

NAVAL POSTGRADUATE SCHOOL
Monterey, California



THESIS

**DEFENSE ACQUISITION SYSTEM AND ITS
CHALLENGES FROM PM'S POINT OF VIEW**

by

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September 1998

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POINT OF VIEW**

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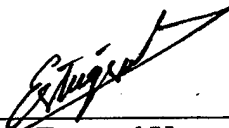
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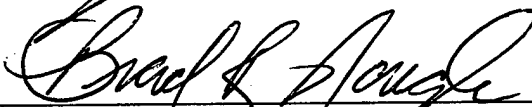
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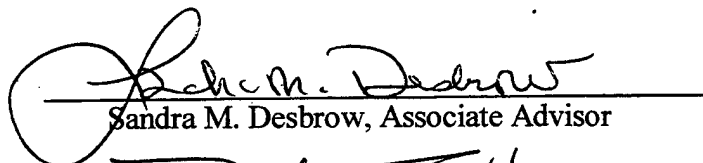


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ABSTRACT

The Defense Acquisition System acquires weapon systems and other items used by armed forces to meet threats to national security in a rapidly changing internal and external environment. Over the last decade, many improvements have been implemented in the Defense Acquisition System. Some have been extremely effective, and others less effective, but the dynamic environment and desire to be perfect lead to continuous change.

This thesis analysis the Defense Acquisition System and its challenges from a program manager's perspective and presents a snapshot of the current system by means of a comprehensive review of the system and a survey of acquisition managers.

The major conclusion drawn from this research is that the uncertainty of the environment and the unstable/lack of funding are the main sources of the challenges. Rigid controls placed on all the resources are detracting the program manager from his/her primary function of managing the program. Therefore, effective communication and cooperation between interested parties and an increased empowerment of the PM will increase the efficiency and effectiveness of the Defense Acquisition System.

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I. INTRODUCTION

A. PURPOSE

The purpose of this research paper is to study the Defense Acquisition System and its challenges from a program management perspective and present a snapshot of the current system. This is accomplished through a comprehensive Defense Acquisition System review, and a survey of acquisition professionals.

The Defense Acquisition System review will be examined in three parts: 1) the Department of Defense (DoD) Organization, 2) the Defense Acquisition Management Process, 3) the Resource Allocation Process (RAP) and National Security. Then efforts to improve the system will be addressed to see what has been done and what might be done in the future.

Additionally, a survey, which was conducted among Program Managers (PM), and other acquisition managers one level up and down from the PM, will examine current view points and attitudes of acquisition professionals with regard to the Defense Acquisition System challenges.

B. BACKGROUND

The Defense Acquisition System started almost 200 years ago and since World War II in 1946 has been rapidly shaped into the current system. Since that time, it has been the most intricate and one of the largest enterprises in the world. The system has many stake holders which makes it a challenge to manage without the effective integration of all players' objectives in the system.

Defense Acquisition, has a meaning more than it is written in the dictionary. It includes "... the entire process used to identify mission needs as well as the process whereby all equipment, facilities and services are planned and designed within DoD. The system entails acquisitions, determining and prioritizing resource requirements, directing and controlling the process, contracting, and reporting to the Congress [Ref 1:p. V-3]."

For decades, the system was under close intense scrutiny by the U.S. public because of its large share of the Federal budget (15-30 percent) and its importance to National Security. Because of the declining defense budget, the cost of the weapon systems and their cycle time has become very important. To achieve a reduced acquisition cycle time, Acquisition Reforms have been continually implemented.

According to an ever-changing environment and different priorities among cost, schedule, and performance, management practices and various differing acquisition paradigms have evolved. Before or during war time, mostly the performance and cycle time have the first priorities. Other times, cost becomes the most important criteria. Also technology and technology related support systems make significant management changes possible. In addition, changing threat affects the priorities and intensity of the change in management. With every iteration, there appeared to be something missing in the system. Each time a new requirement or need emerged, the system has tried to change to adapt. This kind of reactive approach tends to mask the real cause behind the symptoms.

C. RESEARCH QUESTIONS

1. Primary Research Question

What is the Defense Acquisition System and what are the challenges from the Program Manager's point of view?

2. Secondary Research Questions

- a. What is the relationship between Resource Allocation Process (RAP) and National Security objectives?
- b. What are the impacts of improvement efforts on the Defense Acquisition System?

D. SCOPE

This research will address the current Defense Acquisition System and challenges from the Program Managers point of view. It will include the organizational structure,

management process, and key players' interactions and influences on the management process. By providing the "big picture" of the system, and the current snapshot of the PM with his/her perception on these issues with a survey, Defense Acquisition System will be examined thoroughly.

E. METHODOLOGY

The first objective of the this research paper is to provide an overview of the current Defense Acquisition System. This will be accomplished through a literature review of sources including, but not limited to, the following:

- Unclassified DoD publications
- Published academic research papers
- References, publications and electronic media available at the Naval Postgraduate School (NPS) library
- Internet websites and homepages (DoD, commercial, and academic)
- Interviews with systems management faculty at NPS.

The next objective is to perform a survey among Defense Acquisition Managers to identify their current challenges and get their perspective regarding the causes of the deficiencies (if any) in the system. Relationships and interactions of the players and their influences on the Defense Acquisition Management Process will be discussed.

F. ORGANIZATION

Chapter II (The Defense Acquisition Management System) provides an overview of the current Defense Acquisition System and DoD organization structure. Chapter II also provides background information on the relationships between the players of the Defense Acquisition System.

Chapter III (The Resource Allocation Process, Budget, and National Security) introduces the Resource Allocation Process which is the backbone of the Defense Acquisition System. The chapter then examines National Security objectives for the following 10-20 years based on the 1997 Quadrennial Defense Review (QDR). The chapter concludes with the discussion of the effects of the QDR on Defense Acquisition Management.

Chapter IV (Acquisition Reform) provides background information on Acquisition Reforms and some important current efforts to improve the Defense Acquisition System.

Chapter V (The Survey) provides the survey findings.

Chapter VI (Analysis) provides an in-depth analysis of the survey findings, with their relationship to the thesis scope and background.

Chapter VII (Summary, Conclusions, and Recommendations) summarizes the findings of the research, answers the research questions, and presents recommendations for further research and study.

G. BENEFITS OF THE STUDY

The primary benefit of this study will be the documentation of the Defense Acquisition System, the impacts of past and current reforms, and the identification of needed reforms. The current organization, players, interactions of the players, and efforts to improve the system in recent years will give the reader a complete picture of the system. The survey conducted with managers from three levels of the Defense Acquisition Management will provide insight from PM's point of view about problems and prospective solutions. An additional benefit of the study is to provide recommendations for further research of the Acquisition Reforms and reorganization of the system.

II. BACKGROUND DEFENSE ACQUISITION MANAGEMENT

A. INTRODUCTION

The meaning of the Acquisition in Defense systems is far away from its definition as a simple word in the dictionary. It defines a complex, unique and ever-changing living organism. It includes the Congress, Executive branch, Industry and the interactions within each other.

The following is the basic definition given by DSMC:

A single uniform system whereby all equipment, facilities, and services are planned, developed, acquired, maintained and disposed of the Department of Defense (DoD). The system includes policies and practices that govern acquisition, identifying and prioritizing resource requirements, directing and controlling the process, contracting, and reporting to Congress. [Ref 2:p. 1]

The Defense Acquisition System acquires weapon systems and other items used by the armed forces to meet threats to national security. In this regard, it maybe considered as an extension of National Security Policy. The Department of Defense conduct its mission of deterring, and/or denying war by means of weapon "systems" with other tools it is using.

"The very first major weapon acquisition of the U.S. Government started with an authorization for the procurement of the six large frigates by the U.S. War Department in 1794 [Ref 1:p. V-5]." But acquisition problems started with the first acquisition attempt, and only three of the six frigates were built due to schedule slippage and cost overruns. The professional acquisition system started after World war II in 1946, and has been shaped by many factors through today. By its nature, there is no final system, but an ever-evolving one.

"Defense Acquisition" starts with defining requirements, goes through analyzing alternatives, obtaining/acquiring a new system, deployment and support of the new system, and ends with disposal of the system.

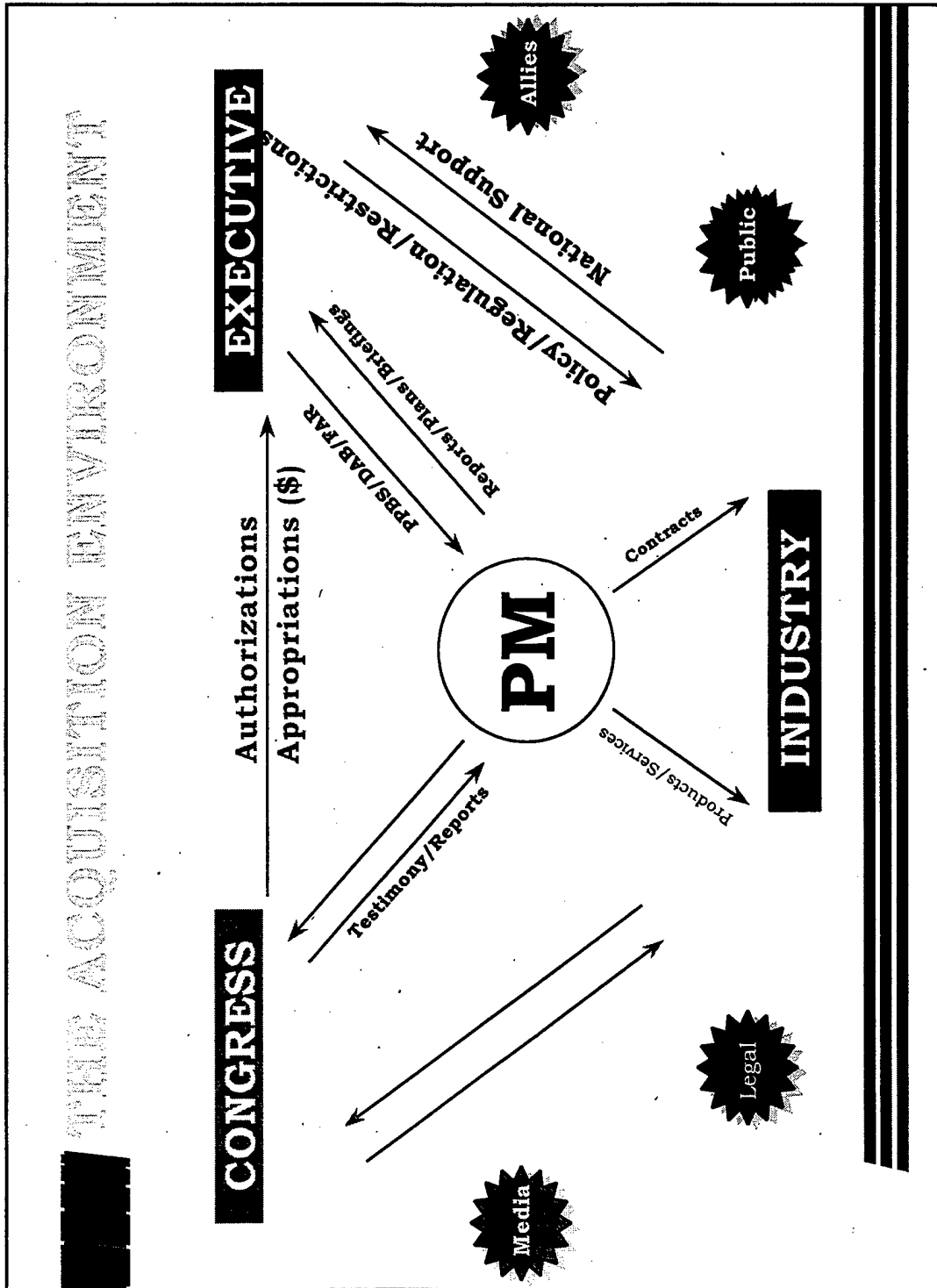


Figure 2-1, Major Players of the Defense Acquisition System, from [Ref 3]

B. THE ROLE OF CONGRESS, THE EXECUTIVE BRANCH AND INDUSTRY IN DEFENSE ACQUISITION

Major elements of the Defense Acquisition System are the Executive Branch of the Federal Government, the Congress and industry. Each of these participants, in terms of perspectives, method of operation and objectives is discussed briefly below.

1. Executive Branch:

Principal players within the Executive Branch include the President, the Department of Defense (DoD), the Office of Management and Budget (OMB), the Department of State and the National Security Council (NSC). [Ref 2:p. 2]

Perspective:

- Formulate, direct, and execute national security policy
- Want to be re-elected
- Patriotic

Method of Operation:

- Issue directives/regulations
- Contract with industry
- Command and control of unified and specified commands through the Joint Chief of Staff
- Negotiate with Congress
- Under Secretary of Defense (Acquisition and Technology) USD(A&T) decides on major defense acquisition programs

Objectives:

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

2. Legislative Branch:

The Legislative Branch (Congress) includes the "Defense Committees": the Senate and House Armed Services Committees (the Authorization Committees) and

the Defense Subcommittees of the House and Senate Appropriation Committees; the Senate and House Budget Committees; other committees having legislative oversight of defense activities; individual members of Congress; the Congressional Budget Office and the General Accounting Office (GAO). [Ref 2:p. 2]

Perspective:

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

Method of Operation:

- Debate/vote/pass legislation
- Conduct hearings
- Set ceilings (manpower and equipment)
- Establish oversight committees
- Provide funds

Objectives:

- Balance defense and social needs
- Distribute defense dollars by district
- Control public debt
- Maximize competition
- Control industry profits
- Control fraud, waste, abuse and mismanagement

3. Industry:

The defense industry (contractors) includes large and small organizations providing goods and services to DoD. [Ref 2:p. 3]

Perspective:

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

Methods of Operation:

- Respond to solicitations
- Propose solutions
- Independent R&D
- Design systems
- Produce systems

Objectives:

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

In this complex and adverse environment, each party has been trying to reach its own objective. With the Acquisition Reform, the Government has tried to establish a "Win-Win" situation. The ultimate goal is to satisfy all the players at an optimum point. Otherwise, at least one party will "lose" in the long term. Since Defense Acquisition relies on long-term relationships, Acquisition Reform has to be accepted by all parties.

C. DEFENSE ACQUISITION MANAGEMENT ORGANIZATIONS

1. Background

The backbone of the current Defense Acquisition Management Organization was basically formed after the Packard Commission, initiated by Executive Order 12526. Former Secretary of Defense David Packard included almost all acquisition players in his Defense Acquisition Organization process review. Reporting to the President in mid-1986, the Commission recommended the creation of a single position responsible for

acquisition (the USD (A&T)) and establishment of a streamlined reporting chain from the program manager to the acquisition decision authority within DoD. President Reagan approved the Packard Commission recommendations and he directed their implementation via National Security Decision Directive (NSDD) 219 in 1986. [Ref 2:p. 11]

President Bush initiated a follow-on assessment of defense acquisition management in 1989 via the National Security Review (NSR). With this second assessment, Packard Commission findings were reiterated. As a result, DoDD 5000.1, DoDI 5000.2 and DoD 5000.2-M were issued in February 1991. In March 1996, 5000 Series DoD Directives were revised.

2. Four-tier System

The U.S. Defense Management Organization has a complex structure. In the Office of Secretary of Defense (OSD) organization, the Under Secretary of Defense (Acquisition and Technology) (USD (A&T)) is the main responsible body for all DoD Acquisition Management Processes. Basically, it is a four-tier system (Figure 2-2) designed to streamline the Program Managers' reporting requirements.

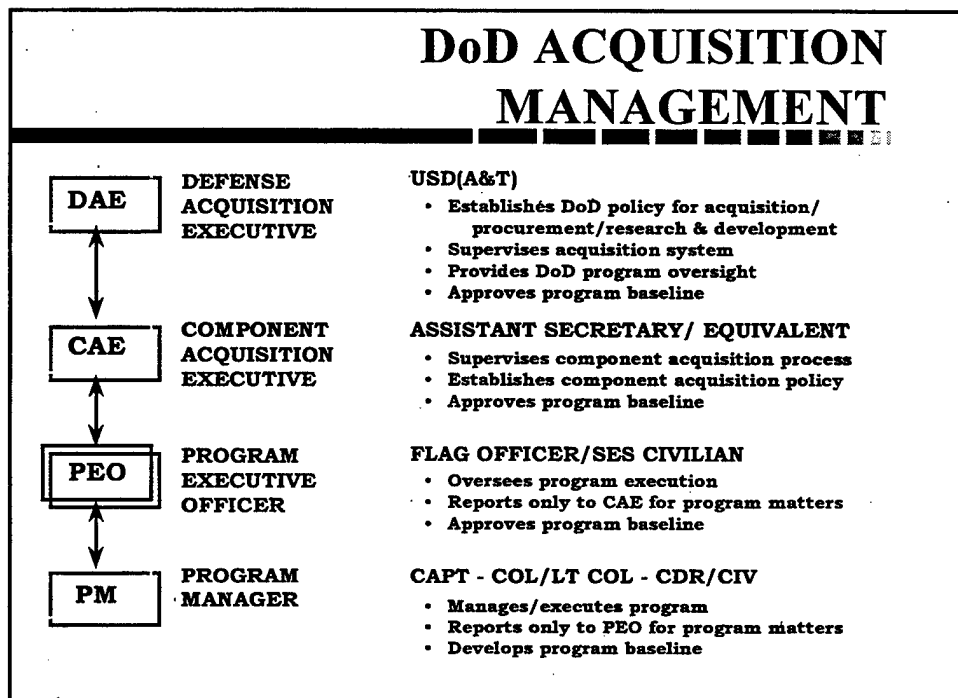


Figure 2-2, The "four-tier" system, from [Ref 3]

This structure provides a chain of authority running from the Under Secretary of Defense for Acquisition (USD (A)) through full-time Component Acquisition Executives (CAEs) and full time Program Executive Officers (PEOs) to the individual program managers of Major Defense Acquisition Programs. The services have chosen somewhat different approaches for implementing this policy. [Ref 2:p. 12]

a. *Defense Acquisition Executive (DAE)*

USD (A&T) serves as Defense Acquisition Executive. For acquisition matters, USD (A&T) takes precedence over the Secretaries and ranks number three within DoD. Details on responsibilities and authorities of USD (A&T) will be given later in this chapter.

b. *Component Acquisition Executive (CAE)*

A single official within a DoD Component who is responsible for all acquisition functions within that Component. This includes Service Acquisition Executives for the Military Departments and Acquisition Executives in other DoD Components who have overall acquisition management responsibilities [Ref 4]. Principal Staff Assistants, the Under Secretaries of Defense, the Assistant Secretaries of Defense, the General Counsel of the Department of Defense, the Inspector General of the Department of Defense, the Comptroller of the Department of Defense, the Assistants to the Secretary of Defense, and the OSD Directors or equivalents who report directly to the Secretary or Deputy Secretary of Defense. [Ref 5]

c. *Program Executive Officer (PEO)*

A Program Executive Officer (PEO) is military or civilian official who has primary responsibility for directing several acquisition category I programs and for assigned acquisition category II, III, and IV programs. A PEO has no other command or staff responsibilities within the Component, and only reports to and receives guidance and direction from the DoD Component Acquisition Executive. [Ref 4]

d. Program Manager (PM)

A Program Manager (PM) is “military or civilian official who is responsible for managing an acquisition program [Ref 4].” With respect to a major or significant non-major defense acquisition program, the term "program manager" means the member of an Acquisition Corps responsible for managing the program, regardless of the title given the member. [Ref 6]

e. Deputy Program Manager

The person who has continuing authority to act on behalf of the PM in his or her absence is the Deputy Program Manger (DPM).

3. Major Players in DoD

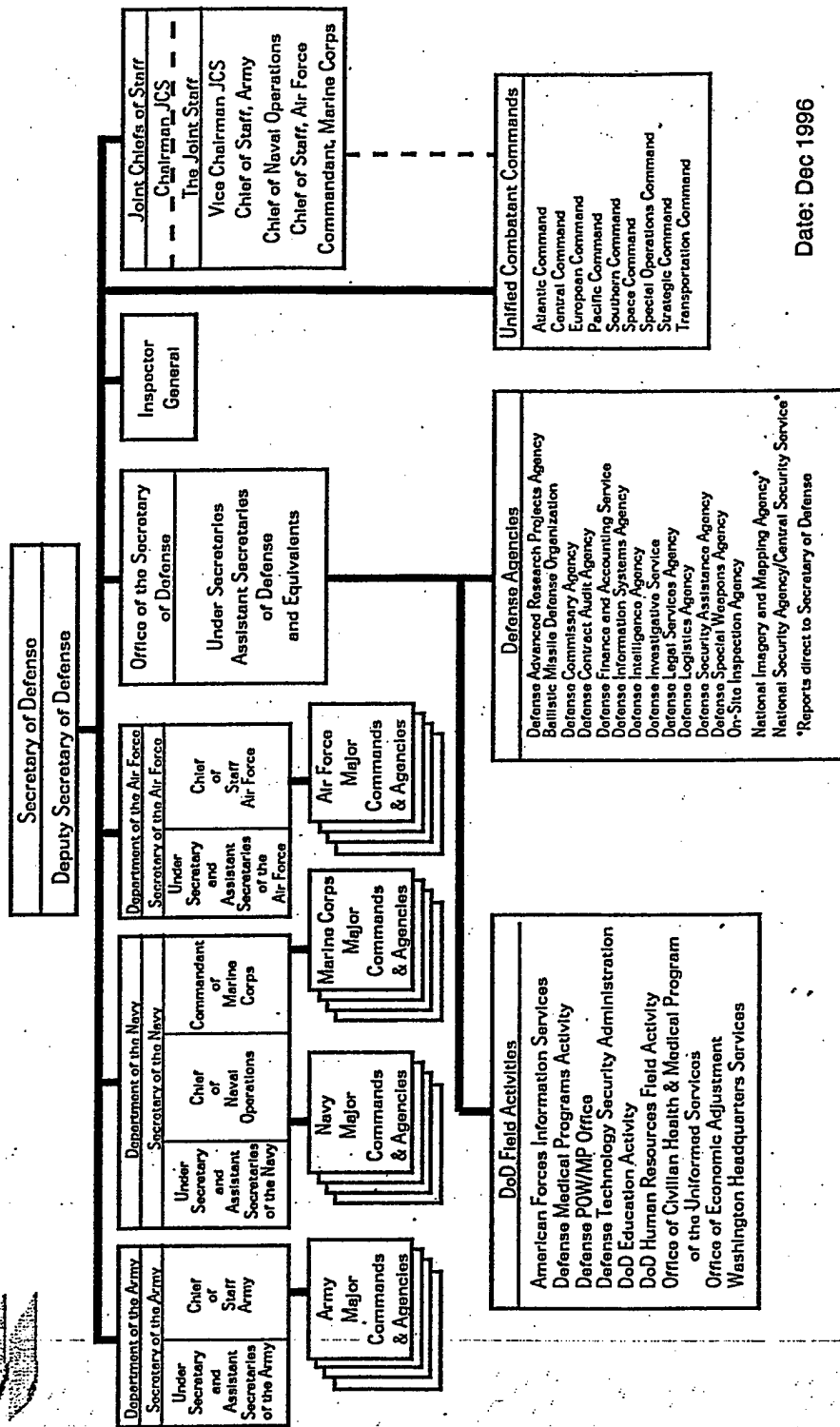
Major players and sub-organizations described in Defense Organizations and Functions Guidebook are described as given below:

a. Acquisition Organization

An organization, including its subordinate elements, whose mission includes planning, managing and/or executing acquisition programs which are governed by DoD Directive 5000.1, DoD Instruction 5000.2 and related issuance. Specifically: Office of the Under Secretary of Defense (Acquisition); Army Materiel Command; Army Information Systems Command; Army Strategic Defense Command; Army Acquisition Executive; Office of the Assistant Secretary of the Navy (Research, Development, and Acquisition); Naval Sea Systems Command; Naval Air Systems Command; Naval Supply Systems Command; Naval Facilities Engineering Command; Office of the Chief of Naval Research; Space and Naval Warfare Systems Command; Navy Strategic Systems Program Office; Navy Program Executive Officer/Direct Reporting Program Manager Organization; Marine Corps Research, Development, and Acquisition Command; Office of the Assistant Secretary of the Air Force (Acquisition); Air Force Systems Command; Air Force Logistics Command; Air Force Program Executive.



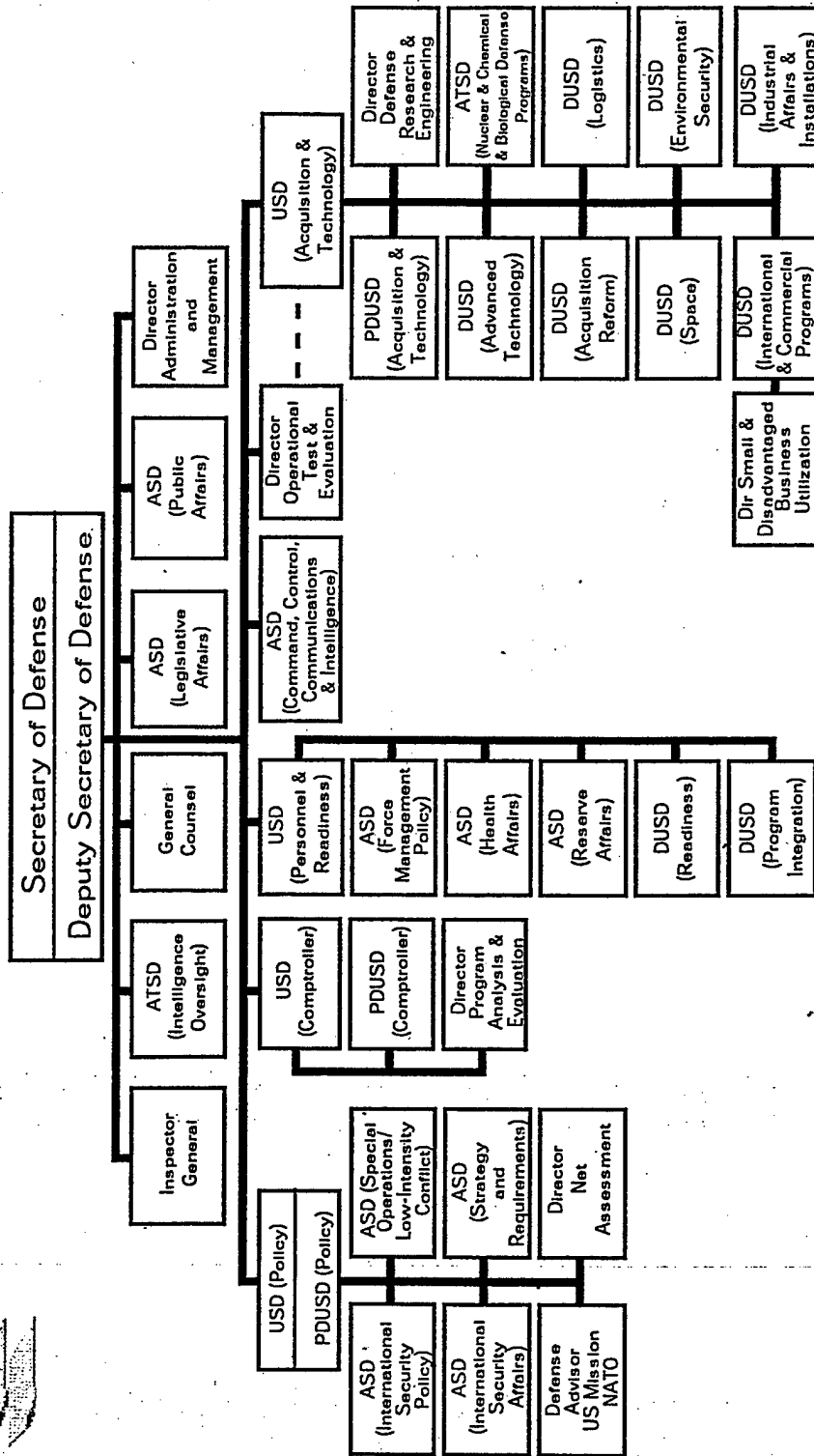
Department of Defense



Date: Dec 1996

Figure 2-3, DoD Organization Chart, from [Ref 7]

Office of the Secretary of Defense



Date: Jan 1997

Figure 2-4, The Secretary of Defense, from [Ref 7]

b. The Secretary of Defense

The Secretary of Defense is the principal defense policy advisor to the President and is responsible for the formulation of general defense policy and policy related to all matters of direct and primary concern to the DoD, and for the execution of approved policy. Under the direction of the President, the Secretary exercises authority, direction, and control over the Department of Defense. [Ref 7]

c. Office of the Secretary of Defense

The Office of the Secretary of Defense (OSD) (Figure 2-4) is the principal staff element used by the Secretary and Deputy Secretary of Defense to exercise authority, direction, and control over the Department of Defense. The mission of OSD as an organizational entity, in coordination with other elements of DoD, is as follows:

- Develop and promulgate policies in support of United States national security objectives.
- Provide oversight to assure the effective allocation and efficient management of resources consistent with Secretary of Defense approved plans and programs.
- Develop appropriate evaluation mechanisms to provide effective supervision of policy implementation and program execution at all levels of the Department.
- Provide the focal point for departmental participation in the United States security community and other Government activities.

In addition, each OSD principal staff official, in his/her respective areas of functional assignment, is responsible for performing the following:

- Conduct analyses, develop policies, provide advice, make recommendations, and issue guidance on Defense plans and programs.
- Develop systems and standards for the administration and management of approved plans and programs.

- Initiate programs, actions, and taskings to ensure adherence to DoD policies and national security objectives, and to ensure that programs are designed to accommodate operational requirements.
- Review and evaluate programs for carrying out approved policies and standards.
- Inform appropriate organizations and personnel of new and significant trends or initiatives in assigned areas of functional responsibilities.
- Review proposed resource programs, formulate budget estimates, recommend resource allocations, and monitor the implementation of approved programs.
- Participate in those planning, programming, and budgeting activities, which relate to assigned areas of functional responsibilities.
- Review and evaluate recommendations on requirements and priorities.
- Promote coordination, cooperation, and mutual understanding within the Department of Defense and between DoD and other Federal agencies and the civilian community.
- Serve on boards, committees, and other groups pertaining to assigned functional areas, and represent the Secretary of Defense on matters outside the Department of Defense.
- Develop information and data, prepare reports, and/or testimony for presentations to Congressional Committees or in response to congressional inquiries.
- Represent the DoD with Congressional Committees or individual Members of the Congress.
- Perform such other duties as the Secretary of Defense may from time to time prescribe.

d. The Deputy Secretary of Defense

The Deputy Secretary of Defense is delegated full power and authority to act for the Secretary of Defense and to exercise the powers of the Secretary on any and all matters for which the Secretary is authorized to act pursuant to law. [Ref 7]

e. Under Secretary of Defense (Policy) USD (P) (DoD Directive 5111.1)

Under the direction of the Secretary of Defense, the USD (P) is the principal staff assistant and advisor to the Secretary and Deputy Secretary of Defense for all matters concerning the formulation of national security and defense policy and the integration and oversight of DoD policy and plans to achieve national security objectives. In the exercise of this responsibility, the USD (P) shall:

- Represent the DoD, as directed, in matters involving the National Security Council (NSC), Department of State (DoS), and other Departments, Agencies, and interagency groups with responsibilities for national security policy.
- Serve as a member of the NSC Deputies Committee; serve as a member of the Deputies Committee for Crisis Management; and advise the Secretary of Defense on crisis prevention and management, including contingency planning for major areas of concern.
- Develop policy for defense-related international negotiations and represent the DoD in those negotiations unless otherwise directed.
- Develop and coordinate DoD policy and positions for international negotiations on arms control implementation and/or compliance issues.
- Develop policy on the conduct of alliances and defense relationships with foreign governments, their military establishments, and international organizations; integrate and oversee plans and programs undertaken in conjunction with those alliances and defense relationships.
- Develop, coordinate, and oversee the implementation of international security strategy and policy; political-military policy on issues of DoD interest that relate to foreign governments and their defense establishments, to include arrangements for United States military facilities, access and operating rights, and status of forces; and policy on all matters relating to prisoners of war and missing in action.
- Develop, coordinate, and oversee the implementation of policy and plans for defense security assistance.

- Develop, coordinate, and oversee the implementation of policy to reduce and counter the threat to the United States, its forces, and allies of weapons of mass destruction and other militarily significant technologies and force capabilities, to include counter-proliferation policy, arms control policy, and security policy.
- Provide oversight of all DoD activities related to international technology transfer; develop, coordinate, and provide policy direction and overall management for the DoD Technology Security Program and policy related to international technology transfer, to include export controls, dual-use and munitions licensing, arms cooperation programs, and support for enforcement and intelligence systems.
- Develop, coordinate, and oversee the implementation of strategy and policy for strategic and theater nuclear offensive forces, strategic and defensive forces, and space systems; and review and evaluate plans, programs, and systems requirements for such forces and systems to assure consistency with the strategy and policy.
- Assist the Secretary of Defense in development of national security and defense strategy; advise on the resources and forces necessary to implement that strategy, to include serving as the principal advisor for the planning phase of the DoD Planning, Programming, and Budgeting System and for monitoring the degree to which the DoD program and budget underwrite the strategy; and assist the Secretary of Defense in preparing written policy guidance for the preparation and review of operational and contingency plans, including those for nuclear and conventional forces, and in reviewing such plans.
- Develop policy guidance, provide overall supervision, and provide oversight of planning, programming, budgeting, and execution of special operations activities, including civil affairs and psychological operations, and of low-intensity conflict activities, including counter terrorism, support to insurgency, and contingency operations.

- Develop, coordinate, and oversee the implementation of policy for the defense and military aspects of the promotion of constitutional democracy and respect for human rights, United States participation in peace operations, and the provision of humanitarian assistance.
- Develop, coordinate, and oversee the implementation of drug control policy, including planning, programming, and budgeting for the DoD counter-drug mission.
- Provide mid- and long-range policy planning on strategic security matters and emerging national security issues; develop and oversee the implementation of a comprehensive strategy toward Russia, Ukraine, and other newly independent states of Eurasia; plan and conduct net assessments and policy research activities and programs.
- Develop, coordinate, and oversee the implementation of policy for international security countermeasures activities of the Department of Defense; administer for the Department of Defense the National Disclosure Policy, the Foreign Disclosure and Technical Information System, the Foreign Visits System, and the U.S. Visitor International Technology System.
- As the U.S. Security Authority for North Atlantic Treaty Organization, serve as the primary focal point for staff coordination on these matters both internal and external to the Department of Defense.
- Develop policy and provide oversight for emergency planning and preparedness, crisis management, defense mobilization in emergency situations, military support to civil authorities, civil defense, and continuity of operations and government. Develop policy and coordinate DoD participation in, and exercise staff supervision over, special activities, special access programs, sensitive support to non-DoD agencies, and the joint worldwide reconnaissance schedule.

The above functions are carried out through the following key OSD personnel:

- Principal Deputy Under Secretary of Defense (Policy) (DoDD 5111.3)

- Assistant Secretary of Defense (International Security Affairs) (DoDD 5111.7)
- Assistant Secretary of Defense (International Security Policy) (DoDD 5111.5)
- Assistant Secretary of Defense (Strategy and Requirements) (DoDD 5111.8)
- Assistant Secretary of Defense (Special Operations and Low-Intensity Conflict) (DoDD 5111.10)
- Defense Advisor for U. S. Mission NATO
- Director of Net Assessment (DoDD 5111.9)

In addition, the USD (P) exercises authority, direction, and control over the following:

- Defense Security Assistance Agency (DoDD 5105.38 - under revision), through the Assistant Secretary of Defense (International Security Affairs)
- Defense Technology Security Administration (DoDD 5105.51), through the Assistant Secretary of Defense (International Security Policy)
- Defense Prisoner of War/Missing in Action Office (DoDD 5105.38), through the Assistant Secretary of Defense (International Security Affairs)

***f. Under Secretary of Defense (Personnel and Readiness)
(USD(P&R)) (DoD Directive 5124.2)***

Under the direction of the Secretary of Defense, the USD (P&R) is the principal staff assistant and advisor to the Secretary and Deputy Secretary of Defense for Total Force management as it relates to readiness; National Guard and Reserve component affairs; health affairs; training; and personnel requirements and management, including equal opportunity, morale, welfare, and quality of life matters. In the exercise of this responsibility, the USD (P&R) shall:

- Develop policies, plans, and programs for:
 - ✓ Total Force personnel and their allocation among DoD Components and between the Active and Reserve components to ensure efficient and effective support of wartime and peacetime operations, contingency planning, and preparedness.

- ✓ Reserve component affairs to promote the effective integration of Reserve component capabilities into a cohesive Total Force.
 - ✓ Health and medical affairs sufficient to provide, and maintain readiness to provide, medical services and support to members of the Armed Forces during military operations, and to provide medical services and support to members of the Armed Forces, their dependents, and others entitled to DoD medical care.
 - ✓ Recruitment, training, equal opportunity, compensation, recognition, discipline, and separation of all DoD personnel, to include both military (Active, Reserve, and retired) and civilian.
 - ✓ The quality of life of DoD personnel and their dependents, including family support, allowances transition assistance, community services, and dependent education.
 - ✓ DoD moral, welfare, and recreation programs and supporting non-appropriated fund revenue-generating programs including commissaries and exchanges.
 - ✓ Interagency and intergovernmental activities, special projects, or external requests that create a demand for DoD personnel resources.
- Serve as OSD focal point for readiness issues; develop policies, management structures, and administrative processes to ensure forces have sufficient readiness to execute the National Military Strategy; oversee Total Force personnel and medical readiness; and coordinate with other Principal Staff Assistants and cognizant officials in the Office of the Chairman of the Joint Chiefs of Staff and in the Services on other aspects of readiness.
 - Analyze the Total Force structure as related to quantitative and qualitative military and civilian personnel requirements, utilization, readiness and support.
 - Administer and implement controls on military and civilian personnel strengths for Military Departments, Defense Agencies, and other DoD Components.

- Review and evaluate the requirements of the Defense Acquisition Board's major defense acquisition programs and proposed weapon systems for personnel, training, and readiness implications, and the implications of weapon systems maintainability for qualitative and quantitative personnel requirements and for readiness.
- Formulate policy for and ensure coordination of DoD Noncombatant Evacuation Operations (NEO).
- Participate in those planning, programming, and budgeting activities that relate to assigned areas of responsibility.
- Serve on boards, committees, and other groups pertaining to assigned functional areas and represent the Secretary of Defense on personnel, readiness, Reserve component, health, and compensation matters outside of the Department.

The above functions are carried out through the following key OSD personnel:

- Assistant Secretary of Defense (Force Management Policy) (DoDD 5124.5)
- Assistant Secretary of Defense (Health Affairs) (DoDD 5136.1)
- Assistant Secretary of Defense (Reserve Affairs) (DoDD 5125.1)

In addition, the USD(P&R) exercises authority, direction, and control over the following:

- Defense Commissary Agency (DoDD 5105.55), through the Assistant Secretary of Defense (Force Management Policy)
- Department of Defense Education Activity (DoDD 1342.6), through the Assistant Secretary of Defense (Force Management Policy)
- DoD Civilian Personnel Management Service (DoDD 5124.4), through the Assistant Secretary of Defense (Force Management Policy)
- Defense Medical Programs Activity (DoDD 5136.1), through the Assistant Secretary of Defense (Health Affairs)
- Office of Civilian Health and Medical Program of the Uniformed Services (DoDD 5105.46), through the Assistant Secretary of Defense (Health Affairs)

- Uniformed Services University of the Health Sciences, through the Assistant Secretary of Defense (Health Affairs), pursuant to the authority vested in the Secretary of Defense by Chapter 104 of 10 U.S.C., except that the authority to appoint the President, USUHS, is reserved to the Secretary of Defense (DoDD 5105.45)
- Defense Equal Opportunity Management Institute
- Defense Manpower Data Center

g. DoD Field Activities

The DoD Field Activities (Figure 2-4) are established by the Secretary of Defense, under the provisions of Title 10, United States Code, to perform selected support and service functions of a more limited scope than Defense Agencies. Organization and Functions of specific DoD Field Activities are:

(1) The Inspector General. The Inspector General of the Department of Defense (DoD Directive 5106.1), under the provisions set forth by Public Law 95-452, serves as an objective official in the Department of Defense who is responsible for conducting, supervising, monitoring, and initiating audits, investigations, and inspections relating to programs and operations of the Department of Defense. The Inspector General provides leadership and coordination and recommends policies for activities designed to promote economy, efficiency, and effectiveness in the administration of, and to prevent and detect fraud and abuse in, such programs and operations. The Inspector General is also responsible for keeping the Secretary of Defense and the Congress fully and currently informed about problems and deficiencies relating to the administration of such programs and operations and the necessity for, and progress of, corrective action. [Ref 7]

(2) The Joint Chief of Staff and Joint Staff. The Joint Chief of Staff (JCS) and Joint Staff (DoDN Directive 5100.1). The Joint Chiefs of Staff, headed by the Chairman of the Joint Chiefs of Staff, consists of the Chairman; the Vice Chairman, JCS; the Chief of Staff, U.S. Army; the Chief of Naval Operations; the Chief of Staff, U.S. Air Force; and the Commandant of the Marine Corps, and supported, subject to the authority, direction, and control of the Chairman, by the Joint Staff,

constitute the immediate military staff of the Secretary of Defense. The Chairman of the JCS is the principal military advisor to the President, the National Security Council, and the Secretary of Defense. The Chiefs of Service are the senior military officers of their respective Services and are responsible for keeping the Secretaries of the Military Departments fully informed on matters considered or acted upon by the JCS, and are military advisers to the President, the National Security Council, and the Secretary of Defense. The Vice-Chairman of the JCS performs such duties as may be prescribed by the Chairman with the approval of the Secretary of Defense. When there is a vacancy in the Office of the Chairman or in the absence or disability of the Chairman, the Vice-Chairman acts as Chairman and performs the duties of the Chairman until a successor is appointed or the absence or disability ceases.

(3) Military Departments. The Military Departments (DoD Directive 5100.1) (Figure 2-5) are the Departments of the Army, Navy, and Air Force (the Marine Corps is a part of the Department of the Navy). Each Military Department is separately organized under its own Secretary and functions under the authority, direction, and control of the Secretary of Defense. The Military Departments are responsible for organizing, training, supplying, and equipping forces for assignment to Unified Combatant Commands.

(4) Unified Combatant Commands. The Unified Combatant Commands (DoD Directive 5100.1) are responsible to the President and the Secretary of Defense for accomplishing the military missions assigned to them. Commanders of the Unified Combatant Commands exercise command authority over forces assigned to them as directed by the Secretary of Defense. The operational chain of command runs from the President to the Secretary of Defense to the Commanders of the Unified Combatant Commands. The Chairman of the Joint Chiefs of Staff functions within the chain of command by transmitting to the Commanders of the Unified Combatant Commands the orders of the President or the Secretary of Defense. Unified Combatant Commands include the European Command, Pacific Command, Atlantic Command, Southern Command, Special Operations Command, Strategic Command, Central Command, Transportation Command, and Space Command. [Ref 7]

*h. Under Secretary of Defense (Acquisition and Technology)
(USD(A&T)) (DoD Directive 5134.1)*

Under the direction of the Secretary of Defense, the USD (A&T) 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; test and evaluation; production; logistics; military construction; procurement; economic security; and atomic energy. In the exercise of this responsibility, the USD (A&T) shall:

- Serve as the Defense Acquisition Executive with full responsibility for supervising the performance of the DoD Acquisition System.
- Chair the Defense Acquisition Board (DAB).
- Serve as the DoD Procurement Executive.
- Chair the DoD Ethics Council.
- Serve as the United States representative at the North Atlantic Treaty Organization (NATO) Conference of National Armaments Directors and other multinational forums of armaments directors.
- Establish and publish policies and procedures governing the operations of the DoD Acquisition System and the administrative oversight of defense contractors.
- Prescribe the developmental testing and evaluation program (which excludes those statutory test and evaluation responsibilities assigned to the Director, Operational Test and Evaluation, including establishing and ensuring implementation of policies and program plans, including funding, for ranges and test facilities and also be responsible for the acquisition-related functions of weapons programs, including control of the elements of the OSD performing the acquisition-related functions of strategic and theater nuclear forces programs and tactical warfare programs.
- Prescribe policies, in coordination with the IG, DoD, and the Under Secretary of Defense (Comptroller), to ensure that audit and oversight of contractor activities are coordinated and carried out in a manner to prevent duplication

by different elements of the DoD. The exercise of this responsibility shall not affect the authority of the IG, DoD, under the Inspector General Act of 1978.

- Coordinate research and development programs DoD-wide to eliminate duplication of effort and ensure that available resources are used to maximum advantage.
- Establish policies and programs that strengthen DoD Component technology development programs, encourage technical competition and technology-driven prototyping that promise increased military capabilities, and exploit the cost-reduction potential of innovative or commercially developed technologies.
- Develop acquisition plans, strategies, guidance, and assessments, including affordability assessments and investment area analyses, in support of the acquisition Milestone review and the Planning, Programming, and Budgeting System (PPBS) processes.
- Designate major defense acquisition programs as either DAB or Component programs, sign congressional certifications and reports to include Milestone authorization breaches, administer the Selected Acquisition Report (SAR) and Unit Cost Report (UCR) systems.
- Develop, in coordination with the Under Secretary of Defense for Policy (USD (P)), agreements with friendly and Allied Nations relating to acquisition matters.
- Establish policies relating to the capability of U.S. defense industry to meet DoD needs.
- Establish policies and procedures, in coordination with the Under Secretary of Defense.
- Personnel and Readiness (USD (P&R)), for the effective management of the acquisition workforce within the Department of Defense, including accession, education, training, and career development.
- Establish and manage the cooperative research and development program.

The above functions are carried out with the support of the following key OSD personnel:

- The Principal Deputy Under Secretary of Defense (Acquisition and Technology) (DoDD 5134.6)
- The Director of Defense Research and Engineering (DoDD 5134.3)
- The Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs)(DoDD 5134.8)
- The Director of Small and Disadvantaged Business Utilization (DoDD 5134.4)
- The Deputy Under Secretary of Defense (Acquisition Reform)
- The Deputy Under Secretary of Defense (Advanced Technology)
- The Deputy Under Secretary of Defense (Environmental Security)
- The Deputy Under Secretary of Defense (Industrial Affairs and Installations)
- The Deputy Under Secretary of Defense (International and Commercial Programs)
- The Deputy Under Secretary of Defense (Logistics)
- The Deputy Under Secretary of Defense (Space)

In addition, the USD (A&T) exercises authority, direction, and control over the following:

- Ballistic Missile Defense Organization (DoDD 5134.9)
- Defense Advanced Research Projects Agency (DoDD 5134.10), through the Director of Defense Research and Engineering
- Defense Logistics Agency (DoDD 5105.22)
- Defense Special Weapons Agency (DoDD 5105.31), through the Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs)
- On-Site Inspection Agency (DoDD TS-5134.2), through the Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs)
- Office of Economic Adjustment (DoDD 3030.1), through the Deputy Under Secretary of Defense (Industrial Affairs and Installations)

- Defense Acquisition University (DoDD 5000.57), through the Deputy Under Secretary of Defense (Acquisition Reform)

i. Director of Operational Test and Evaluation (DOT&E) (DoD Directive 5141.2)

Under the direction of the Secretary of Defense, the DOT&E is the principal staff assistant and advisor to the Secretary and Deputy Secretary of Defense on OT&E in the DoD and the principal OT&E official within the senior management of the DoD. The DOT&E is responsible for the following functional areas:

- Prescribe policies and procedures for the conduct of OT&E within the Department of Defense. Provide advice and make recommendations to the Secretary of Defense, and issue guidance to, and consult with, the heads of the DoD Components with respect to OT&E in the DoD in general, and with respect to specific OT&E to be conducted in connection with a major defense acquisition program.
- Designate selected special interest weapons, equipment, or munitions as major defense acquisition programs.
- Develop systems and standards for the administration and management of approved OT&E plans for major defense acquisition programs.
- Monitor and review all OT&E in the DoD to ensure adherence to approved policies and standards.
- Analyze the results of OT&E conducted for each major defense acquisition program and submit a report to the Secretary of Defense, the Under Secretary of Defense (Acquisition and Technology), and to the Committees on Armed Services and Appropriations of the Senate and House of Representatives that addresses (a) the adequacy of the test and evaluation performed and (b) whether the results confirm the combat effectiveness and suitability of the items tested.
- Coordinate operational testing conducted jointly by more than one DoD Component.

- Review and make recommendations to the Secretary of Defense on all budgetary and financial matters relating to OT&E, including operational test facilities and equipment.
- Initiate plans, programs, actions, and tasking to ensure that OT&E for major defense acquisition programs is designed to evaluate the operational effectiveness and suitability of U.S. military weapon systems and equipment.
- Review and report to the Secretary of Defense on the adequacy of operational test planning, priorities, support resources, execution, evaluation, and reporting for major defense acquisition programs while avoiding unnecessary duplication.

j. Selected Defense Agencies

The Defense Agencies (Figure 2-3), authorized by the Secretary of Defense pursuant to the provisions of Title 10, United States Code, perform selected support and service functions on a Department-wide basis; Defense Agencies that are assigned wartime support missions are designated as Combat Support Agencies.

Organization and Functions of specific Defense Agencies

(1) Defense Logistics Agency (DLA) (DoD Directive 5105.22). The Defense Logistics Agency (DLA), is a Combat Support Agency of the Department of Defense (DoD) under the authority, direction, and control of the Under Secretary of Defense (Acquisition and Technology). DLA provides worldwide logistics support for the missions of the Military Departments and the Unified Combatant Commands under conditions of peace and war. It also provides logistics support to other DoD Components and certain Federal agencies, foreign governments, international organizations, and others as authorized. Provides materiel commodities and items of supply that have been determined, through the application of approved criteria, to be appropriate for integrated management by DLA on behalf of all DoD Components, or that have been otherwise specifically assigned by appropriate authority. Furnishes logistics services directly associated with the supply management function and other support services including scientific and technical information, federal cataloging, industrial plant equipment, reutilization and marketing and systems analysis, design, procedural development and

maintenance for supply and service systems, industrial plant equipment storage and issuance, DLA logistics systems development, and the National Defense Stockpile Program. Maintains a wholesale distribution system for assigned items. Provides contract administration service in support of the Military Departments, other DoD Components, Federal civil agencies and, when authorized, to foreign governments and others.

(2) Defense Advanced Research Projects Agency (DARPA) (DoD Directive 5134.10). The Defense Advanced Research Projects Agency (DARPA), under the authority, direction, and control of the Director for Defense Research and Engineering, serves as the central research and development organization of the DoD with a primary responsibility to maintain U.S. technological superiority over potential adversaries. The DARPA pursues imaginative and innovative research and development projects offering significant military utility; manages and directs the conduct of basic and applied research and development that exploits scientific breakthroughs and demonstrates the feasibility of revolutionary approaches for improved cost and performance of advanced technology; and, stimulates a greater emphasis on prototyping in defense systems by conducting prototype projects that embody technology that might be incorporated in joint programs, programs in support of deployed U.S. Forces (including the Unified Combatant Commands), or selected Military Department programs, and on request, assist the Military Departments in their own prototyping programs.

k. Under Secretary of Defense (Comptroller) (USD(C)) (DoD Directive 5118.3)

Under the direction of the Secretary of Defense, the USD(C) is the principal advisor and assistant to the Secretary and Deputy Secretary of Defense for budgetary and fiscal matters (including financial management, accounting policy and systems, budget formulation and execution, and contract audit administration and organization), DoD program analysis and evaluation, and general management improvement programs. In addition, the USD(C) is the Chief Financial Officer of the Department of Defense. In the exercise of this responsibility, the USD(C) shall:

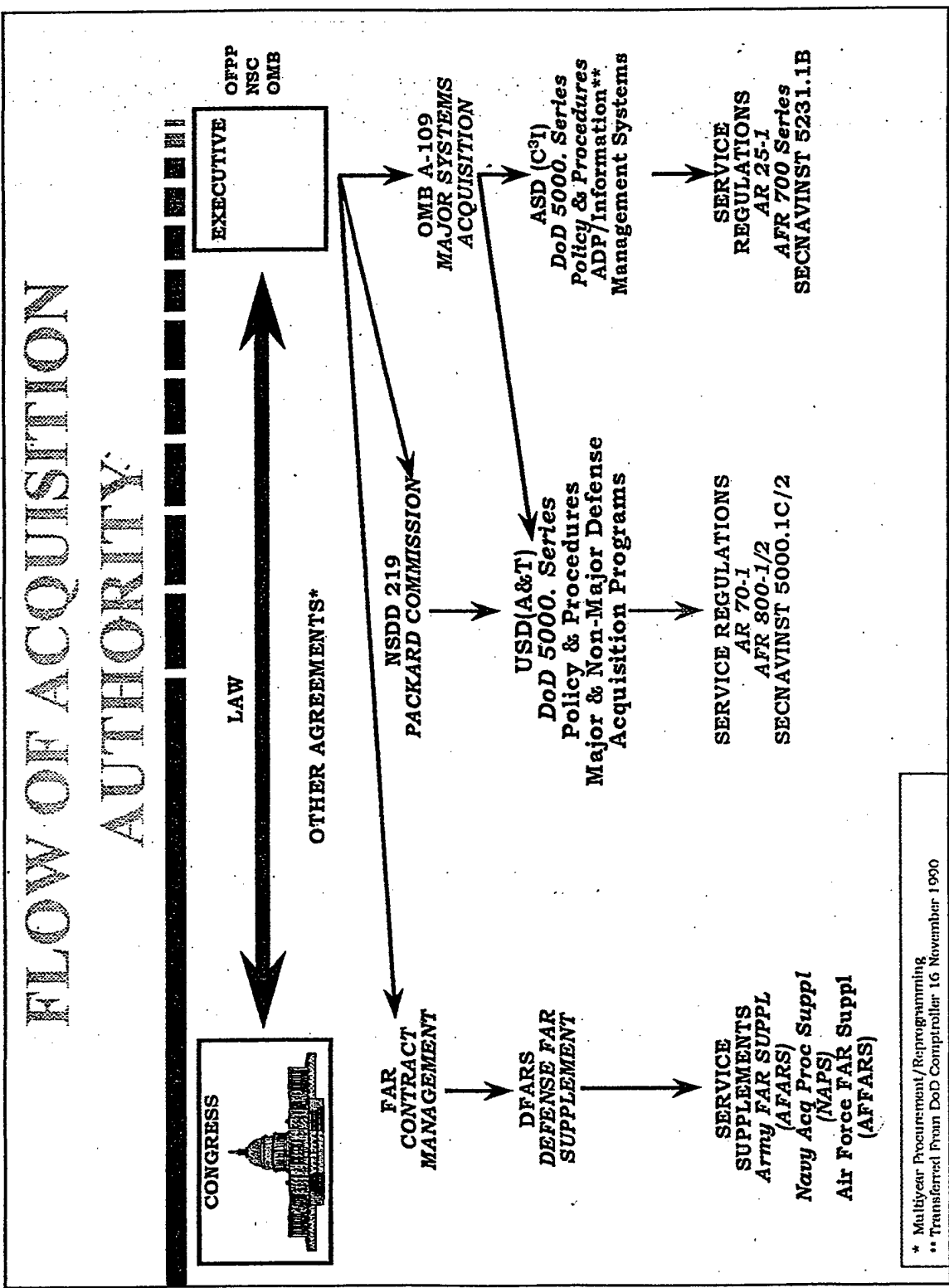
- Administer the planning, programming, and budgeting system of the DoD.

- Supervise and direct the formulation and presentation of Defense budgets, the interactions with the Congress on budgetary and fiscal matters, and the execution and control of approved budgets; and maintain effective control and accountability over the use of all financial resources of the DoD.
- Establish and supervise the execution of uniform DoD policies, principles, and procedures (including terminology and classifications, as necessary) for:
 - ✓ Budget formulation and execution; financial management programs and systems;
 - ✓ Accounting and disbursing systems; cash and credit management; debt collection;
 - ✓ Financial progress and statistical reporting; and technical, organizational, and administrative matters related to contract audit.
 - ✓ Relationships with financial institutions, including those operating on DoD installations in the United States and overseas.
 - ✓ International financial matters, including the adequacy of international financial agreements.
 - ✓ Education, training, and career development of comptroller and financial management personnel.
 - ✓ Prices for transactions involving the provision of goods and services by DoD Components, including sales to foreign governments.
- Access to DoD budgetary material and other records by the General Accounting Office (GAO).
- Provide for the design, development, and installation of management improvement programs and systems throughout the DoD by:
 - ✓ Improving general management practices within the Department by analyzing current practices, identifying improvements that will result in management efficiencies, measuring cost savings, and implementing changes.
 - ✓ Developing and overseeing implementation of total cost per output standards for the DoD to be used for budget, management, and productivity improvement purposes.

- ✓ Establishing and maintaining an internal management control program to control waste, fraud, and mismanagement.
- Advise and assist the Secretary and Deputy Secretary of Defense on administration and organization of the contract audit function within the DoD.
- Establish and supervise uniform DoD policies, principles, and procedures for administrative matters related to contract audit.
- Analyze resource requirements and use of personnel to accomplish the contract audit needs of the DoD.
- Coordinate and interface with other DoD Components having interest in the contract audit mission and related activities, including the Under Secretary of Defense (Acquisition and Technology), the Inspector General of the DoD, the Military Departments, and the Defense Logistics Agency.
- Interact with the Congress on issues involving the contract audit function of the DoD, including interface with the GAO on pertinent audits.
- Conduct analyses, develop plans, provide advice, recommend changes, and issue guidance on DoD contract audit organization structure and management practices.
- Interact with the Defense industry on major areas of concern involving contract audit activity.
- Perform such other activities in the area of contract audit as the Secretary or Deputy Secretary of Defense may prescribe.

The above functions are carried out with the support of the following key OSD personnel:

- Principal Deputy Under Secretary of Defense (Comptroller)
- Director, Program Analysis and Evaluation, (DoDD 5141.1)



* Multiyear Procurement/Reprogramming
 ** Transferred From DoD Comptroller 16 November 1990

Figure 2-5, Flow of Acquisition Authority, from [Ref 3]

D. AUTHORITY FOR DEFENSE SYSTEMS ACQUISITION

The authority for DoD to conduct systems acquisition (i.e., to develop, produce and field weapons systems) flows from four principal sources. These "sources" include the Law (legal basis), Executive Direction, OMB Circular A-109 and the Federal Acquisition Regulation (FAR). [Ref 2:p. 5]

A brief synopsis of each of these follows.

1. The Law

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

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

2. Executive Direction

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

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

- National Security Review (NSR) 11 (1989), which directed the Defense Management Review (DMR) and subsequent Defense Management Report to the President.

3. OMB Circular A-109

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

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

4. Federal Acquisition Regulation (FAR)

The FAR is the primary regulation for use by all Federal agencies for acquisition of supplies and services with appropriated funds. This document, published in 1984, consolidated the major procurement regulations of the various departments and agencies. The intent was to standardize content and decrease the volume of regulatory guidance and to establish a consistent set of procurement rules throughout government. The FAR applies to acquisition of all goods and services. It directs the defense program manager in many ways, including contract-award procedures, acquisition planning, warranties and establishing guidelines for competition. Besides the FAR, each agency has a supplement to describe its own particular ways of doing business. The DoD's supplement is called the DFARS (Defense Federal Acquisition Regulation Supplement).

E. DEFENSE ACQUISITION MANAGEMENT PROCESS

With participation of all three parties, Defense Acquisition Management has a complex web of Life Cycle Process (It will be explained later in this chapter in detail) and decision points between each phase of this process. To understand this process, major documents and some key oversight committees are discussed here.

The Department of Defense has implemented the provisions of OMB Circular A-109 via "The 5000 series." These documents, which guide defense acquisition, include:

- DoD Directive 5000.1 (Defense Acquisition), the broad policy directive.
- DoD Instruction 5000.2 (Defense Acquisition Management Policies and Procedures), which implements this policy.

Related major policy directives are DoD Directive 5134.1 (Under Secretary of Defense (Acquisition)), 30 September 1992, and DoD Directive 5000.49 (Defense Acquisition Board), 11 September 1989.

DoD Directive 5000.1, approved and signed by the Deputy Secretary of Defense, establishes broad policies, which govern acquisition of major, non-major and highly sensitive classified defense acquisition programs. It attempts to rationalize and explain the interfaces between the Requirements Generation Process, the Acquisition Management System and the Planning, Programming and Budgeting System (PPBS). These systems and their interfaces (i.e., intersections) are illustrated in Figure 2-6.

As indicated on the figure 2-6, the three "*decision-making support system*" must interact and interface with one another in order for the acquisition process to work effectively. The first interface between the Requirements Generation System and the Acquisition Management System occurs at Milestone 0, and this interface is supported by a review by the Joint Oversight Council (JROC). The JROC reviews requirements prior to each milestone review by the Defense Acquisition Board (DAB). Milestone I marks the initial interface between the Acquisition Management System and PPBS.

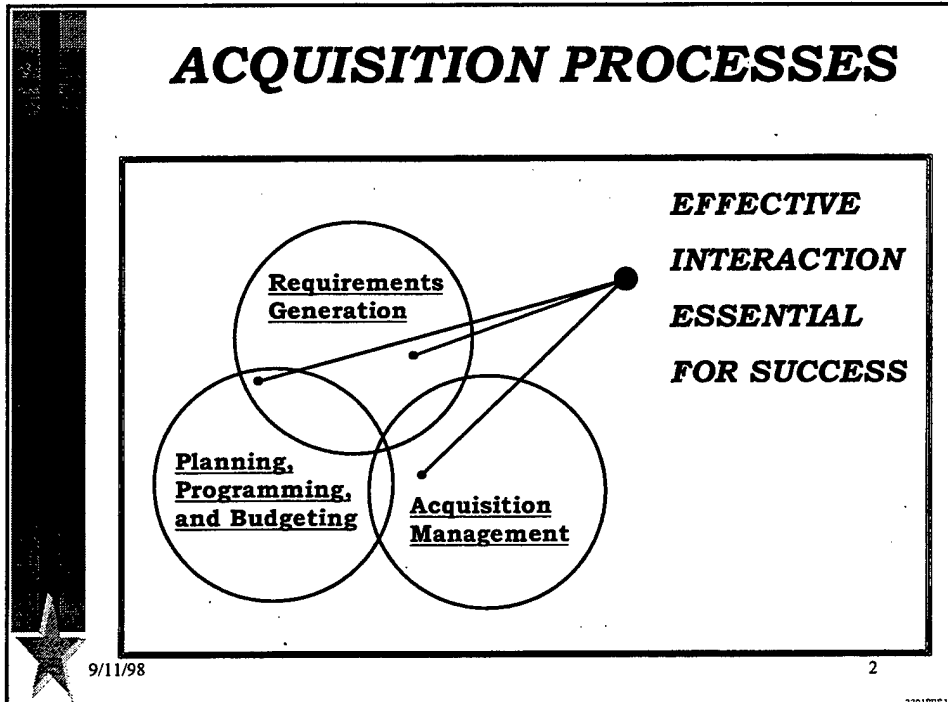


Figure 2-6, Three Major Decision-Making Support Systems, from [Ref 3]

DoDD 5000.1 also includes the following broad policies:

- Long-range planning will be based on best estimates of future fiscal resources.
- Mission needs shall be initially expressed in broad operational capability terms.
- Acquisition process shall be structured in discrete phases separated by major decision points.
- A full range of alternatives must be considered before starting a new acquisition program.
- Sensitive information and technologies must be identified early and protected.
- Acquisition strategies shall be tailored to accomplish program objectives and control risk.
- Risk and risk management shall be addressed at each milestone decision point.
- Contract type must permit equitable and sensible allocation of risk between government and industry.
- Broad cost, schedule, and performance parameters will be established at the new start decision, then refined and expanded for subsequent program baselines.

- Competition will be used to the maximum extent practicable.
- Short and clear lines of authority and accountability will be established.
- Milestone decisions will be delegated to the lowest level deemed appropriate.
- Boards, councils, committees and staffs may provide advice and assessments, but shall not issue programmatic direction, nor impede the orderly progress of programs through the acquisition process.
- Systems, logistics and materiel commands shall focus on supporting deployed forces, managing non-PEO programs, providing support services to PEOs and PMs, and managing acquisition-related activities such as test, laboratory and support centers.
- Each military department shall establish an independent operational test activity.

DoD Instruction 5000.2 provides detailed procedures necessary to implement the policies of DoDD 5000.1. It discusses processes involved with the following acquisition management functional areas:

- Requirements Evolution and Affordability
- Configuration and Data Management
- Acquisition Planning and Risk Management
- Business Management and Contracts
- Engineering and Manufacturing
- Test and Evaluation
- Special Situations: Defense Enterprise Programs, Joint Programs and Assignment of Program Oversight
- Logistics and Other Infrastructure
- Defense Acquisition Board Process

DoD 5000.2 also describes a model consisting of four major milestones and four phases of the *"life cycle management system."* These phases and milestones are illustrated and described in greater detail in later part of this chapter.

Defense Acquisition Board (DAB): The *Defense Acquisition Board (DAB)* is the name given to the life-cycle, decision-making process through which major programs

proceed from requirements and concept definition through production and deployment. It provides the formal oversight/management mechanism for many major defense acquisition programs (ACAT ID). The DAB replaced the former Defense Systems Acquisition Review Council and Joint Requirements Management Board review processes. Formal meetings are held at each milestone to review accomplishments of the previous life cycle phase and assess readiness to proceed into the next phase. Typical issues addressed in the DAB proceedings include cost growth, schedule delays, technical threshold breaches, supportability issues, acquisition strategy, threat assessment, test and evaluation highlights, cooperative development/joint service concerns, manpower evaluation, and operational effectiveness/suitability. The DAB is *issue-oriented*, and the result of a DAB review is a go or no-go decision from the USD (A&T), which is documented in an *Acquisition Decision Memorandum (ADM)*.

The DAB review (and USD (A&T) milestone decision) only approves a program to proceed; it has no direct role in the resource allocation process, although the USD(A&T) can direct the comptroller to withhold funds from a program.

DAB members include:

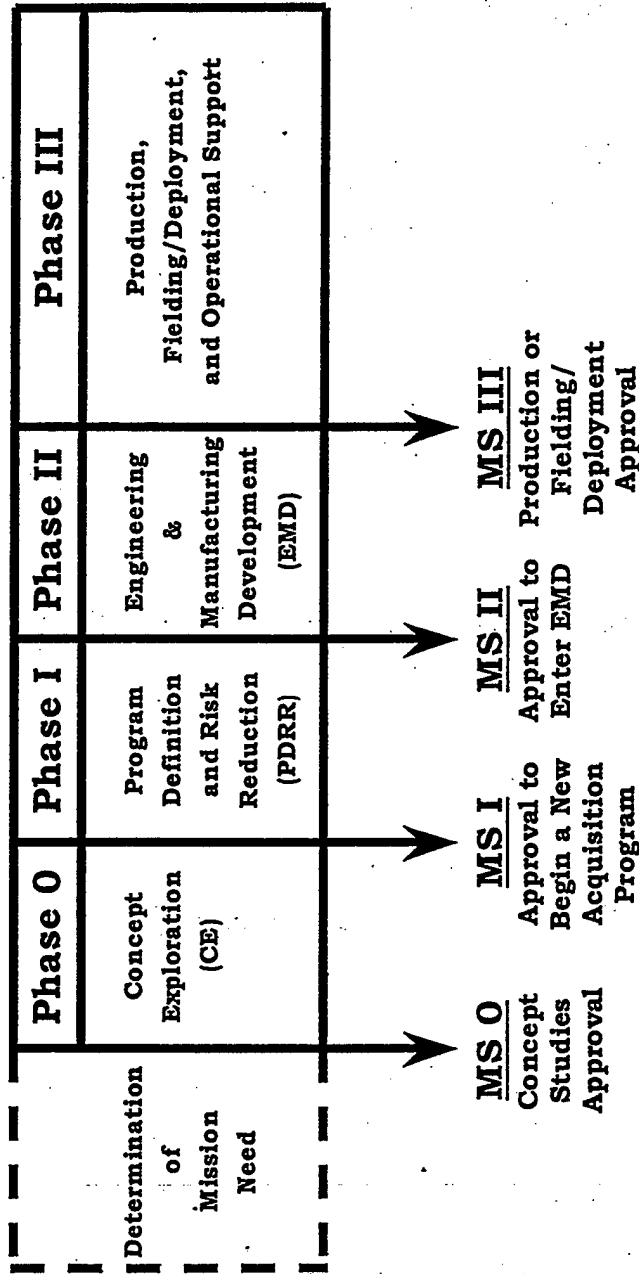
- Under Secretary of Defense (Acquisition), *Chairman*
- Vice Chairman JCS, *Vice Chairman*
- Deputy Under Secretary of Defense (Acquisition)
- Director, Defense Research and Engineering (DDR&E)
- Component (Service) Acquisition Executives (CAEs) - Army, Navy, Air Force
- Comptroller, DoD
- Assistant Secretary of Defense for Program Analysis and Evaluation (ASD(PA&E))
- Director, Operational Test and Evaluation (OT&E)
- Chairman of Cognizant DAB Committee

The DAB (as a review body) reviews about 60 major defense acquisition programs (ACAT ID); another 60 or so ACAT IC programs are managed at the Component (or Service) Acquisition Executive level. Each service and defense agency has its own version of the life-cycle process, which parallels the DAB process. Those parallel processes are used for managing programs that do not require OSD decisions, and for reviewing ACAT ID programs prior to a DAB. Following is a summary of the individual service level reviews and their respective chairmen (Service-level review authorities).

SERVICE-LEVEL MILESTONE REVIEWS	
<u>SERVICE-LEVEL REVIEW</u>	<u>CHAIRIED BY</u>
<ul style="list-style-type: none"> • ARMY SYSTEMS ACQUISITION REVIEW COUNCIL (ASARC) 	<div style="border: 1px solid black; padding: 2px; display: inline-block;">ASA (RD&A)</div>
<ul style="list-style-type: none"> • AIRFORCE SYSTEMS ACQUISITION REVIEW COUNCIL (AFSARC) 	<div style="border: 1px solid black; padding: 2px; display: inline-block;">ASAF (AQN)</div>
<ul style="list-style-type: none"> • PROGRAM DECISION MEETING (NAVY) 	<div style="border: 1px solid black; padding: 2px; display: inline-block;">ASN (RD&A)</div>
<ul style="list-style-type: none"> • PROGRAM DECISION MEETING (MARINE CORPS) 	<div style="border: 1px solid black; padding: 2px; display: inline-block;">ASN (RD&A)</div>

Figure 2-7, Service-level Review Authorities, from [Ref 3]

ACQUISITION MILESTONES AND PHASES



3301MSTN

Figure 2-8, Acquisition Milestones and Phases, from [Ref 3]

1. Life-Cycle Management Process

The Under Secretary of Defense for Acquisition (USD (A&T)) uses the Defense Acquisition Board (DAB) process to manage the life cycle of major acquisition programs. The services and defense agencies have similar processes to manage other than major programs, which are analogous to the DAB model. The *Life-cycle process* consists of decision points, or milestones, and periods of time, or phases.

The life cycle of a weapon system program begins with planning before the program is approved or officially begins, and takes the program through research, development, production, deployment, support and, finally, disposal. Reference to life-cycle in the acquisition business, such as total life cycle costs of developing, producing, deploying, supporting and disposing of a system to include all costs associated with the system, literally means *from cradle to grave*. Defense systems normally take from 12-15 years from identification of a warfighting deficiency to fielding of a system to satisfy that deficiency. Completion of a program often costs deploying, or fielding, the system so that a predetermined number of operational forces have the system and the capability of using it, a point called *initial operational capability (IOC)*. During those 12-15 years the program is controlled through a series of steps involving periodic business and technical decisions. These decisions are scheduled into the overall strategy (i.e., *the acquisition strategy*) to acquire the system. They provide both the program manager and senior officials in the service/agency, and OSD officials such as the Under Secretary of Defense for Acquisition, USD (A&T), who is the Defense Acquisition Executive (DAE), the framework with which to review major programs, monitor and administer progress, identify problems and make corrections.

There is an overlap between the production and deployment and operations and support phases. Also the production of a system could last for many years, and that the support for a system must begin with the initial system fielding and continue throughout the system's life. Major upgrades to systems no longer in production must compete with other potential alternatives at a Milestone I decision point. Most programs follow the process illustrated in Figure 2-8. However; if a new system essentially is an updated version of an existing one, or is one in which a proven or available technology or system is to be used (i.e., non-developmental items (NDI)), a program possibly could omit a

omit a milestone or phase or accomplish multiple phases or technical functions simultaneously (concurrency) to accelerate the process. This process is often referred to as *tailoring*. Milestone decisions for major programs are made by the USD (A) after program review by the respective Defense Acquisition Board Committee and Defense Acquisition Board. [Ref 2p. 25]

2. Program Management in Defense Acquisition

Department of Defense (DoD) policy calls for the systems acquisition process to be directed by a responsible manager under the concept of program management. The terms program and project are used interchangeably. The role of the Program Manager (PM), or Project Manager, is to direct the development, production and initial deployment (as a minimum) of a system. This must be done within limits of cost, schedule, performance and logistics support objectives approved by the Under Secretary of Defense for Acquisition (USD (A)) or head of the Military Department (service) or defense agency, or designee. The PM's role, then, is to be the agent of the service or defense agency in the management of a weapon system acquisition program within the defense acquisition process.

Program Management may be defined as:

A special management approach used to provide centralized authority and responsibility (on a team or taskforce basis) for the priority accomplishments of a specified project or task. This approach involves the timely integration of divergent specialties and activities onto coherent, coordinated management structure. [Ref 2:p. 39]

Program management must 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 and discipline areas that must eventually work together to achieve program goals.

Program Manager's Perspective:

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

- Is a leader and a manager not primarily a task "doer"
- Understands the requirements environmental factors, organizations, activities, constraints and motivations impacting his 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 matrix arrangement
- Builds support for the program and monitors reactions and perceptions, which help or impede progress
- Serves both the military needs of the user in the field and the priority and funding constraints imposed by managers in the Pentagon and service/defense agency headquarters.

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

Considering all the factors mentioned above, DoD specifies guidelines, which every Program Manager should follow to some extent. This regulation is intended to guide the Program Manager, and let him design his program while applying the latest management techniques. Regardless of its implication, let's look at the Defense

Acquisition Management Process closer in terms of phases, steps and key boards, players involving.

Major programs have a similar chain of responsibility. The Program Manager is responsible for the efficient execution of the program. PMs guide their program from concept development through deployment, (with a life cycle management focus).

ACQUISITION CATEGORIES (ACAT) CLASSIFICATION	
• DETERMINES:	
– Level of Review	
– Decision Authority	
– Applicable Procedures for DoD Programs	
• PROGRAMS DESIGNATED AN ACAT WHEN FIRST AUTHORIZED	
• ACAT CLASSIFICATION DEPENDS ON:	
1. Development Risk	
2. Urgency of Need	
3. <i>Political Interest</i>	
4. Funding Thresholds	
5. Joint Program Status	
• MAY BE CHANGED <i>DURING</i> THE PROGRAM	

Figure 2-9, Acquisition Categories (ACAT) Classification, from [Ref 3]

Programs are categorized in to four different levels called Acquisition Categories (ACAT) according to their Research and Development, and procurement dollar values. For each level, the decision authority and required reports vary.

"ACAT" STRATIFICATION		
• ACAT ID:	DAB Review Designed by DAE Decision by DAE	\$355M RDT&E/ \$2.1B Procurement (FY96 Constant \$)
• ACAT IC:	Component (Svc Hq) Review Designated by DAE Decision by Svc Sec/CAE	\$355M RDT&E/ \$2.1B Procurement (FY96 Constant \$)
• ACAT IA:	MAISRC Review (ACAT IAM) Designated by ASD (C ³ I) Decision by ASD(C ³ I)	\$30M /YR \$120M Total Program \$360M Life-Cycle (FY96 Constant \$)
• ACAT II:	Does Not Meet ACAT I Criteria Designated by Svc Sec/CAE Decision by Svc Sec/CAE	\$135M RDT&E/ \$640M Procurement (FY96 Constant \$)
• ACAT III:	All Others Designated by CAE Decision at Lowest appropriate	ACAT III & IV Combined in 1996 Revision of DoD 5000.1-R

Figure 2-10, ACAT Stratification, from [Ref 3]

The Acquisition Process provides a logical flow of actions beginning with defining mission statements and well-defined system specific requirements. This process is accomplished using an incremental commitment of resources, converting dollars into systems.

3. Requirements Generation Process

Requirements generation may be called also the first step of the Defense Acquisition Management, based on a continuing process of assessing the capabilities of the current force structure (people and materiel) to meet the projected threat, while taking into account opportunities for technological advancement, cost savings, and changes in *national policy* or doctrine. The output of this process, known as mission area analysis (MAA) (or mission area assessment), is a *deficiency*, or a mismatch between current capabilities and the future (projected) threat. Once identified, deficiencies need to be resolved, and the first choice is a change in organization, doctrine or tactics, or perhaps additional training. These alternatives, often called *non-materiel alternatives*, are investigated first because of their relatively low cost and ease (i.e., speed) of implementation. Should non-materiel alternatives prove incapable of resolving the deficiency, we are forced to look for *materiel* solutions. The overall requirements generation process is depicted in Figure 2-11.

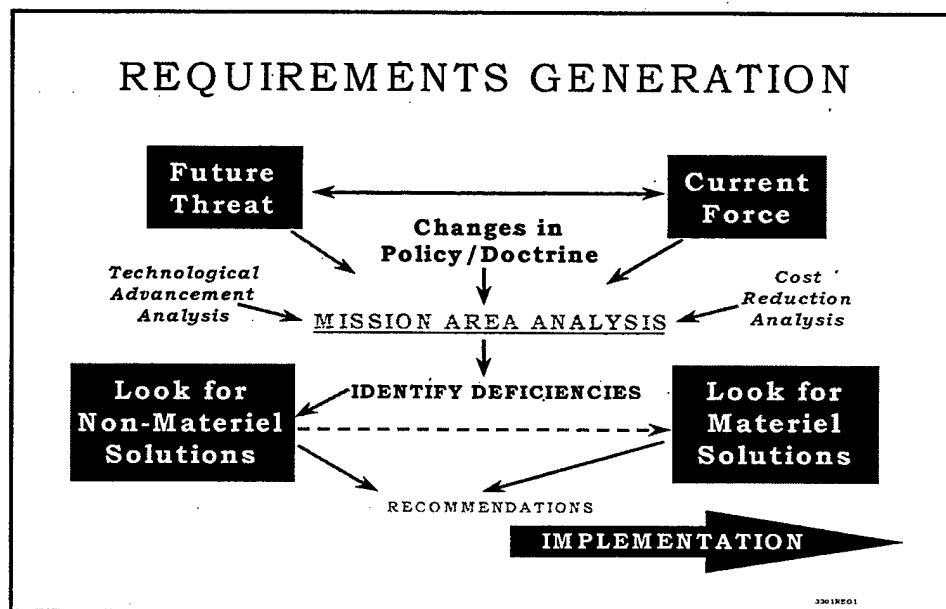


Figure 2-11, Requirements Generation, from [Ref 3]

The *order of precedence* for consideration of materiel alternatives is as follows:

- Use or modification of an existing U.S. military system.
- Use or modification of an existing commercially developed or allied system (Non-Developmental Item (NDI) approach).
- Cooperative research and development program with one or more allied nations.
- New Joint-Service program.
- New Service-unique development program.

Once a determination is made that a materiel solution is required to satisfy a deficiency, a *Mission Need Statement (MNS)* is generated. The Mission Need Statement documents the deficiency in *operational capability, not system specific* terms. The services have different organizations involved in the mission area analysis and MNS generation processes. In the Army, the Training and Doctrine Command (TRADOC) is responsible for performing MAA and generating the MNS. Navy Fleet CINCs develop MNSs in coordination with the OPNAV staff. The Marine Corps Combat Developments Command (MCCDC) (specifically the Warfighting Center) does MAA and writes MNSs for the Marine Corps. In the Air Force, MAA is performed and the major operating commands, Air Combat Command, Air Mobility Command, Air Force Space Command, and the Air Force component of Strategic Command generates MNSs. The processing/approval process for ACAT I level MNSs is illustrated in Figure 2-12.

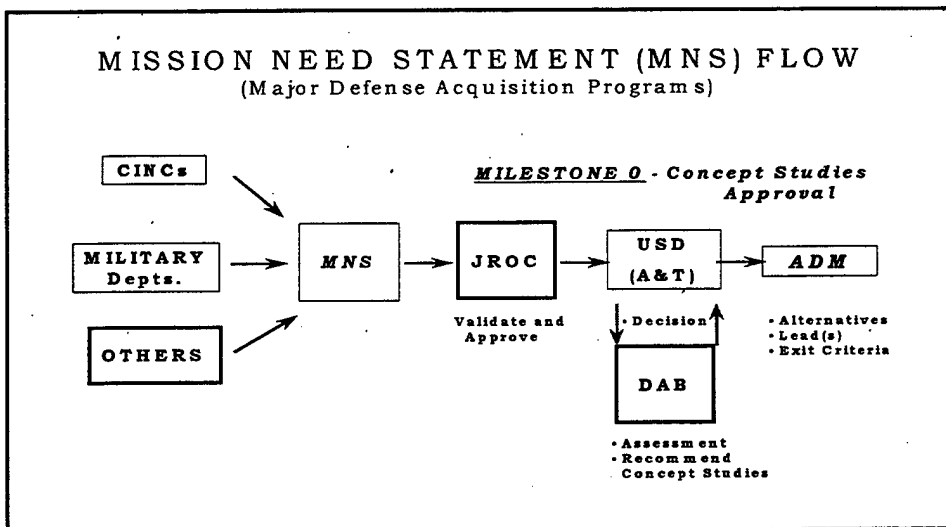


Figure 2-12, MNS Flow, from [Ref 3]

Mission Need Statements for potential Major Defense Acquisition Programs (ACAT I) are initially forwarded to the JROC for *validation and approval*.

Validation is the process of documentation by an operational authority (other than the user) to confirm the identified need and operational requirement. As a maximum, the operational validation authority (the JROC for ACAT I level MNSs) reviews the MNS, confirms that a non-materiel solution is not feasible, and assesses the joint service potential.

Approval is the formal or official sanction of the identified need and/or operational capabilities described in the MNS. Approval also certifies that the MNS has been subject to the processes contained in the DoD 5000 series and appropriate JROC Memoranda of Policy (MOPs).

Should the MNS be approved by the JROC, it will be forwarded to the DAB with a recommendation that concept direction studies be initiated. Based on a review by the DAB Committee and the DAB, the USD (A) makes the final decision as to whether or not the warfighting deficiency warrants the initiation of concept direction studies. The resulting Milestone 0 decision is documented in an Acquisition Decision Memorandum (ADM), signed by the Under Secretary of Defense for Acquisition (the DAE). The MNSs for potential ACAT I level programs, which are disapproved, are returned to the originating service/agency.

The validation and approval authority for ACAT II, and III mission need statements is the service (or defense agency) or CINC of the respective Unified or Specified Command (as appropriate). Approved MNSs for less than ACAT I level programs are forwarded to the component acquisition executive for action (determination of whether concept direction studies will be initiated).

(1) Milestone 0. See Figure 2-14

(2) Phase 0 – Concept Exploration and Definition. Issuance of Acquisition Decision Memorandum (ADM) by the USD (A&T) initiates Phase 0. Basic purpose of this phase is “on paper studies of alternatives.” During this phase, the operating command initiating the Mission Needs Statement (MNS) leads the study effort, establishes a concept action group to explore material alternatives, accomplishes an

Analysis of Alternatives (AOA), and prepares a brief Operational Requirements Document (ORD) with accompanying Requirements Correlation Matrix (RCM).

During the latter part of this phase, the implementing command appoints a Program Manager (PM) to establish the systems program office (usually called Program Manager Office) cadre and begin preparing the acquisition strategy, program management plan, and the Acquisition Program Baseline (APB) for Milestone I review.

The Acquisition Program Baseline (APB) documents identifies proposed cost, schedule, and performance parameters which establish the "contract" between the Program Manager and the milestone decision authority.

(3) Milestone I. See Figure 2-16

(4) Phase I- Program Definition Risk and Reduction. Defense Acquisition Executive (DAE) issues a Milestone I Acquisition Decision Memorandum (ADM) authorizing start of Phase I-Program Definition and Risk Reduction (PDRR). The objectives of Phase I are to prove critical technologies and process are understood. Prototyping and test and evaluation are used to demonstrate and validate the concept. The DAB thoroughly reviews program accomplishments at this time because, from this point on significant resources will be committed.

(5) Milestone II. See Figure 2-18

(6) Phase II-Engineering and Manufacturing Development. The DAE approves the proposed updated acquisition strategy and Development Baseline, and the Engineering and Manufacturing Development (EMD) phase begins with the issuance of the Milestone II ADM. The ADM will baseline low rate initial production quantities, and specific cost, schedule, and performance criteria to be achieved.

The objectives of EMD phase are to translate the design approach from DEM/VAL into a stable design, validate the manufacturing/production process, and demonstrate that the system produced will meet contract specs and satisfy minimum acceptable operational performance requirements.

During this phase the Program Office will revalidate the threat, test the design under realistic operational conditions as possible, and refine the acquisition strategy and system cost estimates. They will also develop a Production Baseline that better portrays program cost, schedule and performance objectives.

Major programs entering this phase, because of magnitude of the resources expanded, receive a tremendous amount of attention from Congress, the Office of Budget and Management (OMB), the Office of the Secretary of Defense (OSD), and the Service Chiefs.

(7) Phase III-Production and Deployment. The Production and Deployment Phase begins with issuance of approving ADM and its subsequent Program Management Directive (PMD). The objectives of this phase are weapon systems quality and performance. In the production phase, the system is produced in quantity using assembly line methods and/fielded in large numbers. Trying to keep stable production rates in the face of annual budget perturbations becomes a major challenge.

The Operations and Support is no longer a separate phase but really is a continuation of the Phase III. Its objectives are to correct quality and safety problems, ensure the system continues to meet the threat, and identify shortcomings and deficiencies.

MILESTONE 0 CONCEPT STUDIES APPROVAL		
<u>OBJECTIVES</u>	<u>DECISION CRITERIA</u>	<u>ACQUISITION DECISION MEMORANDUM (ADM)</u>
<ul style="list-style-type: none"> ① □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ <ul style="list-style-type: none"> ② □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-top: 10px;"> <p>Changed in 1996 Revision of DoD 5000.2-R</p> </div>	<ul style="list-style-type: none"> • MISSION NEED IS BASED ON VALIDATED PROJECTED THREAT • MISSION NEED CANNOT BE SATISFIED BY A NON-MATERIAL SOLUTION • IMPORTANCE OF MISSION NEED WARRANTS FUNDING OF STUDY 	<ul style="list-style-type: none"> • DEFINES <i>MINIMUM</i> SET OF ALTERNATIVE CONCEPTS TO BE EXAMINED • IDENTIFIES <i>LEAD</i> ORGANIZATION(S) FOR THE STUDY • ESTABLISHES <i>EXIT CRITERIA</i> INFORMATION OR ANALYSES REQUIRED • IDENTIFIES DOLLAR AMOUNT AND <i>SOURCE</i> OF FUNDING FOR STUDY

Figure 2-13, Milestone 0, from [Ref 3]

PHASE 0 CONCEPT EXPLORATION

<u>OBJECTIVES</u>	<u>POSSIBLE REQUIRED ACCOMPLISHMENTS</u>
<ul style="list-style-type: none"> • Explore Various Material Alternatives • Define Most Promising System Concept(s) • Develop Supporting Analyses and Identify High-Risk Areas • Develop Proposed Acquisition Strategy and Initial Cost, Schedule, and Performance Objectives for Each System <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-top: 10px;"> <p>Changed in 1996 Revision of DoD 5000.2-R</p> </div>	<ul style="list-style-type: none"> • Validated System Threat Assessment • Assess PROs and CONs of Each Alternative • Develop Proposed Acquisition Strategy for Each Promising Alternative That Includes: <ul style="list-style-type: none"> - Key System Characteristics and Operational Constraints - Cost, Schedule, Performance Trade-Offs - Objectives for Cost, Schedule, and Performance: SW Requirements - Associated Risks and Risk Management Approaches - T&E Strategy • Identification of Potential Environmental Consequences • Propose Specific Exit Criteria That Must Be Accomplished During Phase I (PDRR) <p style="text-align: right; font-size: small;">3301 M073</p>

Figure 2-14, Phase 0, from [Ref 3]

MILESTONE I APPROVAL to BEGIN a NEW ACQUISITION PROGRAM

<u>OBJECTIVES</u>	<u>DECISION CRITERIA</u>	<u>ACQUISITION DECISION MEMORANDUM (ADM)</u>
<ul style="list-style-type: none"> • DETERMINE IF RESULTS OF PHASE 0 WARRANT PROGRAM INITIATION • ESTABLISH ACQUISITION PROGRAM BASELINE (APB) INCLUDING INITIAL PROGRAM COST, SCHEDULE, AND PERFORMANCE <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-top: 10px;"> <p>Changed in 1996 Revision of DoD 5000.2-R</p> </div>	<ul style="list-style-type: none"> • SYSTEM THREAT ASSESSMENT AND PERFORMANCE OBJECTIVES VALIDATED • STUDIES SUPPORT NEW PROGRAM • POTENTIAL ENVIRONMENTAL CONSEQUENCES ANALYZED • PROJECTED LCC AND ANNUAL FUNDING IS AFFORDABLE • ADEQUATE RESOURCES (<i>PEOPLE AND FUNDS</i>) CAN BE PROGRAMMED • ORDER OF PREFERENCE FOR NEW PROGRAM (DoDD 5000.1) <ul style="list-style-type: none"> - Procurement (including mod) of commercially-available system, - additional production (incl mod) of already-developed US systems, or Allied systems - Cooperative Development program with one or more Allied nations - New joint Service development program - New Service-unique development program 	<ul style="list-style-type: none"> • APPROVES <i>PROGRAM INITIATION</i> AND ENTRY INTO PHASE I (PDRR) • APPROVES <ul style="list-style-type: none"> -ACQUISITION STRATEGY -COST AS INDEPENDENT VARIABLE (CAIV) OBJECTIVES -APB -EXIT CRITERIA FOR PHASE I

3301 M074

Figure 2-15 Milestone I, from [Ref 3]

PHASE I

PROGRAM DEFINITION AND RISK REDUCTION (PDRR)

<u>OBJECTIVES</u>	<u>POSSIBLE REQUIRED ACCOMPLISHMENTS</u>
<ul style="list-style-type: none"> • BETTER DEFINE <i>CRITICAL</i> DESIGN CHARACTERISTICS AND EXPECTED CAPABILITIES • DEMONSTRATE INCORPORATION OF TECHNOLOGIES CRITICAL TO SYSTEM DESIGN • PROVE THAT CRITICAL PROCESSES ARE <i>UNDERSTOOD</i> AND ATTAINABLE • DEVELOP ANALYSES/INFORMATION NEEDED TO SUPPORT MS II DECISION • ESTABLISH A PROPOSED <i>DEVELOPMENT BASELINE</i> AND REFINED PROGRAM COST, SCHEDULE, AND PERFORMANCE OBJECTIVES <div style="border: 1px solid black; padding: 2px; margin-top: 10px; width: fit-content;"> <p style="margin: 0;">Changed in 1996 Revision of DoD 5000.2-R</p> </div>	<ul style="list-style-type: none"> • <i>VALIDATED</i> SYSTEM THREAT ASSESSMENT • IDENTIFICATION OF MAJOR COST, SCHEDULE, AND PERFORMANCE TRADE-OFFs • A DEVELOPMENT BASELINE WHICH INCLUDES COST, SCHEDULE, AND PERFORMANCE OBJECTIVES • DEVELOPMENT TEST RESULTS WHICH IDENTIFY TECHNOLOGICAL <i>RISK AREAS</i> • A REFINED ACQUISITION STRATEGY WHICH IDENTIFIES: <ul style="list-style-type: none"> - High-risk areas and risk-management approaches - Low-rate Initial Production quantities, if appropriate • ASSESS DEFENSE INDUSTRIAL BASE CAPABILITY TO SUPPORT PROGRAM • IDENTIFICATION OF POTENTIAL ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES • UPDATE LIFE-CYCLE COST ASSESSMENTS AND ANNUAL FUNDING REQUIREMENTS (SHOW AFFORDABILITY) • PROGRAMMING OF ADEQUATE RESOURCES TO SUPPORT THE PROPOSED PROGRAM • PROPOSE PROGRAM-SPECIFIC <i>EXIT CRITERIA</i> TO ENTER PHASE- II ENGINEERING AND MANUFACTURING DEVELOPMENT

3201 MATT

Figure 2-16, Phase I, from [Ref 3]

MILESTONE II

APPROVAL to ENTER ENGINEERING and MANUFACTURING DEVELOPMENT (EMD)

<u>OBJECTIVES</u>	<u>DECISION CRITERIA</u>	<u>ACQUISITION DECISION MEMORANDUM (ADM)</u>
<ul style="list-style-type: none"> • DETERMINE IF RESULTS OF PHASE I WARRANT CONTINUATION OF PROGRAM • REVISE ACQUISITION PROGRAM BASELINE (APB) INCLUDING PROGRAM COST, SCHEDULE, AND PERFORMANCE 	<ul style="list-style-type: none"> • SYSTEM THREAT ASSESSMENT AND PERFORMANCE OBJECTIVES VALIDATED • POTENTIAL ENVIRONMENTAL CONSEQUENCES ANALYZED • PROJECTED LCC AND ANNUAL FUNDING IS AFFORDABLE • ADEQUATE RESOURCES (<i>PEOPLE AND FUNDS</i>) CAN BE PROGRAMMED 	<ul style="list-style-type: none"> • APPROVES <ul style="list-style-type: none"> - ACQUISITION STRATEGY - COST AS INDEPENDENT VARIABLE (CAIV) OBJECTIVES - APB - <i>EXIT CRITERIA</i> FOR PHASE II - LRIP QUANTITIES

Figure 2-17, Milestone II, from [Ref 3]

PHASE II	
ENGINEERING AND MANUFACTURING DEVELOPMENT	
<u>OBJECTIVES</u>	<u>POSSIBLE REQUIRED ACCOMPLISHMENTS</u>
<ul style="list-style-type: none"> • TRANSLATE MOST PROMISING DESIGN APPROACH INTO STABLE, INTEROPERABLE, PRODUCIBLE, SUPPORTABLE, AND COST-EFFECTIVE SYSTEM DESIGN • VALIDATE MANUFACTURING AND PRODUCTION PROCESSES • DEMONSTRATE SYSTEM CAPABILITIES THROUGH TESTING: <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p style="text-align: center;">Changed in 1996 Revision of DoD 5000.2-R</p> </div>	<ul style="list-style-type: none"> • <i>VALIDATED</i> SYSTEM THREAT ASSESSMENT • TEST RESULTS THAT PROVIDE A REALISTIC PORTRAIT OF PERFORMANCE UNDER <u>OPERATIONAL CONDITIONS</u> • <u>LOW-RATE INITIAL PRODUCTION EXPERIENCE THAT:</u> <ul style="list-style-type: none"> - Verifies the adequacy of the manufacturing/production process - Confirms design stability and producibility - Provides a realistic estimate of production costs • A REFINED ACQUISITION STRATEGY AND SYSTEM COST ESTIMATE • A PRODUCTION BASELINE WHICH INCLUDES COST, SCHEDULE, AND PERFORMANCE OBJECTIVES • ASSESS DEFENSE INDUSTRIAL BASE CAPABILITY TO SUPPORT PROGRAM • A SYSTEM CONFIGURATION BASELINE • IDENTIFICATION OF POTENTIAL ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES • UPDATE LIFE-CYCLE COST ASSESSMENTS AND ANNUAL FUNDING REQUIREMENTS (Show Long-Range Affordability) • PROGRAMMING OF ADEQUATE RESOURCES TO SUPPORT PRODUCTION, FIELDING/DEPLOYMENT, AND OPERATIONAL SUPPORT

Figure 2-18, Phase II, from [Ref 3]

F. BUSINESS AND TECHNICAL ASPECTS OF SYSTEMS ACQUISITION

Management of the systems acquisition process not only involves mechanisms for decision making, funding and responding to congressional oversight, but also the daily tasks of managing the business and technical aspects of the program. The acquisition program manager (PM) must attend to frequent external influences of oversight and funding, many of which are beyond his direct control. [Ref 2:p. 35]

1. Business and Financial Functions

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

- Acquisition plan (the contracting checklist) and acquisition strategy (the overall "road map")
- Acquisition Program Baseline
- Contract types, award and monitoring

- Cost estimating
- Formulating input for the Program Objectives Memorandum (POM), the budget and other programmatic or financial documentation in support of the Planning, Programming and Budgeting System (PPBS)
- Request for Proposal Preparation
- Source selection
- Contractor surveillance Program office administration and personnel
- Budget execution (obligating funds and paying the bills)
- Technical data rights
- Total quality management.

The acquisition-planning phase of the contracting process includes the system requirement (need) determination, requirement definition and specification and procurement request. Once potential contractors are notified through the procurement request, the source-selection process moves through solicitation, evaluation of proposals, negotiation and contract award. The contract is then administered and monitored for compliance to ensure product(s) are delivered as agreed.

2. Technical Management Functions

Technical management is a broad term including the management of a totally integrated effort of system engineering, test and evaluation (T&E), production and logistics support over the system life cycle. Its goal is timely deployment of an effective system, sustaining it, and satisfying the need at an affordable cost. Technical management involves balancing a system's cost, schedule and effectiveness. Cost includes funds required to design, develop, produce, operate and support and dispose of a system. Schedule includes the time it takes to design, develop, produce and deploy a fully supported system. Effectiveness is the degree to which a system can be expected to achieve a set of specific mission requirements. Technical management includes:

System/product definition process (establishing the baseline)

- Acquisition Program Baseline (APS)
- Design engineering

- Systems engineering (putting the pieces together)
- Computer resources, including software integrated logistics support
- Developmental Test and Evaluation (DT&E)
- Operational Test and Evaluation (OT&E)
- Reliability, availability and maintainability
- Transition from development to production
- Standardization and specifications
- Configuration management
- Producibility
- Manufacturing process and control
- System or product disposal
- Pre-planned product improvements
- Total quality management
- Logistics supportability.

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

G. RESOURCE ALLOCATION PROCESS

The Resource Allocation process is a lengthy and complicated process that involves everyone. It is affected by current fiscal allocations, possible threats to the U.S., available technology and so on. The Resource Allocation Process conducted through the Planning Programming and Budgeting System (PPBS) will be discussed in the following chapter in detail.

III. RESOURCE ALLOCATION PROCESS(RAP), BUDGET, AND NATIONAL SECURITY /QDR

A. INTRODUCTION

Along with numerous complicated processes, the Resource Allocation Process is the main control power in the Legislative Branch for the Defense Acquisition Management. In terms of translating the U.S. National Security needs and balancing budget requirements for other agencies, the Congress influences the Defense Acquisition Management System by using its legitimate power. Sometimes the process improves acquisition efficiency, and sometimes it produces unwanted and unexpected side effects. In order to understand the internal process of the Defense Acquisition System in the Executive Branch, we need to understand the relationship between the Legislative and the Executive Branches with respect to the Defense Acquisition Process.

This intricate funding allocation process creates difficulties for Program Managers because of funding instability. Program efficiency lies in both funding stability or flexibility by providing means to adapt to a rapidly changing environment. By examining the Resource Allocation Process (RAP) and situation of the Program Manager, potential opportunities for program efficiency may be identified.

B. RESOURCE ALLOCATION PROCESS (RAP); THE PLANNING, PROGRAMMING, AND BUDGETING SYSTEM (PPBS)

Resources for Department of Defense (DoD) activities whether weapon systems or personnel cost, are provided through the resource allocation process. Resources include dollars (funds), material, people, facilities, and equipment. The four phases of the *Resource Allocation Process (RAP)* are:

Phase 1 - Planning, Programming, and Budgeting System (PPBS)

Phase 2 - Enactment

Phase 3 - Apportionment

Phase 4 - Execution

From the standpoint of developing, producing, fielding, and supporting weapon systems, the PPBS is the focus of attention in the service and defense agency

headquarters activities, while program managers and their Program Executive Officers (PEOs) are equally concerned with execution. The following is a brief discussion of these four phases. [Ref 2:p. 29]

1. Phase I - Planning, Programming, and Budgeting System (PPBS)

The PPBS is the official management system, which ultimately produces DoD's portion of the President's budget. It is unique to DoD and was originally introduced to the Department by Secretary of Defense Robert McNamara in 1962. The PPBS is a cyclic process with three distinct but interrelated phases: Planning, Programming and Budgeting. It provides a formal, systematic structure for making decisions on policy, strategy, and the development of forces and capabilities to accomplish anticipated missions. The PPBS provides for a time-phased allocation of resources and submission of supporting documentation. Its objective is to provide operational commanders with the best mix of forces and support in view of real fiscal constraints.

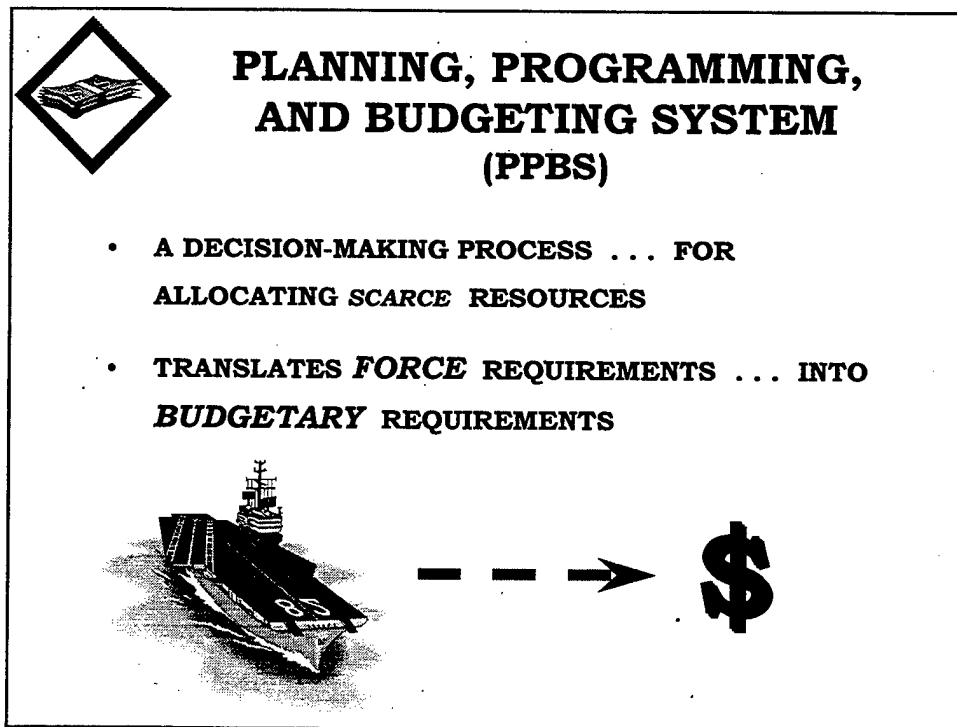


Figure 3-1, PPBS, from [Ref 3]

The PPBS processes are based on and consistent with objectives, policies, priorities, and strategies derived from National Security Decision Directives. Throughout the three major phases of planning, programming, and budgeting, the Secretary of

Defense will provide centralized policy direction while placing program execution authority and responsibility with the DoD Components: The DoD Components will provide advice and information as requested by OSD to permit the latter to assess execution end accountability. Participatory management involving the DoD Components shall be used in each phase to achieve the objective of providing the operational commanders-in-chief (CINCs) the best mix of forces, equipment, and support attainable within resource constraints. The decisions (as modified by legislation or Secretary of Defense direction) associated with the three major phases of the PPBS will be reflected in the FYDP as Secretary of Defense approved programs for the military functions of the Department of Defense. The FYDP will address the prior, current, budget and program years. [Ref 8]

The Deputy Secretary of Defense (DEPSECDEF) manages the PPBS with the advice and assistance of the Defense Planning and Resources Board (DPRB), which he chairs. The DPRB includes the Under Secretaries of Defense, the Assistant Secretary of Defense for Program Analysis and Evaluation (ASD (PA&E)), and the DoD Comptroller. Until 1986, the PPBS was an annual process through which DoD prepared its annual budget. Beginning in 1987 with submission of the first two-year defense budget (for fiscal years 1988-89), PPBS itself became a biennial procedure. A complete PPBS cycle takes 24 months (February of year one to February of year three). The PPBS also results in periodic updates (at least twice annually) to the Future Years Defense Program (FYDP). The FYDP reflects requirements for the outyears (years beyond the next budget year) based on DoD planning to meet national defense objectives. It represents those programs approved by the Secretary of Defense (via the DEPSECDEF and the DPRB). A brief description of each of the segments of the Planning, Programming, and Budgeting System follows.

a. Planning

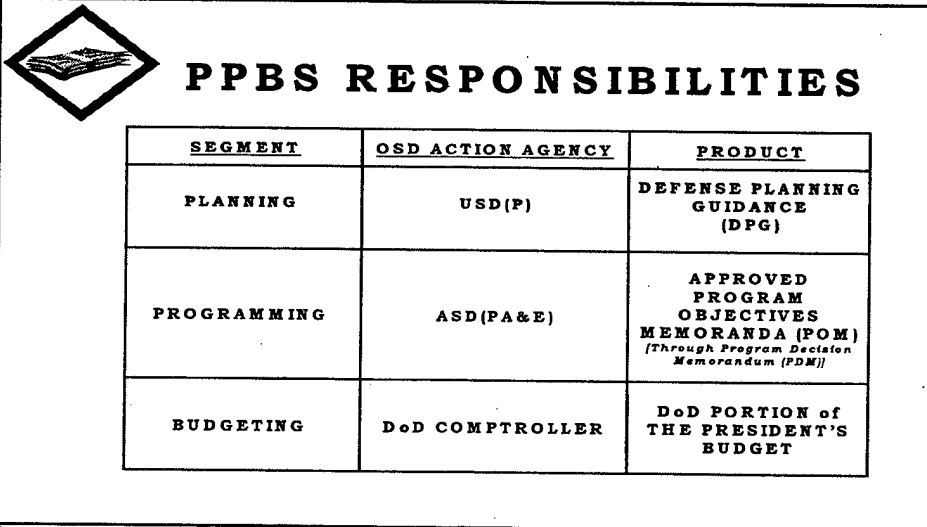
This phase is the responsibility of the Under Secretary of Defense for Policy (USD (P)). The planning phase is nine months long, starting in February of each odd-numbered calendar year (the "off year" for programming and budgeting) and ending in October with the publication of the Defense Planning Guidance (DPG).

b. Programming

This phase is managed by the Assistant Secretary of Defense for Program Analysis and Evaluation (ASD (PA&E)). It is the bridge between planning (with broad fiscal guidance) and budgeting (which meticulously prices each program element). It begins with the issuing of the draft Defense Planning Guidance in August of each odd numbered calendar year and ends with the submission of the service and defense agency *Program Objectives Memoranda (POMs)* in April of each even-numbered calendar year. Military departments, defense agencies and one Commander in Chief (CINC), (CINC, Special Operations Command) prepare POMs based on guidance contained in the DPG. The POM is the service (or defense agency) request for resources to accomplish its mission(s).

c. Budgeting

The Comptroller of the DoD is responsible for this phase. Based on OSD review/comment on the POMs, *Budget Estimate Submissions (BESs)* are prepared and forwarded (in September of the even-numbered calendar years) to OSD by the military departments and defense agencies. Service and defense agency budgets are reviewed and the final DoD budget then goes to OMB to be incorporated into the President's budget submission to Congress, thus ending the budgeting phase.



SEGMENT	OSD ACTION AGENCY	PRODUCT
PLANNING	USD(P)	DEFENSE PLANNING GUIDANCE (DPG)
PROGRAMMING	ASD(PA&E)	APPROVED PROGRAM OBJECTIVES MEMORANDA (POM) <i>[Through Program Decision Memorandum (PDM)]</i>
BUDGETING	DoD COMPTROLLER	DoD PORTION of THE PRESIDENT'S BUDGET

Figure 3-2, PPBS Responsibilities, from [Ref 3]

Figure 3-2 summarizes the responsible agency and key product of each PPBS segment.

2. 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 his annual budget to the Congress at the beginning of each calendar year of law (on the first Monday in February) and ends when the President signs the annual authorization and appropriation bills approximately eight months later. *Authorization* approves programs and specifies maximum funding levels and quantities of systems to be procured. The *Appropriations process* provides the budget authority with which to incur obligations (i.e., obligate and expend (or outlay) funds). Even though DoD has submitted a two-year budget to Congress since January 1987, Congress authorizes most programs and funding on an annual basis and appropriates funds on an annual basis. There are a few exceptions, the most notable being programs for which multiyear (rather than annual) procurements have been approved. However, even multiyear procurements must be funded by annual appropriations.



APPROPRIATION OBLIGATION TIME LIMITS

<u>APPROPRIATION</u>	<u>YEARS</u>
• RDT&E	2 YEARS
• PROCUREMENT (excluding SCN)	3 YEARS
• SHIP CONSTRUCTION - NAVY (SCN)	5 YEARS
• OPERATION & MAINTENANCE	1 YEAR
• MILPERS	1 YEAR
• MILCON	5 YEARS

Figure 3-3, Appropriation Obligation Time Limits, from [Ref 3]



DoD APPROPRIATIONS

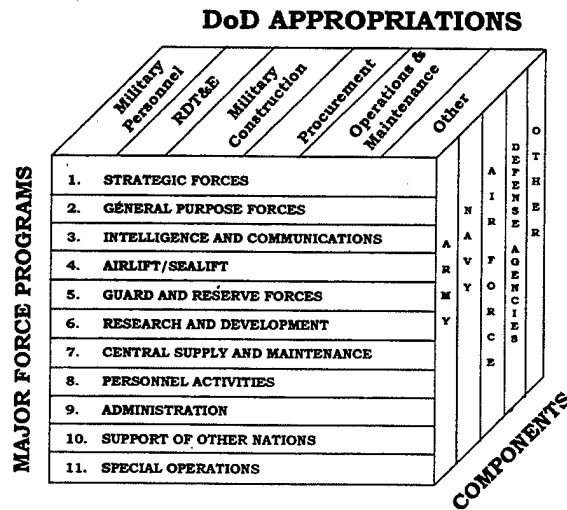


Figure 3-4, DoD Appropriations, from [Ref 3]

3. Phase III - Apportionment

Once the authorization and appropriations legislation is signed into law by the President, funds are made available. *Apportionment* occurs when the Office of Management and Budget (OMB), provides these funds to DoD and other Federal agencies. Subsequently, DoD *allocates* funds within the Department through action by the DoD Comptroller and his counterparts in the services and defense agencies.

4. 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).

The four phases of the resource allocation process overlap (Figure 3-5).

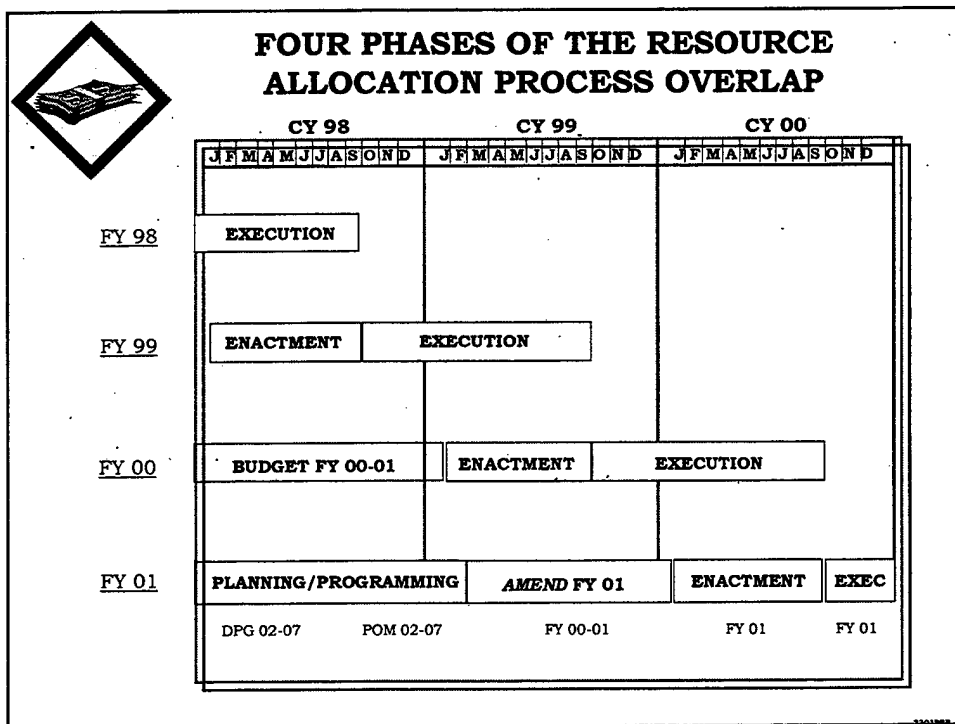


Figure 3-5, Resource Allocation Process-Overlap, from [Ref 3]

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 resource allocation to be aware of the sequence of activities and to understand where they are in the RAP. Because the DAB and PPBS fairly are independent processes, it is possible for a program to be approved to enter the next phase in the life cycle but have insufficient funds to execute that phase. Figure 3-6 compares and contrasts the PPBS and acquisition life-cycle process.

SYSTEM	FOCAL POINT	DRIVER	OUTOUT
Life-Cycle Management	USD(A&T)	Events/Phases/ Milestones	Proceed to next Phase
PPBS	DEPSECDEF	Biennial/Calendar	Funding

Figure 3-6, DoD Life-Cycle and Resource Management Systems, from [Ref 2:p.32]

It is important to keep in mind that the PPBS is a *calendar-driven system* and that the acquisition life cycle is *event-driven*. Avoiding a mismatch or disconnect between programmatic requirements and available funding demands close attention on the parts of program managers and their respective Program Executive Officers.

The interface between the weapons acquisition process, as defined in DoD Directive 5000.1 and DoD Instruction 5000.2, and the PPBS is achieved by designated membership of the Defense Systems Acquisition Review Council (DSARC) and the Defense Resources Board (DRB), and the requirement to develop an acquisition strategy for all major systems. [Ref 8]

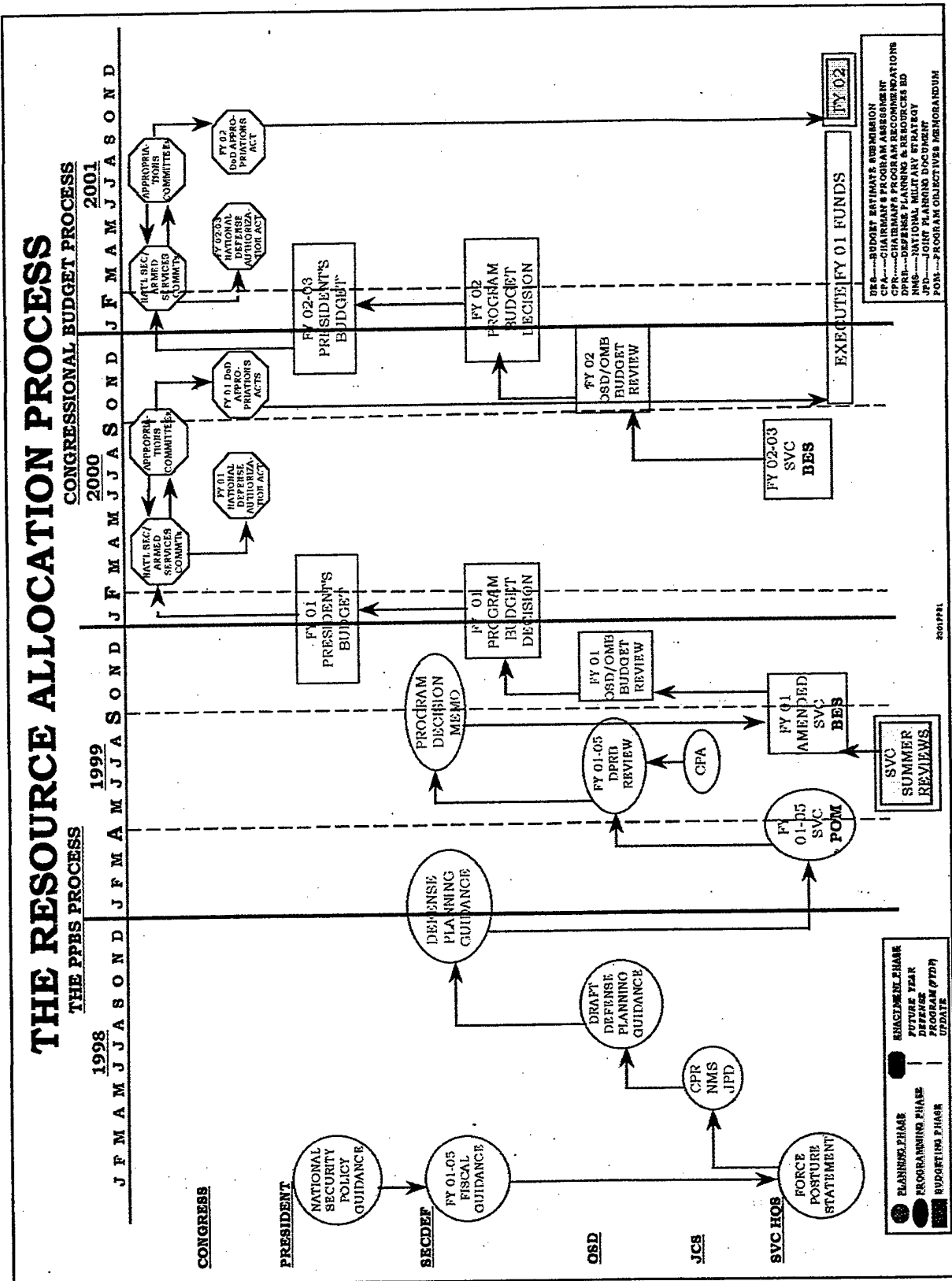


Figure 3-7, The Resource Allocation Process (RAP), from [Ref 3]

5. DESCRIPTION OF KEY PLANNING, PROGRAMMING, AND BUDGETING SYSTEM (PPBS) DOCUMENTS

a. *Joint Long Range Strategic Appraisal (JLRSA)*

The JLRSA shall be submitted by the JCS to provide transition from long-range to mid-range strategic planning. The JLRSA is intended to stimulate more sharply focused strategic studies. Additionally, the JLRSA influences the development of the NMSD. [Ref 9]

b. *National Military Strategy Document (NMSD)*

The NMSD shall be submitted by the JCS to provide military advice to the President, the National Security Council, and the Secretary of Defense. It shall contain a concise, comprehensive military appraisal of the threat to U.S. interests and objectives worldwide, a statement of recommended military objectives derived from national objectives, and the recommended military strategy to attain national objectives. It shall include a summary of the JCS planning force levels required to execute the approved national military strategy with a reasonable assurance of success, and views on the attainability of these forces in consideration of fiscal responsibility, manpower resources, material availability, technology, industrial capacity, and interoperability in joint and cross-Service programs. The NMSD shall also provide an appraisal of the capabilities and risks associated with programmed force levels, based on the planning forces considered necessary to execute the strategy as a benchmark, and shall recommend changes to the force planning and programming guidance. The NMSD provides a vehicle for an exchange of views on defense policy among the President, the Secretary of Defense, the National Security Council, and the Joint Chiefs of Staff. [Ref 9]

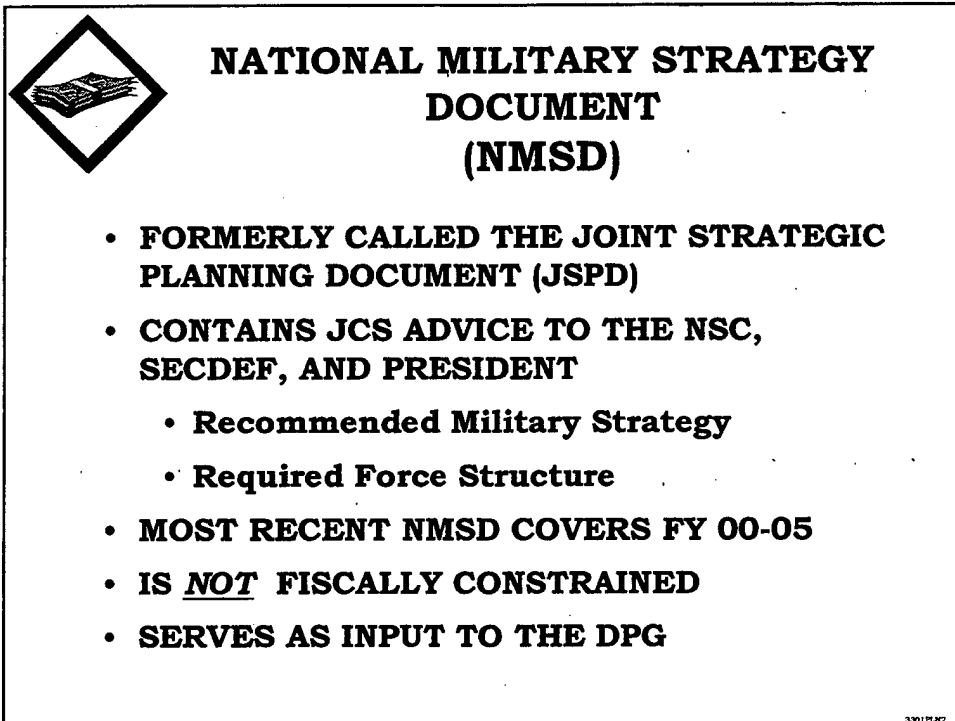


Figure 3-8, National Military Strategy Document (NMSD), from [Ref 3]

c. *Defense Planning Guidance (DPG)*

After consideration of the military advice of the JCS, as expressed in the JL RSA and NSMD, a draft of the DPG is issued to solicit comments of all DoD Components, including the CINCs, on the major issues, problems, and resource constraints in developing and programming forces to execute the policy, strategy, and management direction. The draft DPG is also provided to the Department of State, the Staff of the National Security Council, and the Office of Management and Budget for comment. The final version of the DPG, which is an output of the planning phase, serves as an authoritative statement directing defense policy, strategy, force and resource planning, and fiscal guidance for development of the POMs. The DPG will consist of the following elements: near- and long-term threat assessment and opportunities; policy and strategy guidance; force planning guidance; resource planning guidance; fiscal guidance; and unresolved issues requiring further study. [Ref 9]



DEFENSE PLANNING GUIDANCE (DPG)

PERHAPS THE MOST IMPORTANT DOCUMENT IN THE DoD BUDGET PROCESS

- **CONTAINS THE COLLECTIVE WORK OF THE SECRETARY OF DEFENSE, JCS, THE SERVICES, AND THE PRESIDENT**
- **IS THE BASIS FOR THE SERVICES TO PREPARE THEIR PROGRAM OBJECTIVE MEMORANDUMS (POMs)**
- **CONTAINS FISCAL GUIDANCE, BUT DOES NOT LIMIT FUNDING FOR SPECIFIC PROGRAMS**
- **PROVIDES THE BASIC RATIONALE AND JUSTIFICATION FOR DoD's PROGRAMS AND BUDGETS AND CONTAINS THE *TOTAL OBLIGATION AUTHORITY (TOA)* LIMITS FOR EACH SERVICE**

Figure 3-9, Defense Planning Guidance (DPG), from [Ref 3]

d. Program Objective Memoranda (POM)

Annually, each Military Department and Defense Agency must prepare and submit to the Secretary of Defense a POM that is consistent with the strategy and guidance, both programmatic and fiscal, as stated in the DPG. Major issues that are required to be resolved during the year of submission must be identified. Supporting information for POMs will be in accordance with the annual POM Preparation Instructions or requirements established by DoD Directive or Instruction.

e. Program Decision Memoranda (PDM)

DRB program review decisions shall be recorded in a set of PDMs, signed by the Secretary or the Deputy Secretary of Defense, and distributed to the DoD Components and OMB. The PDMs will then be the basis for the budget submissions.

[Ref 9]

C. NATIONAL SECURITY; THE WAY FROM QDR 1997 TO THE PM

Probably the broadest official overview of U.S. National Security is Quadrennial Defense Review (QDR). The biggest driver in the QDR (with 15 percent share in GDP), is military R&D and procurement. Interaction between QDR, budget process and the Defense Acquisition Management is highly complicated in terms of planning and executing this strategy.

1. Importance of QDR

It is necessary to predict the future world environment for every nation. In order properly to allocate resources and counter prospective threats. After assessing potential threats, effective countermeasures will be taken and the people in charge of security and wealth of the country will make trade off to get the best defensive alternative. As part of its own national security, the U.S. undertook the QDR

2. Driver of QDR

As Secretary of Defense William S. Cohen stated, the QDR is strategy-driven, but it was developed within realistic budget considerations. Indeed, at some of the debates held by the National Defense Panel (NDP) and hearings for the QDR before Congress, the budget was a significant factor.

And, frankly, I do not see a strong support on a bipartisan basis for increasing defense spending in the absence of a major conflict in the foreseeable future. I think that we will be fortunate we can hold it roughly \$250 billion, where it is today in constant dollars, and I wanted the military to operate with that assumption in the background. [Ref 10]

Statement of Secdef in testimony for QDR actually reveals that the budget is more than just a constraint.

3. Time Frame of QDR

It is difficult to predict accurately the future world, but it is imperative to be proactive based on solid insight. There is always a strong tendency to reflect on history and prepare for what has happened, rather than for what will happen. To avoid this, the

QDR 1997 was developed to help identify the military capability needed throughout the 1997-2015 timeframe and beyond.

4. The Expected Environment

Uncertainty is the keyword, especially when we talk about ten years in the future and beyond. In the short term, no super power competitor is expected. But fractured zones like Iraq, Iran, and North Korea are potential problems. Some peacekeeping or humanitarian operations are already engaged or need to be ready for Bosnia, Zaire, The Republic of Congo, Albania and many more.

As the time span we examine increases, the possibility of asymmetric challenges tends to increase. Most countries are aware that they are not capable to defeat U.S. military forces one on one. Thus, they have been searching for weaknesses to exploit such as communication, and Nuclear-Biological-Chemical (NBC) protection. In addition, it is possible for those type of countries to acquire mass destruction weapon systems even with limited budgets.

In the long term, China and Russia are also candidates to pose a threat to the U.S.

Finally, it is important to note that this projection of the security environment rests on two fundamental assumptions: that the United States will remain politically and militarily engaged in the world over the next 15 to 20 years, and that it will maintain military superiority over current and potential rivals. If the United States were to withdraw from its international commitments, relinquish its diplomatic leadership, or relinquish its military superiority, the world would become an even more dangerous place, and the threats to the United States, our allies, friends, and interests would be even more severe. [Ref 10]

5. What Needs To Be Done?

The strategy to go from current environment to a more peaceful and desirable world environment is explained in the QDR 1997 as cited below:

From that analysis of the global environment, we developed an overarching defense strategy to deal with the world today and tomorrow, identify required military capabilities, and define the programs and policies needed to support them. Building on the President's National Security Strategy, we determined that U.S. defense strategy for the near and long term must continue to shape the strategic environment to advance

U.S. interests, maintain the capability to respond to the full spectrum of threats, and prepare now for the threats and dangers of tomorrow and beyond. Underlying this strategy is the inescapable reality that as a global power with global interests to protect, the United States must continue to remain engaged with the world, diplomatically, economically, and militarily. [Ref 10]

The QDR examined three alternative paths that differed in where they accepted risks and emphasized investment over the near term, midterm, and long term.

One path is to focus more on current dangers and opportunities. Two other options, near- and long-term paths, are either to decrease the potential strength of the future force structure or increase the lethality of current structure. In order to shape the world to obtain stability and deter the prospective challenges, it is important to maintain a high degree of readiness by investing accordingly. Deterrence will enable the U.S. to save money and lives in the long run by avoiding armed conflict. The best path is the balance between being ready for the present threat and modernizing for the future, recognizing that interests and responsibilities in the world do not permit the U.S. to choose between the two. This approach forces the U.S. to reallocate resources and priorities to achieve the best balance of capabilities for shaping the world, responding to threats, and preparing for future challenges the entire time span covered by the QDR.

6. "Shape" and Acquisition System Relationship

In the shape-respond-prepare strategy defined in the QDR, shaping the world is quite important to the Defense Acquisition Management and the PM. Being prepared for the future, in which hostile and/or potentially hostile states, who will acquire new capabilities demand increased and stable investment in modernization in order to exploit the revolution in technology and to transform force towards Joint Vision 2010. The ability to shape the world needs to pay attention to Defense Acquisition. By providing capable and effective systems to the user, the Defense Acquisition System has to be more effective and efficient to produce these weapon systems.

One of the most important factors of being efficient and effective in the Defense Acquisition System is stable funding. In the last decade, failure to address fiscal problems undermined the ability to execute a coherent "shape" strategy. For different reasons,

projected increases in funding for modernization have continually been delayed as modernization funds migrated to operations and support accounts to pay current bills. This unexpected fund shifts to other accounts caused cost increases and delay in the programs. Even some of the programs were cancelled because of these funding problems.

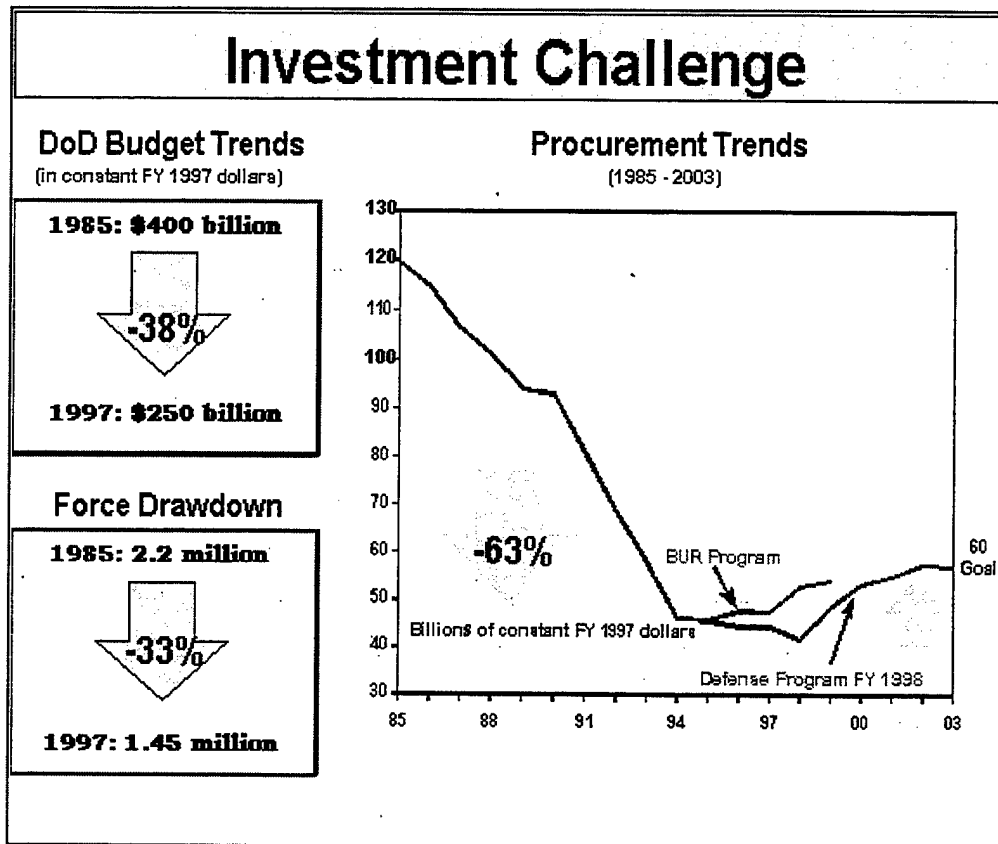


Figure 3-10, Trends of Procurements Budget, from [Ref 10]

7. Impact of the QDR Decisions on R&D and Procurement

To save extensive amounts of money and effort in the future, shaping the world would be cheaper than responding to conflict. According to the QDR, this strategy needs to invest about \$60 billion per year to have enough capability for shaping the world. But procurement dollars in the proposed budgets missed that goal by \$15 billion. This means either that some of the prospective programs essential to implement the QDR strategy will die before they are started or that some current programs will get cut by the now familiar “salami slice” method.

8. The Way To Handle Procurement Funding Problem

This current funding environment mentioned above requires serious measures to survive in this unique strategy-driven, budget-constrained environment. The current defense resource allocation process generally starts with objectives and creates strategy first, then deals with resource constraints. If this process has, in spite of reform, not efficient and effective enough, why not turn the process around? Starting with constraints and building strategy and force levels from a realistic estimate of the means may be an option in this budget-constrained environment. Also program budget proposals should be realistic, so they will not have to be cancelled because of overcost in order to keep other programs alive.

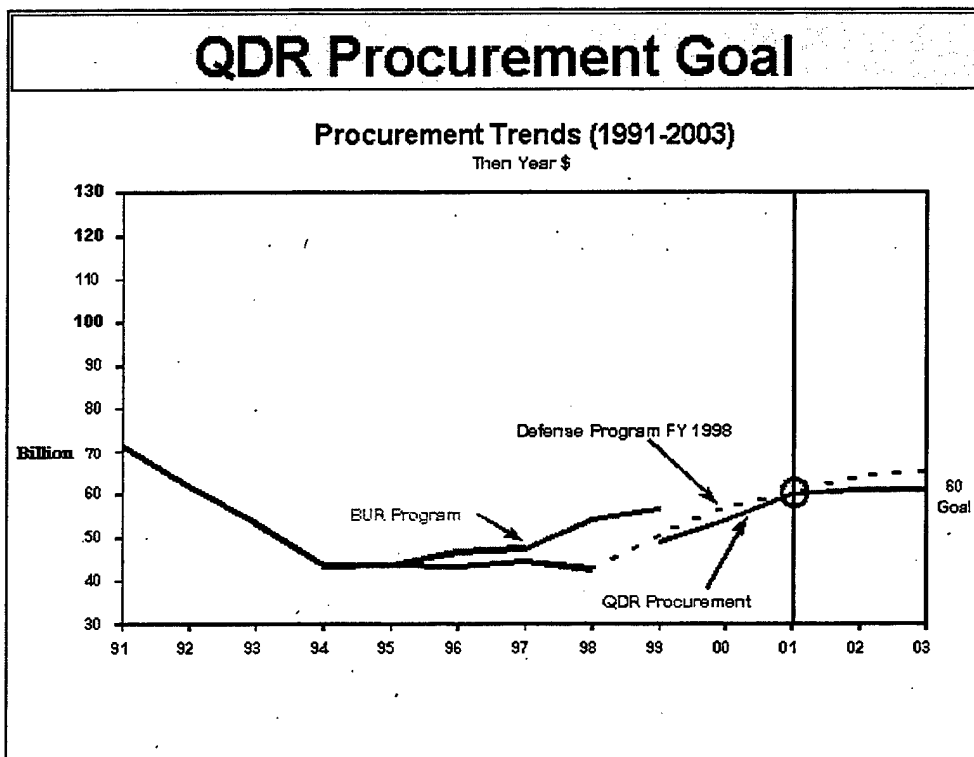


Figure 3-11, QDR Procurement Goal, from [Ref 10]

D. SUMMARY

The following 15 to 20 years will not be as low risk as some people think just because there is no cold war. In the light of the QDR, the threat is changing and the U.S. armed forces must be ready to meet these threats. In order to achieve this goal, readiness

and acquisition of new systems for future conflicts should be considered seriously. With 20 percent share of the DoD Budget, procurement is critical in shaping the world events. Because of this, we need to examine the problems in the Defense Management Acquisition Process closely. Root causes of these problems must be eliminated by aggressive reforms. Senior officials must give appropriate tools and authority to their PMs and trust them to handle issues. The budget does not support the modernization required to meet the U.S. national security strategy under the current acquisition process.

IV. ACQUISITION REFORM

A. INTRODUCTION

The Acquisition System has been the topic of dissatisfaction for decades. The Rockefeller Report of 1953, the Symington Plan of 1961, the Blue Ribbon Report of 1970, the Commission of Government Procurement of 1973, the Packard Commission Report, Federal Acquisition Streamlining Act of 1994, Federal Acquisition Reform Act of 1996 and many others in between indicate that the Acquisition System has been developing over years. Lately, by the Government Performance and Results Act (GPRA) and the National Performance Review (NPR), the current administration has been working on measuring the effectiveness and efficiency of the system, focusing on the ability to track the outcomes of the efforts and eliminate non-value-added steps in the system.

Having said that, the root cause of the Acquisition System challenges are quite intricate to overcome in the short term. The lessons learned, emerging technologies, and new management concepts are combining gradually to make the system better. In this manner, no one can say that "this is enough" or "this is the best system we've got." By looking at the efforts in the past, current situations and initiatives ongoing now, we may begin to understand this evaluating acquisition system better and define the needs for the future.

B. NEED FOR CHANGE-BASIC PROBLEMS

Time poses a new set of political, economic, and military security challenges for the United States: regional or limited conflicts; proliferation of weapons of mass destruction, both nuclear and non-nuclear; risk to its economic well-being; and the possible failure of democratic reform in the former Soviet Bloc and elsewhere. Officials are committed to maintaining the U.S. military's edge over opponents. That means maintaining superior people, training, logistics, and weapons system technology. The advantage the U.S. now has allowed to deter aggression and to prevail quickly with

minimum casualties when required to employ force. It is necessary to maintain a lean, high-tech, agile, ready-to-fight military force during a time in which: the threats are changing and unpredictable; by Fiscal Year (FY) 1997, defense spending will have declined in real terms by over 40 percent from FY85, and advanced technology is increasingly available to the world.

The DoD's (DoD) Bottom-Up Review provides the vision, and the blueprint, for meeting the security challenges of the post-Cold War world -- responding to threats anywhere in the world where U.S. interests are at risk. In today's environment, the current process will not always be able to meet the Department's need. The DoD will not be able to carry out this blueprint without dramatic changes in its acquisition processes -- from determining what the Department needs, to logistics support and reutilization requirements. [Ref 11]

1. Examples of the Need for Change

It is not difficult to see why change is imperative. Stories illustrating the need for reform abound. For example:

The Department of Defense is often unable to acquire state-of-the-art commercial technology. A commercial company was planning to introduce a radio with special encryption features sought by DoD. Because the item had not been sold in substantial quantities to the public, it could not qualify for an exemption to DoD's requirement that the company provide cost data. Since the company did not generate such information for its commercial customers, it would have had to set up a new accounting system to track and verify the information. If it wanted to sell the radios to DoD, it could not afford to do that. The result was that DoD was stuck buying old technology while commercial customers bought the new, more capable radios.

The DoD is often unable to buy from commercial companies. Even when their costs are cheaper or DoD must buy a commercial product, because it is the only one they can get. A military hospital wanted to buy aspirin. The low bid was \$3.98 per unit. The DoD ended up having to buy from the next lowest bidder for \$4.40 per unit, because the low bidder was a commercial company that refused to disturb its long-standing subcontractor relationships to fulfill DoD requirements that a certain percentage of its

subcontractors were small, disadvantaged businesses. The additional cost to DoD was \$107,000 over the life of the contract.

The Air Force attempted to negotiate a new contract with an aircraft manufacturer to supply spare parts for its military version of a commercial aircraft. The company was only manufacturing the spares in its commercial division, which did not meet the requirements for doing business with the Government. In January, 1988, the company first notified the Air Force that it would need a commercial item exemption in order to provide these spares. It took until June, 1992; four and a half years, until the Air Force and the company were able to agree on contract terms and conditions. During that time, countless hours were spent by the contractor, the Air Force, and Office of the Secretary of Defense personnel attempting to determine which of the 278 clauses in the Air Force contract could be waived. They finally received waivers on approximately 11 clauses.

Commercial divisions of a major defense electronics company simply refuse to do business with the Government. They cite several reasons: their commercial division accounting systems cannot provide the cost data required by DoD; they do not want to incur the added cost of complying with Government-unique terms and conditions; they are wary of giving the Government the right to audit proprietary cost and financial information; and fear losing their commercial proprietary data and software. Because many of these requirements are required to be "flowed down" by a prime contractor to its subcontractor, and there is no exception for inter-company transfers, not only can these divisions not sell to the DoD, but they cannot transfer their parts to divisions of the company that do sell to the Government without changing their commercial processes to accommodate the Government requirements. This means that the company either cannot use its own company's semiconductors, or cannot charge the Government for the components, because the semiconductor division of the company does not have an approved Government accounting system. One company projected it will have included over \$1,000,000 worth of semiconductors at no cost to the Government on just two current DoD programs.

The Department of Defense's costs of doing business are too great. DoD sent out a solicitation for a quantity of ant bait expected to cost \$25,595, based on the last purchase made. This meant that DoD had to use the standard, lengthy solicitation procedures rather

than existing streamlined procedures for "small purchases" -- those \$25,000 or less. The solicitation was 29 pages long, and it took 227 days to award the contract. As it turned out, the lowest bid came in under \$25,000. Had the threshold for "small purchases" been higher, the contracting officer would have been able to use simplified procedures at the outset, and the contract could have been awarded in 27 days instead of 227.

As a 1991 report by the Center for Strategic and International Studies concluded, the existing acquisition system:

Results in higher prices to DoD (even when lower-cost commercial alternatives exist for the same requirements), loss of a broad domestic production base that could be available to defense for peacetime and surge demands, and lack of access to commercial state-of-the-art technologies. Additionally, the wall between engineers and scientists engaged in commercial and military work impedes the kind of shoulder-to-shoulder contact that is the essence of technology transfer and that is basic to achieving greater job stability and growth opportunities for the U.S. work force.

To meet the new National Security challenges (political, economic, and military) the DoD must:

- Maintain its technological superiority, and a strong, globally competitive National industrial base that can support the Nation's future defense needs, by being able to:
 - ✓ Rapidly purchase commercial and other state-of-the-art products and technology from reliable suppliers who utilize the latest manufacturing and management techniques;
 - ✓ Assist in the conversion of defense-unique companies to dual-use production;
 - ✓ Aid in the transfer of military technology to the commercial sector;
 - ✓ Preserve defense-unique core capabilities.
- Reduce acquisition costs (including DoD's overhead costs) through:
 - ✓ The adoption by DoD of business processes characteristic of world-class customers and suppliers (including processes that encourage DoD's suppliers to do the same);

- ✓ Relief from the requirement to impose Government-unique terms and conditions on its contractors to the maximum extent practicable.

2. Maintaining Technological Superiority and A Strong National Industrial Base

While the DoD drove technology developments in many areas for years, today the pace of commercial technology advancement in many sectors far exceeds Government sponsored technology efforts. Commercial technology advancements are outpacing DoD sponsored efforts in the same sectors that are key underlying technologies for military superiority (e.g., computers, software, integrated circuits, communications, and advanced materials). The current development and production of DoD systems takes too long. The design cycle for commercial technology is approximately three to five years, in DoD it is eight to ten years. Many DoD systems are technologically obsolescent at the time they are fielded.

The Department of Defense must have unimpeded access to commercial technologies more quickly than other countries if it is to maintain its technological superiority. Yet, many current laws and regulations are barriers to DoD's ability to purchase of state-of-the-art commercial items, the conversion of defense companies to making commercial products on a competitive basis, and the integration of the defense and commercial industrial bases.

The following are most often identified by industry as significant barriers:

- Unique laws and regulations imposed on Government contractors, such as: Government cost accounting standards; the requirement to provide product cost data; record keeping and reporting requirements; audit and oversight requirements; access to competitively sensitive financial data; socio-economic and mandatory source requirements; requirements for rights in technical data; security requirements; and DoD-unique product and process specifications and standards.
- The instability of the Department's requirements and budget which makes it difficult to predict the market.
- Imposition of Government-unique rules on commercial subcontractors.

- The Government's right to terminate contracts at will.
- Industry's perception there is a tremendous risk that a contractor will inadvertently fail to comply with a Government rule or regulation that will lead to criminal or civil penalties, and a loss of the company's good name in the commercial marketplace.

Companies that do both commercial and Government business often are forced to segregate their facilities to ensure they can track, monitor, and report compliance with Government requirements, and account for inventories of components traceable to Government progress payments and their manufacturing origin. If the facilities are not segregated, the need to ensure compliance with Government requirements adds to the company's overhead costs, typically for both military and commercial products, since once the facility has the compliance systems in place, they are generally applied to the entire facility. These additional costs, of course, make the company's commercial and military products less competitive in the global marketplace.

In the past, many companies were willing to accept these additional costs because of the large volume of sales to the DoD, and the fact that the Government reimbursed them for the costs on products it purchased. However, as DoD's share of many contractors' sales continues to shrink, the companies are often no longer willing to accept the additional costs and production inefficiencies associated with complying with Government administrative requirements. The cost is too high in today's competitive environment.

The semiconductor market is a perfect example of this situation. In 1965 the DoD accounted for over 75 percent of all U.S. semiconductor purchases. By 1995, the Semiconductor Industry Association predicts that sales to DoD will be around one percent of all U.S. company sales. When DoD sales are such a small part of their market, companies are less willing to let the Government dictate to them the terms and conditions under which they will sell their product. They would rather concentrate on their commercial business or sell their products to the Government through third parties as a means of avoiding the unique Government rules and regulations.

In addition, with a procurement budget that has declined more than 60 percent in real terms since FY85, the DoD and the Nation can no longer afford the luxury of

maintaining a totally unique defense industrial base. The sharp decline in defense business, and the resultant mergers, acquisitions, and bankruptcies of defense companies, is causing a dramatic shrinkage in the defense industrial base. Defense companies that are now supporting our existing weapons systems may not exist when we need them in the future. A reconstituted or larger defense production and logistics capability, if necessary, would have to be based on a National industrial base composed primarily of companies producing commercial or dual-use products, many of whom do not or will not do business with DoD because they will not alter their traditional business practices to comply with Government-unique rules and regulations.

Finally, the burden of defense reductions is felt most sharply by those companies who rely heavily on DoD for the majority of their sales, and small businesses. Those companies who are most dependent on defense business are laying off hundreds of thousands of employees. This is not a temporary layoff pending an up-swing in the economy. These jobs are gone for good unless the company can convert to producing for a commercial market that will make up for the decline in defense business, or adopt another strategy to accommodate reduced defense expenditures while remaining a DoD-only supplier. Small businesses not only disproportionately feel the loss of business revenue, but also the unique burdens placed on Government suppliers. They least of all can afford to bear the spillover of additional overhead costs of doing business with the Government. -- the additional employees to ensure compliance, lawyers to explain Government-unique laws and regulations, and the legal risks associated with an inadvertent failure to comply with a rule foreign to commercial business practice, but required when selling to DoD, onto their commercial products. [Ref 11]

3. Reducing Acquisition Costs Through Adoption of Business Practices Characteristic of World Class Suppliers

The Carnegie Commission on Science, Technology and Government, using an indirect measure of the cost of DoD regulatory system, calculated that "the overhead, or management and control costs, associated with the DoD acquisition process were about 40 percent of DoD acquisition budget, as compared to 5 percent to 15 percent for

commercial firms [Ref 12].” This includes both the Government's internal costs, and the costs borne by DoD contractors and ultimately reimbursed by the Government.

An Office of Technology Assessment study pegged the costs of DoD's regulatory maze at \$15 to \$75 billion, and concluded that the benefits could not be worth this additional cost. [Holding the Edge: Maintaining the Defense Technology Base, Volume II Appendix, CCGPO (April 1989)]. Other studies have indicated that DoD contractors incur additional costs on Government contracts, for identical items being sold to commercial customers, of about 30 percent over their commercial contracts (e.g., Integrating Commercial and Military Technologies for National Security: An Agenda for Change, Center for Strategic and International Studies (Washington, D.C., April 1991)).

The problem is that DoD's acquisition system is a complex web of laws, regulations, and policies, adopted for laudable reasons over many years. For example:

- Military specifications were adopted to ensure that the DoD got a quality product that would meet the users needs while using a procurement process that would allow it to buy from the lowest bidder; and to ensure standardization to enable ease of logistics support;
- Cost or pricing data requirements were established to ensure the Government received the same information the contractor had, for use in negotiating a fair and reasonable price;
- Cost Accounting Standards were adopted to provide accounting criteria that would result in comparable costs for like circumstances within a company and to ensure contractors properly allocated costs to DoD contracts;
- Checks on the Government's authority were established, in essence, to “protect the people” (in this case suppliers), from certain Government demands, such as the inappropriate use of fixed-price research and development contracts;
- Rights in Technical Data have been requested to ensure that the Government can operate, repair, and maintain its equipment without fear of being held hostage to a sole-source supplier for spare parts and to obtain additional equipment and spare parts at reasonable prices through competition; and,

- Laws such as the Davis-Bacon Act, requirements to use small businesses, and buy only American-made products, were adopted to further a particular public interest.

While each rule individually has (or had) a purpose for its adoption, and may be important to the process as a whole, it often adds no value to the product itself, and when combined, contributes to an overloaded system that is often paralyzed and ineffectual, and at best cumbersome and complex. If there were any doubt that the current system exacts a significant cost in terms of performance, quality, innovation, and prices the Government pays, one need only ask the Government's senior acquisition executives. In a recent U.S. Merit Systems Protection Board survey, a majority of Senior Executive Service members in the Federal Government stated "that the procurement process frequently results in procurement decisions that are neither cost effective nor in the best interests of the Government [Ref 13]."

There are other problems that must be solved. The DoD acquisition system, not unlike that of many companies in the U.S. and around the world, can best be characterized as an "industrial era bureaucracy in an information age." DoD and many of its suppliers are still practicing many management techniques and philosophies that were fundamentally developed by Adam Smith and Alfred Sloan. These philosophies are based on the following:

- Specialization, which led to economies of scale, as the most efficient way to produce products;
- Rigid lines of authority and reporting;
- Creation of rules or practices to address every contingency, if possible;
- Extensive paperwork to document that appropriate actions occurred;
- Detailed design and "how-to" specifications as the only way to ensure an acceptable product, and to ensure a "level" playing field for competition;
- In-process inspections, audits and reviews as the most effective means to assure compliance with the system; and,
- Programming people to conform to established procedures ensured that systems would be predictable, workable, and safe.

The result of these philosophies, however, as authors Michael Hammer and James Champy noted in their book, *Reengineering the Corporation: A Manifesto for Business Revolution*, is a system that is less than perfect in today's world. Systems of this type:

- Create functional stove-piping in which no one person is accountable for an entire process;
- Result in so many hand-offs during staffing that errors and waiting time dominate the system; and,
- Make the ability of any one person to change the process small if not impossible.

This system is at least partially to blame for the characterization by one senior service acquisition official that the DoD acquisition hierarchy had an unquenchable appetite for data and paperwork, was quick to second-guess decisions, and worse yet, revisited decisions endlessly.

People are encouraged to conform, to follow the rules, to document their actions, and to avoid risk, rather than innovate and use good business judgment. The system rewards those who follow the rules and avoid risk. And it allows everyone to point the finger at someone else in the process. Congress points to DoD's management, DoD points to the Congress, and people within the services point to the Office of the Secretary of Defense leadership.

The layer upon layer of organizations, legislation, regulations, policies and oversight is an impediment to DoD's adoption of business processes that are characteristic of world-class customers and suppliers today. Most companies have begun to recognize that in today's world, flexibility and agility are more important than efficiencies achieved by specialization and other benefits attributable to the old management techniques. Here with decreasing defense budget, efficiency is also important and the problem is to achieve both of effectiveness and efficiency together.

DoD is unlike most commercial companies. It is populated by military and civil service personnel who have a different personnel system than most companies. Senior political appointees rotate frequently. There is no profit and loss sheet, no bottom line. No commercial company is scrutinized like DoD is scrutinized by Congress and the

general public. And no commercial organization utilizes the acquisition process to achieve social goals to the extent required of Government agencies.

Yet the critical management issues are the same:

- There are too many people in the organization;
- There are too many regulations;
- There is resistance to change and a suspicion of process management; and,
- There is considerable "stove-piping" of functions and personnel, and massive coordination requirements.

Thanks to the ability and dedication of the thousands of acquisition professionals in the Department of Defense and the assistance of many contractors, DoD has been able to develop and acquire the best weapons and support systems in the world. DoD and contractor personnel accomplished this feat not because of the system but in spite of it. And they did so at a price, both in terms of the sheer expense to the Nation and eroded public confidence in the DoD acquisition system. It is a price the Nation can no longer afford to pay.

While there have already been reductions in the acquisition workforce, continuing reductions in both military and civilian personnel (active duty reduced by 520,000; civilians by 200,000) and the need to reduce DoD's infrastructure mean that there will be further reductions in the acquisition workforce. The Department of Defense cannot accommodate these reductions without making changes in the current acquisition process. It must reduce the cost of the acquisition process by the elimination of activities that, although being performed by many dedicated and hardworking personnel, are not necessary or cost effective in today's environment.

No one is suggesting that there be a wholesale deletion of safeguards that have been designed to ensure the integrity of the Government acquisition process nor the wholesale removal of laws intended to further U.S. social policies. Rather, DoD must advocate a balancing of the risks associated with reducing oversight and the cost to both industry and the Government of compliance. In the case of social programs, the costs of maintaining records to ensure compliance must be balanced against: the contribution to be made by requiring compliance when making small purchases; and, the lost opportunities when commercial companies and small businesses are unwilling to change

their standard business practices and contractor relationships in order to comply with a Government socioeconomic policy imposed only on Government contractors. [Ref 11]

C. WHAT HAS BEEN DONE SO FAR?

From the beginning of Defense Acquisition in U.S. history till now, there have been many efforts to solve or ease problems in this area. Implementation of acquisition related reports, laws, and research are important to examine, in order to understand this long journey. Without knowing where we are and how we came to this point, it is quite difficult to find the way to the ultimate solution of the acquisition problems.

Some of the proposals in these studies are already implemented and then reevaluated in the following periods. Some were improved, some were abandoned because of their outcomes, but efforts are still going on with hope of reaching perfection.

1. From 1960s to 1987

Since the early 1960s, many studies analyzing the defense weapons acquisition process have noted its strength, its deficiencies, and its needed reforms. From 1960 to 1987, there were twelve major studies. Despite the large number of studies and the similarity of their findings, problems of cost growth, lengthy cycle time of acquiring new systems remained significant. To overcome these problems and do it better, cheaper, and faster, a more comprehensive approach was required -- an approach based on a better understanding of how and why defense business works the way it does.

During Kennedy and Johnson administrations (1960-1968), in response to numerous cost overruns of the 1950s and early 1960s, the Office of the Secretary of Defense discouraged cost-plus-fixed-fee contracts in favor of fixed-price and incentive contracts. In the early 1960s, Secretary McNamara and his management team developed and implemented a number of sensible improvements. One was the Planning Programming Budgeting System (PPBS), which provided the Secretary and the President with an organized approach to major program decisions and to the allocation of resources within DoD, though it was not designed to have a major impact on the acquisition process. Another was the creation of the Office of Systems Analysis, to perform cost-

effectiveness studies. The Services was encouraged to do the same. Despite these significant improvements in DoD management, cost increase could not be stopped.

The McNamara team also developed and implemented Total Package Procurement (TPP), which required simultaneous bidding, on a fixed-priced basis, for both the first (development) and second (production) stages as a means of preventing a winning contractor (for the first stage) from facing little or no competition for the second stage. It was applied on such systems as the Lockheed C-5A cargo airplane, General Dynamics F-111 fighter aircraft, and the Grumman F-14A Tomcat fighter aircraft. All of these had large cost overruns, and Total Package Procurement was judged to be ineffective.

This failure in procurement reform prompted the Congress in 1969 to appoint the Commission on Government Procurement (soon followed by the Nixon administration's Blue Ribbon Panel on Defense Procurement, in 1970) to identify the causes of weapons cost overruns and to propose new methods of cost control.

During the Nixon and Ford administrations (1968-1976), Defense Secretary Melvin Laird and Deputy Defense Secretary David Packard returned some autonomy to the individual Services, but maintained Office of the Secretary of Defense (OSD) involvement in program decisions. Deputy Secretary Packard established the Defense Systems Acquisition Review Council (DSARC) to advise him of the status of each major defense system to allow for careful evaluation before proceeding to the next phase. In 1972, Mr. Packard formed a second group, the Cost Analysis Improvement Group (CAIG), to provide OSD staff with independent program cost estimates to present the Defense Systems Acquisition Review Council and to determine uniform DoD cost-estimating standards. Equally important, Mr. Packard sought ways to limit the expensive practice of putting a weapon system into production before completing its development. This reform, called fly-before-buy, entailed the development of prototypes and competitive fly-offs before choosing a contractor and entering production.

In May 1970, Mr. Packard issued a memorandum citing additional ways by which the acquisition of major weapon systems could be improved. The memorandum served as the basis for DoD Directive 5000.1. The memorandum and directive set forth Mr. Packard's view that "successful development, production, and deployment of major

defense systems are primarily dependent upon competent people, rational priorities, and clearly defined responsibilities." Program Managers were to be given adequate authority to make major decisions, recognition and rewards for good work, and more opportunity for career advancement. As constructive as this directive was, it produced few encouraging changes within military services. Reassignments for additional tours of duty to program management positions were rare, except in case of non-rated (non-flying status) officers in the Air Force. There was little or no accountability for cost growth on acquisition programs.

During 1969 and 1970, the President's Blue Ribbon Defense Panel studied the Pentagon and stressed the need for, among other reforms, an independent weapons testing office. The panel reexamined other problems that had accompanied hardware development for several years, including major cost increases, schedule delays, and failures in technical performance. The panel concluded that the causes were largely of management, that officers serving as program managers generally lacked any special training or expertise in their duties, were rotated at short intervals, usually had no assignment overlap with their predecessors, and saw little potential for career advancement in program management.

Mr. Packard left the Defense Department in 1971. Near the time of his departure, he expressed disappointment at DoD's resistance to improvements in the acquisition process. He had wanted to apply the lessons of his success with Hewlett-Packard Company, which he frequently described as finding good men for the job of the program manager, assigning them, and then leaving them alone.

In 1976, the Office of Federal Procurement Policy (part of Office of Management and Budget) published Circular A-109, which required Mission Area Analysis (MAA) in early phases of the acquisition process and more competition throughout the process.

During the Carter administration (1976-1980), Defense Secretary Harold Brown sought to regain some of the authority in weapons acquisition Mr. Packard had relinquished to the services.

In 1981, President Reagan's Defense Secretary, Casper Weinberger, expressed interest in reforming the acquisition process. Whereas his predecessor Secretary Brown had sought to tighten the control over key aspects of the process, Secretary Weinberger

implemented what he called controlled decentralization, whereby subordinate line executives, especially service program managers, were to be held responsible for executing policy decisions made by the Secretary after consultation with his top civilian and military advisers.

Early in the Reagan administration (1981), Secretary Weinberger and Deputy Secretary Frank Carlucci instituted a set of thirty-two reforms (the Carlucci initiatives) to the acquisition process. The core idea of the Carlucci initiatives was that over-regulation thwarts efficiency and increases costs.

In 1986, the Presidential Panel on defense, the Packard Commission, characterized the defense acquisition process as expensive, inefficient, and cumbersome. It observed that "the increasing complexity of the process means unnecessary delays are incurred in acquiring goods and supplies and that higher costs are paid for what is acquired [Ref 13]."

2. Federal Acquisition Streamlining Act (FASA) of 1994

The Federal Acquisition Streamlining Act is probably the most significant single piece of legislation impacting the acquisition system since the Armed Services Procurement Act of 1948. In FASA, we see the Congress and the administration implementing many of the recommendations of the Section 800 Panel to streamline the Federal Acquisition System.

There are a great many changes in the Federal Acquisition Streamlining Act with respect to how we buy items on behalf of the Federal Government. These changes include every aspect of the procurement process from how we determine our requirements to close-out of a contract. An overview of all of the changes can be found in the "Federal Acquisition Institute Analysis, Guide to the Federal Acquisition Regulation."

The major changes to the procurement process occurred in five areas:

- Authorization to conduct Pilot Programs (not covered in this paper).
- Commercial items and practices. Federal Acquisition Streamlining Act emphasizes the role of market research in the acquisition process, creates a preference for purchasing commercial items, eliminates certain statutory

restrictions for the purchases of commercial items on prime and subcontracts, and provides for use of commercial practices even where a commercial item is not procured. For more information on these changes, see the FAR Parts 10, 11 and 12.

- Simplified Acquisition Threshold (SAT) and Simplified Acquisition Procedures (SAPs). Federal Acquisition Streamlining Act created the Simplified Acquisition Threshold (SAT at \$100,000 and provided for the use of Simplified Acquisition Procedures (SAPs)). Federal Acquisition Streamlining Act ties use of Simplified Acquisition Procedures to FACNET certification (this tie is temporarily suspended under Federal Acquisition Reform Act). All procurements under the Simplified Acquisition Threshold are relieved from a number of statutory restrictions. For more information on these changes, see the FAR Part 13.
- Federal Acquisition Computer Network (FACNET). FACNET was created to provide a “single face” to industry for the purposes of electronic commerce with the Federal Government. It is based on a philosophy of pushing public Request For Quotations out to the vendor community as opposed to having the vendor community come look for them. For more information about FACNET see FAR Part 4 and 13 and FACNET section in this chapter.
- Reduced Requirements for Cost or Pricing Data. Significant changes were made to the Truth in Negotiations Act (TINA) by Federal Acquisition Streamlining Act. Contracting officers no longer operate under a presumption that Cost or Pricing data is required when they are at the \$500,000 threshold. Rather, the contracting officer is required to determine if one of a number of exemptions apply or whether a waiver is appropriate. If an exemption applies or a waiver is appropriate, cost or pricing data may not be obtained. For more information see FAR Subpart 15.8. [Ref 14]

3. Integrated Product Team (IPT)

On May 10, 1995, Secretary Perry directed the Department to apply the Integrated Product and Process Development (IPPD) concept of using Integrated Product Teams

throughout the acquisition process. That direction has been captured in the draft revisions to the DoD Directive 5000.1 and the DoD Instruction 5000.2. This guide clarifies the instructions contained in those directives for Overarching Integrated Product Teams (OIPTs) and Working-Level Integrated Product Teams (WIPT). Program Integrated Product Teams are described in the draft "Guide to Implementation and Management of Integrated Product and Process Development in Department of Defense Acquisition." This guide is intended to facilitate organizing and leading effective and efficient Integrated Product Teams (IPTs) that will serve the Acquisition Community and ultimately enhance our capability to provide systems that satisfy the warfighter's needs.

The guidance in the extracts from draft DoD Instruction 5000.2 will be mandatory. The other guidelines are not mandatory, but they represent sound business practices and will be included in the discretionary section of the Acquisition Deskbook. This guide describes the Integrated Product Team process for ACAT ID and IAM acquisition programs, but the concepts should be considered for all programs.

These guidelines are not intended in any way to detract from the responsibility and authority of the Program Manager (PM). The Integrated Product Team activities discussed on the following pages are designed to assist the Program Manager by engaging Office of the Secretary of Defense and Service Staff in early and continuous support and by identifying and resolving issues as early and as quickly as possible. The staff's mission is to ensure the Program Manager's success.

a. Purpose of Integrated Product Teams

As Secretary Perry stated in his May 10, 1995, memorandum, the Integrated Product Team concept for oversight and review is intended to replace the current sequential process that produces a product at the program office level which frequently, when reviewed at higher levels, is modified substantially or even rejected. Such a sequential review and approval process takes considerably longer than an Integrated Product Team approach that simultaneously takes advantage of all members' expertise and produces an acceptable product the first time. The purpose of Integrated Product Teams is to facilitate decision-making by making recommendations based on timely input from the entire team.

Organization	Teams	Focus	Participant Responsibilities
OSD and Components	OIPT WIPTs	<ul style="list-style-type: none"> • Strategic Guidance • Tailoring • Program Assessment • Resolve Issues Elevated by WIPTs • Planning for Program Success • Opportunities for Acquisition Reform (e.g., innovation, streamlining) • Identify / Resolve Program Issues • Program Status 	<ul style="list-style-type: none"> • Program Success • Functional Area Leadership • Independent Assessment • Issue Resolution • Functional Knowledge & Experience • Empowered Contribution • Recommendations for Program Success • Communicate Status & Unresolved Issues
Program Teams & System Contractors	Program IPTs	<ul style="list-style-type: none"> • Program Execution • Identify & Implement Acquisition Reform 	<ul style="list-style-type: none"> • Manage Complete Scope of Program, Resources & Risk • Integrate Government & Contractor Efforts for Program Success • Report Program Status & Issues

Figure 4-1, DoD Integrated Product Team Types, Focus and Responsibilities, from [Ref 15]

b. Integrated Product Teams in the Oversight and Review Process

For ACAT ID and IAM programs, mandatory guidance for Overarching Integrated Product Teams and Working-level Integrated Product Teams is provided in Part 5.4 of the new draft DoD Instruction 5000.2 as extracted below. (Mandatory guidance for program Integrated Product Teams is provided in Part 4.2 of the draft DoD Instruction 5000.2.)

Integrated Product Teams are an integral part of the defense acquisition oversight and review process. The Secretary of Defense has directed that the Department perform as many acquisition functions as possible, including oversight and review, using Integrated Product Teams. These Integrated Product Teams shall function in a spirit of teamwork with participants empowered and authorized, to the maximum extent possible,

to make commitments for the organization or the functional area they represent. Integrated Product Teams are composed of representatives from all appropriate functional disciplines working together to build successful programs and enabling decision-makers to make the right decisions at the right time. Integrated Product Teams operate under the following broad principles:

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

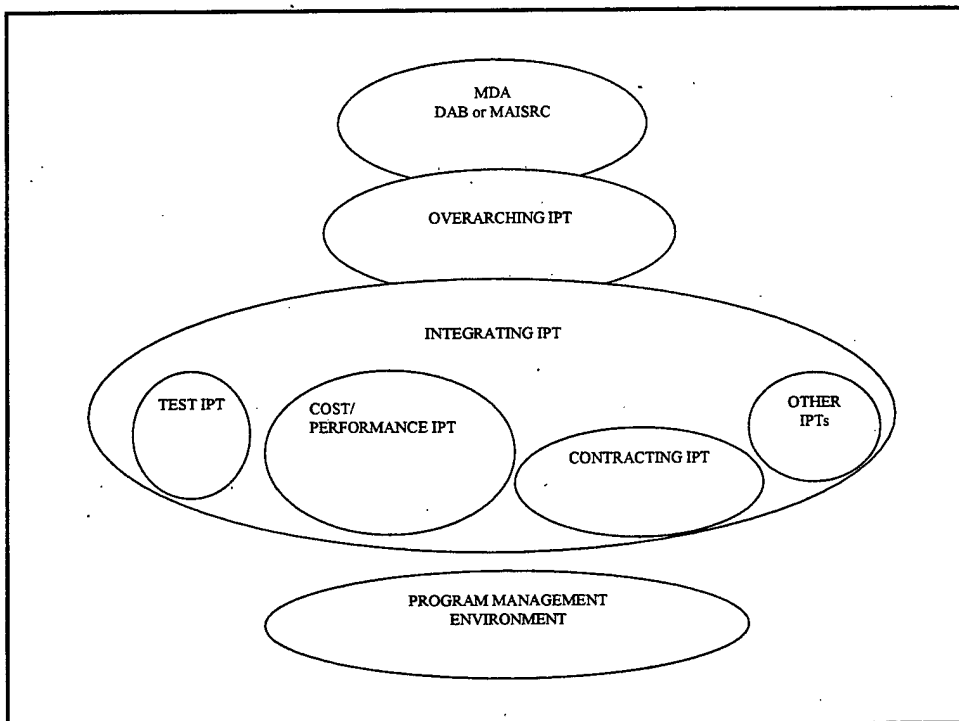


Figure 4-2, Integrated Product Team Structure, from [Ref 15]

For each program, there will be an Overarching Integrated Product Team and at least one Working-level Integrated Product Team. Working-level Integrated Product Teams will focus on a particular topic, such as test, cost/performance, contracting, etc. An Integrating Integrated Product Team will coordinate Working-level

Integrated Product Team efforts and cover all topics not otherwise assigned to another Integrated Product Team.

c. Working-level Integrated Product Team's Procedures, Roles, and Responsibilities

The Program Manager, or designee, shall form and lead an Integrating Integrated Product Team (IIPT) to support the development of strategies for acquisition and contracts, cost estimates, evaluation of alternatives, logistics management, cost-performance trade-offs, etc. The Integrating Integrated Product Team will assist the Program Manager in the development of a Working-level Integrated Product Team structure to propose to the Overarching Integrated Product Team. The Integrating Integrated Product Team will also coordinate the activities of the remaining Working-level Integrated Product Teams and ensure that issues not formally addressed by other Working-level Integrated Product Teams are reviewed. Working-level Integrated Product Teams shall meet as required to help the Program Manager plan program structure and documentation and resolve issues. While there is no one-size-fits-all Working-level Integrated Product Team approach, there are three basic tenets to which any approach shall adhere:

- (1) The Program Manager is in charge of the program.
- (2) Integrated Product Teams are advisory bodies to the Program Manager.
- (3) Direct communication between 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 Leader of each Integrated Product Team will usually be the Program Manager or the Program Manager's representative. The Office of the Secretary of Defense action officer may co-chair the Integrated Product Team meetings, at the invitation of the Program Manager. The following roles and responsibilities apply to all Working-level Integrated Product Teams:

- (1) Assist the Program Manager in developing strategies and in program planning, as requested by the Program Manager
- (2) Establish Integrated Product Team plan of action and milestones

- (3) Propose tailored document and milestone requirements
- (4) Review and provide early input to documents
- (5) Coordinate Working-level Integrated Product Team activities with the Overarching Integrated Product Team members
- (6) Resolve or elevate issues in a timely manner
- (7) Assume responsibility to obtain principals' concurrence on issues, as well as with applicable documents or portions of documents. [Ref 16]

d. Test Strategy Integrated Product Team

The purpose of the 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 Test and Evaluation Master Plan that is acceptable to all organizational levels the first time. [Ref15]

e. Cost-Performance Integrated Product Team

The purpose of the Cost-Performance Integrated Product Team shall be to facilitate cost-performance trades and to assist in establishing program cost-range objectives. Cost objectives shall be used as a management tool. They should be communicated to industry and used, in part, for source selection and to incentivize contracts. The nature of the cost-performance trades and the composition of the Cost-Performance Integrated Product Team shall change as the program matures from concept to design. As the program matures, the role of the Program Manager in the Cost-Performance Integrated Product Team increases. The Cost-Performance Integrated Product Team (normally led by the Program Manager or the Program Manager's representative and including, at a minimum, the user or user's representative) shall recommend to the Program Manager performance or engineering and design changes as long as the threshold values in the Operational Requirements Document (ORD) and Acquisition Program Baseline (APB) can be achieved. If the changes require ORD/APB threshold value changes, the leader of the Cost-Performance Integrated Product Team

shall notify the Program Manager and the Overarching Integrated Product Team leader. The Program Manager shall ensure that the changes are brought before the ORD and/or APB approval authorities for decision. [Ref 17]

f. Overarching Integrated Product Team Procedures and Assessments

In support of all ACAT ID and IAM programs, an Overarching Integrated Product Team (OIPT) shall be formed for each program to provide assistance, oversight, and review as that program proceeds through its acquisition life-cycle. The Overarching Integrated Product Team for ACAT ID programs shall be led by the appropriate Office of the Secretary of Defense (OSD) official (typically the Director of Strategic and Tactical Systems, the Assistant Deputy Under Secretary of Defense (Space and Acquisition Management), or the Deputy Assistant Secretary of Defense (C3I Acquisition), depending on the program in question). The DASD (C3I Acquisition) will designate the Overarching Integrated Product Team Leader for each ACAT IAM program. Overarching Integrated Product Teams shall be composed of the Program Manager, Program Executive Officer (PEO), Component Staff, Joint Staff, USD(A&T) staff, and the Office of the Secretary of Defense staff principals or their representatives, involved in oversight and review of a particular ACAT ID or IAM program.

The Overarching Integrated Product Team shall first form upon learning that a program is intended to be initiated to consider the recommendations proposed by the Integrating Integrated Product Team -- the extent of Working-level Integrated Product Team support needed for the potential program; who shall participate on the Working-level Integrated Product Teams; the appropriate milestone for program initiation; and, the minimum information needed for the program initiation review. Overarching Integrated Product Teams shall meet as necessary over the life of a program. The Overarching Integrated Product Team Leader shall take action to resolve issues when requested by any member of the Overarching Integrated Product Team, or when directed by the Milestone Decision Authority (MDA). The goal is to resolve as many issues and concerns at the lowest level possible, and to expeditiously escalate issues that need resolution at a higher

level, bringing only the highest level issues to the Milestone Decision Authority for decision.

In support of a planned milestone review by the Defense Acquisition Board (DAB) or Major Automated Information System Review Council (MAISRC), the Overarching Integrated Product Team shall normally convene two weeks in advance of the anticipated review to assess information and recommendations being provided to the Milestone Decision Authority. Additionally, at that meeting, the Program Manager shall propose the Working-level Integrated Product Team structure, documentation, and strategy for the next acquisition phase, for approval by the Milestone Decision Authority. The Overarching Integrated Product Team Leader, in coordination with the appropriate Component Acquisition Executive (CAE), shall recommend to the Milestone Decision Authority whether the anticipated review should go forward as planned.

The Overarching Integrated Product Team leader for ACAT ID or IAM programs shall provide an independent assessment to the DAB or MAISRC chairs, principals, and advisors at major program reviews and milestone decision reviews using information gathered through the Integrated Product Team process. The leader's independent assessment shall focus on core acquisition management issues and shall take account of assessments prepared by Overarching Integrated Product Team members. Assessments will normally be provided by the Overarching Integrated Product Team members. There should be no surprises at this point, because all team members are already working the issues in real time, and they should be knowledgeable of their Overarching Integrated Product Team leader's independent assessment. [Ref 18]

g. Continuous, "up-the-line" Communications

Working-level Integrated Product Team members are expected to ensure that their leadership is in agreement with what the Integrated Product Team is doing. When issues arise that exceed the limits of empowerment, the Program Manager or Integrated Product Team leader must allow members adequate time to coordinate issues and positions with their principals. There should be no surprises later when the principals are asked to coordinate or review a final draft document or decision.

<p>OIPT</p> <p>DAB</p> <ul style="list-style-type: none"> • DASD (C3I Acquisition) • Director, Strategic & Tactical Systems • ADUSD (Space) 	<p>LEADERS</p> <p>MAISRC</p> <p>Director, Acquisition Oversight, ODASD (C3IA)</p>
<p>Component Acquisition Executives</p> <p>Component Representatives</p> <ul style="list-style-type: none"> • PEO • PM • Operators • Senior Information Management Official <p>User</p> <p>Vice Chairman, Joint Chiefs of Staff</p> <p>Under Secretary of Defense (Comptroller)</p> <p>Assistant Secretary of Defense (C3I)</p> <p>Director, Defense Procurement</p> <p>Director, Operational Test and Evaluation</p> <p>Director, Program Analysis and Evaluation</p> <p>Director, Acquisition Program Integration</p> <p>Director, Test, Systems Engineering & Evaluation</p> <p>Chairman, OSD Cost Analysis Improvement Group (DAB only)</p> <p>Director, Counterintelligence & Defense Security Programs, OASD(C3I) (DAB only)</p> <p>Under Secretary of Defense (Personnel & Readiness)</p> <p>Under Secretary of Defense (Policy)</p> <p>Assistant to the Secretary of Defense (Atomic Energy)</p>	<p>Assistant Secretary of Defense (Reserve Affairs)</p> <p>Deputy Under Secretary of Defense (Acquisition Reform)</p> <p>Deputy Under Secretary of Defense (Advanced Technology)</p> <p>Deputy Under Secretary of Defense (Environmental Security)</p> <p>Deputy Under Secretary of Defense (Logistics)</p> <p>Deputy General Counsel (Acquisition and Logistics)</p> <p>Deputy Director, Defense Research & Engineering</p> <p>Assistant Secretary of Defense (Economic Security)</p> <p>Assistant Secretary of Defense (Health Affairs)</p> <p>Director, Ballistic Missile Defense Organization</p> <p>Director, Defense Intelligence Agency</p> <p>Director, Defense Information Systems Agency</p> <p>Director, National Reconnaissance Office</p> <p>DASD(C3)</p> <p>DASD (Information Management) (MAISRC only)</p> <p>Director, Continuous Acquisition and Life Cycle Support (CALC)</p> <p>Director, Central Imagery Office</p> <p>Director, Special Programs</p>

Figure 4-3, Overarching Integrated Product Team Membership, from [Ref 15]

h. Reasoned Disagreement

The team is not searching for "lowest common denominator" consensus. There can be disagreement on how to approach a particular issue, but that disagreement must be reasoned disagreement based on an alternative plan of action rather than unyielding opposition. Issues that cannot be resolved by the team must be identified early so that resolution can be achieved as quickly as possible at the appropriate level. [Ref 15]

i. Issues Raised and Resolved Early

The agreements essential to Integrated Product Team success will be founded on the early identification and resolution of issues. When an issue cannot be resolved by a Working-level Integrated Product Team, the Program Manager should raise the issue as quickly as possible to a decision-making level where resolution can be achieved.

j. Last word for Integrated Product Team from Mr. Perry

I need your personal involvement and commitment to ensure that the concepts of IPPD and Integrated Product Teams are effectively implemented. By using the best practices from both the public and private sectors, we can enhance our ability to provide what the warfighter needs, when needed and at a cost that the Department can afford. [Ref 15]

4. Electronic Commerce (EC), Electronic Data Interchange (EDI)

Use of Electronic Commerce, Electronic Data Interchange to support DoD procurement processes has been under consideration for some time. A 1988 Deputy Secretary Defense memo calls for maximum use of Electronic Data Interchange based on ten years of DoD Electronic Data Interchange investigation and experiments. In 1990, Defense Management Review Decision 941 stated, "The strategic goal of DoD's current efforts is to provide the department with the capability to initiate, conduct, and maintain its external business related transactions and internal logistics, contracting, and financial activities without requiring the use of hard copy media." The January 1993 DoD

Acquisition Law Advisory Panel submitted a report to the Congress that concentrated on changes that would streamline the defense procurement process. Among the hundreds of recommendations contained in the report were several that addressed the increased use of electronic procurement notice and contracting methods. A Presidential Memorandum in October 1993 reinforced this effort by supporting streamlining procurement through electronic commerce. In parallel with these activities, a DoD Electronic Commerce/Electronic Data Interchange In Contracting Process Action Team was formed and recommended in December 1993 that a central functional coordinator be designated to direct the execution of the implementation plan. The DoD Electronic Commerce office was established under the Deputy Under Secretary of Defense for Acquisition Reform in 1994 to implement the Process Action Team implementation plan and plan for future electronic commerce activities.

Goals:

- Maximize the use of electronic commerce/electronic data interchange in contracting
- Develop an implementation plan that when executed would result in:
 - ✓ Providing information on pending procurements, receiving quotes of solicitations, and making awards
 - ✓ At 244 sites within two years (covers 80 percent of DoD's contracting actions under \$25K and 98 percent under \$100,000)
 - ✓ Using existing Agency automated contract writing systems and commercial software and hardware
- Establish a single face to industry
- Support the Federal effort in expanding EC/EDI to other agencies by developing a Government-wide process that would provide a single face to industry
- Facilitate the use of EC/EDI in all DoD functional areas as part of the business reengineering process:
 - ✓ Take advantage of a standard DoD infrastructure
 - ✓ Consolidate individual Service/agency EC/EDI activities into joint activities as they relate to functional business areas

- ✓ Establish a single face to industry implementing a common information processing standards and a common set of business practices and operational principles

5. Federal Acquisition Network (FACNET)

The Federal Acquisition Streamlining Act of 1994 establishes the Federal Acquisition Network (FACNET) requiring the Government to evolve its acquisition process from one driven by paperwork into an expedited process based on Electronic Data interchange (EDI). The electronic system is intended to provide a single face to industry and interoperability within the Federal sector. The Act establishes parameters for FACNET built along functional lines, with parameters set forth for Government and private users. These functions are to be implemented by agencies within five years of enactment of the Act. The Government-wide FACNET will be designed to:

- Inform the public about Federal contracting opportunities;
- Outline the details of Government solicitations;
- Permit electronic submission of bids and proposals;
- Facilitate responses to questions about solicitations;
- Enhance the quality of data available about the acquisition process; and
- Be accessible to anyone with access to a personal computer and a modem.

[Ref 19]

6. Evolutionary Acquisition (EA)

Evolutionary acquisition is a tailored, streamlined process for acquiring weapons systems. The Evolutionary Acquisition process is consistent with current guidance and can help shorten the time between requirement genesis and weapon system availability. Per Under Secretary of Defense (Acquisition & Technology) in a memorandum dated 12 January 1995, Evolutionary Acquisition is an alternative practice to be assessed by program managers (PMs) when developing the acquisition strategy for their individual programs. Particularly important are relationships among the acquisition executive, user, user representative, independent tester, supporter, and the developer. These relationships

must be of high quality for the successful performance of Evolutionary Acquisition developments.

a. Why Evolutionary Acquisition?

The use of conventional approaches to the acquisition of large, software-dominated command, control, communications, and intelligence (C3I) systems has not been supportive of operational commanders in the performance of their command and control functions. Difficulties arose primarily because it was often not feasible to define, in detail, what the operational capabilities or functional characteristics for the complete system were before starting the Engineering and Manufacturing Development (EMD) Phase. If Engineering and Manufacturing Development is initiated without a clear definition of operational concepts and required system capabilities and the functional characteristics of the complete system are not known, it is likely the development process will be long, costly, and unstable, and the system developed will be unsatisfactory.

Studies conducted by the Armed Forces Communication and Electronic Association and Defense Systems Management College have examined the acquisition environment likely to emerge from a changed threat perception and rapid world economic change, with its associated technological advances and realignments. It appears that these rapid changes will preclude those long periods of stability necessary to develop clear definitions of system operational concepts, capabilities, and functional characteristics prior to entering Engineering and Manufacturing Development. This situation implies an extension of Evolutionary Acquisition processes to other than C(3)I weapons systems.

b. What is Evolutionary Acquisition?

Evolutionary Acquisition is an acquisition strategy that may be used to procure a system that is expected to evolve during development and within an approved architectural framework in order to achieve an overall system capability. An underlying factor in Evolutionary Acquisition is the need to quickly field a well-defined core capability in response to a validated requirement. This is accomplished while planning for an incremental upgrade program designed to enhance the system eventually. These increments are each treated as individual acquisitions. Their scope and content being the

result of: (1) continuous feedback from independent testing agencies, the user (operating forces), and supporting organizations; and (2) the application of new technology. This is all balanced against the constraints of time, requirements, and cost.

Considered most broadly, Evolutionary Acquisition consists of several steps. The first step defines the requirement and the general outline of the system. Then the succeeding steps in the process sequentially define, fund, develop, test, field, support, and evaluate increments of the system. This process begins with a core or baseline system, which is then enhanced through incremental upgrades.

c. What Evolutionary Acquisition is not

Evolutionary Acquisition is not:

- An approach that provides for unconstrained requirements growth and an unbridled budget;
- A single strategy ready for application to all C(3)I system acquisition efforts;
- A checklist approach that will greatly simplify C(3)I acquisition; or
- A free ticket to exemption from competition, disciplined configuration management, testing, or logistics support planning.

Evolutionary Acquisition poses additional challenges in these areas and requires careful tradeoff analysis to reach smart decisions that will benefit the total acquisition.

An Evolutionary Acquisition model and its application emphasize the incremental nature of the Evolutionary Acquisition approach and the essential, continual user involvement in every phase of development.

d. The following is a brief description of the Evolutionary Acquisition process:

The Service Chief or representative begins the process with the definition of the overall system operational concept and requirements, expressed in functional terms and based upon user input. At about the same time, the operational concept and functional requirements for the first system operational element to be fielded (the core element) are also defined in considerable detail. When fielded, the core element must

provide a significant, identifiable operational capability and be supportable in its intended operational environment.

After the Service Chief (or representative) formulates an overall system concept and identifies the overall capability required in the final configuration, the developer recommends, for Service approval, a system architecture capable of accommodating system evolution without redesign. The supporter identifies the minimum elements required to sustain the system in its intended operational environment. The system architecture is a critical element that should be structured with a great deal of care and with some detail, although a high degree of specificity as to details may be impossible at first.

Evolutionary Development Plan: The Evolutionary Development Plan is a Service-approved and Service-funded product. Its goal is achievement of the overall capability through incremental development, fielding, and support of incremental upgrades to the core (or baseline) operational capability.

Architectural Plan: This plan is a description of the principles on which the system architecture is based and the kind of changes that architecture can facilitate.

Technology Road Map. This is a schedule for the availability of technology developments relating to the system under development. It should include a survey of commercial, off-the-shelf products and a projected schedule for maturing emerging technologies.

The Service Chief (or representative), with continuing developer, supporter, and user input, defines the initial (core) capability to be developed, tested, and fielded. It is important to note that the core element is not fielded until operationally tested to determine its effectiveness, suitability, and sustainability. The fielded incremental capability is then operated and exercised by the user and sustained by the supporter in its operational environment. The user provides recommendations to be addressed in the definition of later incremental upgrades.

On a sequential basis, the additional increments of capability are defined, Service approved, developed, operationally evaluated, fielded, and supported in the same way as the initial increment.

Funding for the system elements is also incremental in nature. Budget approval and funding for each element is made available only after the operational performance characteristics and support requirements of that element have been defined in sufficient detail for development of that element to begin.

In the interest of simplicity, the model does not present the contribution that an off-line development, test, and support facility may make to the development process. Such a facility, using operational mock-ups, simulations, and a software laboratory, will generally be required for system development, development testing, and system integration. The facility will also serve to help integrate the users' and testers' input with that of the development activities and will provide the capability to develop and evaluate hardware and software updates.

e. Areas Requiring Special Consideration When Using Evolutionary Acquisition

While Evolutionary Acquisition could be the best approach to use in acquiring certain weapon systems, it is, of course, no panacea. To formulate and execute an Evolutionary Acquisition strategy successfully, a number of areas must be given special consideration. Key areas requiring such consideration are discussed below:

Acquisition Executive, User, User Representative, Supporter, Independent Tester, and Developer. In conventional acquisition programs, relationships among these six entities may sometimes be rather formal, and negotiations among them may be conducted at arm's length. For Evolutionary Acquisition to be successful, some of the roles of these entities may need to be redefined, and most of the relationships need to be closer and more cooperative than has been the norm.

System Operational Capabilities: In system acquisition, the user representative frequently has the primary role in specifying the desired operational requirements for the system. Depending upon Service-specific procedures, the actual user may be rather far removed from this process. A major premise, when Evolutionary Acquisition processes are used, is that the field user plays the major role in formulating operational requirements and in defining detailed system characteristics. The traditional roles of the user and the user representative may have to be redefined for a particular

program, in accordance with the needs of that program. Each program will, therefore, need to define suitable roles/relationships for all participants. The complexity of these relationships is likely to be even greater in cases where the actual user is in a Service different from that of the developer. A Memorandum of Understanding or Agreement is recommended in these instances.

Operational Test and Evaluation: A key premise involved in using Evolutionary Acquisition processes is that systems tests are made incrementally on each element of system capability. Initial testing is accomplished on the first incremental system configuration and involves an investigation of architecture growth capability. Testing continues on subsequent configurations, as they become available. The tests determine whether the system, as configured, meets the operational requirements specified by the user.

Each Service has an organization responsible for independent operational test and evaluation. When the user operates a system, that user becomes a critical part of the total system and greatly influences its performance. When independent testers perform tests with user forces, not only are test results more likely to represent real capabilities; but both the user and the developer gain understanding of the system capabilities. That shared information is critical to validating (or redefining) operational requirements for those system increments that are to follow:

Operational tests: Operational tests are important in the process of evolving requirements and introducing increments of system operating improvements. As a result, it is imperative that operational testers and evaluators become deeply involved early and maintain continuous, direct liaison with developer and user. Early, continuous involvement facilitates the integrated, appropriate, and timely operational testing essential to successful system development.

Test and Evaluation Planning: Use of Evolutionary Acquisition approaches is likely to necessitate some redefinition of the process of operational testing and evaluation. Specifically, there may be an increased use of contractor testing, especially for systems that are software intensive; but contractor participation in the final phase of operational testing prior to Milestone III (for example, Initial Operational Test and Evaluation) is almost always entirely prohibited. The issue of contractor participation

in operational testing must be addressed in the Test and Evaluation Master Plan at program inception. The objective of operational test and evaluation should be to exploit integrated testing without loss of critical independence of contractor/developer/user perspective and their subsequent input to the ongoing development process.

Developer-User Interaction: In conventional acquisition processes, developers and users may have less frequent interaction during the development process than during Evolutionary Acquisition processes. Evolutionary Acquisition processes depend on just such close and continued interaction. Developers, users, and those who will support the system when deployed must work closely together over the course of the development activity. For systems with requirement uncertainties, provision for user prototypes and beta site testing should be included within the acquisition strategy.

Program Review and Approval: In conventional acquisition, there are normally only a few times when the Program Manager needs to obtain approval of the Milestone Decision Authority (MDA) in order to proceed with the program. Such approval is normally required at each of the major program milestones. Evolutionary Acquisition processes might require Milestone Decision Authority approval for each increment of capability, perhaps at each of several stages in the development program. Under these circumstances, it would be necessary to greatly streamline the review and approval process. For some programs, when a final configuration can be defined in some detail, the total system might be validated as a single requirement and each increment treated as a "release." This only pertains as long as the program remains within designated performance and cost thresholds.

Program Management: For conventional programs, a program office is frequently not established until Milestone I or later. Often the program office is not as well staffed with experienced people during the early phases of a program as in later program phases.

In using Evolutionary Acquisition, it is important that a capable program office be established very early in the program because: (1) the acquisition strategy must be defined early; (2) roles and relationships of the various key players in the acquisition process (as discussed previously) need to be negotiated early; (3) the program sponsor will need program office support in defining the fundamental architecture and support

structure underlying the entire system; and (4) Evolutionary Acquisition requires early delivery of a core capability and early feedback on its performance.

Another consideration involving the program office is that the office must generally be staffed more heavily to allow it to manage all phases of the acquisition cycle concurrently. This is necessary when using an Evolutionary Acquisition process because several increments may be under development at any one time, and these various increments may be at different stages of the acquisition cycle.

Competition in Contracting: Use of Evolutionary Acquisition requires consideration of four closely related areas of work. These areas are: (1) system architecture; (2) development and maintenance of the Off-line Development, Test, and Support Facility; (3) system configuration management; and (4) logistics support. These areas of work may continue not only throughout the Evolutionary Acquisition period, but most likely throughout the acquisition process and the system's useful lifetime. This is because the system will continue to evolve as it is used. Because it is important that continuity be maintained in each of these functional areas, either the functions must be provided directly by the Government; or any contractor performing a function must be retained for a number of years. While contractors can be changed occasionally without undue program impact, frequent change in responsible agent or staff will likely be highly disruptive. In such cases it may be preferable for the Government to perform the functions with in-house Government Staff.

On the other hand, normal practices concerning competition most likely could be employed for the tasks of developing each of the increments of the system's operational capability. Here, the inefficiencies of new contractors learning the system may or may not offset the positive values of competition.

In keeping with the Evolutionary Acquisition approach, special emphasis should be placed on early development of an acquisition plan to ensure that procurement lead-time constraints are noted and addressed up front. The Evolutionary Acquisition "fast march" will necessitate innovative contracting approaches; early planning would afford maximum opportunity to make use of effective competition practices. For example, a two-phase process might be used as shown below. The first phase would involve multiple awards with the resulting contracts addressing the core capability of the

system. Potential teaming arrangements would be indicated. Conceptual segments and approaches to incremental upgrades would be discussed and a system specification prepared. Demonstration models would be deliverables where feasible. The second phase would involve selection of a contractor for a system engineering integration contract. This would allow for competition at the second tier for individual increments. This approach tends to be time-intensive up front but pays off with a smoother transition in the second phase. In addition, it would provide much greater accountability and confidence in the adequacy of the final system capability.

Control and Stability of the Development Process: Evolutionary Acquisition processes must provide for proper process control. Although Evolutionary Acquisition is by definition evolutionary, it is important that it be partitioned into fairly distinct increments. These developmental increments must be precisely defined and clearly identify the system performance they will achieve. Once the development of a particular increment is well under way, changes in functional requirements pertaining to that increment should be made only if they are very important. Feedback on effectiveness and suitability from actual operations and maintenance is almost always required to determine the value of proposed changes. Consideration should be given to the following when managing change:

When programs have short time periods between development increments, it might be best to defer requirement changes until the next program increment. This preserves the acquisition schedule and does not place delivery and fielding plans at risk. Preserving schedule is of little value, however, if feedback indicates an inability to meet or sustain specified performance thresholds or a lack of logistic support.

When users can identify frequently changing requirements, evolutionary acquisition may be an appropriate strategy if multiple configurations can be managed and supported. Evolutionary processes provide for later stages when such changes can be incorporated if still required.

The need to manage requirement changes is, perhaps, greatest when change affects software in development. It is often possible to effect a performance change through a change to the system software. There is a widely held belief that software changes are easy to accomplish and that a change in requirement results in only

minor software modification. In reality, the further along the development process, the more difficult it is to make such changes. Detecting errors in program function caused by modification to program code becomes much more difficult as individual software programs are joined with each other through a series of integration tests. Experience shows that lack of tight software configuration control produces extreme difficulty in both testing and in-service use.

Configuration Management and Documentation of System Design. For any acquisition program, configuration management and full documentation of the design of the system are important. The technical data package is the key to disciplined documentation. For an Evolutionary Acquisition program possibly involving both an evolving architecture and a series of system increments, it is especially important that configuration management and system documentation be comprehensive and of high quality.

Production and Installation: In considering Evolutionary Acquisition of defense systems, attention is normally focused primarily upon architecture, requirements, development, integration, and evaluation.

Most of the issues concerning production and supportability of C(3)I systems are not greatly different from the issues concerning production of the hardware of many other types of systems. One notable difference in hardware installation, however, is seated in the fact that many large C(3)I systems are few in number or even unique. In such cases, however, the time between system evolutionary increments may be shortened with only a small impact on configuration management and installation.

As opposed to hardware, the cost of producing and distributing software is significantly less than its development costs. Once the development of software is complete, production and distribution consist primarily of copying digital data from one storage medium to another. Installation of software (exclusive of software integration and test) is also generally a trivial process, involving primarily the reading of digital data from a magnetic tape or disk into a computer's internal memory and testing to ensure the program was installed correctly.

Software Maintenance and Control: Even though the term "maintenance" is generally applied to both hardware and software, they are two radically different

things. Maintenance of hardware consists largely of actions to: (1) determine whether the hardware is functioning properly; (2) prevent components from wearing out; (3) correct for deviations in system component functional characteristics (or "drift"); and (4) repair or replace badly worn or failed components. Determinations of the need for maintenance and the ease with which maintenance can be performed on hardware are dictated to a large extent by its design and manufacture.

Conversely, software does not drift, wear out, burn out, or break and so requires no maintenance of the kind required for hardware; but software does malfunction when untested combinations of options are used. Since testing does not find all the bugs, however, operational malfunctions do require software maintenance and support.

Software maintenance, as opposed to hardware maintenance, is concerned with two quite different activities, which are: detecting, localizing, and analyzing software bugs (design deficiencies remaining in the software) and then either correcting the bugs by changing the design of the software or devising means to allow the system to operate adequately in spite of the bugs; or changing the existing functional characteristics of the system by modifying the design of the software, and adding additional functional capability to the system by designing and adding additional software.

Because software maintenance activities result in functional performance changes to the software, adequate configuration management procedures must be observed in the maintenance process, and systems documentation (technical data package) must be updated to reflect the program changes. This practice must be followed for each software increment or phase that is released for use.

For C(3)I systems acquired by means of Evolutionary Acquisition, it seems almost axiomatic that the above software functions must be performed by the development rather than by the support community. Indeed, this is mandatory for the full period of the acquisition if difficulty in operational test and evaluation is to be avoided. Moreover, even after completion of the basic acquisition cycle, C(3)I systems are likely to undergo subsequent incremental changes to meet changing operational conditions and to incorporate significant new capabilities. Thus, it is likely that a software development capability and the Off-line Development, Test, and Support Facility would be maintained for the operational life of the C(3)I system.

In view of the circumstances, the transition of software design, control, production, and maintenance from the development community to the support community should be treated on a case-by-case basis for each major C(3)I system. From the very beginning, however, the developer must consider support alternatives in the operational environment and either modify designs to increase supportability or plan for the necessary support to be available. These tradeoffs should be assessed early in the conceptual stage. This support alternative assessment should include consideration of diagnostics/prognostics and design for discard while they are still feasible.

User Designed/Maintained Software: With the advent of low-cost computers and easy-to-use, high-level software (such as database management systems), it is to be expected that some users will wish to design and maintain their own individual "micro" C(3)I systems. While a do-it-yourself microsystem might sometimes be desirable, such a system can also be a source of difficulties as a result of: (1) possible lack of integration of such a system within a larger C(3)I framework; (2) possible lack of adequate system documentation; and (3) possible lack of adequate configuration management.

The better the acquisition community can meet the user's needs in a timely and adequate way, the less likely the users will be to act as their own system developers.

Product Assurance: Solid product assurance planning must link all aspects/phases of the system and be visible at decision milestones. Such planning should highlight the fact that, in an evolutionary approach, the developer's responsibility must extend through user/fielded verification and may entail special maintenance or warranty provisions.

Logistics Support: As with conventional acquisition approaches, logistics support is critical in Evolutionary Acquisition to ensure that design is influenced by support requirements and that support is available for operational sustainment. In the C(3)I environment, supportability of the software and the equipment that operates the software is critical to the supportability of the overall weapon system. [Ref 20]

D. SUMMARY

Despite all of the studies and initiatives implemented through the Defense Acquisition history, cost growth and schedule slips are still prevalent problems today. To still have these problems, even after all of these initiatives and studies, there is something missing in the big picture. With all these lessons-learned and technology available on the eve of the 21st century, the DoD and its counterparts are not adapting quickly enough to the constantly changing environment.

V. SURVEY

A. INTRODUCTION

In this chapter, based on the survey conducted during thesis research, I will address basic findings of the survey. These findings will be discussed in the following "Analysis" chapter. In order to understand the challenges in the Defense Acquisition System, a snapshot of the system is needed. The survey will provide the insight to the "big picture" of the system. This insight will provide the basis to develop/propose better organizations, regulations and sound Defense Acquisition System changes.

B. SURVEY METHODOLOGY

A survey questionnaire was developed and sent to DoD Acquisition personnel. The set of questions was used to collect opinion data from military and civilian managers in similar PM positions.

1. Population

The population receiving this survey was based on PM and Deputy PM positions in the Defense Acquisition System. In order to obtain the other insights into Program Management and organizational relationships at the PM level, Program Executive Office (PEO) and functional line managers were also included in the survey.

Some relevant population demographics are presented:

- Rank: General five percent, O-6 36 percent, O-5 27 percent, GS-15 14 percent, GS-14 eight percent (See Figure 5-1).
- Degree: MS/MA/MBA 92 percent, BS/BA eight percent (See Figure 5-2).
- Experience: 1-10 years 28 percent, 11-20 years 43 percent, 20+ years 12 percent (See Figure 5-3).

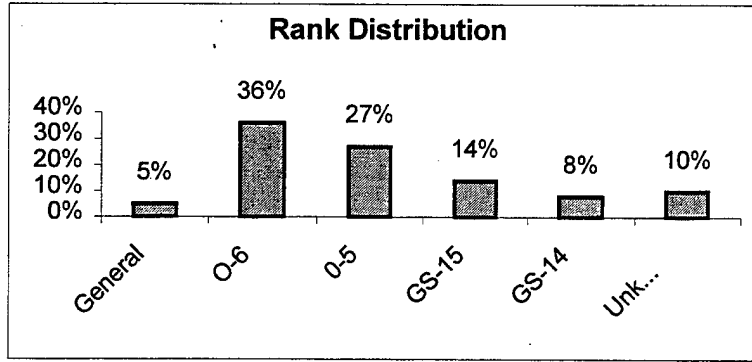


Figure 5-1, Rank Distribution

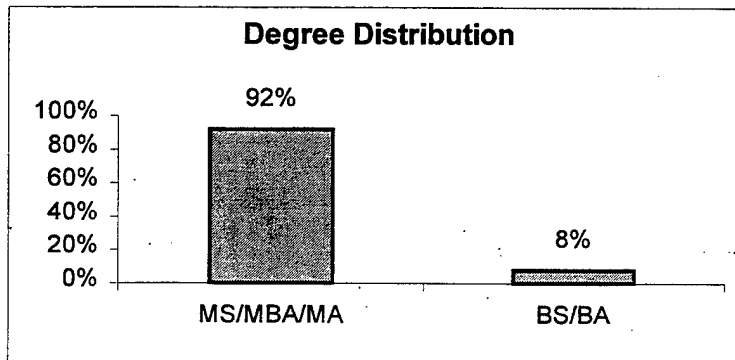


Figure 5-2, Degree Distribution

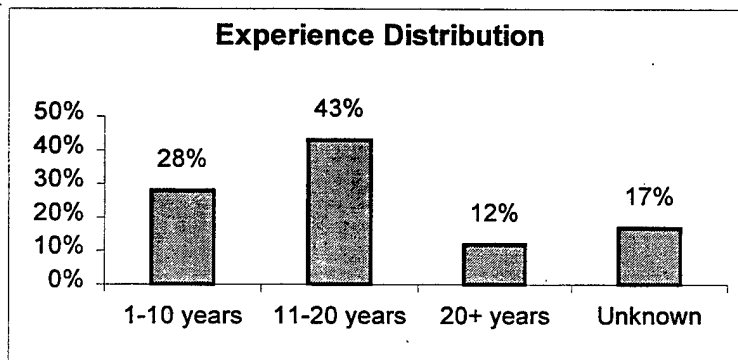


Figure 5-3, Experience Distribution

2. Survey Instrument

The survey instrument addressed five areas:

- Challenges in managing program;
- Challenges encountered in implementing Acquisition Reforms;
- Human Resources related challenges;
- Opinions about improving Defense Acquisition Management;
- The PM position in the current environment;

Additionally, some personal information such as rank, degree, position, experience etc., was collected to assist in the analysis.

C. FINDINGS OF THE SURVEY

1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

Question 1: I believe there is strong link between budget formulation and execution.

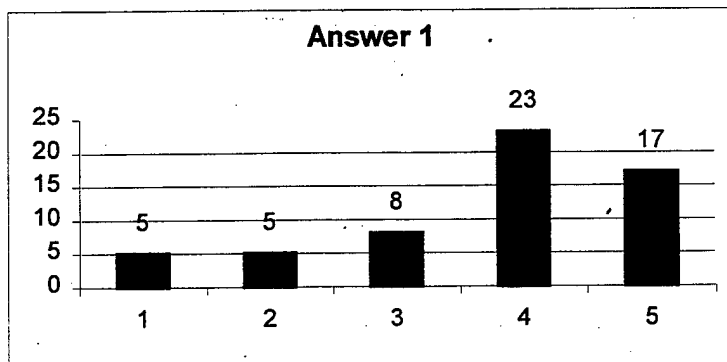


Figure 5-4, Answer 1

Question 2: I have enough award authority to incentivize both core and matrix personnel.

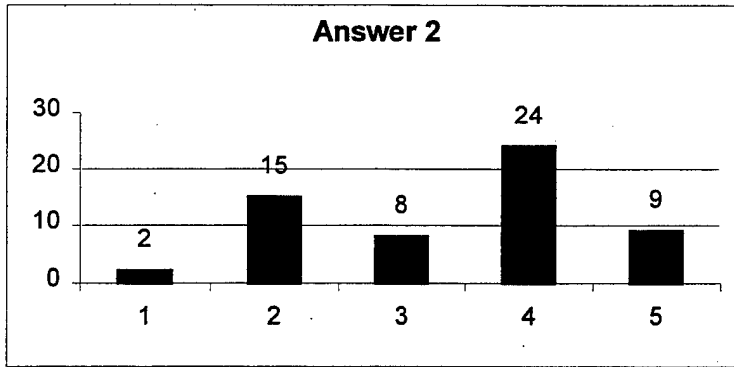


Figure 5-5, Answer 2

Question 3: Best business practices will help speed up integration with contractor teams and improve the experience.

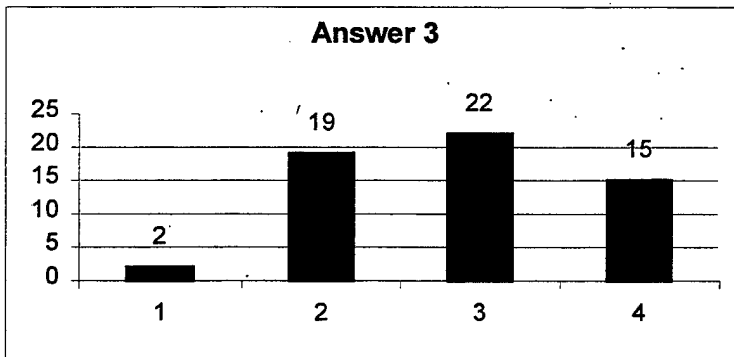


Figure 5-6, Answer 3

Question 4: I am confident that I have the authority, manpower and tools to tailor the phases and milestones to fit unique requirements of my program.

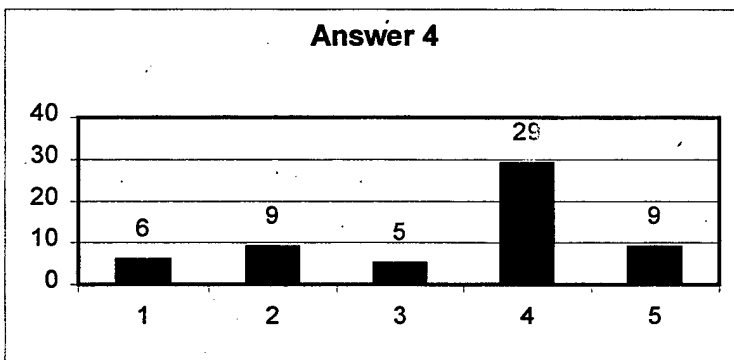


Figure 5-7, Answer 4

Question 5: I have enough flexibility in the Acquisition Plan to solve problems I encounter.

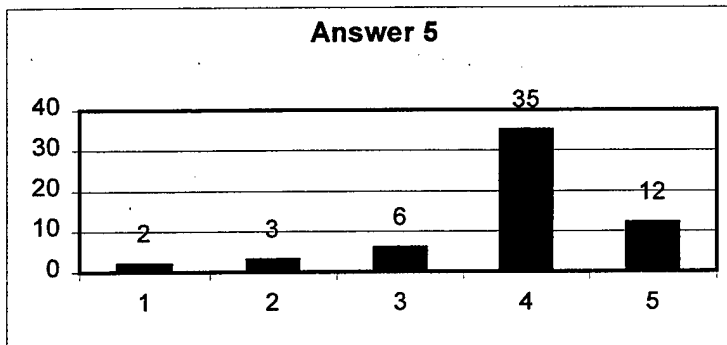


Figure 5-8, Answer 5

Question 6: I spent most of my time resolving conflicts or finding new sources to keep my program stable which might be caused by....

Managers from PEO to line manager level ranked their challenges in the following order:

1. Resource Allocation
2. Program priorities/schedule
3. Resistance to change
4. Inconsistent goals
5. Communication barriers
6. Misinformation
7. Ambiguous roles
8. Lack of authority
9. Lack of information
10. Matrix vs. core organization

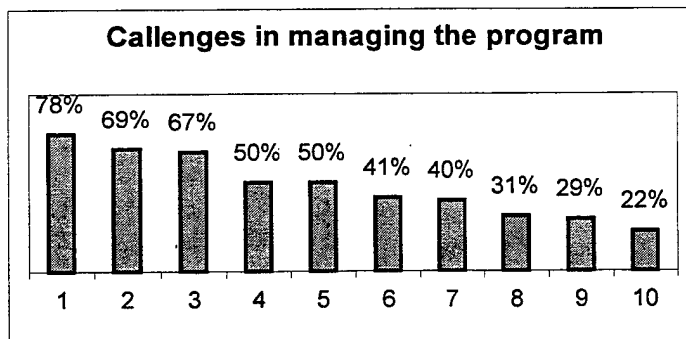


Figure 5-9, Answer 6

Question 7: What do you think the barriers in acquisition reform/streamlining are?

Survey participants identified the barriers in acquisition reform/streamlining as follows:

1. Resistance to change by personnel
2. Poor communication
3. Policy and procedures
4. Inadequate empowerment
5. Management support
6. Legislation

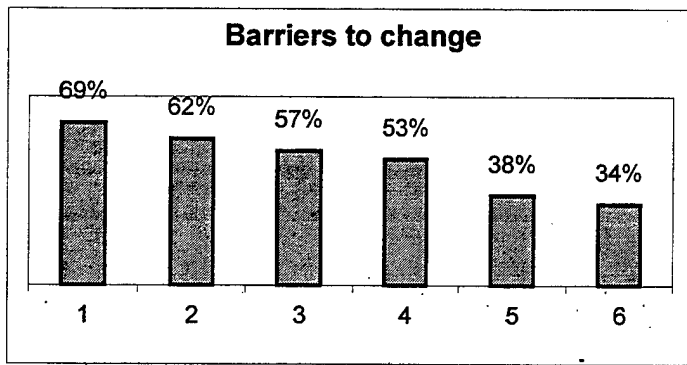


Figure 5-10, Answer 7

Question 8: Becoming commercial-like in Acquisition will ease/facilitate the relations with contractors/Congress/war fighting units so it will reduce cycle time and cost.

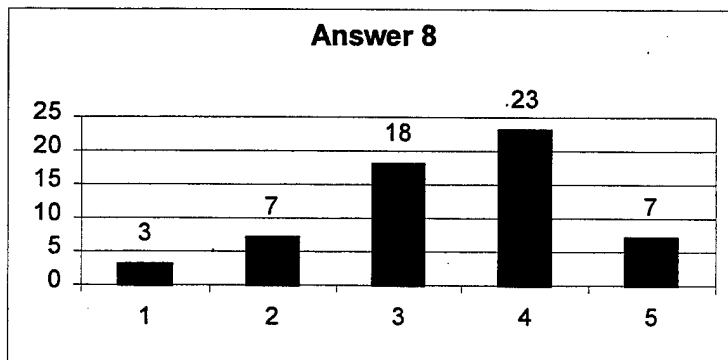


Figure 5-11, Answer 8

Question 9: It is better to encourage innovation by issuing generic guidance, not rules.

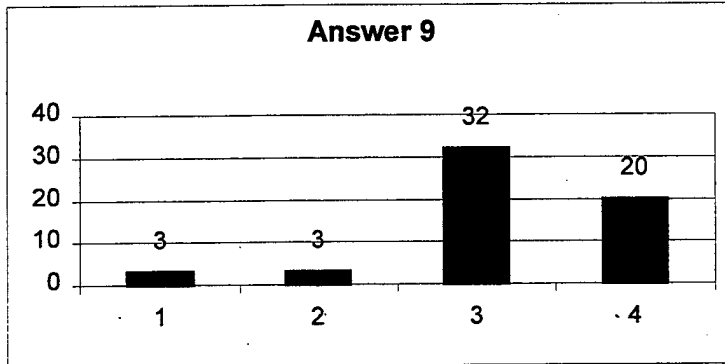


Figure 5-12, Answer 9

Question 10: Use of EDI/EC will help to establish more decentralized management.

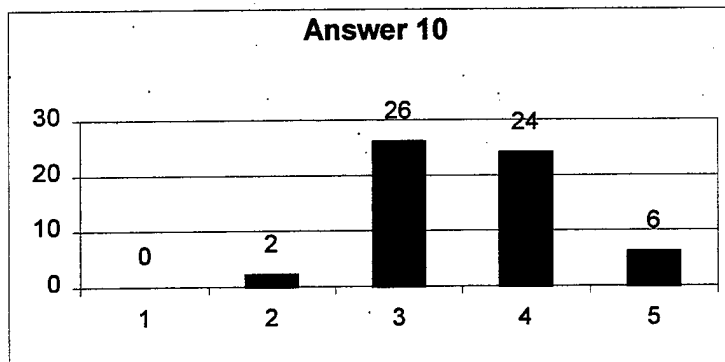


Figure 5-13, Answer 10

Question 11: The PM should waive or seek relief from low value added directives.

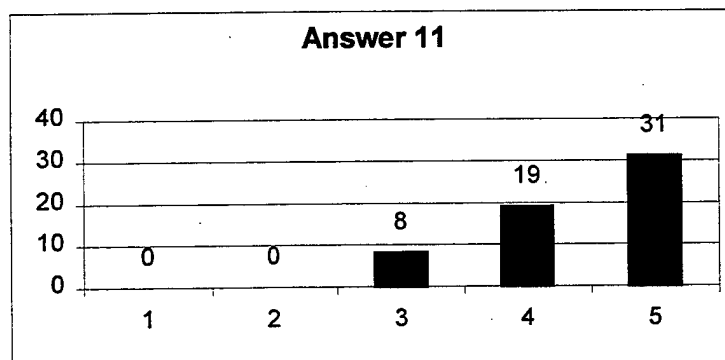


Figure 5-14, Answer 11

Question 12: For the PM, it is better to get involved in requirements generation with users and to begin a dialogue with industry in requirements generation process early on.

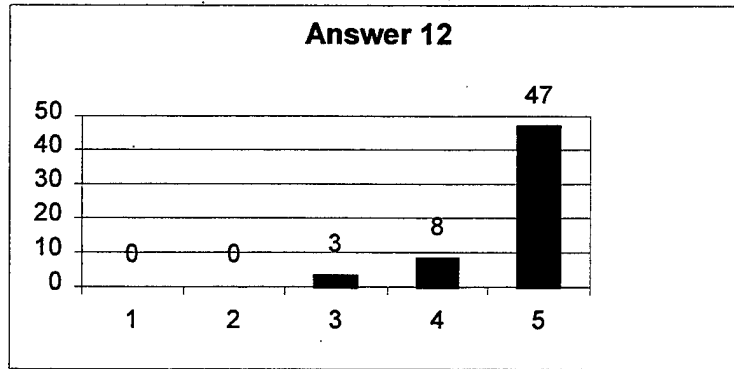


Figure 5-15, Answer 12

Question 13: To have the authority to resolve issues at the lowest possible management level will save time and money.

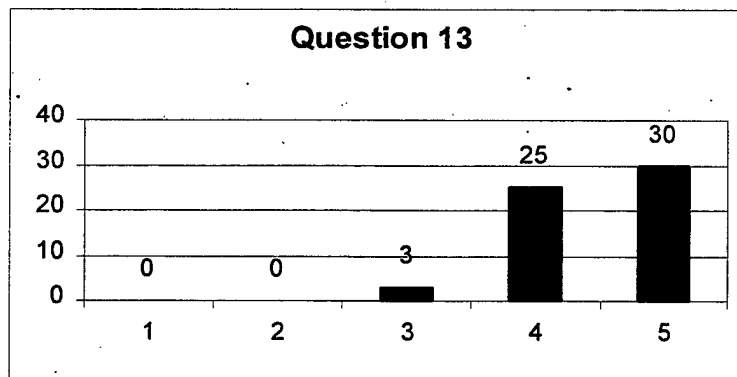


Figure 5-16, Answer 13

Question 14: In order to reduce overall life cycle cost (not just acquisition cost of the system), the PM needs to have better communication with users.

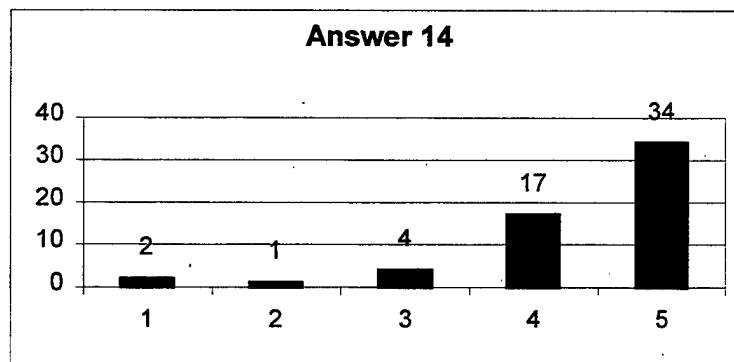


Figure 5-17, Answer 14

Question 15: Stable funding is the key element of cutting life cycle cost, so the PM needs to have tools and authority to keep it.

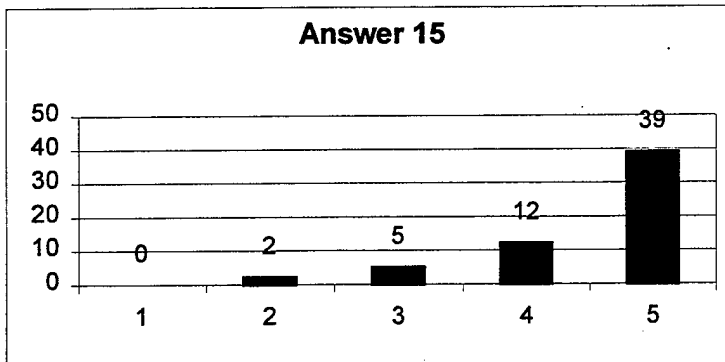


Figure 5-18, Answer 15

Question 16: Being able to switch money within accounts (changing color of money at the PM level) would improve program stability.

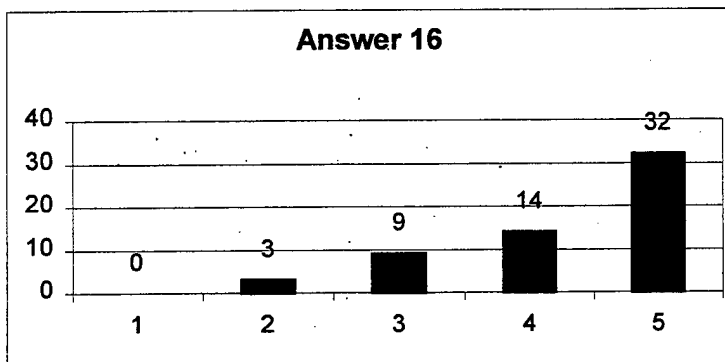


Figure 5-19, Answer 16

Question 17: I feel free to improve/make changes (E.G., human resources, training, fund transfer etc. in my program, when I encounter/anticipate problems.

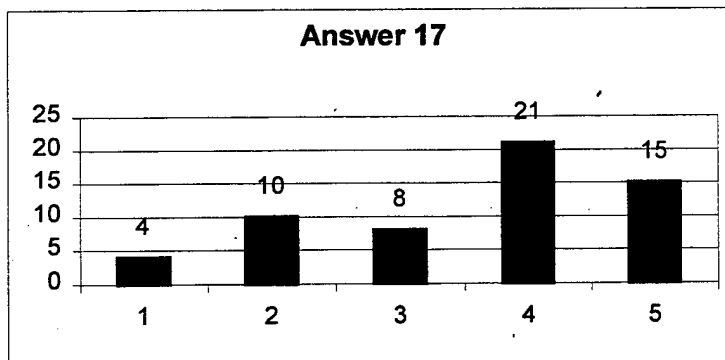


Figure 5-20, Answer 17

Question 18: I get timely decisions by senior leadership.

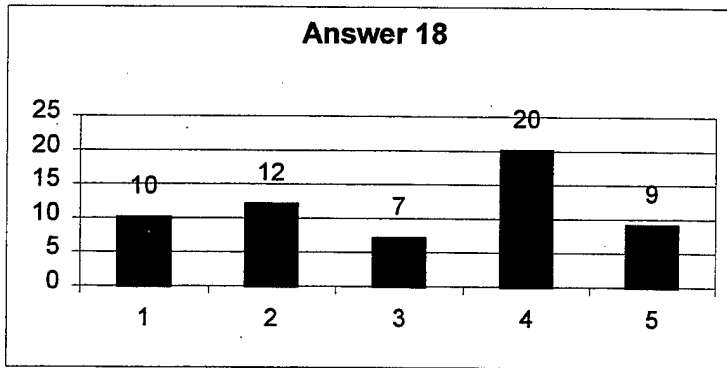


Figure 5-21, Answer 18

Question 19: What are the most significant five problems in your program (it may be in previous programs you worked)?

The most frequently expressed problems reported by survey respondents:

- Resource allocation
- Funding
 - ✓ Lack of funding
 - ✓ Unstable funding
 - ✓ Different accounts (color of money)
- Human Resource (HR)
 - ✓ Downsizing/manpower cuts
 - ✓ Empowerment
 - ✓ Quality personnel
 - ✓ Lack of incentive/promotion possibilities
- Organizational/Leadership
 - ✓ Inconsistency or lack of commitment in upper management level
 - ✓ Micro management
- Poor communication and teaming with
 - ✓ Contractor
 - ✓ Test community
 - ✓ User

Question 20: Are you comfortable to take risk in your program, if not why?

Answer 20: Eighty-four percent of the participants were comfortable in risk taking in their program. But it is noteworthy that 60 percent of them believe that they are exceptional and they rely on either their experience (more than two third of the participants have more than ten years experience) or their personal relationships to address program challenges

Question 21: Do you consider yourself candid and forthcoming without fear of personal consequences?

Answer 21: Eighty-two percent of the participants consider themselves candid and forthcoming, without fear of personal consequences.

Question 22: Do you think your authority is commensurate with your responsibility?

Sixty percent of the participants said that their authority was commensurate with their responsibility. The remaining 40 percent indicated that they do not have enough latitude to practice their own judgement.

Question 23: Do you have the freedom to see senior leadership/legislator? If not, please explain what your problems are.

Answer 23: Fifty-six percent of the participants responded that they had sufficient access to senior leadership.

Question 24: Do you think giving more decision making power and communication tools to interact with other players of acquisition management will reduce/eliminate non-value-added steps in Defense Acquisition Management?

Answer 24: Sixty-eight percent of the survey participants indicated that they more decision making power and communication tools would be better.

D. SUMMARY

Challenges in the Defense Acquisition Management still exist in different areas such as funding, manpower, leadership, communication, and teaming. Besides all these challenges, people in the Acquisition Workforce are working hard to improve the system. Most are candid in taking risk and ready to do everything possible to make the system better, faster, and cheaper. They realized the importance of the teaming and better communication with industry, and user. They have the power to tailor the system for

efficiency but they need cooperation of the upper management level to practice this power effectively.

VI. ANALYSIS

A. INTRODUCTION

Based on the survey conducted and background information given in the preceding chapters, this chapter will address the relationships of the responses of the survey on the current Defense Acquisition System and its challenges. Since the system is intricate and survey responses are subjective, sometimes there are contradictory opinions on the same issue or different approaches to improve the system. However, there is a high level of awareness of the challenges and the need to change.

B. ACQUISITION REFORMS

Over the last decade, many improvements have been implemented in the Defense Acquisition System. Some have been extremely effective and others less effective, but the dynamic internal/external environment and a desire to be perfect lead to continuous change.

On February 9, 1994, the Secretary of Defense William Perry described the overriding world environment that will drive future Defense Acquisition:

Time poses a new set of political, economic, and military security challenges for the United States: regional or limited conflicts; proliferation of weapons of mass destruction, both nuclear and non-nuclear; risk to its economic well-being; and the possible failure of democratic reform in the former Soviet Bloc and elsewhere.

Today, according to the survey conducted during this thesis research, challenges in managing the program include:

- Funding
 - ✓ Lack of funding
 - ✓ Unstable funding
 - ✓ Different accounts (color of money)
- Human Resource (HR)

- ✓ Downsizing/manpower cuts
- ✓ Quality personnel
- ✓ Lack of incentive/promotion possibilities
- Organizational/Leadership
 - ✓ Inconsistency or lack of commitment in upper management level
 - ✓ Micro management
- Poor communication and teaming with
 - ✓ Contractor
 - ✓ Test community
 - ✓ User

These challenges are quite similar to the ones stated by Mr. Perry, and his successor Mr. Cohen in various reports including *Mandate for Change* and QDR testimony in front of the Congress. This similarity shows us that we still need to work on these challenges.

A major challenge to maintaining technical superiority and a strong national industrial base, the procurement budget has declined more than 60 percent in real terms since FY85. DoD and the Nation can no longer afford the luxury of maintaining a totally unique defense industrial base, and there is need to reduce acquisition cost significantly.

In order to improve efficiency and effectiveness, some major Acquisition Reforms were implemented in the last few years such as FASA, FARA, FACNET, EC/EDI, EA etc. Unfortunately, expected outcomes have not been achieved. In the survey, participants expressed challenges they encountered while implementing these reforms:

- Resistance to change by personnel
- Poor communication
- Policy and procedures
- Inadequate empowerment
- Legislation
- Management support

EC/EDI was one of the most popular reforms which is still underway. More than half of the survey participants (51 percent) agree that the use of EC/EDI would help to

improve the system.

Another aspect of acquisition reform is managing programs by using commercial business practices. It is also acknowledged that one-to-one transformation from commercial business to DoD business is not appropriate. However, there are many functions which can be adapted to commercial business practices. Sixty-four percent of the survey participants approved of the use of best business practices to speed up the required integration with contractor teams and improve the experience. Civilian/military industrial integration was emphasized by Dr. Jacques S. Gansler.

We seek a greatly expanded partnership with revived and prospering commercial industry Using commercial business practices over the past five years, the DLA wholesale inventory alone was reduced \$721 million, a 30-percent savings. This shows the dramatic savings that can result when we adapt commercial practices to our military requirement. These practices must become widespread!

Increasing communication with all players and empowering the acquisition personnel with enough authority to make changes needed were widely accepted (88 percent and 95 percent accordingly) by the survey participants. After these Acquisition Reform initiatives 60 percent of the participants said that their authority was commensurate with their responsibility. Fifty-six percent of survey participants responded that they had sufficient access to senior leadership.

The IPT approach was implemented widely in DoD. IPT guidelines were not intended in any way to detract from the responsibility and authority of the PM which is established in the PM's Bill of Rights. The IPT activities were designed to assist the PM by engaging OSD and the Service Staff in early and continuous support and by identifying and resolving issues as early as possible. As expressed in the survey findings, there is a great demand for teaming. However there are problems encountered by participants in implementing teaming concepts. This shows that the IPT approach was well chosen by DoD officials, but still needs to be improved to ensure it is implemented properly.

It is clear that significant challenges remain and there is room to improve the system, while there is resistance to change to all these efforts. "This reform must continue to spread to all areas and become part of the way every one does business... [Ref 21]."

Acquisition Reform is a program to achieve DoD's military superiority objective at reduced price with increased responsiveness to the customers. Key elements of the strategy are to integrate the military and commercial industrial base, increase innovation, foster managed risk, encourage empowerment and establish cross-functional revisions to law and policies and change the culture of the current acquisition environment to give program managers the freedom to succeed. [Ref 22]

C. ACQUISITION SUPPORT SYSTEMS

1. Requirements Generation

Requirements Generation is the key in the Defense Acquisition Management Process. According to survey participants, there are challenges directly and indirectly related with this key part of the system. Ninety-five percent of the survey participants agree that it is better for the PM to get involved in the requirements generation process with users and to begin a dialogue with industry early on.

Once requirements are validated and approved, the effects of any mistake done at this stage will cost time and money later on in the program. As it is important in the other phases of the program, communication is important in the requirements generation process. Communication barriers were identified by 50 percent of the survey participants. Eighty eight percent of the participants also indicated that, in order to reduce overall life cycle cost, the PM needs to have better communication with users.

In the Requirements Generation Process, according to the survey responses, the PM should seek relief from low value-added directives. In the case of requirements conflict, 85 percent of the survey participants believe that having authority to resolve issues at the lowest possible management level would save time and money.

An analysis of the survey responses indicated that PMs still have challenges in Requirement Generation Process. They want:

- Better communication to understand user/industry perspective

- Authority to resolve issues at the lowest possible level, and
- Relief from low value-added steps

in the Requirements Generation Process. This shows that using the IPT approach will decrease challenges and reduce the cycle time and save money.

2. Resource Allocation Process

The Resource Allocation Process is an integral part of the Defense Acquisition System which affects the program stability most. Hence, the cycle time and cost of the programs depend on the success of synchronizing the two processes.

In the survey, 78 percent of the respondents had issues related to RAP as the major challenge to effective and efficient Acquisition Management. In question 19, participants decomposed funding problems as:

- Lack of funding
- Unstable funding
- Inflexibility of funding (different accounts, color of money)

In response to question 15, 88 percent of survey respondents said “stable funding was the key element of cutting life cycle cost.” The reason for instability of funding stems from the Resource Allocation Process. As explained in Chapter III, Defense Acquisition Management and PPBS are independent processes.

Difficulty begins with the Enactment Phase of the RAP. Even though DoD has submitted a two-year budget to the Congress every year since January 1987, the Congress authorizes most programs and funding on an annual bases. In addition to that, even multiyear procurements are funded by annual appropriations.

The second part of the funding problem is lack of funding. It stems from 1) PPBS process mismatch with life cycle management (i.e., It is possible for a program to be approved to enter the next phase but have insufficient funds to execute the phase.) 2) Unexpected program budget cuts by DoD or the Congress caused by changing program priorities in DoD or other budgetary shortfalls.

The third part of the funding problem is the flexibility of funding also known as “color of money.” Different accounts are used to execute the different phases of the program. However, these pre-approved accounts do not always fit flexible program

execution. In this case, having money in one account does not help to solve “lack of funding” in another account. In order to eliminate/decrease effects of this challenge, 80 percent of the survey participants agree that being able to switch money within accounts (changing color of money at the PM level) would improve the program stability. In this context, while 62 percent of the survey participants feel free to improve/make changes on funding transfers, 25 percent of the participants do not feel free. (Remaining 13 percent had no preference).

Funding instability affects the schedule, unit cost, and life cycle cost of the program. It is acceptable to make choices among programs and sometimes kill any of them, but overall and continuous funding instability significantly distracts the PM and his/her office from concentrating on the other challenges of the program.

The most practical thing for the PM in the current system is to pay close attention to avoid a mismatch or disconnect between programmatic requirements and available funding. For future programs, it is better to:

- Improve cost estimation of the programs,
- Have sufficient PM reserve,
- Give authority to the PM to change the color of the money when necessary,
- Keep core requirements stable as much as necessary to decrease needs for extra funding,
- Keep procurement budget from unexpected cuts, and
- Define program priorities up front.

3. Program Management

Program Management is not effective and efficient enough. According to the PM’s Bill of Rights, the PM has authority to tailor his/her program in addition to responsibilities mentioned there. With the four-tier system, life cycle management process, PPBS, it seems like Program Management works well under the PM’s control. But in reality, Acquisition Managers are not satisfied with the following in managing a program:

- Resource Allocation
- Program priorities/schedule

- Resistance to change
- Inconsistent goals
- Communication barriers
- Misinformation
- Ambiguous roles
- Lack of authority
- Lack of information
- Matrix vs. core organization

Despite all these challenges, 84 percent of the acquisition managers are willing to take risks and 82 percent of them are candid and forthcoming without fear of personal consequences while making decisions.

The authority granted to the PM is not enough according to survey findings. For example:

- Thirty percent of the survey participants are not happy with award authority to incentivize both core and matrix personnel.
- Forty-five percent of the participants are not confident that they have the authority to tailor the phases and milestones to fit the unique requirements of their program.

In order to improve the Defense Acquisition Management, 95 percent of the survey participants believe that having the authority to resolve the issues at the lowest possible management level is essential. Eighty-seven percent emphasized that the PM needs to have tools and authority to keep funding stable -- the key element of cutting life cycle cost. As a means to stabilize program funding, 80 percent of the respondents propose having the authority to switch money within accounts.

Besides all the desire for decision making power and authority, the level of legitimate authority granted in PM's Bill of Rights was supported by 60 percent of the survey participants. The remaining 40 percent indicated that they did not have enough latitude to practice their own judgement.

As it is mentioned in the IPT approach, timely decisions and better communication will save time and money. This view was shared by most of the participants in response to different questions in the survey. For instance, 95 percent of

the survey participants expressed the opinion that for PMs, it is better to get involved in the Requirements Generation Process with users and to begin dialogue with industry while 87 percent agreed that a better communication with users to reduce life cycle cost. One solution to improve the communication with other players is to increase EDI/EC. Only three percent of the participants disagreed with the use of EDI/EC.

In the organization of the Defense Acquisition Management, roles and responsibilities are defined for major players in detail, such as the DAE, CAE, PEO, and PM. But in a managing program, especially after downsizing and the implementation of a matrix organization, problems arose in managing people. In response to question six, 40 percent of the Acquisition Managers identified "Ambiguous roles" as one of the major challenges. Twenty-two percent had problems with matrix organization structure.

Side effects of downsizing were also identified as affecting the roles of personnel in Defense Acquisition Management. Managers must to consolidate jobs so that personnel are doing more than before downsizing. It becomes important while trying to eliminate unnecessary positions and save money while insuring personnel are not overloaded.

In the chain of command, 56 percent of the survey respondents said that they had access to senior leadership. Some of the participants made comments on this issue stating that they did not think that they needed to see senior leadership. Since there is not detailed information, it is difficult to reach a conclusion regarding senior level access. One of the PEOs' comments about access to senior leadership/legislator was noteworthy, "...you need to have credibility with both sides."

To improve roles and organizational structure, we need to pay attention to:

- Rightsizing
- Empowerment of the right people
- Clarifying the roles and responsibilities
- Better and candid horizontal/vertical communication

The inevitable challenges for Defense Acquisition Management are scarce resources (i.e. declining budget, manpower etc.), rapidly changing environments (i.e. threats, requirements, technological innovations etc.), and difficulty in translating user needs into applicable, sound performance specifications.

Inconsistent goals was identified as a challenge in managing a program by 50 percent of the survey respondents. Referring to policy and procedures, 69 percent of the participants said "they had difficulty understanding and following "program priorities/schedules."

Based on survey responses, there are many challenges in managing programs and efforts to improve the Defense Acquisition Management Process. But, as it was mentioned in Chapter IV and in the beginning of this chapter, one of the major challenges is barriers to change.

This challenge can be improved by having a policy which allows for a loose organization with good communication channels and empowered people to utilize scarce resources effectively and efficiently. Otherwise, every policy has to be renewed according to ever-changing environments and needs.

D. SUMMARY

Since the Packard Commission, the Defense Acquisition System has been improved in terms of organization, RAP, Requirement Generation Process, and Defense Acquisition Management. In spite of all the acquisition reforms to date, PMs still face emerging challenges due to the ever-changing external and internal environment. Accordingly, from the responses to the survey, more changes are necessary to improve the system in response to the changing environment.

VII. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. SUMMARY

The Defense Acquisition System is the biggest enterprise in the history, including three main players in it; the Legislative Branch, the Executive Branch, and the Industry. With different motives and objectives, each branch is serving the U.S. defense efforts at different levels and areas.

The main driver of the Defense Acquisition System is the threat against the U.S. and her allies. One of the difficulties in accomplishing this mission is the uncertainty of the threat which leads to different combinations of the weapon system requirements. By making an assessment every four years (Quadrennial Defense Review), this uncertainty is decreased to some extent.

DoD has established an organizational structure to deal with Weapon Systems Acquisition. It consists of four levels under the Secretary of Defense headed by the Under Secretary of Defense (Acquisition and Technology) (USD(A&T)). At the bottom of this command chain, the Program Manager (PM) is ultimately responsible for the program. Program Management starts with a Mission Need Statement (MNS) and goes through milestones and phases based on program needs and ends with disposal of the system.

During the Program Management, there are problems affecting the program adversely in terms of cost, schedule, and performance. These problems vary from funding instability to human resource related issues.

It is hard to assess the success of any single program's management, which makes reforms hard to propose and implement. An objective judgement of the program is the key factor to get support and keep moving with stable funding.

B. CONCLUSIONS

The changing world environment drives corresponding changes in how, and what is produced by the U.S. Defense Acquisition System. The world's threat has radically shifted from largely bi-polar "cold war" to the numerous fractured zones and terrorist activities that destabilize the global environment. In addition, U.S. military forces are

now participating in many non-traditional roles including peace keeping operations, nation building, and anti-drug enforcement. In order to address the continually changing threats and world situation, the U.S. conducts a formal assessment at least every four years (the QDR).

This changing world situation creates a political environment where defensive capabilities are de-emphasized, as perceived threats to U.S. Security are deemed not extreme. Both the size of the force and the defense budget have been, and continue to be decreased, even though forward zones required a presence. Unless the Congress provides additional funding for planned contingencies, the military must find them internally, drawing funding disproportionately from procurement accounts. All of these factors place extreme pressure on the Defense Acquisition System.

The Defense Acquisition System is challenged to equip the force to meet the decidedly different world situation. Reduced buying clout has shifted technology development from military markets to commercial markets. In addition, many key technology advancements have accelerated so that traditional acquisition cycle times ensure deployment of outdated systems. The Defense Acquisition System must adapt so that the U.S. military dominance is not compromised.

1. Acquisition Reforms

Recognizing the need for change, DoD instituted numerous acquisition reforms. These reforms have had varying degrees of effectiveness, moving DoD toward a more efficient Acquisition System. While representing a good start, these reforms have not moved the Defense acquisition System to the degree needed.

2. Acquisition Support Systems

a. Requirements Generation

Unconstrained and uncoordinated requirements generation has resulted in a sub-optimized Defense Acquisition System. Cost as an independent variable has not eliminated high cost, low-value-added requirements. Effective communication and cooperation between combat developer and material developer remains elusive even with

the IPPD approach. The high cost of a few high priority programs has reduced funds available, or caused the cancellation of other important programs.

b. Resource Allocation

The rigid controls placed on all resources by the U.S. Congress are not likely to change, despite the fact that resource allocation remains one of the most significant barriers to effective and efficient acquisition. Considerable effort will continue to be expended managing both personnel and funding resources, detracting from the primary function of managing the program.

c. Program Management

Program management challenges will continue to increase. While Acquisition Reforms have improved the process, difficulties in managing both the Resource Allocation Process and the Requirements Generation Process have not been adequately addressed. An inordinate amount of effort will continue to be expended defending budgets, managing support personnel, and disputing high cost, low-value-added requirements.

C. RECOMMENDATIONS

Based on the Defense Acquisition System review, survey analysis, and conclusions reached as a result thereof, the following actions need to be taken to improve the Defense Acquisition System:

1. Acquisition Reforms

Acquisition Reforms should be closely studied before being implemented so that there will be solutions to the current and prospective problems without interfering with the other reforms and regulations. To avoid the implementation of conflicting new approaches, all players in the Acquisition System, both Government and industry should be invited to participate in the formation of new policies and procedures. This would minimize the barriers to the changes.

2. Acquisition Support Systems

a. Requirements Generation

Good and effective communications should be increased between combat developer and material developer. IPT and IPPD approaches should be expended at every level of the Defense Acquisition System.

b. Resource Allocation

As a long-term commitment, rigid rules should be eliminated in the Resource Allocation Process to eliminate low-value-added steps from the Defense Acquisition System. For the short term, DoD should give flexibility in the allocation of funding to Program Managers to increase the stability of their programs. Program Managers should be freed from spending inordinate amounts of their time and effort seeking additional funding or defending their program to retain current funding or to gain additional funding.

c. Program Management

Effective communication between the user, industry, and the Congress needs to be established upfront. PMs should be given more authority in making decisions concerning their programs to manage their programs more efficiently and effectively. Program Management offices should be equipped with enough personnel and tools to handle the vast number of challenges confronting them.

D. ANSWERS TO RESEARCH QUESTIONS

1. What is the Defense Acquisition System and its problems from Program Managers point of view?

The Defense Acquisition System is formed by three main players: the Legislative Branch, the Executive Branch, and Industry. DoD has established an organizational structure to deal with Weapon Systems Acquisition. It consists of four levels:

- The Under Secretary of Defense (Acquisition and Technology) (USD(A&T)) as Defense Acquisition Executive (DAE)
- Component Acquisition Executive (CAE)
- Program Executive Officer (PEO)
- Program Manager (PM).

At the bottom of this command chain, the Program Manager (PM) is the ultimate person responsible for the program. Program Management starts with a Mission Need Statement (MNS) and goes through milestones and phases based on program needs and ends with disposal of the system.

The effective interaction of Planning Programming Budgeting System (PPBS), Requirements Generation, and Acquisition Management is essential for the success.

Problems of the Defense Acquisition System from PM's point of view are as follows:

- Unstable and/or lack of funding
- Lack of communication and teaming
- Human Resource related problems
- Organizational/leadership related problems
- Resistance to change
- Policy and procedures
- Inconsistent goals
- Program priorities and schedule

2. What is the relationship between the Resource Allocation Process (RAP) and National Security objectives?

The main driver of the Defense Acquisition System is the threat to the U.S. and her allies. According to threat assessment, strategies are defined to encounter the possible threat. Based on Quadrennial Defense Review (QDR) 1997, the Secretary of Defense William Cohen stated that "shape-respond-prepare" is the key aspect of the strategy. In this manner, in order to shape the world, instead of being reactive, which is more expensive and sometimes ineffective, there is a need to be ahead of all other countries in

terms of technology and military power. This requirement emphasizes the Defense Acquisition.

Another aspect of the National Security is the lack of a certain enemy to be prepared. Because of rapidly changing threats, program needs to have short cycle times with lower budgets. Effectiveness and efficiency are both important in this situation unlike war or crisis time. Also the lack of a particular enemy makes it hard to get the Congress increase the defense budget.

3. What are the improvement efforts on the Defense Acquisition System?

The Defense Acquisition System has been the topic of dissatisfaction for decades. Making the system better, faster, and cheaper is the main idea behind all the reform efforts. Beginning with the Rockefeller Report in 1953, the Blue Ribbon Report of 1970, the Packard Commission Report, FASA 1994, and FARA 1996 are the major ones in the history of the Defense Acquisition System.

By establishing ground rules like the four-tier system, life cycle management, and the Planning Programming Budgeting System as a major part of the Resource Allocation Process, the Defense Acquisition System has reached its contemporary form. The DoD 5000 series which is the guidance of the Defense Acquisition System was revised in March 1996.

Lately, by Government Performance and Results Act (GPRA) and the National Performance Review (NPR), the current administration has been working on measuring effectiveness and efficiency of the system, focusing on the ability to track the outcomes of the efforts and eliminate non-value-added steps in the system.

E. RECOMMENDATIONS FOR FURTHER STUDY

1. Stable/Adequate Funding

Many problems in managing programs are caused by unstable or lack of funding. Investigate the cost and schedule effects of these funding problems on the program.

Examine the Cycle Time and Total Ownership Cost of the systems with and without funding escalations.

2. Human Resource

Research the optimum number of personnel for different size programs to accomplish the job. Determine education, training, and other skills needed by personnel according to their position/function in the Program Office.

3. Evaluation Criteria

Develop a set criteria to evaluate the success of the program. This effort should be objective enough to be accepted by all interested parties.

4. Common Board/Body of the Stake Holders

Examine the possibility of having a board or integrated team consisting of all players of the Defense Acquisition System. This study should consider the power balance of the stake holders and their influence on the system.

5. Resistance to change

Examine the root cause of the resistance to change in the Acquisition Community. Focus on the culture, background, perception on the change, and future expectations of the personnel.

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