanced concept technology demonstrations. Acquisition would be started in the current year with bridge funds to the planning, programming, budgeting, and execution process so initiatives are accelerated.
- *Transformation of Test and Evaluation*. Joint test and evaluation is needed to determine if the integrated architectures that define the parameters of a Joint warfighting capability do, in fact, result in a viable application of those capabilities.

## **Transforming How We Work With Others**

The defense acquisition process must support arrangements for international military cooperation so that U.S. warfighting capabilities can be applied effectively with the capabilities of our allied and coalition partners.

### **Revolution in Military Affairs**

Many defense analysts believe the conduct of warfare is entering a period of fundamental change, literally a “revolution in military affairs,” driven by advances in information technology and precision guided weapons. Past experience suggests that revolutions in military affairs are not produced solely by rapid technological advancements but also require changes to prevailing operational concepts, doctrine, and force structure to fully harness the technology in a manner to dominate the battlefield. Coupled with the rise of new threats since the end of the cold war (international drug cartels, terrorism, regional warfare, chemical/biological agents, availability of missile technology, etc.), the United States has begun the process of transforming its forces to harness the revolution in military affairs, both to meet these new threats and to ensure it remains dominant on any 21st century battlefield.

### **Joint Vision**

*Joint Vision* is the Chairman of the Joint Chiefs of Staff’s conceptual blueprint for future military operations. *Joint Vision 2020*, the latest version of the *Joint Vision*, provides a foundation for broad support of the “revolution in military affairs” through the creation and exploitation of information superiority. Central to the Chairman’s vision, the concept of “full-spectrum dominance” is achieved through the interdependent application of four operational concepts—dominant maneuver, precision engagement, focused logistics, and full-dimensional protection. Together, these four concepts provide Joint warfighters the means to fulfill their primary purpose—victory in war—as well as the capability to dominate an opponent across the full range of military operations. Achieving full-spectrum dominance also means building an integrated, complex set of systems, especially a command, control, communications, computers, intelligence, surveillance, and reconnaissance architecture (see Chapter 5). To fulfill the Chairman’s vision and the Military Service Chief’s companion vision, the research, development,

and acquisition of future defense systems will be a challenge for the defense acquisition system outlined in this publication.

### **Acquisition Streamlining Initiatives**

There have been many attempts to reform the Federal Government's acquisition process over time. However, in the early 1990s it became clear that the rapidly changing threat environment, reduced resources, and changes in technology development required permanent changes in the way DoD acquired defense systems.

Perhaps the most notable changes in defense systems acquisition were caused by the collapse of the Soviet Union and the September 11, 2001, terrorist attacks on the World Trade Center and the Pentagon. These major world events impacted national objectives, treaties, budgets, and alliances. While the specter of strategic thermonuclear war lessened, the probability of regional conflicts and policing actions increased. Domestic terrorism, information warfare, and narcotics control are becoming increasingly troublesome threats to national security, and the Department is playing an ever-increasing role in confronting these issues.

The defense industrial base has gone through a metamorphosis. Weaker competitors have merged with stronger companies or have dropped out of the market. The remaining large contractors are positioning themselves with other major contractors to compete for the remaining defense contracts. For example, in 1982 there were ten major U.S. producers of fixed-wing military aircraft. By 1998, there were only three: Boeing, Lockheed-Martin, and Northrop-Grumman. As a result of this reduced industrial base, the Department is working to bring about greater civilian/military industrial integration.

Given the changes in the threat and the fast pace of technological advances in the commercial market, there was a real need to access technology before potential adversaries could buy it. Therefore, the Department fundamentally had to change the way it acquired systems, i.e., more efficient and effective ways to acquire goods and services faster, better, and cheaper. This led to the following major "events" that provided the foundation for streamlining the acquisition process:

- *Section 800 Panel Report (1993)*. This report was the result of congressional direction to the Under Secretary of Defense (Acquisition, Technology and Logistics) to review all DoD procurement laws

“with a view toward streamlining the *Defense* acquisition process.” It recommended over 400 changes to existing laws and regulations. The report was intended not only to implement reforms recommended in several previous studies but also provide a framework for continuous improvements in acquisition practices.

- *Secretary of Defense Perry’s “Acquisition Reform—A Mandate for Change” (February 1994)*. This paper lists the key reasons why change in acquisition is imperative and outlines methods to make the most impact through change. This led to the formal beginning of regulatory reform in DoD.

Major legislation, regulatory reform, and a series of implementing initiatives has helped to institutionalize better business practices within the Department of Defense.

### **Major Legislation**

***Federal Acquisition Streamlining Act (FASA) 1994***. This legislation on procurement reform implemented many of the recommendations of the Section 800 Panel Report. The FASA repealed or substantially modified over 225 provisions of law primarily dealing with contracting and procurement matters. Notable features of this legislation include an emphasis on the use of commercial versus military specifications, encouragement of electronic commerce, and requirements to use past performance when evaluating contractor proposals.

***The Federal Acquisition Reform Act (FARA) (1996)***. A follow-up to FASA, FARA (Division D of the FY 1996 National Defense Authorization Act) covers some of the Section 800 Panel acquisition reform recommendations that were not covered in FASA. Some of the more interesting issues covered include exceptions for commercial item acquisitions, the Truth in Negotiations Act, and Cost Accounting Standards.

***Information Technology Management Reform Act (ITMRA) (1996)***. ITMRA was enacted as Division E of the FY 1996 National Defense Authorization Act. This act requires greater accountability for system improvements achieved through Information Technology (IT). Among other things, the act streamlines both protest and acquisition procedures for IT systems by identifying the General Accounting Office as the single agency for protests and by repealing the Brooks Act, which originally targeted mainframes and imposed cumbersome regulations on

purchasing computers since the 1960s. It also addresses the issue of rapidly changing technology by requiring modular contracting with increments delivered within 18 months of contract award. **Note:** FARA and ITMRA were combined and are known, together, as the “Clinger-Cohen Act,” in honor of the congressional sponsors responsible for this change.

## **Regulatory Reform**

Provisions of the Federal Acquisition Streamlining Act, the Clinger-Cohen Act, and recommendations of the various process action teams (convened during the 1990s) were implemented in changes to the Federal Acquisition Regulation and its Defense supplement and DoD directives, instructions, and regulations for systems acquisition. (The Federal Acquisition Regulation was mentioned in Chapter 1; regulatory provisions will be covered in Chapter 4.)

## **Implementing Initiatives**

Implementing initiatives must work together to support objectives of acquiring defense systems better, faster, and cheaper. The following items, though not all-inclusive, capture the essence of the major thrusts of acquisition streamlining within the DoD:

***Alternative Dispute Resolution.*** To facilitate resolution of differences between the government and its contractors without going into a formal protest or litigation process, alternative dispute resolution provides voluntary procedures to resolve issues in controversy. These procedures may include, but are not limited to, conciliation, facilitation, mediation, fact finding, arbitration, and use of ombudsmen.

***Advanced Concept Technology Demonstrations.*** To provide opportunities to try out mature technology directly with the warfighters, advanced concept technology demonstrations allow operational forces to experiment with new technology in the field to evaluate potential changes to doctrine, operational concepts, tactics, modernization plans, and training. Following a successful advanced concept technology demonstration, the system may enter the acquisition process at whatever point good judgment dictates.

***Best Value Contracting.*** DoD seeks to award contracts based on the best overall value. This means that the Department considers all relevant



factors, such as cost, performance, quality, and schedule, and making potential tradeoffs between cost and non-cost factors rather than just buying from the lowest cost, technically acceptable offeror.

***Commercial Items and Practices.*** Maximizing the use of commercial items takes advantage of the innovation offered by the commercial marketplace and ensures access to the latest technology and a broader vendor base. DoD is also encouraging defense contractors to move to commercial practices that will enhance their global competitiveness. The Department's goal is to establish partnerships with industry to create advanced products and systems with common technological bases and to allow production of low-volume defense-unique items on the same lines with high-volume commercial items.

***Evolutionary Acquisition*** is the preferred strategy for the rapid acquisition of mature technology for the user. An evolutionary approach delivers capability in militarily useful increments and recognizes, up front, the need for future capability improvements. The objective is to balance needs and available capability with resources and to put capability into the hands of the user quickly.

***Integrated Product Teams and Integrated Product and Process Development*** are two closely intertwined initiatives that are replacing traditionally adversarial relationships among key players (users, acquirers, testers, funds managers, contractors, and other stakeholders) with cooperation and teamwork to improve product quality and supportability.

***Logistics Transformation*** will transform DoD's mass logistics system to a highly agile, reliable system that delivers logistics on demand. Logistics reform will move toward performance-based support and link modern warfighting and modern business practices. The commercial marketplace demonstrates that product support can be optimized to create a strategic advantage by focusing on customer service, integrated supply chains, rapid transportation, and electronic commerce. When applied to defense, this equates to integrated logistics chains focused on readiness and rapid service to the warfighter.

***Open Systems.*** Designing open systems and specifying interface standards enhance interoperability, both among the Services and with our allies. Applying widely used interface standards in weapons systems will enable multiple sources of supply and technology insertion and allow for upgrading through spares.

**Price or Cost as an Independent Variable** is used to develop strategies for acquiring and operating affordable systems by setting aggressive, achievable price or cost objectives and managing achievement of these objectives. Through cost performance integrated product team participation, key stakeholders (users, industry, etc.) help set and achieve cost objectives by identifying potential tradeoffs early in the acquisition process. Price is preferred over cost as the independent variable when there is a high degree of competition, a high level of confidence that the price is fair and reasonable, and the technical risk is acceptable.

**Performance-based Services Acquisition.** As services become an increasingly significant element of what DoD buys, steps are being taken to ensure they are acquired effectively and efficiently. Service requirements must be stated using results required and not methods for performance of the work.

**Specifications and Standards Reform.** In mid-1994, Secretary of Defense Perry approved a new major policy for use of specifications and standards for defense systems acquisition contracts. In this policy, the first choice is the use of performance specifications. Design-specific specifications and standards are authorized only as a last resort, and their use requires a waiver.

There are many more initiatives in place as well as new ones being tested throughout the Department. These initiatives will help America acquire quality defense systems faster and cheaper—essential capabilities for this country to maintain the world’s best warfighting forces.

**Changes in Emphasis**

The cultural shifts in the acquisition process may be characterized by the following chart:

<p><b>Characteristics of defense systems acquisition in the past included:</b></p> <ul style="list-style-type: none"> <li>• Many new systems</li> <li>• Focus on nuclear warfare</li> <li>• Technology-driven systems</li> <li>• Service-specific programs</li> <li>• Military-unique technology</li> <li>• Technology development</li> </ul>	<p><b>Today the emphasis has shifted toward:</b></p> <ul style="list-style-type: none"> <li>• Fewer new systems; modified legacy systems</li> <li>• Conventional warfare</li> <li>• Affordability-driven systems</li> <li>• Joint programs</li> <li>• Commercial and dual-use technology</li> <li>• Technology insertion</li> </ul>
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# 3

## PROGRAM MANAGEMENT IN DEFENSE ACQUISITION

### Program Manager

Department of Defense (DoD) policy requires that a *program manager* be designated for each acquisition program. The role of the program manager<sup>3</sup> is to direct the development, production, and initial deployment (as a minimum) of a new defense system. This must be done within limits of cost, schedule, and performance, as approved by the program manager's acquisition executive (see Chapter 5). As the agent of the military service or Defense agency in the defense acquisition system, the program manager's role is to ensure the warfighter's modernization requirements are met efficiently and effectively in the shortest possible time.

*The designated individual with responsibility for and authority to accomplish program objectives for development, production, and sustainment to meet the user's operational needs. The Program Manager shall be accountable for credible cost, schedule, and performance reporting to the Milestone Decision Authority. (DoDD 5000.1)*

### Program Manager's Perspective

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

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<sup>3</sup> The title, “Program Manager,” is used broadly here. Some DoD Components use different titles. For example, the Army uses “project” and “product” manager depending on the authorized rank of the position.

- 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 through some form of integrated product team or matrix support arrangement;
- builds support for the program and monitors reactions and perceptions that help or impede progress; and
- serves both the military needs of the user in the field and the priority and funding constraints imposed by managers in the Pentagon and military service/Defense agency headquarters.

### **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. (DAU Glossary)*

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 disciplines<sup>4</sup> that must work together to achieve program goals.

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

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

### **Integrated Product and Process Development**

Integrated product and process development is a management process that integrates all activities from the concept of a new defense system through the entire life cycle (see Chapter 7) using multidisciplinary teams called integrated product teams.

### **The Program Manager and Integrated Product Teams**

An integrated product team is composed of representatives from all appropriate functional disciplines working together with a team leader to facilitate management of acquisition programs. Integrated product teams exist at the oversight and review levels (see Chapter 5) as well as at the program office level. Program office-level integrated product teams may be structured around the major design aspects of the system under development, such as an “engine Integrated Product Team” or processes such as a “test Integrated Product Team.” Following contract award, program-level integrated product teams often include contractor participation.

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<sup>4</sup> Functional disciplines refer to business and financial management, logistics, systems engineering, software management, test and evaluation, manufacturing management, and others.

The DoD has recognized the importance of integrated product teams as a means to aid the program manager and as a way to streamline the decision process. By working as part of cross-functional teams, issues can be identified and resolved more quickly, and stakeholder involvement in the overall success of the program can be maximized. In this way the program manager capitalizes on the strengths of all the stakeholders in the defense acquisition system.

# 4

## DEPARTMENT OF DEFENSE ACQUISITION POLICY

### Regulatory Documents

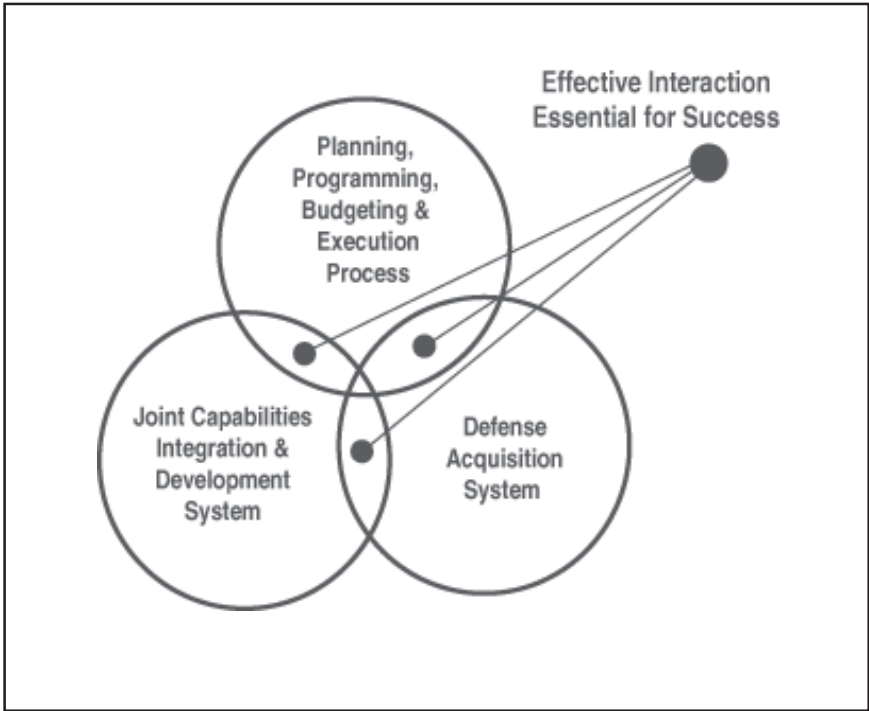
Two major Department of Defense (DoD) regulatory documents guide the management of defense acquisition:

#### **DoD Directive 5000.1**

The *Defense Acquisition System*, approved by the Deputy Secretary of Defense, provides a basic set of definitions and three overarching policies that govern the defense acquisition system: flexibility, responsiveness, and innovation. In addition, a minimum set of more detailed policies is provided in a tightly structured format for ease of reading and understanding.

#### **DoD Instruction (DoDI) 5000.2**

*Operation of the Defense Acquisition System*, approved by the Under Secretary (Acquisition, Technology and Logistics), the Assistant Secretary of Defense (Networks and Information Integration), and the DoD Director, Operational Test and Evaluation, establishes a simplified and flexible management framework for translating mission needs and technological opportunities into stable, affordable, and well-managed acquisition programs. DoDI 5000.2 establishes a general approach for managing all defense acquisition programs while authorizing the program manager and the Milestone Decision Authority to exercise discretion and prudent business judgement to structure a tailored, responsive, and innovative program. The Defense Acquisi-



**Figure 4-1. Three Major Decision Support Systems**

tion University groups oversight of the acquisition process into three primary decision support systems: the Joint Capabilities Integration and Development System (JCIDS); the Defense Acquisition System; and the Planning, Programming, Budgeting and Execution (PPBE) process. The three oversight groups are depicted in Figure 4-1.

### **Three Major Decision Support Systems**

These three decision support systems must interface on a regular basis to enable the leadership to make informed decisions regarding the best allocation of scarce resources. This publication discusses these decision support systems in Chapters 6, 7, and 8, respectively.



The *Joint Capabilities Integration and Development System*, governed by Chairman of the Joint Chiefs of Staff Instruction 3170.01C, is the system that results in identifying and documenting warfighting needs, i.e., mission deficiencies or technological opportunities.

The “Defense Acquisition System,” governed by the DoD 5000 series of regulatory documents, establishes a management framework for translating the needs of the warfighter and technological opportunities into reliable, affordable, and sustainable systems.

The *Planning, Programming, Budgeting and Execution Process*, governed by DoD Directive 7045.14, prescribes the process for making decisions on funding for every element of the Department, including acquisition programs.

### **Acquisition Categories**

For management purposes, all defense acquisition programs fall into one of the Acquisition Categories (ACATs) shown in Figure 4-2 on Page 25. The ACAT level is principally based on their dollar value and level of Milestone Decision Authority. The chain of authority and organizational players affecting various ACATs are discussed in Chapter 5.

Major Defense Acquisition Programs (MDAP) are ACAT I programs. There are two subcategories of ACAT I programs:

- *ACAT ID*. The Milestone Decision Authority is the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)). The “D” in ACAT ID refers to the Defense Acquisition Board. These programs require a review by an Office of the Secretary of Defense Overarching Integrated Product Team and the Defense Acquisition Board. The USD(AT&L), as the Defense Acquisition Executive, makes the final decision.
- *ACAT IC*, for which the Milestone Decision Authority is the Component<sup>5</sup> Acquisition Executive (CAE). The “C” in ACAT IC refers

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<sup>5</sup> DoD Components are the military departments, Defense agencies and unified commands. Only one unified command has an acquisition executive, the U.S. Special Operations Command.

to Component. Each of the Components has its own process for headquarters review of these programs prior to a milestone decision by the Component Acquisition Executive.

Major automated information system acquisition programs are ACAT IA programs. There are two subcategories of ACAT IA programs:

- *ACAT IAM*, for which the Milestone Decision Authority is the Assistant Secretary of Defense (Networks and Information Integration). The “M” in IAM refers to major automated information systems reviewed by the Information Technology Acquisition Board. Final decision authority lies with the assistant secretary who is also the Chief Information Officer (CIO) of the DoD.
- *ACAT IAC*, for which the Milestone Decision Authority is delegated to the Component. The “C” in IAC refers to Component. After the appropriate headquarters review, the Component Acquisition Executive, advised by the Component CIO, makes the final milestone decision.

*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 Milestone Decision Authority for these programs is also the Component Acquisition Executive. The review process for these programs is similar to that of ACAT IC programs.

*ACAT III programs* are those programs that do not meet the criteria for ACAT I, ACAT IA, or ACAT II. The Milestone Decision Authority is designated by the Component Acquisition Executive. Milestone decisions for these programs are typically made at the level of the Program Executive Officer or Systems Command (Navy and Marine Corps), Major Subordinate Command (Army), or Product or Air Logistics Center (Air Force) level. This category also includes nonmajor automated information system acquisition programs.

*ACAT IV programs* have been retained as a designation for internal use by the Departments of the Army and Navy.

Major Defense Acquisition Programs	ACAT ID: <ul style="list-style-type: none"> <li>• Designated by USD(AT&amp;L)</li> <li>• Defense Acquisition Board Review</li> <li>• Decision by USD(AT&amp;L)</li> </ul>	<div style="border: 1px solid black; padding: 5px; text-align: center;">           \$365M RDT&amp;E or            \$2.19B Procurement            (FY 2000 Constant \$)         </div>
	ACAT IC: <ul style="list-style-type: none"> <li>• Designated by USD(AT&amp;L)</li> <li>• Component-level Review</li> <li>• Decision by Component</li> </ul>	
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Major Automated Information Systems Acquisition Programs	ACAT IAM: <ul style="list-style-type: none"> <li>• Designated by DoD Chief Information Officer</li> <li>• Information Technology Acquisition Board Review</li> <li>• Decision by DoD Chief Information Officer</li> </ul> ACAT IAC: <ul style="list-style-type: none"> <li>• Designated by DoD Chief Information Officer</li> <li>• Component-level Review</li> <li>• Decision by Component Acquisition Executive</li> </ul>	<div style="border: 1px solid black; padding: 5px; text-align: center;">           \$378M Life Cycle Cost or            \$126M Total Prog. Cost or            \$32M Prog. Cost            in any Single Year            (FY 2000 Constant \$)         </div>
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Major Systems	ACAT II: <ul style="list-style-type: none"> <li>• Designated by Component Acquisition Executive</li> <li>• Component-level Review</li> <li>• Decision by Component Acquisition Executive</li> </ul>	<div style="border: 1px solid black; padding: 5px; text-align: center;">           \$140M RDT&amp;E or            \$660M Procurement            (FY 2000 Constant \$)         </div>
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All Other Systems (Except for Army Navy, USMC)	ACAT III: <ul style="list-style-type: none"> <li>• Designated IAW Component Policy</li> <li>• Does Not Meet Criteria for ACAT I, IA, II, or III</li> <li>• Review and Decision at Lowest Appropriate Level</li> </ul>	<div style="border: 1px solid black; padding: 5px; text-align: center;">           No Fiscal            Criteria         </div>
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Army Navy USMC	ACAT IV: <ul style="list-style-type: none"> <li>• Designated IAW Component Policy</li> <li>• Does Not Meet Criteria for ACAT I, IA, II, or III</li> <li>• Review and Decision at Lowest Appropriate Level</li> </ul>	<div style="border: 1px solid black; padding: 5px; text-align: center;">           See AR 70-1 (Army) &amp;            SECNAVINST 5000.2C            (Navy and Marine Corps)         </div>

**Figure 4-2. Acquisition Categories**

## **DoD Space Systems Acquisition Process**

Management oversight of national security space systems has been delegated to the Under Secretary of the Air Force. “National Security Space Acquisition Policy 03-01,” October 6, 2003, provides policies and procedures for oversight of space-based systems (satellites), ground-based systems (satellite command and control and other ground stations), satellite launch systems (boosters and space launch facilities) and user equipment. This policy generally parallels that of the DoD 5000 documents mentioned earlier, with slightly different terms and streamlined processes appropriate for high technology, small quantity space systems.

### **Acquisition, Technology and Logistics Knowledge Sharing System**

In addition to the regulatory documents mentioned previously and throughout this publication, the *Acquisition, Technology and Logistics Knowledge Sharing System (AKSS)* can be accessed over the Internet at <http://www.deskbook.osd.mil>. AKSS, with links to acquisition-related communities of practice, various acquisition commands/organizations, and valuable reference material, provides a complete Web-based source of information for the acquisition community.

# 5

## DEFENSE ACQUISITION MANAGEMENT—KEY PERSONNEL AND ORGANIZATIONS

### Background

#### **Packard Commission**

The President's Blue Ribbon Commission on Defense Management, chaired by former Deputy Secretary of Defense David Packard, conducted a comprehensive review of the overall defense acquisition system. Reporting to President Reagan in early 1986, the Packard Commission recommended creation of a single top-level Defense Acquisition Executive responsible for the defense acquisition process, the Under Secretary of Defense (Acquisition, Technology and Logistics), and establishment of a streamlined reporting chain for program managers of major defense acquisition programs to that top-level executive. President Reagan approved the Commission's recommendations and directed their implementation in National Security Decision Directive 219 on April 1, 1986.

#### **Defense Management Review**

A follow-on assessment of defense acquisition management was initiated by President Bush in 1989. The report of the Defense Management Review reiterated the Packard Commission findings and reinforced the importance of the streamlined reporting chain for all program managers. This reporting chain provides for no more than two levels of management oversight between the program manager and the Milestone Decision Authority for all acquisition programs. The reporting

chain for any particular program is a function of the program's size and Acquisition Category (ACAT). (See Chapter 4 for a discussion of ACATs.)

This structure provides a clear line of authority, running from the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) through Component Acquisition Executives and Program Executive Officers to the individual program managers of ACAT ID programs. For ACAT IAM programs, the Assistant Secretary of Defense (Networks and Information Integration) (ASD(NII)), as the Department of Defense (DoD) Chief Information Officer, serves as the Milestone Decision Authority.

## **DoD Acquisition Authority Chain**

### **Program Executive Officers**

The position of Program Executive Officer (PEO) was established in 1986 based on the Packard Commission Report. A PEO is typically a one- or two-star general officer or senior executive service civilian equivalent responsible for the first-line supervision of a group of like programs, each managed by a program manager. Examples are the Army's PEO for Tactical Missiles, the Navy's PEO for Tactical Aircraft Programs, and the Air Force's PEO for Fighters and Bombers. The number of PEOs varies by Service and time, but typically the Services have between six and ten Program Executive Officers at any one time.

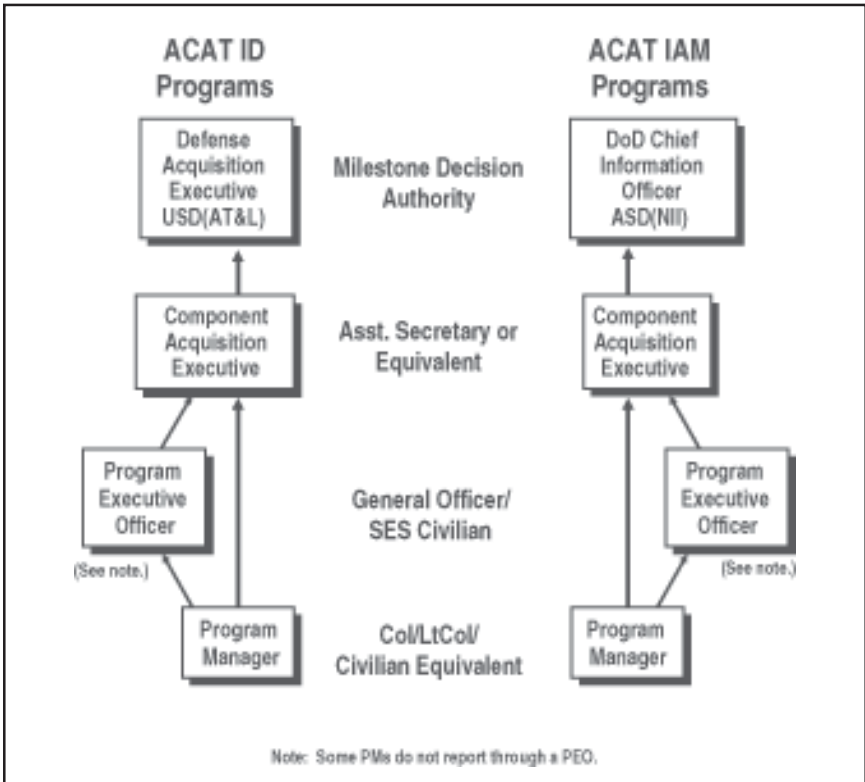
### **Acquisition Program Reporting**

The reporting structure for ACAT ID and ACAT IAM acquisition programs is illustrated in Figure 5-1.

### **Component Acquisition Executives**

The senior official in each DoD Component responsible for acquisition matters is known as the Component Acquisition Executive (CAE). The CAE is the Secretary of the military department or the head of the Defense agency and has power of redelegation. In the military departments, the Secretaries have delegated this responsibility to the Assistant Secretary level, commonly called the *Service Acquisition Executives* (SAEs). The SAE for the Army is the Assistant Secre-

tary of the Army for Acquisition, Logistics and Technology. The Department of the Navy SAE (includes Marine Corps) is the Assistant Secretary of the Navy for Research, Development, and Acquisition. The SAE for the Air Force is the Assistant Secretary of the Air Force for Acquisition. The SAE reports to the Secretary administratively and to the USD(AT&L) for acquisition management matters. Each SAE also serves as the Senior Procurement Executive for their military department. In this capacity, they are responsible for management direction of their respective Service procurement system. The United States Special Operations Command also has an acquisition executive.



**Figure 5-1. DoD Acquisition Authority Chain**

ACAT ID programs reviewed by the USD(AT&L) and programs reviewed by the Components follow the same basic management oversight process, but the final decision authority is at a lower level for the latter programs. Similarly, ACAT IAM programs reviewed by the Assistant Secretary of Defense for Networks and Information Integration and automated information system acquisition programs reviewed by

the Components follow the same basic management oversight process, but the final decision authority is at the lower level for the latter programs.

### **Component Chief Information Officers**

The DoD Components each have Chief Information Officers that provide advice and assistance to the Component Acquisition Executive for the oversight and review of automated information systems acquisition programs. The Department of the Army Chief Information Officer is the G-6 who reports to the Secretary of the Army and the Army Chief of Staff. The Department of the Navy Chief Information Officer reports to the Secretary of the Navy and has a deputy for Navy matters in the Office of the Chief of Naval Operations and a deputy for Marine Corps matters located in Headquarters, U.S. Marine Corps. In the Department of the Air Force, the Chief Information Officer reports to the Secretary of the Air Force.

### **Direct Reporting Program Managers**

Some program managers do not report to a Program Executive Officer but, instead, report directly to the Component Acquisition Executive. These direct reporting program managers are typically one- or two-star officers or senior executive service civilian equivalents who manage priority programs of such a nature that direct access to the Component Acquisition Executive is deemed appropriate. Examples are the Department of the Army's program managers for Biological Defense and Chemical Demilitarization and the Department of the Navy's program managers for Strategic Systems and the Advanced Amphibious Assault Vehicle Program.

### **Under Secretary of Defense (Acquisition, Technology and Logistics)**

Title 10, United States Code, §133, authorizes the position of Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)). The USD(AT&L) is the Principal Staff Assistant and



advisor to the Secretary and Deputy Secretary of Defense for all matters relating to the DoD acquisition system; research and development; advanced technology; developmental test and evaluation; production; logistics; installation management; military construction; procurement; environmental security; and nuclear, chemical, and biological matters. The USD(AT&L) serves as the Defense Acquisition Executive and, for acquisition matters, takes precedence over the Secretaries of the military departments. The USD(AT&L) is responsible for establishing acquisition policies and procedures for the Department and, as chair of the Defense Acquisition Board, makes milestone decisions on ACAT ID programs. The USD(AT&L) also establishes policy for the training and career development of the defense acquisition workforce.

The Office of the USD(AT&L) has the following four major subordinate staff elements:

- *Principal Deputy USD(AT&L)* serves as chief advisor to *USD(AT&L)*, acts in the *USD(AT&L)*'s absence, and supervises the following:
  - Deputy Under Secretary for Industrial Policy
  - Deputy Under Secretary for International Technology Security
  - Director, Defense Procurement & Acquisition Policy
  - Director, Defense Systems
  - Director, Small and Disadvantaged Business Utilization
  - Director, Defense Contract Management Agency
  
- *Director, Defense Research and Engineering* is principal advisor to the USD(AT&L) for scientific and technical matters, responsible for oversight of DoD science and technology programs, and supervises the following:
  - Deputy Under Secretary for Advanced Systems and Concepts
  - Deputy Under Secretary for Science and Technology
  - Deputy Under Secretary for Laboratory and Basic Sciences
  - Director, Defense Advanced Research Projects Agency

- *Deputy Under Secretary of Defense for Logistics and Materiel Readiness* oversees policy for acquisition logistics, readiness, maintenance and transportation, and supervises the following:
  - Assistant Deputy Under Secretary for Supply Chain Integration
  - Assistant Deputy Under Secretary for Maintenance Policy
  - Assistant Deputy Under Secretary for Transportation Policy
  - Assistant Deputy Under Secretary for Logistics Systems Management
  - Assistant Deputy Under Secretary for Logistics Plans and Programs
  - Director, Defense Logistics Agency
  
- *Assistant to the Secretary of Defense, Nuclear & Chemical & Biological (ATSD(NCB)) Defense Programs.* The ATSD(NCB) is the principal staff assistant and advisor to the Secretary and Deputy Secretary of Defense and the USD(AT&L) for all matters concerning the formulation of policy and plans for nuclear, chemical, and biological weapons. The ATSD(NCB) also is directly responsible to the Secretary and Deputy Secretary of Defense for matters associated with nuclear weapons safety and security, chemical weapons demilitarization, chemical and biological defense programs, and smoke and obscurants. The ATSD(NCB) supervises the following:
  - Deputy Assistant to the Secretary of Defense, Nuclear Matters
  - Deputy Assistant to the Secretary of Defense, Chemical/Biological Defense
  - Deputy Assistant to the Secretary of Defense, Nuclear Treaty Program
  - Director, Defense Threat Reduction Agency

Other officials that report directly to the USD(AT&L) include:

- Deputy Under Secretary, Installations and Environment
- Director, International Cooperation
- Director, Acquisition Resources and Analysis
- Executive Director, Defense Science Board
- Director, Special Programs
- Director, Missile Defense Agency

Some of the above officials deal with program managers, Program Executive Officers, and Component Acquisition Executives on a regular basis, for example:

- *Director, Defense Procurement and Acquisition Policy.* Oversees contracting policy and procedures; chairs the Defense Acquisition Regulatory Council, which issues the Defense Federal Acquisition Regulation Supplement; represents the USD(AT&L) on the Federal Acquisition Regulatory Council; provides the chair of the Defense Acquisition Policy Working Group, which oversees the DoD 5000 series of acquisition regulations; and has responsibility for the education and training of the acquisition, technology and logistics workforce.
- *Director, Acquisition Resources and Analysis.* Oversees the Defense Acquisition Executive Summary and Earned Value Management System processes and provides the Executive Secretariat for the Defense Acquisition Board.
- *Director, Defense Systems.* Responsible for review of ACAT ID programs prior to the Defense Acquisition Board and chairs the weapon systems overarching integrated product teams that advise the Defense Acquisition Board.

In addition to the above, several other offices play a critical role in defense acquisition management. These include:

- *Assistant Secretary of Defense (Networks and Information Integration).* As the Chief Information Officer for DoD, responsible for command, control, communications, computers, intelligence, surveillance and reconnaissance architecture, policies, and procedures; serves as the Department's Milestone Decision Authority for ACAT IAM acquisition programs; and establishes acquisition policies for information technology systems.
- *Director, Operational Test and Evaluation.* Responsible for operational and live fire test and evaluation policy and procedures and analyzes results of operational test and evaluation conducted on ACAT I programs and other selected programs deemed of a high

enough priority to be selected for Defense-level oversight. The incumbent reports on results of testing ACAT I programs to the Secretary of Defense, the USD(AT&L), and the Senate and House Committees on Authorizations and Appropriations as to whether test results indicate the system is operationally effective and suitable. This office also renders a live fire test and evaluation report to the Secretary of Defense, the USD(AT&L), and the Senate and House Committees on Authorizations and Appropriations on whether covered systems (primarily ACAT I and ACAT II systems) meet survivability and lethality requirements.

For acquisition-related duties and responsibilities pertaining to the *Under Secretary of Defense (Policy)*, *Under Secretary of Defense (Comptroller)*, and *Director, Program Analysis and Evaluation*, see Chapter 8.

### **Defense Acquisition Boards and Councils**

Several boards/councils are also key players in defense acquisition. These include:

***Defense Acquisition Board (DAB)***. The DAB is the senior-level Defense forum for advising the USD(AT&L) on critical issues concerning ACAT ID programs. Formal meetings may be held at each milestone to review accomplishments of the previous phase and assess readiness to proceed into the next phase. The DAB is *issue-oriented*. Typical issues addressed by this board include cost growth, schedule delays, and technical threshold breaches. The result of a DAB review is a decision from the USD(AT&L), documented in an Acquisition Decision Memorandum (ADM).

Defense Acquisition Board members include:

- Under Secretary of Defense (Acquisition, Technology and Logistics), Chairman
- Vice Chairman, Joints Chiefs of Staff, Cochairman
- Under Secretary of Defense (Comptroller)
- Under Secretary of Defense (Policy)
- Under Secretary of Defense (Personnel and Readiness)
- Assistant Secretary of Defense (Networks and Information Integration)
- Director, Operational Test and Evaluation
- Secretaries of the Army, the Navy, and the Air Force

**Information Technology Acquisition Board (ITAB).** The ITAB advises the Assistant Secretary of Defense (Networks and Information Integration) (ASD(NII))/DoD CIO on critical acquisition decisions for ACAT IAM programs. These reviews enable the execution of the DoD CIO's acquisition-related responsibilities for information technology systems, under the Clinger-Cohen Act and Title 10 of the United States Code. An Acquisition Decision Memorandum (ADM) documents the decision(s) resulting from the review.

**Defense Space Acquisition Board (DSAB).** The DoD Space Milestone Decision Authority (MDA), the Under Secretary of the Air Force, convenes a DSAB at each space program decision point to obtain advice and information necessary to support the decision whether or not to proceed into the next acquisition phase. The DoD Space MDA chairs the DSAB, and the Vice Chairman of the Joint Chiefs of Staff is the Cochair. The DSAB Executive Secretary (Director, National Security Space Integration) facilitates the preparation for, and execution of, the DSAB meeting. DSAB principals are advisors and representatives of entities who have a material interest in the program under consideration. Their role is to act in an advisory capacity to the DSAB Chairman. The DoD Space MDA is the sole decision maker for a DSAB.

**Joint Requirements Oversight Council (JROC).** The JROC leads the Joint Staff in developing policies and procedures for determining warfighting capability needs and validates and approves warfighting capability needs for ACAT I and ACAT IA programs. The JROC is chaired by the Vice Chairman of the Joint Chiefs of Staff and includes the following members:

- Vice Chief of Staff, U.S. Army
- Vice Chief of Naval Operations
- Vice Chief of Staff, U.S. Air Force
- Assistant Commandant, U.S. Marine Corps

In addition to his role as chair of the JROC, the Vice Chairman also serves as cochair of the Defense Acquisition Board and is a member of the Defense Resources Board.

**Cost Analysis Improvement Group (CAIG).** This group provides the USD(AT&L) an Independent Cost Estimate of the life cycle cost for ACAT I acquisition programs. It is also responsible for improving cost estimating techniques and practices.

## Integrated Product Teams

*The Defense Integrated Product Team (IPT)* concept was adapted from commercial business to streamline an antiquated, inefficient stove-piped process. These teams are composed of stakeholders representing all appropriate functional disciplines working together to build successful programs and, thereby, enable 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
- Issues raised and resolved early

For ACAT ID and ACAT IAM programs, two levels of IPTs are generally above the program office—an *Overarching Integrated Product Team (OIPT)* at the Office of the Secretary of Defense and *Working-level IPTs (WIPTs)* at the headquarters of the military department. The following paragraphs discuss the roles and responsibilities of these IPTs in the defense acquisition system.

*Overarching Integrated Product Teams (OIPTs)*. Each ACAT ID program is assigned to an OIPT for management oversight. The primary role of this team is to provide strategic guidance and to help resolve issues early as a program proceeds through its acquisition life cycle. OIPTs for weapons systems are headed by the USD(AT&L)’s Director, Defense Systems. OIPTs for Command, Control, Communications & Intelligence (C3I) and major automated information systems are headed by an official from the Office of the Assistant Secretary of Defense (Networks and Information Integration) (OASD(NII)).

OIPT members include the program manager, the Program Executive Officer, Component staff, USD(AT&L) staff, the Joint Staff, and other Defense staff principals or their representatives, involved in oversight and review of a particular ACAT ID or ACAT IAM program. OIPTs meet as required and convene in formal session two weeks in advance of an anticipated milestone decision to assess information and to provide the status of the program to the Milestone Decision Authority.

***Working-level Integrated Product Teams (WIPTs).*** The WIPTs are formed at the Pentagon-level military department headquarters. They meet as required to assist the program manager with planning, preparation for OIPT reviews, and to help resolve issues. The leader of each WIPT is usually the program manager or the program manager's representative. While there is no one-size-fits-all approach, WIPTs must adhere to three basic tenets:

1. The program manager is in charge of the program.
2. Integrated product teams are advisory bodies to the program manager.
3. Direct communication among the program office and all levels in the acquisition oversight and review process is expected as a means of exchanging information and building trust.

The program manager, or designee, may form and lead a type of WIPT called an Integrating IPT (IIPT), composed of a member from each of the other WIPTs. This team supports the development of strategies for acquisition and contracts, cost estimates, evaluation of alternatives, logistics management, cost-performance tradeoffs, etc. The IIPT also coordinates the activities of the other WIPTs and ensures that issues not formally addressed by those teams are reviewed.

The following examples of working-level integrated product teams are offered as illustrations:

- ***Test Strategy Integrated Product Team.*** The purpose of this integrated product team is to assist in outlining the Test and Evaluation Master Plan (TEMP) for a major program. The objective of such an integrated product team is to reach agreement on the strategy and plan by identifying and resolving issues early; understanding the

issues and the rationale for the approach; and, finally, documenting a quality TEMP that is acceptable to all organizational levels the first time.

- *Cost/Performance Integrated Product Team (CPIPT)*. The best time to reduce life-cycle costs is early in the acquisition process. Cost reductions must be accomplished through cost/performance tradeoff analyses that are conducted before an acquisition approach is finalized. To facilitate that process, each ACAT I and ACAT IA program should establish a CPIPT. The user community should have representation on this team.

### **Component-level Oversight**

Each military service and Defense agency has its own oversight and review process, which parallels the DAB and IT OIPT processes. These processes are used for managing nonmajor programs and for reviewing ACAT ID or ACAT IAM programs prior to a program or milestone review at the Defense level. The following is a summary of the individual military department Pentagon headquarters-level reviews and their respective chair. ACAT III and IV programs are reviewed in a similar fashion by the Program Executive Officers or the Commander of an acquisition command.

<b>Service-level Review:</b>	<b>Chaired By:</b>
<ul style="list-style-type: none"> <li>• Army Systems Acquisition Review Council</li> </ul>	<ul style="list-style-type: none"> <li>• Assistant Secretary of the Army (Acquisition, Logistics and Technology)</li> </ul>
<ul style="list-style-type: none"> <li>• Program Decision Meeting (Navy)</li> </ul>	<ul style="list-style-type: none"> <li>• Assistant Secretary of the Navy (Research, Development and Acquisition)</li> </ul>
<ul style="list-style-type: none"> <li>• Program Decision Meeting (Marine Corps)</li> </ul>	<ul style="list-style-type: none"> <li>• Assistant Secretary of the Navy (Research, Development and Acquisition)</li> </ul>
<ul style="list-style-type: none"> <li>• As Necessary</li> </ul>	<ul style="list-style-type: none"> <li>• Assistant Secretary of the Air Force (Acquisition)</li> </ul>



# 6

## DETERMINING JOINT WARFIGHTING NEEDS

This Chapter focuses on a capabilities-based approach to identifying current and future gaps in the ability to carry out Joint warfighting missions and functions. This process is called the Joint Capabilities Integration and Development System (JCIDS). In 2003, JCIDS replaced the requirements generation system used by the Department of Defense (DoD) for many decades. JCIDS involves an analysis of Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF) in an integrated, collaborative process to define gaps in warfighting capabilities and propose solutions. Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01C, *Joint Capabilities Integration and Development System*, provides the policy and top-level description of JCIDS. The details for action officers who will be performing the day-to-day work of identifying, describing, and justifying warfighting capabilities is provided by CJCS Manual 3170.01, *Operation of the Joint Capabilities Integration and Development System*.

Four JCIDS documents are used in DoD to support the acquisition process. The Initial Capabilities Document (ICD) provides the definition of the capability need and where it fits in the broader concepts and architectures. The ICD is used to support the Concept Decision and Milestone A decisions and to guide the *Concept Refinement* and the *Technology Development* phases of the acquisition process.

During the *Technology Development* phase, a Capability Development Document (CDD) is written. The CDD supports a Milestone B

decision by providing more detail on the materiel solution to provide the capability previously described in the ICD. The CDD also provides the thresholds and objectives for the system attributes against which the delivered capability will be measured. Once approved, the CDD is used to guide the *System Development and Demonstration* phase of the acquisition process.

During the *System Development and Demonstration* (SDD) phase, the Capability Production Document (CPD) is developed. The CPD is used to support the Milestone C decision before a program enters low-rate initial production and initial operational test and evaluation. The CPD may contain refined performance thresholds from the CDD based on lessons learned during the System Development and Demonstration phase.

JCIDS will retain the use of the Capstone Requirements Document (CRD) until the operational concepts and integrated architectures, upon which the JCIDS analysis are based, become fully mature. The CRD is only written as directed by the Joint Requirements Oversight Council (JROC). (The JROC was discussed in Chapter 5.) The CRD contains capabilities-based requirements that facilitate the development of CDDs and CPDs by providing a common framework and operational concept for a family-of-systems or systems-of-systems. The CRD's primary focus is to influence system development to ensure that the systems are conceived and developed to optimize Joint capabilities.

### **Key Performance Parameters**

Key Performance Parameters (KPPs) are those attributes or performance characteristics considered most essential for an effective military capability. The CDD and the CPD both contain KPPs that are included in the acquisition program baseline (APB). (See Chapter 7 for information on the APB.) Either the JROC or the DoD Component validate the KPPs, depending on the Joint Potential Designator (JPB) of the program, which is discussed later.

### **The JCIDS Process and Acquisition Decisions**

The link of the JCIDS process to acquisition milestones is shown in Figure 6-1. More information on milestones and phases is provided in Chapter 7.

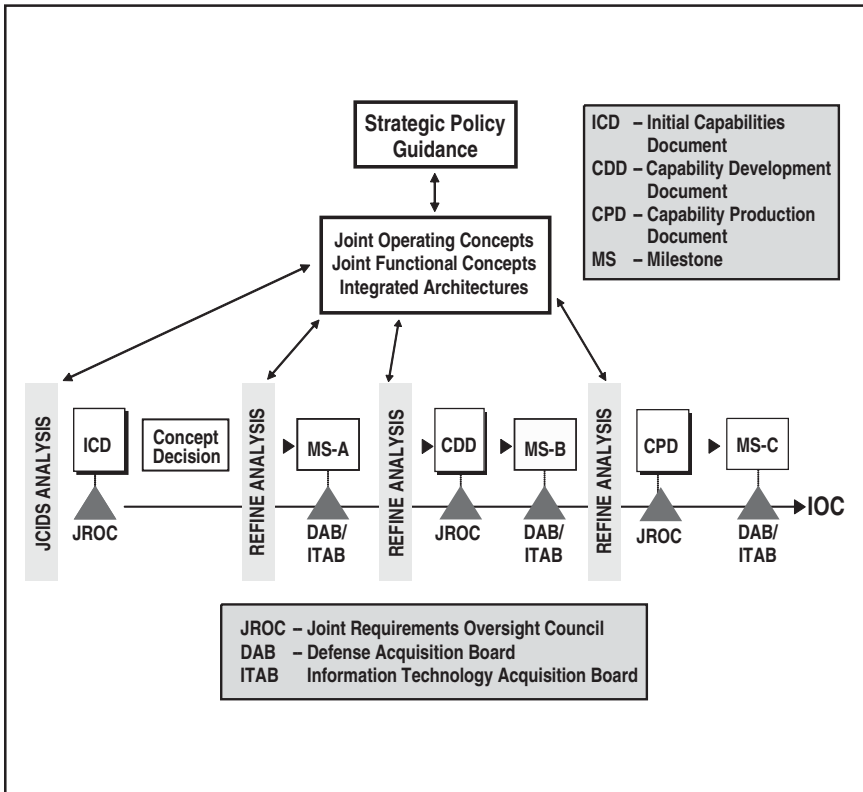


Figure 6-1. Mission Need Determination

### Identifying Needed Capabilities

The capabilities identification and assessment methodology is the backbone of the JCIDS process. (See Figure 6-2 on the following page.) It is a top-down approach starting with strategic policy and guidance from the President and the Chairman, Joint Chiefs of Staff. The President’s **National Security Strategy**, issued annually by the White House, provides the Chairman top-level policy upon which to base the national military strategy. The **National Military Strategy**, issued as needed by the Joint Staff, articulates the Chairman’s recommendations to the President and Secretary of Defense on the employment of the military element of power in support of the President’s National Security Strategy. **Joint Vision** describes the Chairman’s operational concepts

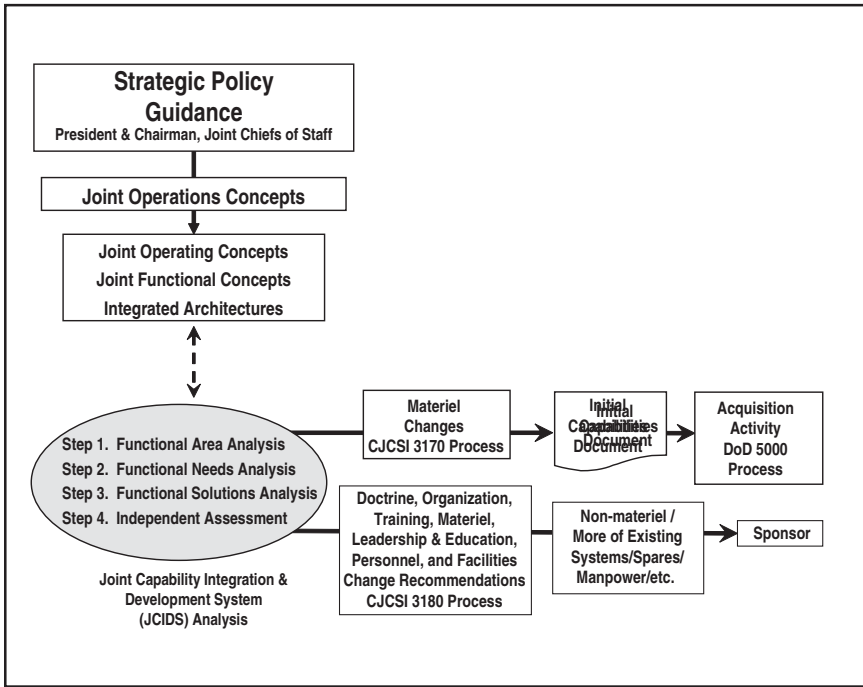


Figure 6-2. Joint Capabilities Integration & Development System

and capabilities anticipated of future Joint forces. It provides a conceptual template for the military departments, combatant commands, Defense agencies, and the Joint Staff as they develop plans and programs to evolve the Joint force to meet future warfighting requirements.

Based on this top-level strategic policy and guidance, the Joint Staff prepares JCIDS supporting documents to refine the guidance into more detailed concepts and architectures that sponsors can use as a basis for the JCIDS analysis. **Joint Operations Concepts** describe how the Joint Forces intends to operate 15 to 20 years from now. The **Joint Operating Concept** describes how the future Joint Forces commander will plan, prepare, deploy, employ, and sustain Joint Forces against potential adversaries' capabilities or in crisis situations and guide the development and integration of Joint functional concepts to provide Joint capabilities. The **Joint Functional Concept** describes how a future Joint Forces commander will integrate a set of related military tasks to attain capabilities required across

the range of military operations. **Integrated Architectures** consist of multiple views or perspectives (operational, systems, technical) that facilitate integration and promote interoperability across family-of-systems and systems-of-systems and compatibility among related architectures.

### The Sponsor

In the JCIDS, the sponsor “is the DoD Component responsible for all common documentation, periodic reporting, and funding actions required to support the capabilities development and acquisition process for a specific capability proposal.” The Training and Doctrine Command in the Army, the Center for Naval Analysis and/or the Office of the Chief of Naval Operations staff in the Navy, the Marine Corps Combat Developments Command in the Marine Corps, and the operational commands (e.g., Air Combat Command or Air Mobility Command), supported by the Office of Aerospace Studies in the Air Force, are typical sponsors of JCIDS analysis.

**JCIDS Analysis.** The JCIDS supporting documents provide sponsors a common Joint warfighting construct upon which to base their JCIDS analysis to determine capabilities needed for Joint Forces and information for the development of the ICD. JCIDS analysis (Figure 6-2) is a four-step process; each step is led by the sponsor.

1. *Functional Area Analysis (FAA).* The first step in the JCIDS process is the FAA. The FAA identifies the operational tasks, conditions, and standards needed to accomplish military objectives. The results of the FAA are the required warfighting tasks to be reviewed in a follow-on functional needs analysis.
2. *Functional Needs Analysis (FNA).* The second step is to assess the ability of current and programmed Joint capabilities to accomplish the required warfighting tasks identified in the FAA. The result of the FNA is a list of capability gaps that require solutions.
3. *Functional Solutions Analysis (FSA).* The third step in JCIDS analysis is an operationally based assessment of Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF); this assessment determines approaches for solving one or more of the capability gaps identified in the FNA. The result is a set of

potential materiel and non-materiel approaches to fixing the capability gaps. If the sponsor determines a limited DOTMLPF approach can address the capability need, the appropriate military department will be notified to take action through the process outlined in CJCS Instruction 3180.01.<sup>6</sup> On the other hand, if the sponsor determines a new defense acquisition program may be required, further analysis will be done to identify alternative ideas for materiel approaches. Next, an analysis of these alternatives will be performed to provide a prioritized list or combinations of approaches considering technological maturity, risk, supportability, and affordability.

4. *Post-independent Analysis.* The final step in JCIDS analysis is the post-independent analysis. Here, the sponsor will consider all the analysis results to determine which integrated DOTMLPF approach(es) best address the gap(s) in required Joint warfighting capability. This information will be compiled into an appropriate recommendation—either a DOTMLPF Change Recommendation or an ICD.

### **Joint Potential Designators**

Within JCIDS a proposal can receive four designations based on its Acquisition Category (ACAT) and its potential for impacting the Joint warfighter. The Joint designation determines who validates and/or approves a proposal. Joint Potential Designators (JPDs) are: JROC Interest, Joint Impact, Joint Integration, and Independent.

***JROC Interest*** applies to all ACAT I and IA programs and any other programs that the JROC decides to review regardless of acquisition category. ***JROC Interest*** proposals will be validated and approved by the JROC before being returned to the sponsor for further action.

***Joint Impact*** is assigned to ACAT II and below proposals that have significant impact on the Joint Forces but do not require JROC oversight. ***Joint Impact*** proposals will be validated by the Functional Capabilities Board and returned to the sponsor for approval and action.

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<sup>6</sup> CJCS Instruction 3180.01, *JROC Programmatic Processes for Joint Experimentation and Joint Resource Recommendations*, provides guidance on addressing DOTMLPF changes not associated with a new defense acquisition program.

**Joint Integration** applies to those ACAT II and below proposals that require intelligence, munitions, or interoperability certifications. *Joint Integration* proposals will be submitted through the Joint Staff certification process before being returned to the sponsor for validation and approval.

**Independent** is assigned to those proposals that have no direct impact on the Joint warfighter. These proposals are returned to the sponsor for further action.

### Functional Capability Boards

The JROC charters Functional Capability Boards (FCBs) responsible for the organization, analysis, and prioritization of Joint warfighting capabilities within an assigned functional area. As of the date of this guidebook, the JROC had chartered FCBs for Force Application, Protection, Command and Control, Battlespace Awareness, and Focused Logistics. In addition to the review and validation of JCIDS documents shown in Figure 6-3, FCBs are responsible for all aspects, materiel and nonmateriel, of their assigned functional area.

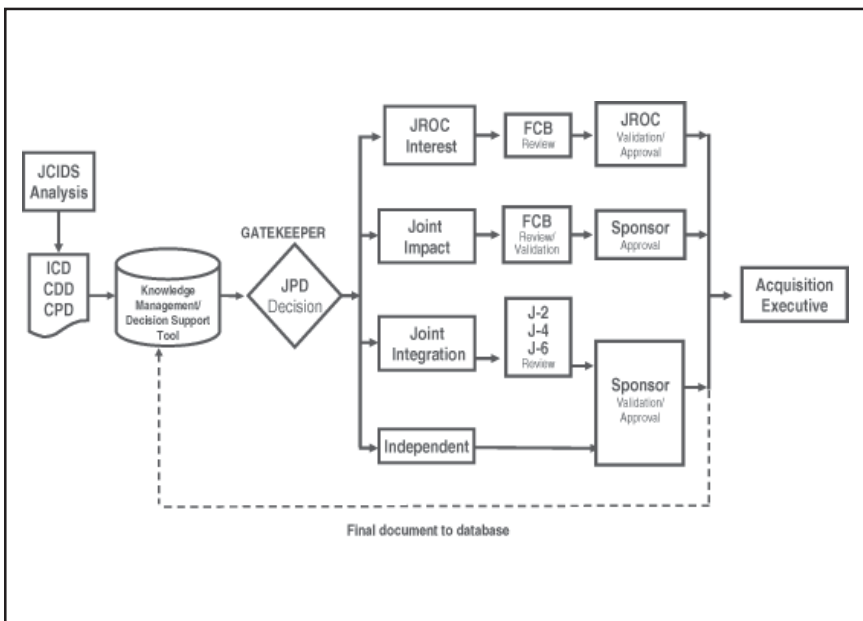


Figure 6-3. Joint Capabilities Integration & Development System Documents

## Interoperability

*Interoperability* is the ability of systems, units, or forces to provide data, information, materiel, and services to, and accept services from, other systems, units, or forces. It is also the ability to use the services that are exchanged to enable them to operate effectively together. All defense systems must be interoperable with other U.S. and allied defense systems, as defined in the JCIDS and interoperability documents. The Program Manager (PM) describes the treatment of interoperability requirements in the acquisition strategy. In an evolutionary acquisition involving successive increments of increasing capability, this description should address each increment, as well as the transitions from increment to increment. Chapter 7 will explain the evolutionary acquisition process in more detail.

Consistent with the Department's philosophy of treating new systems as components of a family-of-systems, if enhancements to the PM's program or to other programs are required to support interoperability requirements, the PM must identify the technical, schedule, and funding issues for both the acquisition program and the other program(s). Some examples of interoperability include:

- Aircraft from different Services and allied countries can communicate with each other and with ground forces.
- Aircraft from one Service can exchange target information with a ship of another Service and/or an allied country.
- Ammunition from one Service can be used by weapons from another Service, and/or an allied country.

As shown in Figure 6-4 on the following page, Command, Control, Communications, Computers and Intelligence (C4I) interoperability issues affect all kinds of systems. When applied to communications-electronics systems or items, interoperability means information can be exchanged directly and satisfactorily between systems and items of equipment.



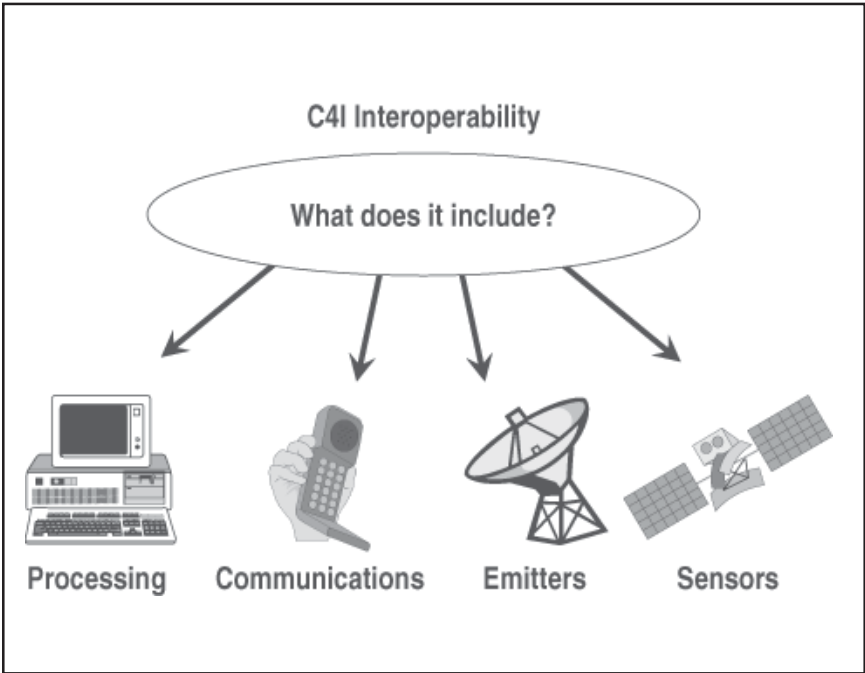


Figure 6-4. Command, Control, Communications, Computers and Intelligence Interoperability

C4I interoperability policy affects both kinds of Information Technology systems—automated information systems, which normally satisfy business and/or administrative requirements like the information systems used in the Defense Commissary System; and C4I systems, which are used to assist the commander in organizing, directing, and controlling warfighting forces.

Achievement of seamless interoperability among all defense C4I systems is of the highest priority. To this end, the DoD published the *Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance Architecture Framework*. This framework establishes the strategic direction for all defense command, control, communication, computer, intelligence, surveillance and reconnaissance architectures.

## **Testing of C4I Interoperability Requirements**

All C4I systems that have Joint interoperability requirements, regardless of ACAT, must be tested and certified by the Joint Interoperability Test Command. To conserve resources, this testing should be performed during developmental and operational testing whenever possible. The Director, Defense Information Systems Agency certifies whether a system meets its interoperability requirements based on results of the testing.

# 7

## ACQUISITION MANAGEMENT FRAMEWORK

### Acquisition Life Cycle

The management framework for defense systems acquisition is commonly referred to as the acquisition life cycle. The generic model for this process is illustrated in Figure 7-1. Program managers tailor/streamline

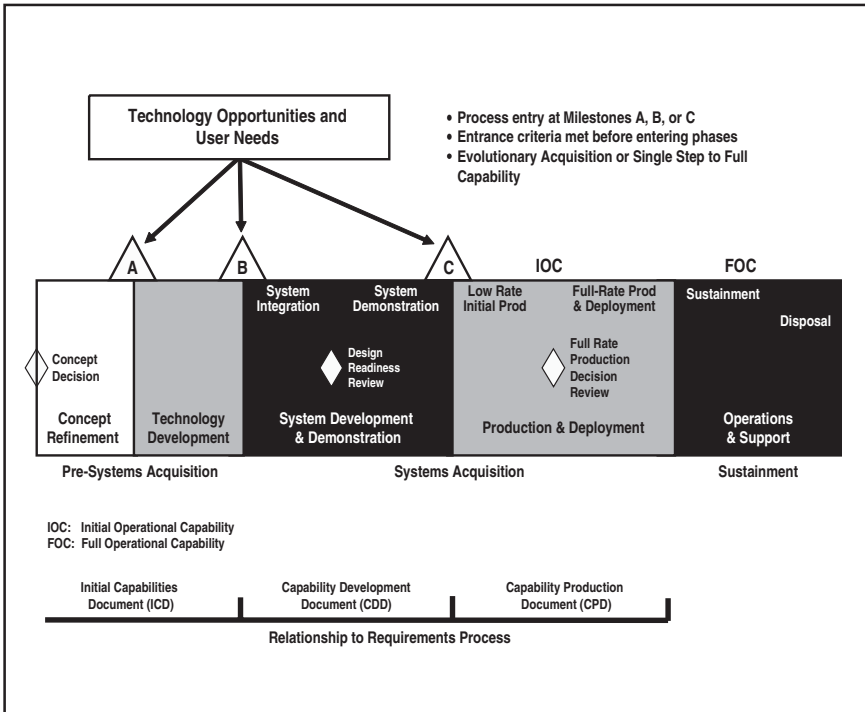


Figure 7-1. Defense Acquisition Management Framework

this model to the maximum extent possible, consistent with technical risk, to provide new systems to the warfighter as fast as possible. The process provides for multiple entry points consistent with a program's technical maturity, validated requirements, and funding. Entrance criteria for each phase of the life cycle guide the Milestone Decision Authority in determining the appropriate point for a program to enter the acquisition process.

The life cycle process consists of periods of time called *phases* separated by decision points called *milestones*. Some phases are divided into two efforts that are separated by program reviews. These milestones and other decision points provide both the program manager and milestone decision authorities the framework with which to review acquisition programs, monitor and administer progress, identify problems, and make corrections. The Milestone Decision Authority will approve entrance into the appropriate phase or effort of the acquisition process by signing an Acquisition Decision Memorandum upon completion of a successful decision review.

The life cycle of a program begins with planning to satisfy a mission need before the program officially begins (see Chapter 6). Program initiation normally occurs at Milestone B. The life cycle process takes the program through research, development, production, deployment, support, upgrade, and finally, demilitarization and disposal. *Initial Operational Capability (IOC)*<sup>7</sup> is that point at which a selected number of operational forces have received the new system and are capable of conducting and supporting warfighting operations. References to “life cycle costs” in defense acquisition include all costs associated with the system from the “cradle to the grave.”

**Technological Opportunities and User Needs.** The Defense Science and Technology Program identifies and explores technological opportunities within DoD. The aim is to provide the user with innovative war-winning capabilities and reduce the risk associated with promising technologies before they are introduced into the acquisition system. Three mechanisms are available to facilitate the transition of innovative concepts and superior technology to the acquisition

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<sup>7</sup> IOC is the first attainment of the capability to effectively employ a weapon, item of equipment, or system by an adequately trained, equipped, and supported military unit or force.

process: (1) *Advanced Technology Demonstrations*, (2) *Advanced Concept Technology Demonstrations*, and (3) *Joint Warfighting Experiments*.

*Advanced Technology Demonstrators* are used to demonstrate technical maturity and the potential for enhanced military capability or cost effectiveness. They are subject to oversight and review at the Service or Component level. An Advanced Technology Demonstrator can become the basis for a new acquisition program or for the insertion of new technology into an existing program.

*Advanced Concept Technology Demonstrators* are used to demonstrate the military utility of a proven technology and to develop the concept of operations for the system to be demonstrated. Consequently, these demonstrators are typically funded and engineered to endure up to two years of service in the field before entering the acquisition process. Oversight and review of Advanced Concept Technology Demonstrators is performed at the Office of the Secretary of Defense and the Joint Staff levels.

*Experiments*, such as the warfighting experiments conducted by the military services and the Joint Forces Command, are used to develop and assess concept-based hypotheses to identify and recommend the best value-added solutions for changes to doctrine, organizational structure, training and education, materiel, leadership, and people required to achieve significant advances in future Joint operational capabilities. They are also subject to oversight and review at the military department headquarters, and the Office of the Secretary of Defense and Joint Staff.

The following discussion provides a brief review of each of the phases, milestones, and other decision reviews. No “one size fits all.” Each program structure must be based on that program’s unique set of requirements and available technology. The process of adjusting the life cycle to fit a particular set of programmatic circumstances is often referred to as “tailoring.” The number of phases, key activities, and decision points are tailored by the program manager based on an objective assessment of the program’s technical maturity and risks and the urgency of the mission need.

Milestone decisions are made by the appropriate Milestone Decision Authority (MDA) depending on the acquisition category (ACAT) of the program. (See Chapter 5.) Prior to each decision point, the appropriate Joint Capabilities Integration and Development System (JCIDS) document must be approved. (See Chapter 6.)

### **Pre-Systems Acquisition**

Pre-systems acquisition is composed of activities in development of user needs, in science and technology, and in technology development work specific to the refinement of materiel solution(s) identified in the approved Initial Capabilities Document (ICD). Two *phases* comprise pre-systems acquisition: *Concept Refinement* and *Technology Development*.

*Concept Refinement* begins with a Concept Decision by the Milestone Decision Authority. During this phase a Technology Development Strategy (TDS) is developed to help guide the efforts during the next phase, Technology Development. Also, a study called an *Analysis of Alternatives* (AoA) is conducted to refine the selected concept documented in the approved ICD. To achieve the best possible system solution, Concept Refinement places emphasis on innovation and competition and on existing commercial off-the-shelf and other solutions drawn from a diversified range of large and small businesses. Concept Refinement ends when the Milestone Decision Authority approves the preferred solution supported by the AoA and approves the associated TDS.

*Technology Development* begins after a **Milestone A** decision by the Milestone Decision Authority approving the TDS. The ICD and TDS guide the work during Technology Development. A favorable Milestone A decision normally does not mean that a new acquisition program has been initiated. For shipbuilding, however, programs may be initiated at the beginning of Technology Development. The purpose of this phase is to reduce technology risk and to determine the appropriate set of technologies to be integrated into a full system. During Technology Development a series of technology demonstrations may be conducted to help the user and the developer agree on an affordable, militarily useful solution based on mature technology. The project is ready to leave this phase when the technology for an

affordable increment of a militarily useful capability has been demonstrated in a relevant environment

## Systems Acquisition

**Milestone B.** Milestone B will normally be *program initiation* for defense acquisition programs. For shipbuilding programs, the lead ship in a class of ships is also approved at Milestone B. Each increment of an evolutionary acquisition (explained later) will have its own Milestone B. Before making a decision, the Milestone Decision Authority will confirm that technology is mature enough for systems-level development to begin, the appropriate document from the Joint Capabilities Integration and Development System (JCIDS—see Chapter 6) has been approved, and funds are in the budget and the out-year program for all current and future efforts necessary to carry out the acquisition strategy. At Milestone B, the Milestone Decision Authority approves the acquisition strategy and the acquisition program baseline and authorizes entry into the *System Development and Demonstration Phase*.

**System Development and Demonstration Phase.** Entrance criteria for this phase are technology (including software) maturity, funding, and an approved JCIDS document—the Capability Development Document. Programs that enter the acquisition process for the first time at Milestone B must have an Initial Capabilities Document (ICD) and a Capability Development Document. Unless there is some overriding factor, the maturity of the technology will determine the path to be followed by the program. Programs entering at Milestone B must have both a system architecture (defined set of subsystems making up the system) and an operational architecture (description of how this system interacts with other systems to include passing of data). The efforts of this phase are guided by the Key Performance Parameters (KPPs) found in the approved Capability Development Document and in the Acquisition Program Baseline (APB). The APB establishes program goals, called thresholds and objectives, for cost, schedule, and performance parameters that describe the program over its life cycle. This phase typically contains two efforts: *Systems Integration* and *Systems Demonstration*. A *Design Readiness Review* takes place at the end of Systems Integration.

- *Systems Integration.* A program enters System Integration when the program manager has a technical solution for the system, but the Component subsystems have not yet been integrated into a complete system. This effort typically includes the demonstration of prototype articles or engineering development models (EDM), sometimes in a competitive “fly-off.” A program leaves System Integration after prototypes have been demonstrated in a relevant environment (e.g., a first flight or interoperable data flow across system boundaries), the system configuration has been documented, and a successful Design Readiness Review has been completed.
- *Design Readiness Review.* During SDD the Design Readiness Review provides an opportunity for a mid-phase assessment of design maturity as evidenced by measures such as the number of design reviews successfully completed; the percentage of drawings completed; planned corrective actions to hardware/software deficiencies; adequate developmental testing; and an assessment of environment, safety, and occupational health risks; etc. Successful completion of the Design Readiness Review ends System Integration and continues the SDD phase into the System Demonstration effort.
- *Systems Demonstration.* This effort is intended to demonstrate the ability of the system to operate in a useful way consistent with the approved KPPs. The program enters System Demonstration when the PM has demonstrated the system in prototypes or EDMs. This effort ends when the system is demonstrated (using EDMs in its intended environment); measured satisfactorily against the KPPs; and determined to meet or exceed exit criteria and Milestone C entrance requirements. Industrial capabilities must also be reasonably available. Developmental test and evaluation is conducted to assess technical progress against critical technical parameters, and operational assessments are conducted to demonstrate readiness for production. The completion of this phase is dependent on a Milestone Decision Authority decision to commit the program to production at Milestone C or to end the effort.



***Milestone C.*** The Milestone Decision Authority makes the decision to commit the Department of Defense to production at Milestone C. Milestone C authorizes entry into Low Rate Initial Production (LRIP) or into production or procurement for systems that do not require LRIP. Milestone C authorizes limited deployment in support of operational testing for major automated information systems or software-intensive systems with no production components. If Milestone C is LRIP approval, a subsequent review and decision authorizes full rate production.

***Production and Deployment Phase.*** The purpose of this phase is to achieve an operational capability that satisfies mission needs. Operational test and evaluation determines the effectiveness and suitability of the system. Entrance into this phase depends on acceptable performance in development, test and evaluation, and operational assessment; mature software capability; no significant manufacturing risks; manufacturing processes under control (if Milestone C is full rate production); an approved ICD (if Milestone C is program initiation); an approved Capability Production Document (CPD); acceptable interoperability; acceptable operational supportability; and demonstration that the system is affordable throughout the life cycle, optimally funded, and properly phased for rapid acquisition. For most defense acquisition programs, Production and Deployment has two major efforts: *Low Rate Initial Production* and *Full Rate Production and Deployment*. It also includes a *Full Rate Production Decision Review*.

- ***Low Rate Initial Production.*** This effort is intended to result in completion of manufacturing development to ensure adequate and efficient manufacturing capability; produce the minimum quantity necessary to provide production or production-representative articles for IOT&E; establish an initial production base for the system; and permit an orderly increase in the production rate sufficient to lead to full rate production upon successful completion of operational and, where applicable, live-fire testing. The Milestone Decision Authority determines the LRIP quantity for ACAT I and II programs at Milestone B. LRIP is not applicable to automated information systems or software-intensive systems with no developmental hardware; however, a limited deployment phase may be applicable. LRIP for ships and satellites is the production of items

at the minimum quantity and rate that is feasible and that preserves the mobilization production base for that system.

- *Full Rate Production Decision Review.* Before granting a favorable Full Rate Production Decision Review, the Milestone Decision Authority considers initial operational test and evaluation and live fire test and evaluation results (if applicable); demonstrated interoperability; supportability; cost and manpower estimates; and command, control, communications, computer, and intelligence supportability and certification (if applicable). A favorable Full Rate Production Decision authorizes the program to proceed into the Full Rate Production and Deployment portion of the Production and Deployment Phase.
- *Full Rate Production and Deployment.* The system is produced and delivered to the field for operational use. During this phase, the program manager must ensure that systems are produced at an economical rate and deployed in accordance with the user's requirement to meet the initial operational capability requirement specified in the Capability Production Document. Follow-on Operational Test and Evaluation may also be conducted, if appropriate, to confirm operational effectiveness and suitability or verify the correction of deficiencies. Operations and support begins as soon as the first systems are fielded/deployed; therefore, the Production and Deployment Phase overlaps the next phase—Operations and Support.

***Operations and Support Phase.*** During this phase full operational capability is achieved, each element of logistics support is evaluated (e.g., supply, maintenance, training, technical data, support equipment), and operational readiness is assessed. Logistics and readiness concerns dominate this phase. The supportability concept may rely on a government activity, a commercial vendor, or a combination of both to provide support over the life of the system. System status is monitored to ensure the system continues to meet the user's needs. The operations and support phase includes *sustainment* and *disposal*.

- *Sustainment.* Sustainment includes supply, maintenance, transportation, sustaining engineering, data management, configuration management, manpower, personnel, training, habitability, survivability,

environment, safety (including explosives safety), occupational health, protection of critical program information, anti-tamper provisions, and information technology (including National Security Systems (NSS) supportability and interoperability functions). Effective sustainment of weapon systems begins with the design and development of reliable and maintainable systems through the continuous application of a robust systems engineering methodology. The program manager works with the users to document performance and support requirements in performance agreements specifying objective outcomes, measures, resource commitments, and stakeholder responsibilities. System modifications are made, as necessary, to improve performance and reduce ownership costs. Product improvement programs or service life extension programs may be initiated as a result of experience with the systems in the field. 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 are considered as separate acquisition efforts for management purposes. Modifications that do not cross the ACAT I or ACAT IA threshold are considered part of the program being modified.

- *Disposal* of the system occurs at the end of its useful life. The program manager should have planned for disposal early in the system's life cycle and ensured that system disposal minimizes DoD's liability due to environmental safety, security, and health issues. Environmental considerations are particularly critical during disposal as there may be international treaty or other legal considerations requiring intensive management of the system's demilitarization and disposal.

### **Evolutionary Acquisition**

Evolutionary acquisition is the preferred DoD acquisition strategy for rapid acquisition of mature technology. The acquisition strategy defines what approach will be followed to develop, test, produce, and field the system. An evolutionary approach delivers capability in increments, recognizing, up front, the need for future capability improvements. The objective is to balance needs and available capability with resources and to put capability into the hands of the warfighter quickly. The approaches to achieve evolutionary acquisition

require collaboration between the user, tester, and developer, including the following processes:

- *Spiral Development.* In this process, a desired capability is identified, but the total “end-state” requirements are not known at program initiation. Those requirements are refined through demonstration and risk management; and user feedback is continuous. Each increment provides the user the best possible capability. The requirements for future increments depend on feedback from users and technology maturation.
- *Incremental Development.* In this process, a desired capability is identified, the end-state requirement is known, and that requirement is met over time by developing several increments, each dependent on available mature technology.

### **Key Activities**

All acquisition programs, regardless of Acquisition Category (ACAT), must accomplish certain key activities. These activities generate information that structures and defines the program and facilitates planning and control by the program manager and oversight by a Milestone Decision Authority. The information generated by key activities may be contained in stand-alone documents structured in accordance with the desires of the Milestone Decision Authority. Most of this information/documentation is carefully constructed by the program manager using integrated product teams.

Key activities include development/update and approval of JCIDS documents, cost estimating, formulation of an acquisition strategy and program structure, contract planning and management, budget execution, formulation of an acquisition program baseline, test planning, interoperability planning, and other key activities as noted below:

***Validation and Approval of JCIDS Documents.*** The program must address the mission capability need, which is documented in the Initial Capabilities Document, and meet the system-level performance parameters, documented in the Capability Development Document and Capability Production Document. (See Chapter 6.)

***Selection of a Preferred Solution.*** Alternatives that could potentially meet the mission need are analyzed as part of the JCIDS analysis process. For an ACAT I program, this process can be quite formal, requiring significant time, effort, and dollars. The JCIDS analysis supporting a preferred solution is documented in the Initial Capabilities Document and then further refined by a study called an *Analysis of Alternatives (AoA)*.

***Cost estimating.*** Life cycle cost estimating must be accomplished to support inputs into the Program Objectives Memorandum (see Chapter 8) and the budget. Depending on the ACAT of the program, cost estimating is done at the program level (called the *Program Office Estimate*), the Component headquarters level (called a *Component Cost Analysis*), and at the **Defense** staff level (called an *Independent Cost Estimate*). (See Chapter 4.) Additionally, cost estimating supports *affordability assessments*, which determine whether a Component can “fit” a program within its projected budget authority (over time) given all of the Component’s other commitments.

***Preparation of an Acquisition Strategy and Program Structure.*** The acquisition strategy, developed by the program manager and approved by the Milestone Decision Authority, is a comprehensive, overarching master plan that details how the program’s goals and objectives will be met. It serves as a “roadmap” for program execution from program initiation through post-production support. It describes the key elements of the program (e.g., requirements, resources, testing, contracting approach, and open systems design) and their interrelationship, and it evolves over time, becoming increasingly definitive as the program matures. Acquisition strategies are tailored to the specific needs of an individual program. Program structure charts are schedules that graphically depict the time phasing of key events (e.g., milestones, testing, and others) in the acquisition strategy.

***Contract Planning and Management.*** Contracting for goods and services is fundamental since the functions inherent in systems acquisition, such as analysis, design, development, test, production, sustainment, modification, and disposal of systems, are accomplished through contracts with private industry. Typical activities include

preparing an *Acquisition Plan* (a description of contracting strategy for the program with emphasis on the types and numbers of contracts to be awarded in an upcoming phase), preparing the *Request for Proposal* (a document that describes the task(s) or service(s) that the government wants industry to propose against), conducting a source selection (a process to select the winning contractor(s)), and monitoring contract performance.

***Budget Execution.*** Resources must be budgeted and obtained to execute contracts with industry. This includes formulating input for the *Program Objectives Memorandum* (a spend plan covering a 6-year period), the budget, and other programmatic or financial documentation in support of the Planning, Programming, Budgeting and Execution (PPBE) process. (See Chapter 8.) Funds are “obligated” upon the signing of a contract and then “outlaid” as the government makes actual payment in accordance with the contract for goods and services rendered.

***Preparation of an Acquisition Program Baseline (APB).*** The baseline contains the most important cost, schedule, and performance parameters, described in terms of threshold and objective values. A threshold value is a required value, while an objective value is a desired value. Schedule parameters include key schedule events, such as milestone reviews, initiation of key testing activities, and the start of production. APB performance parameters are the Key Performance Parameters specified in the Capability Development Document and Capability Production Document. (See Chapter 6.) Thus, the APB is a convenient summary of the most important aspects of a program (cost, schedule, and performance), and it provides a useful tool for management to assess how well a program is progressing towards its stated objectives. The APB is developed by the program manager and approved by the chain of authority up to the Milestone Decision Authority. For example, the APB for an ACAT ID program will be approved by its Program Executive Officer, the Component Acquisition Executive, and Defense Acquisition Executive.

***Test Planning.*** Test planning is central to the formulation of a coherent acquisition strategy. A variety of testing must be planned and accomplished either to confirm program progress or to conform to statutory dictate. After all, it is by testing that we validate

the performance requirements identified by the user in the Capability Production Document and promised by the program manager in the acquisition program baseline. Testing includes developmental test and evaluation, operational test and evaluation, and live fire test and evaluation, as appropriate. The program manager's *Test and Evaluation Master Plan* documents the overall structure and objectives of the test and evaluation program. It provides a framework to generate detailed test and evaluation plans for a particular test, and it contains resource and schedule implications for the test and evaluation program.

***Interoperability Planning.*** Interoperability is essential for successful combat operations within and across the military services and partners in coalition warfare. To facilitate planning and ensure interoperability policy is being considered and addressed, a *Command, Control, Communications, Computers, and Intelligence Support Plan (C4ISP)* is required for all weapon systems/programs that interface with command, control, communications, computer, and intelligence systems. The C4ISP includes system description, employment concept, operational support requirements, and interoperability and connectivity requirements.

***Formulation of Exit Criteria.*** Milestone decision authorities use *exit criteria* to establish goals for an acquisition program during a particular phase. At each milestone review, the program manager proposes exit criteria appropriate to the next phase of the program for approval by the Milestone Decision Authority. Exit criteria are phase-specific tasks selected to track progress in important technical, schedule, or risk management areas. They act as "gates," which, when successfully passed, demonstrate that the program is on track to achieve its final goals. Examples of appropriate exit criteria are the achievement of a level of performance (e.g., engine thrust or missile range) or successful accomplishment of a task (e.g., first flight). Exit criteria are documented in the Acquisition Decision Memorandum issued by the Milestone Decision Authority upon completion of a milestone review.

***Technical Management.*** This is a broad term including the management of a totally integrated effort of systems engineering, test and evaluation, production, and logistics support over the system life

cycle. Its goal is timely deployment, sustainment, and attainment of an effective system 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 perform its mission in combat.

Technical management includes defining the system; conducting design engineering; performing systems engineering (system cost, schedule, and performance tradeoffs); developing/acquiring computer resources (including software); planning for logistics support; identifying and tracking reliability, availability, and maintainability requirements; transitioning from development to production; performing configuration management; ensuring producibility of the final design; defining manufacturing processes and controls; and planning for disposal at the end of useful life.

***Program Protection Planning.*** A program protection plan must be prepared for any program that is determined by the program manager to have critical program information that could be exploited to undermine the mission effectiveness of a system. The plan lays out the efforts necessary to prevent inadvertent disclosure and to deny access by foreign intelligence collection activities. It is updated throughout the system life cycle and reviewed at every milestone decision review.



# 8

## THE RESOURCE ALLOCATION PROCESS

### **The Four Phases of the Process**

All resources (dollars) for Department of Defense (DoD) activities, whether for weapons, information systems, people, buildings, or operating and support costs, are provided through the resource allocation process. The four phases of this process are:

- Phase 1—Planning, Programming, Budgeting and Execution (PPBE) Process
- Phase 2—Enactment
- Phase 3—Apportionment
- Phase 4 - Execution

From the standpoint of developing, producing, fielding, and supporting weapon systems, PPBE is the focus of attention in the headquarters activities, while defense acquisition program managers are equally concerned with providing information to ensure their programs are funded for the future and with the day-to-day management of their programs. Figure 8-1, on the following page, depicts these four phases.

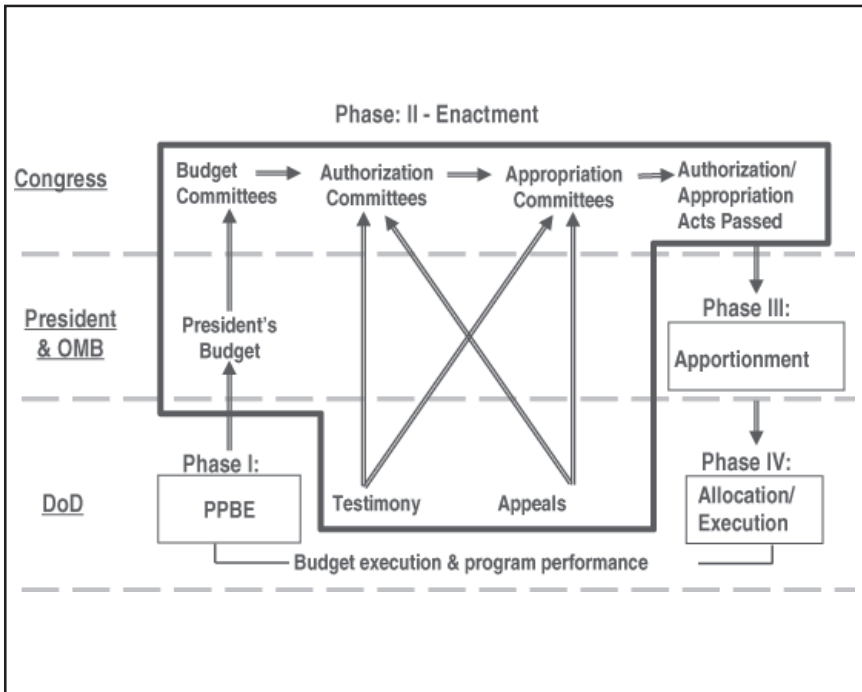


Figure 8-1. Resource Allocation Process

### Phase I – Planning, Programming, Budgeting and Execution (PPBE) Process

PPBE is the process that produces DoD’s portion of the President’s budget. It was originally introduced as the Planning, Programming, and Budgeting System (PPBS) by Secretary of Defense Robert McNamara in 1962. PPBE replaced PPBS in 2003. PPBE is a biennial (2-year) cycle during which DoD formulates 2-year budgets each even-numbered calendar year, called the “on year,” and then focuses on budget execution and program performance each “off year” (odd-numbered calendar year). During the on year, PPBE produces the Defense Planning Guidance (DPG) and a Program Objectives Memorandum (POM) for each military department, Defense agency, and selected other agencies/offices. Updates to the Future Years Defense

Activity	OSD Action Office	Product
<b>On Year:</b>		
Planning	Under Secretary of Defense (Policy)	Defense Planning Guidance
Programming	Director, Program Analysis & Evaluation	Approved Program Objectives Memoranda (Updated FYDP)
Budgeting	Under Secretary of Defense (Comptroller)	DoD Portion of the President's Budget (Updated FYDP)
<b>Off Year:</b>		
Planning (As Required)	Under Secretary of Defense (Policy)	Defense Planning Guidance (Optional)
Program Changes	Director, Program Analysis & Evaluation	Limited Changes to Baseline Program (Updated FYDP)
Budget Changes	Under Secretary of Defense (Comptroller)	Limited Changes to Baseline Budget (Updated FYDP)

Program (FYDP) occur during both on and off years, and a DoD budget is produced every year. During the off year, the DPG may be issued at the discretion of the Secretary of Defense. Small programmatic adjustments will be allowed during the off year to reflect real-world changes. The chart above shows the agency responsible for each product.

The Deputy Secretary of Defense manages the PPBE process with the advice and assistance of the Senior Level Review Group (SLRG), which the Deputy Secretary chairs. The SLRG includes the five Under Secretaries of Defense (i.e., for Acquisition, Technology and

Logistics (AT&L); Policy; Comptroller/Chief Financial Officer; Personnel and Readiness (P&R); and Intelligence); the Director, Program Analysis and Evaluation; the Chairman and Vice Chairman of the JCS; and the Secretaries of the Army, Navy, and Air Force.

**Off-/On-Year Activities.** The Quadrennial Defense Review (QDR) required by the Congress is DoD's major statement of defense strategy and business policy. As such, the QDR fulfills the requirement for the DoD Strategic Plan, required by the Government Performance and Results Act (GPRA). The QDR integrates and influences all internal programmatic decisions that must be resourced by the President's budget. Since the QDR is only produced every four years, this drives PPBE to slightly different off- and on-years within a four-year construct. The following summarizes a typical four-year period of time that reflects the 2-year cycle of PPBE:

- *Year 1: Off Year.* The first year of a new Presidential Administration is an off year (odd-numbered calendar year) for PPBE. The budget submitted to the Congress has been developed by the outgoing administration, and the budget being executed reflects the policies of the previous administration. Activities during this year may include supplemental budget requests to the Congress to start reorienting spending in accordance with policies of the new administration. Since this is an off year for PPBE, there will be no POM or Budget Estimate Submit (BES) to the Office of the Secretary of Defense; however, programmatic and budget changes to the previous administration's on-year baseline will be accomplished by Program Change Proposals (PCP) and Budget Change Proposals (BCP) developed by the departments and agencies during the spring and summer. PCPs/BCPs will be discussed later in this publication. A program/budget review will be conducted in the fall (September-November) based on input from the PCPs/BCPs and will result in the submission of the President's budget to the Congress in February.

In the first year of a new administration, the President's National Security Strategy (NSS) must be issued within 150 days of the incumbent's taking office. The NSS will provide top-level guidance

for conduct of the QDR and provide guidance for the Chairman of the Joint Chiefs of Staff (CJCS) to develop the National Military Strategy (NMS). The NMS will be reflected in the QDR and in an NMS document. For subsequent years, the NSS is due with submission of the President's budget. The NMS is updated by the CJCS only when necessary.

The QDR review will start in the summer/fall of this year so a QDR report can be provided to the Congress concurrent with the submission of the new administration's first budget in February. A program/budget execution review of the prior budget year(s) will be conducted in the fall (September-November), and this activity initializes the drafting of the on-year DPG.

- *Year 2: On Year.* The second year of a new administration is an on year (even-numbered calendar year) for PPBE. The QDR report is submitted concurrent with the President's Budget in February. The DPG is issued around May and is followed by a concurrent POM/Budget process. The departments and agencies will submit their POM and BES in August. Adjustments will be made in the FYDP, and the DoD input to the President's budget will be finalized. Concurrent with the fall OSD assessment of the POMs and budget estimates, a program/budget execution review of the previous budget execution year will be conducted.
- *Year 3: Off Year.* The third year of a new administration is another off year for PPBE. As this is the second off year, another QDR is not required; and the issuance of an off-year DPG may not be necessary depending on the national security environment. There will be an NSS issued by the White House; however, an update of the NMS is optional. Again, this depends on the security environment and whether the NSS contains significant new top-level guidance requiring changes in the military strategy. Programmatic and budget changes to the last on-year baseline will be, once again, accomplished by PCPs/BCPs. Drafting of the on-year DPG is initialized during the off-year program, budget, and execution review. The PCP/BCP process will, once more, result in a new DoD

budget. The off-year execution review will also be conducted, and drafting of the on-year DPG will be initialized.

- *Year 4: On Year.* The fourth year of a new administration is another on year for PPBE. The activities for this year are like those of Year 2, described previously; however, there is no QDR.

## **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 in early February of each year and ends when the President signs the annual authorization and appropriations 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), expend, and outlay funds.

## **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 the Office of Management and Budget provides these funds to DoD and other Federal agencies. Subsequently, DoD allocates funds within the Department through action by the Under Secretary of Defense (Comptroller) and his 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 resource allocation process overlap. (See Figure 8-2.)

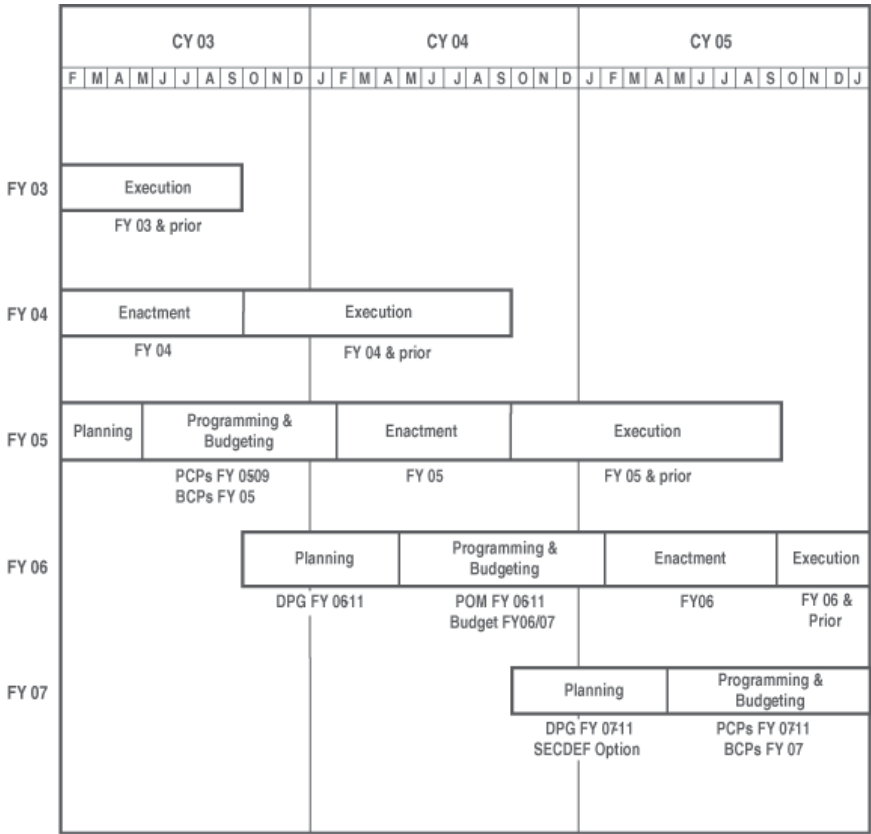


Figure 8-2. Resource Allocation Process — Overlap

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 program managers and other officials responsible for any aspect of the resource allocation process to be aware of the sequence of activities and to understand where they are at all times.

**Note:** PPBE is a *calendar*-driven system, and 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 program managers. This may be the most challenging part of a program manager's job and, if not managed carefully, can become the greatest single source of program instability.



# INTERNET WORLD WIDE WEB LOCATIONS

For readers who wish to follow-up with additional study on the defense acquisition system, the following list of WWW locations for the major organizations and documents mentioned in this publication may be helpful. (Addresses are current as of the publication date.)

Organization/Document	WWW Location
Acquisition Knowledge Sharing System	<a href="http://www.deskbook.osd.mil">http://www.deskbook.osd.mil</a>
Acquisition Community Connection	<a href="http://pmcop.dau.mil">http://pmcop.dau.mil</a>
Assistant Secretary of the Army (Acquisition, Logistics and Technology), the Army Acquisition Executive	<a href="http://www.saalt.army.mil">http://www.saalt.army.mil</a>
Assistant Secretary of the Air Force (Acquisition), the Air Force Acquisition Executive	<a href="http://www.safaq.hq.af.mil">http://www.safaq.hq.af.mil</a>
Assistant Secretary of the Navy (Research, Development and Acquisition), the Navy and Marine Corps Acquisition Executive	<a href="http://www.hq.navy.mil/RDA">http://www.hq.navy.mil/RDA</a>
Assistant Secretary of Defense (NII), the DoD Chief Information Officer	<a href="http://www.dod.mil/nii">http://www.dod.mil/nii</a>
Advanced Concept Technology Demonstrations (ACTD)	<a href="http://www.acq.osd.mil/actd">http://www.acq.osd.mil/actd</a>
Chairman, Joint Chiefs of Staff (CJCS)	<a href="http://www.dtic.mil/jcs">http://www.dtic.mil/jcs</a>
Defense Acquisition University	<a href="http://www.dau.mil">http://www.dau.mil</a>

Organization/Document	WWW Location
Defense Acquisition University Continuous Learning Center	<a href="http://clc.dau.mil/kc/no_login/portal.asp">http://clc.dau.mil/kc/no_login/portal.asp</a>
Director, Program Analysis & Evaluation	<a href="http://www.pae.osd.mil">http://www.pae.osd.mil</a>
Director, Operational Test & Evaluation	<a href="http://www.dote.osd.mil">http://www.dote.osd.mil</a>
DoDD 5000.1 and DoDI 5000.2 CJCSI 3170.01C and CJCSM 3170.01	<a href="http://dod5000.dau.mil">http://dod5000.dau.mil</a>
Integrated Product and Process Development, and Integrated Product Teams (IPPD and IPT)	<a href="http://www.acq.osd.mil/io/se/ippd/ippd_pubs.html">http://www.acq.osd.mil/io/se/ippd/ippd_pubs.html</a>
Joint Technical Architecture (JTA)	<a href="http://www-jta.itsi.disa.mil">http://www-jta.itsi.disa.mil</a>
Joint Vision 2020	<a href="http://www.dtic.mil/jv2020">http://www.dtic.mil/jv2020</a>
Office of the Secretary of Defense	<a href="http://www.dod.mil/osd/">http://www.dod.mil/osd/</a>
Under Secretary of Defense (Acquisition, Technology and Logistics)	<a href="http://www.acq.osd.mil/">http://www.acq.osd.mil/</a>

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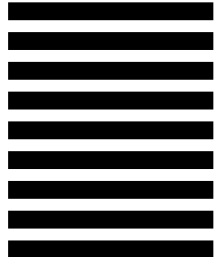
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