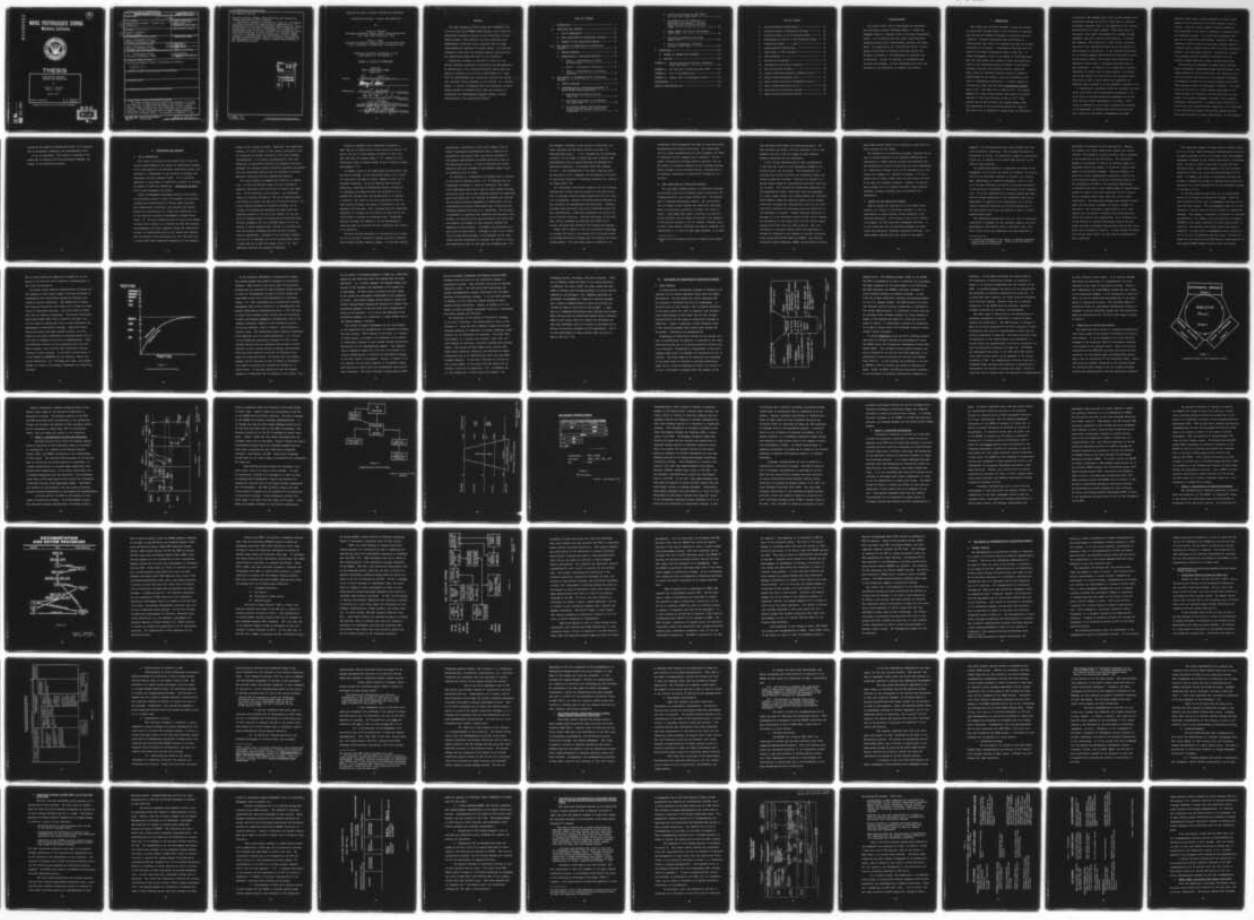
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NAVAL POSTGRADUATE SCHOOL
Monterey, California



THESIS

ACQUISITION STRATEGY:
CONCEPT AND DEFINITION

by

Aivars T. Berzins
Barry L. Cohen

March 1977

Thesis Advisors: E. A. Zabrycki
R. R. Judson

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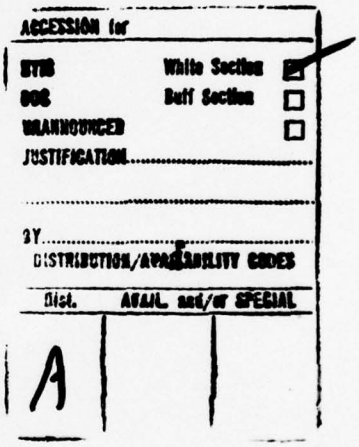
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Acquisition Strategy: Concept and Definition

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TABLE OF CONTENTS

I. INTRODUCTION ---------- 9

II. DEFINITION AND CONCEPTS ---------- 15

A. USE OF TERMINOLOGY ---------- 15

B. SOME LIMITATIONS OF ACQUISITION STRATEGY ----- 20

C. CONCEPT OF THE ACQUISITION MANAGER ---------- 22

III. THE PROCESS OF FORMULATION OF ACQUISITION STRATEGY ---------- 34

A. PROCESS OVERVIEW ---------- 34

B. FORMULATION OF ACQUISITION STRATEGY ---------- 38

1. Stage 1 - Determination of Goals and Objectives ---------- 42

2. Stage 2 - Allocation of Resources -------- 50

3. Stage 3 - Determination of Preferred Approaches ---------- 53

IV. THE PROCESS OF IMPLEMENTATION OF ACQUISITION STRATEGY ---------- 65

A. PROCESS OVERVIEW ---------- 65

B. IMPLEMENTATION OF ACQUISITION STRATEGY IN MAJOR WEAPON SYSTEM ACQUISITION ---------- 67

1. Acquisition Strategy During the 1950's Era ---------- 67

2. Acquisition Strategy in the McNamara Era (1961-1968) ---------- 69

3. Blue Ribbon Defense Panel-Staff Report on Major Weapon Systems Acquisition (1969-1970) ---------- 75

4. Acquisition Strategy in DODD 5000.1 of 1 July 1971 (1971-1976) ---------- 84

5. Contribution of the Commission on Government Procurement to the Major Weapon Systems Acquisition Process (1972) ---------- 89

6. AMARC, NMARC, and Project ACE Studies (1974-1975) ---------- 95

7. Acquisition Advisory Group (AAG) Report (1975) ---------- 101

8. Office of Management and Budget Circular A-109 (1976) ---------- 105

V. CONCLUSIONS ---------- 123

A. SUMMARY OF INFORMATION PRESENTED ---------- 123

B. EPILOGUE ---------- 129

APPENDIX A: Concept Formulation/Contract Definition under DODD 3200.9 ---------- 133

APPENDIX B: The Decision Coordinating Paper (DCP) ----- 135

APPENDIX C: List of Recommendations ---------- 141

APPENDIX D: Summary Chart of Management Studies ------- 147

BIBLIOGRAPHY ---------- 148

INITIAL DISTRIBUTION LIST ---------- 151

LIST OF FIGURES

1. Position/Function Relationships ---------- 29
2. Conceptual Model of Acquisition Strategy ---------- 35
3. Conceptual Model of the Formulation Phase --------- 39
4. Relationship of Policy to the Formulation Phase --- 40
5. Formulation Stages: 1, 2, and 3 ---------- 43
6. Organizational Relationships ---------- 45
7. Time Frames of JSPS Documents ---------- 46
8. JSPS Documents ---------- 47
9. Acquisition Categories ---------- 55
10. Documentation and Review Procedure ---------- 56
11. Navy Acquisition Procedure ---------- 60
12. Concept Formulation/Contract Definition Cycle ----- 70
13. Weapon System Development Cycle ---------- 87
14. Major System Acquisition Recommended Actions ------ 91
15. Major Systems Acquisition Cycle ---------- 108
16. Exploration of Alternative Systems ---------- 113
17. Major Systems Acquisition Process ---------- 117

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I. INTRODUCTION

This thesis was initially intended to study the concept of acquisition strategy based on the collection of empirical data through the combined techniques of interview and questionnaire. Concepts ascertained from the analysis of collected data were then to be compared with past and present literature on the subject. Preliminary interviews were conducted at the Naval Postgraduate School in May 1976. It became increasingly clear, as the number of interviews grew, that the interviewers were having to answer more questions, posed by the interviewees about the nature of acquisition strategy, than were the interview subjects themselves. While almost all interview subjects initially claimed an understanding of the concept, none could formulate a complete or comprehensive definition. A typical response to the question--"what does the phrase acquisition strategy mean to you," was "what does it mean to you?" The program manager for a major weapon system, when asked the question answered "I don't get involved in that at all." When pressed who did get involved, the program manager asked the interviewer if he could please explain his usage of the terms so as to establish a common ground for discussion.

A relatively high ranking career civil servant answered that acquisition strategy was really a fancy name for advanced procurement planning, that is, the summation of all business considerations of a major program. While there were, in retrospect, some highly enlightened, well thought through responses, they were clearly in the minority. It became most apparent, after analysis of those initial interviews that very little thinking had been done by the majority of practitioners on the subject. It was therefore determined, due to obvious semantic difficulties having arisen so early in the research effort, that rather than pursue such an empirically based study, a conceptual approach would be most beneficial. In doing so, it is hoped that a baseline definition for future work has been created. Any further work on the subject can then utilize the conceptual framework which we hope to have created for comparison with empirical data collected as we had originally intended to do.

A comprehensive literature search was conducted into both public and private sector publications pertaining to the broad fields of systems acquisition management on the one hand, and new product development on the other. While there is reference to the concept of acquisition strategy in the Department of Defense 5000 series directives and most recently in the Office of Management and Budget

Circular A-109, there is noted otherwise, an almost total absence of such reference in any other document, public or private. The most closely aligned literature found was that pertaining to the study of corporate or business policy and corporate strategy. It is from that discipline that much of our concept has been derived. Generally, what information could be found on acquisition strategy pointed to a narrow, poorly defined concept which was almost universally linked to the procurement function. Specifically, acquisition strategy was most frequently associated with the business related functions of major systems acquisition.

The practices of assessment of enemy threat (environmental assessment), engineering design and development, long range planning and policy formulation, and resource allocation are normally associated with the Planning Programming and Budgeting System/Joint Strategic Planning System (PPBS/JSPS) processes within the Department of Defense. The initiation and evolution of a major weapon system seems to be viewed by many as a sequential fallout from those two processes, an occurrence seemingly requiring little separate planning or consideration. To support that observation, it can be said, when viewed from the perspective of an individual in the acquisition process, that decision making for most major weapon systems is widely fractionated. It would appear

that no effective planning can be carried out because it is difficult to associate many of the decisions made with a specific strategy or long range plan since they occur at such widely separated times and organizations within the DOD.

It is our belief that a common matrix can and must be established which can associate those widespread activities occurring in the acquisition process as they pertain to a particular weapon system. The literature review reveals no such matrix is recognized by practitioners. The concept of acquisition strategy as expressed in this work was developed in an attempt to link those seemingly unrelated activities in the acquisition process by providing visibility to the definite and obvious relationships discovered during this thesis effort, which exist between them. The acquisition process has infrequently been viewed as an integrated whole because of its tremendous size and amorphous nature (which is spread out over a thirty year time horizon).

A concept such as acquisition strategy, which intentionally makes maximum use of existing procedures, policies and documentation but can relate or integrate activities previously thought to be unrelated, within the acquisition process, has particular intuitive appeal. It will only involve a shift in the thinking of individuals about their

day-to-day activities and will require that emphasis be placed on how each activity fits the overall long range plan. Unfortunately, it appears that just that process, that of altering one's thinking, when such alteration is necessary, is the most difficult thing to change. Patterns of thinking which have evolved over many years become increasingly difficult to alter. Resistence to change has frequently been noted as the greatest obstacle to progress.

A trend, an evolutionary development in the process of acquisition of major weapon systems can be seen to have occurred during the last thirty years. It is our belief that the evolution has culminated in the Report of the Commission on Government Procurement; the first report or document to view the acquisition process using a systems approach. It is our intent to build upon that monumental effort by reemphasizing the need for an integrated approach to decision making and in doing so, provide a point of departure from the daily activities routinely carried out by thousands of DOD civilian and military employees. It is hoped that through their understanding of acquisition strategy, a better understanding of their role in the acquisition process will follow. Through the concept of acquisition strategy, we hope to provide a framework which

structures the numerous differentiated parts of the process into an integrated, meaningful and comprehendable whole.

A note on readership. This thesis is directed to the reader who is familiar with the specialized language, the jargon, of the acquisition process.

II. DEFINITIONS AND CONCEPTS

A. USE OF TERMINOLOGY

This thesis is written on the premise that a clear and concise understanding of the concept of acquisition strategy, by all participants in the military acquisition process, will contribute to imrpovement in the planning, procurement and maintenance of major weapons systems. It is considered important, at the outset, to establish as clearly as possible the manner in which the terminology - acquisition strategy - will be used throughout this thesis.

Office of Management and Budget Circular A-109 defines the acquisition process to mean "the sequence of activities starting with reconciliation of mission needs and goals with capabilities, priorities, and resources and extends through the introduction of a system into operational use or the otherwise successful achievement of program objectives." (1) The word acquisition will be used in the manner outlined above, however it is pointed out that while design and management activities conducted during the "acquisition process" as defined above end for all intents and purposes upon introduction into operational use, the life cycle has or should have been planned and considered in the formative

stages of the systems evolution. Therefore, the acquisition process, or in the context of this thesis, acquisition, will be considered to include, explicitly, life cycle planning considerations. It is noted, parenthetically, that this definition of acquisition includes the planning of military strategy, the business related activities generally associated with the procurement function and the technical activities generally associated with the engineering function.

The term strategy is somewhat more difficult to definitize. In the pure military sense, the word strategy is generally associated with the notions of tactics and logistics. In the literature on the subject, the traditional concept of military strategy is "the art of employing military forces to achieve the ends set by political policy." (2) A more detailed definition of military strategy is the "science of combining and employing the means which the different branches of the art of war afford, for the purposes of forming projects of operations and directing great military movements; the art of moving troops so as to be enabled to either dispense with a battle or to deliver one with the greatest advantage and with the most decisive results; generalship. Strategy is the provision, preparation and use of diplomacy and of the nations armed forces in peace and war to gain the purpose of war." (3) That definition includes the concept of logistics.

Tactics is defined in the traditional literature to mean "the use of armed forces to gain victory in battle," (3) and as "the art of using weapons in battle in such a way that they make the maximum impact." (2) Logistics in the traditional usage is defined simply as the "science of supply and movement." (2)

It appears, based on the definitions provided above, that the aim of strategy, in the traditional sense, is to fulfill the objectives laid down by policy, making the best use of available resources. It can be inferred that the basic, underlying, objective of traditional military strategy is to "disregard the method by which the decision is to be reached and consider only the outcome which it is desired to achieve." (4) There is the clear implication that the ends justify the means; the means is therefore of less significance than the ends. Thus, excluded from the traditional definition of strategy are the choices of goals and the detailed plans or actions for achieving them. Traditional military strategy thus appears to be the marshalling of resources which will provide the best opportunity for tactics to be effective.

The pure military definition of strategy will not suffice for use in the more "business" oriented activity of acquisition of major military weapons systems. It does have obvious

applications, particularly in the early stages of the so called "requirements determination" phase, which will be discussed in some detail later, and can be considered to have general applicability to certain activities later in the acquisition process. It can be said that the concept implied by military strategy is the backdrop against which our definition will be built.

We subscribe to a definition of strategy which is implied in the study of business policy. (5) In shifting from considerations of warfare to those of "business," the rather clear differences which can be seen to exist between strategy and tactics gives way to more imprecise methods for separating goals from objectives; for choosing the methods for securing and deploying resources appropriate to those goals; and for establishing the policies which guide uses of resources and determine programs which are to be undertaken. The business of government is generally more imprecise and disorderly than warfare; its objectives are usually multiple and various and can normally be arranged in some hierarchy ranging from mandatory to discretionary. In warfare, the objectives are more clear cut and precise. Strategy, as used in our definition of acquisition strategy, is an extension of the traditional military definition but includes the choices of goals and objectives as well as the plans for attaining them. For

our purposes, "strategy is the pattern of objectives, purposes, and goals and the major policies and plans for achieving those goals... ." (5) Strategy has the additional attribute, in our usage, of being long term in nature, and simultaneously able to supply direction and guidance for short-term operations. We therefore find that strategy is also "...the determination of the basic long-term goals and objectives of an...(agency)...and the adoption of courses of action and allocation of resources necessary for carrying out these goals." (6)

For convenience, the military usage of the word strategy compares most closely with the concept of long term allocation of existing resources among alternatives with the objective of producing a resource allocation pattern offering the best potential for meeting goals and objectives. Strategic decisions then would deal with policy formulation which has wide ramifications, a long time perspective and involve the use of critical resources. Tactical decisions, on the other hand, involve ensuring the efficient and steady use of current resources when allocation has already been decided.

Rather than to adhere to the use of military terminology of strategy and tactics, our purposes will be better served by dividing acquisition strategy into two separate but highly related phases. The first phase shall be referred to as

formulation, which encompasses the ideas of long term policy determination and resource allocation. The second phase shall be termed implementation and shall encompass the ideas of efficient and well managed use of resources. The two phases of acquisition strategy which we perceive, will be the subject of extensive analysis in the following sections. Before turning to those sections however, consideration of the inherent limitations of acquisition strategy will be valuable.

B. SOME LIMITATIONS OF ACQUISITION STRATEGY

The long range planning aspects of acquisition strategy as described above are not without obvious limitations (5)*. Planning ahead may pose certain difficulties. The environment is becoming increasingly complex. The accelerating rate of change in both military and industrial technology makes it particularly difficult to predict the future in detail. Long range plans cannot, therefore, be quantitatively detailed, and the degree of accuracy to be expected of the futures forecast is all but unknown. However, while at first these various criticisms may seem to represent real limitations on the value of long range planning, it is their

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* Much of the following discussion is adapted from Learned (5).

very existence which makes such planning necessary. The more uncertain the threat, the more necessary it is to contemplate what may or may not happen and make adequate advance preparation for its eventuality.

A more serious limitation may be that overdedication to any plan may result in lost opportunity leading to unfulfilled goals and objectives. The determination of a strategy must include provisions for flexibility among competing alternative solutions. What must be achieved is a moving balance among the considerations upon which the strategy is based. This concept has considerable application in the implementation phase, where faced with the management of a major weapon system, the program manager must constantly shift emphasis among the competing aspects of his program. Acquisition strategy must progressively evolve in the direction which satisfies the long range goals and objectives of the Department of Defense. Another important limitation of strategy is in the inevitable conflict which results between the formulators of long range policy and the various organizations which must carry out those policies. This last limitation is certainly present within the Department of Defense as evidenced in the findings of the Navy and Marine Corps Acquisition Review Committee (NMARC), Army Material Acquisition Review Committee (AMARC) and Acquisition Advisory

Group (AAG) reports which will be analyzed in some detail in later sections of this thesis.

The limitations of acquisition strategy, therefore can be seen to consist primarily in the inherent difficulties of conceiving of a viable pattern of goals and objectives and the formulation of policy by which they are to be implemented. (5) Acquisition strategy is not at all intended to be a substitute for judgment or a shortcut to wisdom. It is not a panacea and in itself, cannot point out the course of action to be taken in a specific situation. However, if military major weapons are to be properly acquired, proper advanced planning, strategic planning, must be formulated and implemented.

C. CONCEPT OF THE ACQUISITION MANAGER

Before turning our attention to the two phases which comprise our concept of acquisition strategy, it will be advantageous to review another concept essential to the following discussion. That concept is one of the "acquisition manager" and the acquisition management function. It is our belief that only an acquisition manager can effectively and efficiently formulate acquisition strategy. For those readers familiar with the concept of the general

manager*; the following discussion merely defines that function in military terminology. The following discussion is theoretical in nature. No acquisition manager is specifically called out, or defined in any current DOD directive in the sense we shall describe.

The acquisition manager is a generalist by virtue of his assignment, not by nature and rarely by training. His loyalty can be to no functional specialty or process, i.e. procurement, engineering, or financial management, rather it must be to the most effective utilization of resources applicable to the successful fulfillment of the mission of his organization. It is his responsibility to properly manage and supervise an optimum combination of the specialized functions or departments or agencies of his organization; it is he who supplies them with resources and direction appropriate to the contribution which they are expected to make to overall organizational goals.

The acquisition manager must rely on a tier of functional specialists or managers for his principal support, each more knowledgeable than himself within a particular area, each with a pride in his own expertness, and each committed to

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* A complete discussion of the concept of general management can be found in Andrews (33). Much of the following is adapted from his discussion.

furthering the interests of this own function. Witness, for example, the rivalry which exists between the various services, each headed by a senior military officer committed to the superiority of his own service. The acquisition manager is the manager or head of an executive agency or a department within that agency, or he may be a senior staff member of an acquisition manager. Wherever resident, he must have a total organizational perspective, even if one of his private concerns is for the contribution that he or his subordinates can make to the operating organization. He therefore must have a clear understanding of organizational purpose in order to know what specialists he will need and how to coordinate their output with that of the overall organization. The acquisition manager must maintain surveillance over the actual attainment of results, formally or informally. He is expected to make himself, or at least preside over the process of making policy decisions which affect the future of the organization. He is therefore the one who chooses or ratifies the choices of goals and performs some kind of planning function which ensures that those goals can be achieved on schedule. He must somehow set direction for the future and at the same time be responsible for daily operations.

The acquisition manager is looked upon to achieve results. To do so, he must remain continually informed about the status of ongoing programs as well as the impact which environmental assessment is making on the validity and accuracy of existing plans. He must be ready to intervene in crisis and take decisive action. Lower level managers carry out the implementation of policy set by the acquisition manager and his staff. In summary, the nature of acquisition strategy must be made to dominate the design of organizational process and structure; it is the responsibility of the acquisition manager to see that it is so.

It has been indicated that there are two interrelated phases of our concept of acquisition strategy. There are also believed to be two types of management functions associated with that concept. The two management types are no more distinct or isolated than are the two aspects of acquisition strategy. Each manager is dependent on outsiders for approval and direction. For example, while the Secretary of Defense (SECDEF) is the senior formulator of policy and allocator of resources, the President and Congress have final approval authority. In some cases, an implementer may be required to act in the role of formulator and vice versa. The most extreme case was reported in the TFX Contract Investigations (7) when former SECDEF McNamara actually took over program

management responsibilities in the F-111 aircraft development program in what became known as "Project Icarus." There, he, the most senior formulator of acquisition strategy, was involved in the daily operation and decision making of a major weapon system. There is no reason to assume that such action will automatically or inevitably lead to disasterous results. Certainly, if one individual took over personal control of all programs in the Department of Defense, there would eventually be total chaos. We contend, that when acting in the capacity as both formulator and implementer of acquisition strategy, it is all too easy to confuse the two functions. Those who formulate acquisition strategy require a degree of detachment from the pressures of daily operating problems. We believe it to be preferred that the two functions be handled by different individuals. We postulate that many of the problems present in the acquisition of major weapons systems, so well documented by Peck and Scherer (8) and Fox (9) may well be, in part, attributable to a confusion of the role being played. It is when the formulator performs implementation and vice versa, or when the proper role to be played is ambiguous, that the potential for problematic repercussions is initiated. As noted earlier, a total organizational perspective is necessary for a manager to carry out acquisition management or acquisition strategy functions and

we would add that this perspective includes a clear understanding of the role he plays at any particular moment.

The distinction between formulator and implementer of acquisition strategy is not as clear cut as might be inferred from the discussion thus far. For example, the SECDEF and Deputy SECDEF (DEPSECDEF) are clearly acquisition managers (more properly they are executives) who formulate acquisition strategy. The program manager and contracting officer can be classified as implementers of acquisition strategy. However, the various staffs within the Office of the Secretary of Defense (OSD) may be viewed as having dual or sometimes conflicting roles. For example, DDR&E may be viewed as both formulator and implementer. When acting in the capacity as advisor to SECDEF on policy matters, he is a formulator. When acting as member of the DSARC panel, he and his staff may variously be viewed as implementer or formulator of policy. Finally, when DDR&E prepares the Technology Coordinating Paper (TCP), he may be viewed as implementer of acquisition strategy. A point which should not pass unmentioned is that it is not the carrying out of a dual function by an acquisition manager that may cause problems to surface. In many cases, the ambiguity caused by the dual role may lead to confusion in the minds of other managers as to the role being played at a specific point in time.

The so called staff/line ambiguity as pointed out in the Report of the AAG (10) can be viewed as a manifestation of the latter circumstances.

To provide a more explicit classification of players for the purposes of this thesis, Figure 1 has been developed to conceptualize the relationship between the functions performed by various individuals. The SECDEF and all Deputy and Assistant Secretaries and staffs will be viewed as formulators of acquisition strategy. The Joint Chiefs of Staff will also be viewed as formulators. The Service Secretaries and Service heads (CNO, Chief of Staff of the Army, etc.) will be viewed as having dual roles as both formulators and implementers of acquisition strategy. Since this thesis deals exclusively with major weapons systems, the roles played by the latter individuals as discussed herein will be more heavily weighted on the side of implementation. Since the individual services do have cognizance over less than major programs, they certainly have formulation responsibilities in those programs. In the major systems arena, it is the SECDEF and DEPSECDEF who are primarily tasked with policy formulation. (11) Following this logic, the program manager is viewed as the foremost implementer of acquisition strategy.

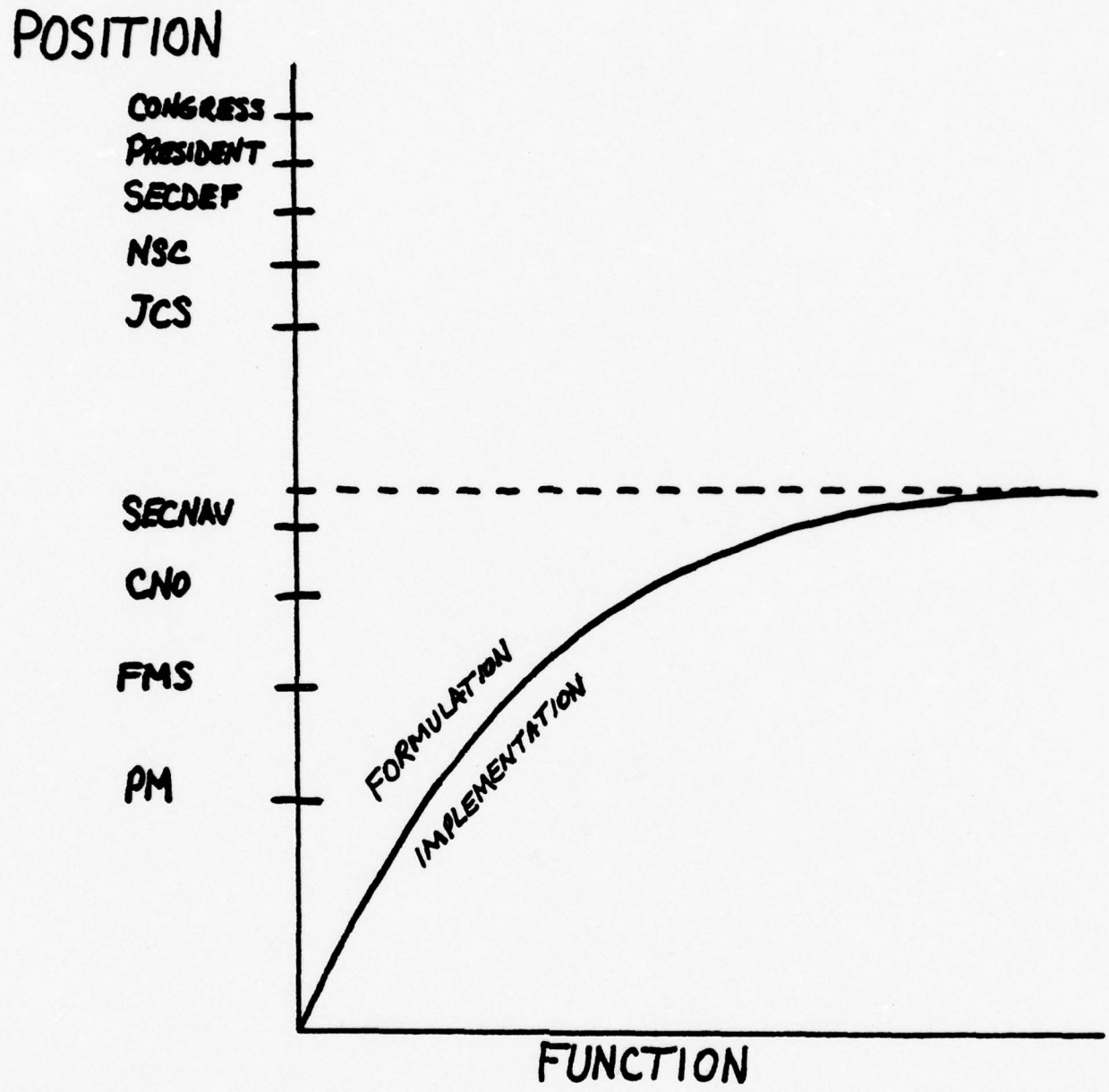


Figure 1

Position/Function Relationship

As the principal implementer of acquisition strategy, the program manager must himself formulate an acquisition strategy. OMB Circular A-109 states that "an acquisition strategy must be tailored for each individual system program as soon as a determination is made to solicit design concepts which could lead to the acquisition of a new major system." (1) That requirement for an acquisition strategy encompasses what we have referred to as implementation and entails developing an implementation plan. A-109 continues to state "such strategy should include test and evaluation criteria and business management considerations such as the timing of essential elements of the acquisition process (as earlier defined)...whom to solicit...and selection of contract types. The contracting process should be recognized as an important tool in systems acquisition." (1) The use of the terminology acquisition strategy in A-109 is more narrowly applied than our definition and excludes in depth analysis of the so called military strategy considerations which have been referred to and will be discussed later under the formulation phase. We believe that the program manager will be carrying out what we define as implementation when he formulates his acquisition strategy as required above. It has been pointed out that the program manager is nothing more than an advocate of his system. (8,9)

In our context, the program manager is viewed as a functional specialist who knows more about his program than any other individual. As a "product manager" the program manager must believe in the supremacy and importance of the product he is developing. He must strive to produce the best system he can within the constraints established by the formulator of policy. The program manager should strive to attain the overall organizational perspective required of a higher level acquisition manager; he does not have such a perspective by virtue of his position. It is one of the functions of the acquisition manager, as a generalist, to make optimal use of the program manager's advocacy.

The concept of general management and its relationship to the formulation and implementation of acquisition strategy has been reviewed. There appears to have been, to a greater or lesser extent, an absence of an awareness of our concept of acquisition strategy in major weapons systems acquisition, particularly in the implementation segment. This apparent lack of awareness appears not to be due to an absence of a clearly defined matrix or skeleton for acquisition strategy in the basic fabric of government. Rather, it appears to be in a general lack of proper exercise of the general management function by senior level and intermediate level government executives. The Joint Strategic Planning System (JSCS)

and the Planning, Programming and Budgeting System (PPBS) certainly form the basis for the formulation segment of acquisition strategy. They represent the matrix or skeleton referred to above. The 5000 series DOD Instructions and service implementation certainly form policy for the implementation of acquisition strategy. It is not their presence or absence, of late, which has caused problems in major weapons systems acquisition. Rather, we believe it is the manner in which the general management function is coordinated with these systems and directives.

The discussion of the concept of acquisition strategy, is not new or startling. The authors make no claim to have invented it. "Form the start, McNamara viewed the military planning technique as comparable to business planning, except possibly for the difference in vocabulary. The plans dealt with numbers (i.e. dollars, men, weapons, ships sunk, aircraft missing or destroyed, casualties suffered and prisoners taken). The sources of these numbers were previous wars, armed forces exercises, maneuvers, and simulated war games. Alternatives had to be identified and their cost and effectiveness compared. It was then a question of the best buy for a given budget, or the forces with the lowest cost to achieve a given set of objectives." (12) As McNamara saw it, the problem was to relate three key elements: the

strategic concept, the budget, and force structure. "This set of concepts formed the basis of the system developed by McNamara, his direct staff, the joint chiefs and thousands of military and civilian personnel in various service branches at the Pentagon." (12) McNamara described his philosophy of management as "based on a decision pyramid and a system of administration in which all possible decisions are made at the bottom of the pyramid. ...there must be a framework within which those decision can be made. Basic policies must be established against which a decision-maker at the lowest levels can compare his decisions and gain some confidence that he is acting in accordance with a pattern of decisions elsewhere in the organization. And it is the establishment of these policies that can only be made at the top." (13)

III. THE PROCESS OF FORMULATION OF ACQUISITION STRATEGY

A. PHASE OVERVIEW

As noted earlier, acquisition strategy is believed to be comprised of two equally important phases which are highly interrelated. The two phases will now be separated both for purposes of discussion and also for diagramming. It should be kept in mind, however, that no precise definition of one phase without the other is complete; only through a clear understanding of both phases and how they interact synergistically can the nature of acquisition strategy be understood. Figure 2 represents a broad conceptual model of the interrelationships which should exist between the two phases - formulation and implementation.

Formulation of acquisition strategy is the rational process of deciding what the agencies or departments long range plans and policies are to be and how available resources are to be allocated. Formulation is accomplished in four overlapping stages which are separable for discussion but not in practice. The first stage is the evaluation and assessment of the enemy threat in relation to existing capabilities. Stage one will later be discussed in detail, but suffice it to say, is believed to culminate with the issuance of the

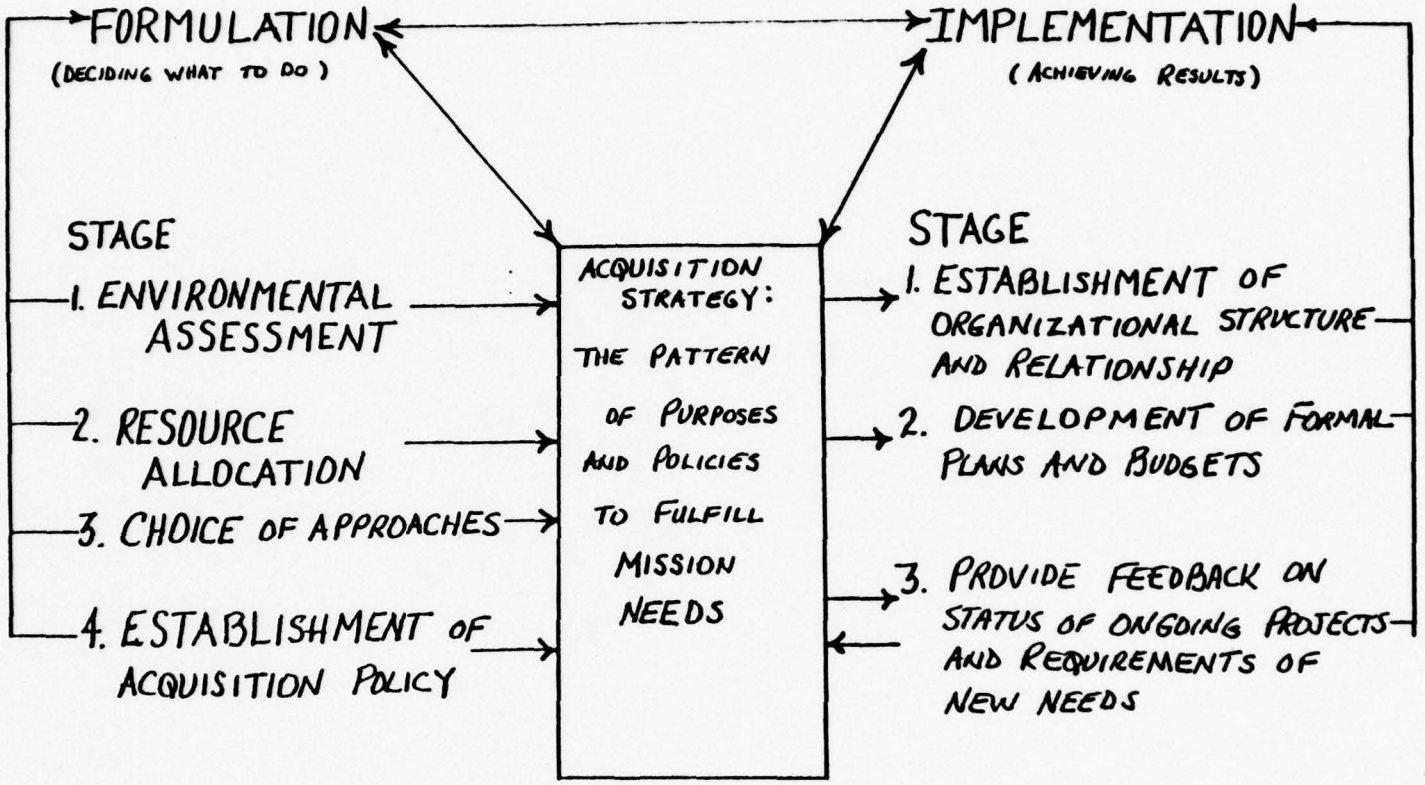


Figure 2

Conceptual Model of Acquisition Strategy

Source: Andrews (33) adapted

Defense Policy and Planning Guidance (DPPG) by the SECDEF. The DPPG is promulgated in order to establish the preliminary strategic framework for the three phases of the PPB System. The DPPG represents the SECDEF's principal statement of broad strategic guidance for defense planning. It sets forth the current objectives, policies and planning guidance for the U.S. defense program. The DPPG provides the essential national security policies established or confirmed by the current administration. It elaborates on those policies by providing broad strategic guidance for force planning in regard to the missions and tasks U.S. forces must be prepared to perform. It additionally provides the assumptions to be made in sizing forces and allocating resources without specific fiscal restraints.

To provide definitive policy and force planning guidance upon which all defense planning and programming are based, the SECDEF issues the Planning and Programming Guidance Memorandum (PPGM). That document provides annual guidance that must be observed by the JCS and other DOD components in the formulation of force structures and the Five Year Defense Plans (FYDP's). It also provides the guidelines to be used by SECDEF's staff in analysis and review of proposed programs. Unlike the DPPG, the PPGM pays particular attention to the allocation of resources realistically assumed to be

available. In the manner described, the second stage of the formulation of acquisition strategy, as presented in Figure 2, is believed accomplished with the issuance of the PPGM. It provides guidance and policy for the determination and allocation of resources consistent with stage one. It is noted that final authority for fiscal resource allocation rests with the congress. However, stage two is believed carried out by the SECDEF when his decisions, regarding probable allocation of resources, are promulgated.

The third stage of formulation is the determination of preferred alternatives or approaches to counter assessed mission area deficiencies. The DSARC process is designed to make the decisions necessary for the final selection of those alternatives best suited to accomplishment of goals and objectives identified in stage one. The fourth and final stage of formulation is the identification and promulgation of overall policy and organizational structure to accomplish the goals and objectives determined in stage one. The SECDEF has promulgated such policy in the 5000 series DOD instructions which provide overall policy guidance to the various components of DOD. The organizational structure necessary to accomplish stage one goals and objectives is promulgated or determined at the service or service head level. Review of stage four will be delayed until the discussion of implementation

in later sections of this thesis. It is noted in passing that policy and procedures for implementation can be an outgrowth of any stage of acquisition strategy. Figures 3 and 4 demonstrate the relationships between the four stages of the formulation segment. In our discussion of stage four later, it will be viewed from the perspective of the implementer of acquisition strategy. The following summary of activities during the requirements determination process is designed to provide additional insight into the formulation phase and particularly into the first three stages outlined in Figure 2.

B. FORMULATION OF ACQUISITION STRATEGY

The discussion which follows is intended to describe the first three stages of the process of formulation of acquisition strategy. It is not designed to be an all inclusive coverage of the heretofore labeled "requirements determination" process as it currently exists. There is no precise correlation of the PPBS/JSPS interface and related service processes, for identifying needs and establishing requirements, with our description of the formulation phase. Rather than pursue an academic discussion of the existing system, our discussion will attempt to fit the relevant existing concepts and decision points into the theoretical conceptual

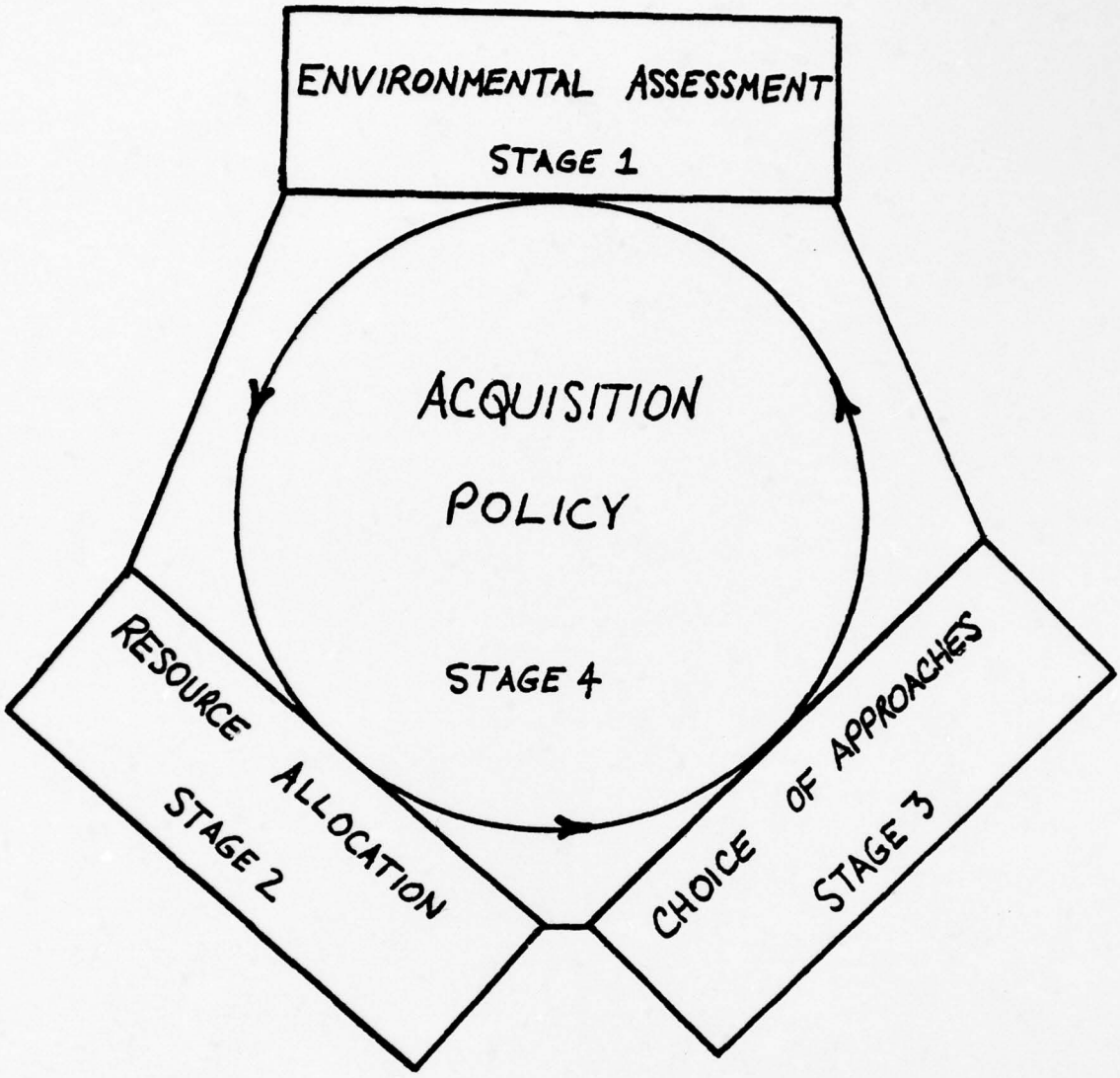


Figure 3

Conceptual Model of the Formulation Phase

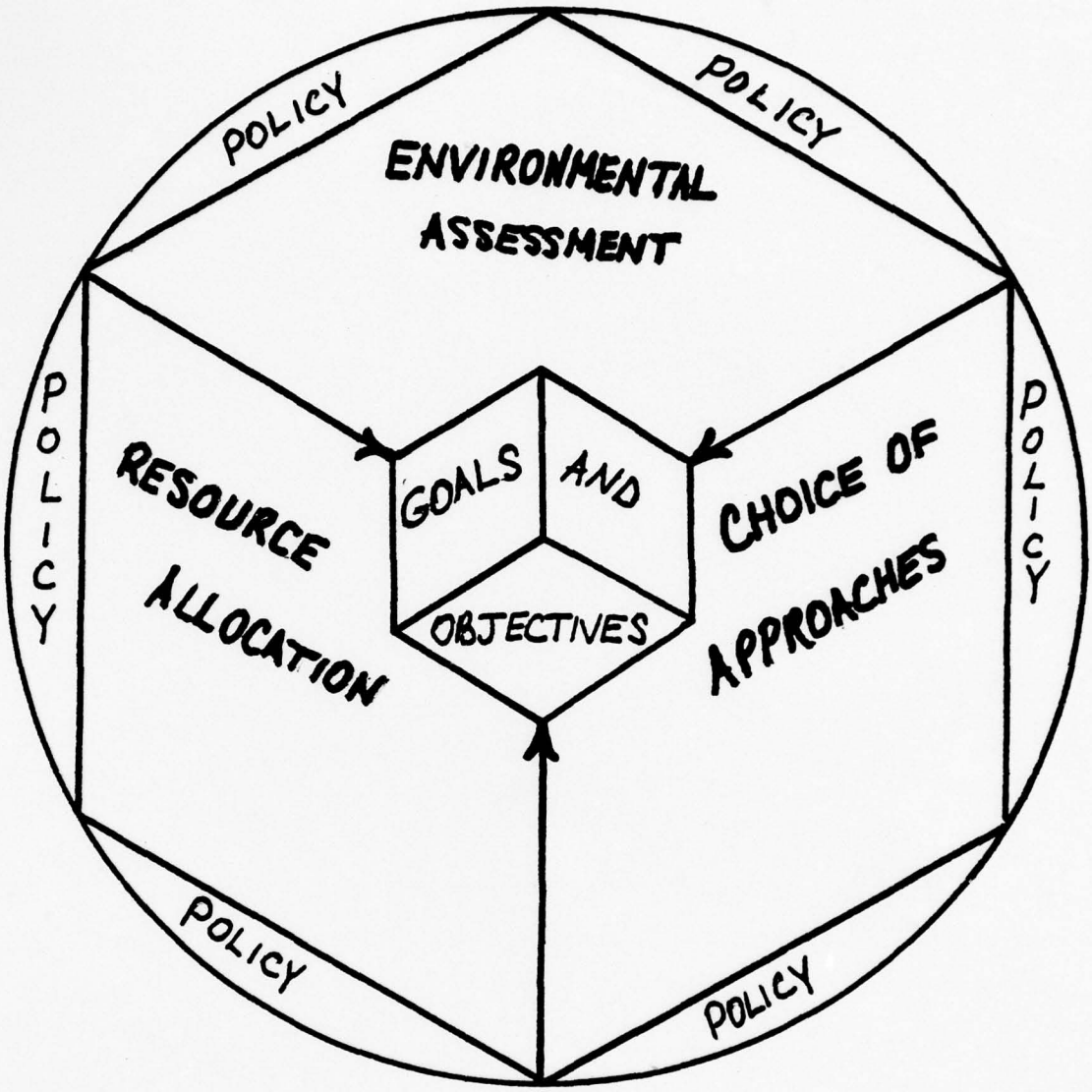


Figure 4

Relationship of Policy to the Formulation Phase

framework of acquisition strategy which we have described thus far. In doing so, particular attention will be given to where the "orderly" process has been perceived to break down. Since "the findings of several recent study groups indicate that problems which appear during the system acquisition cycle can be traced directly to shortcomings in the requirements determination process..." (14) it is our belief that an analysis of this process as viewed from the perspective of the acquisition manager may be very productive. Not only will it lead to a better understanding of our concept of acquisition strategy but it may also provide a new view of the mechanisms which have caused those problems. The discussion will also be stated in such a way as to attempt to promote a better understanding of the heretofore considered "complex," "unstructured," "variable" and "poorly understood" process of requirements determination. It is our belief that the absence of a general management perspective has caused the requirements determination process to be viewed by many as widely diffused and governed by a low visibility of key decisions. The process, without a generalist's perspective has become many unrelated centers of activity without a center of control, leading to unharnessed optimization of each functional interest but a lack of overall appreciation for the basic purpose of the process.

Figure 5 represents a general conceptual model of the initial three stages of the process of formulation of acquisition strategy. The numerous products of the PPBS and JSPS which make major contributions to the formulation process are included; the absence of other documents should not be interpreted to imply their lack of contribution, rather, they are simply not central to our discussion.

1. Stage 1 - Determination of Goals and Objectives

National Security Policy forms the backdrop against which all decisions in the formulation phase are justified or rationalized. As a member of the National Security Council (NSC), the SECDEF contributes to the establishment of that policy. The evaluation and assessment of the environment as carried out by various agencies of government, including reconciliation of assessed enemy capabilities with United States capabilities, is the process which gives rise to Defense Department goals and objectives. Such assessment forms input to NSC study groups which utilize the information in National Security Study Memorandums (NSSM). When NSSM's are ratified by the President, they are issued as National Security Decision Memorandums for government-wide implementation.

As noted earlier, the DPPG is the keystone of this stage of acquisition strategy. The establishment of goals and objectives through interpretation of National Security

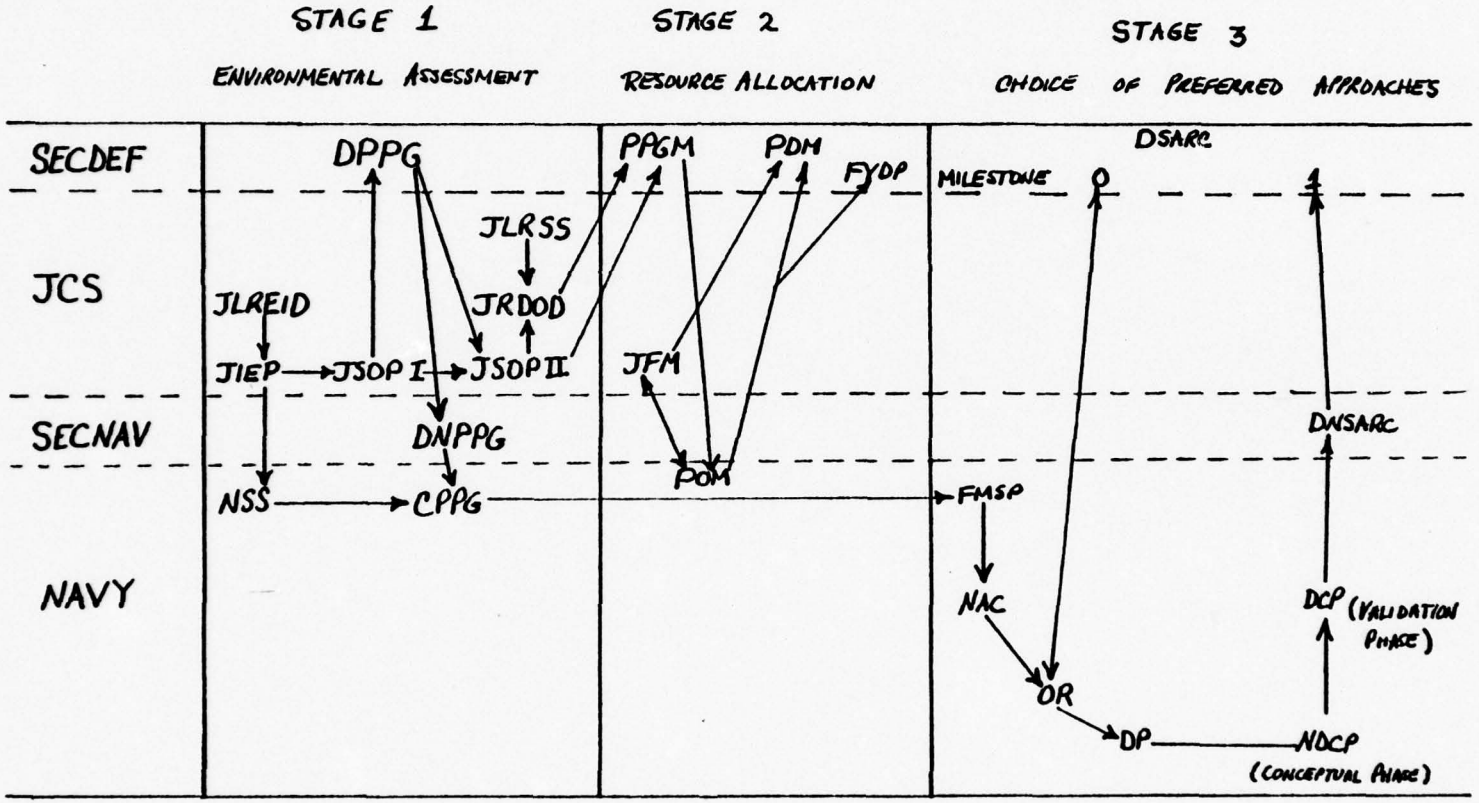


Figure 5

Formulation Stages: 1, 2, and 3

Source: GAO Report (31) adapted

Policy is generally under the direction of the Joint Chiefs of Staff (JCS). Figure 6 shows the relationship of the JCS to the SECDEF and the military services. The JCS are charged by the SECDEF with specific planning responsibilities. It is through the long and short range planning carried out by the JCS that the basic input to the DPPG is developed. The planning carried out by the JCS is packaged in several documents. Figure 7 shows the time frames associated with the documents which will be discussed. Figure 8 reveals the interrelationships between those key planning documents and provides their classification into three major categories: strategic, intelligence, and R&D. These basic categories provide data for all three stages of formulation but principally for stage one.

Major military weapon systems are developed to provide service lives of as much as three decades. In order for acquisition strategy to be meaningful, it must be based on planning which encompasses a future time horizon subtending the projected life of the weapon systems contemplated and in development. The JSPS utilizes a twenty year time horizon which is adequate for the purposes of the formulation of acquisition strategy. Future planning is divided into short range (1-10 years) and long range (10-20 years). Short range intelligence estimates of the military capabilities,

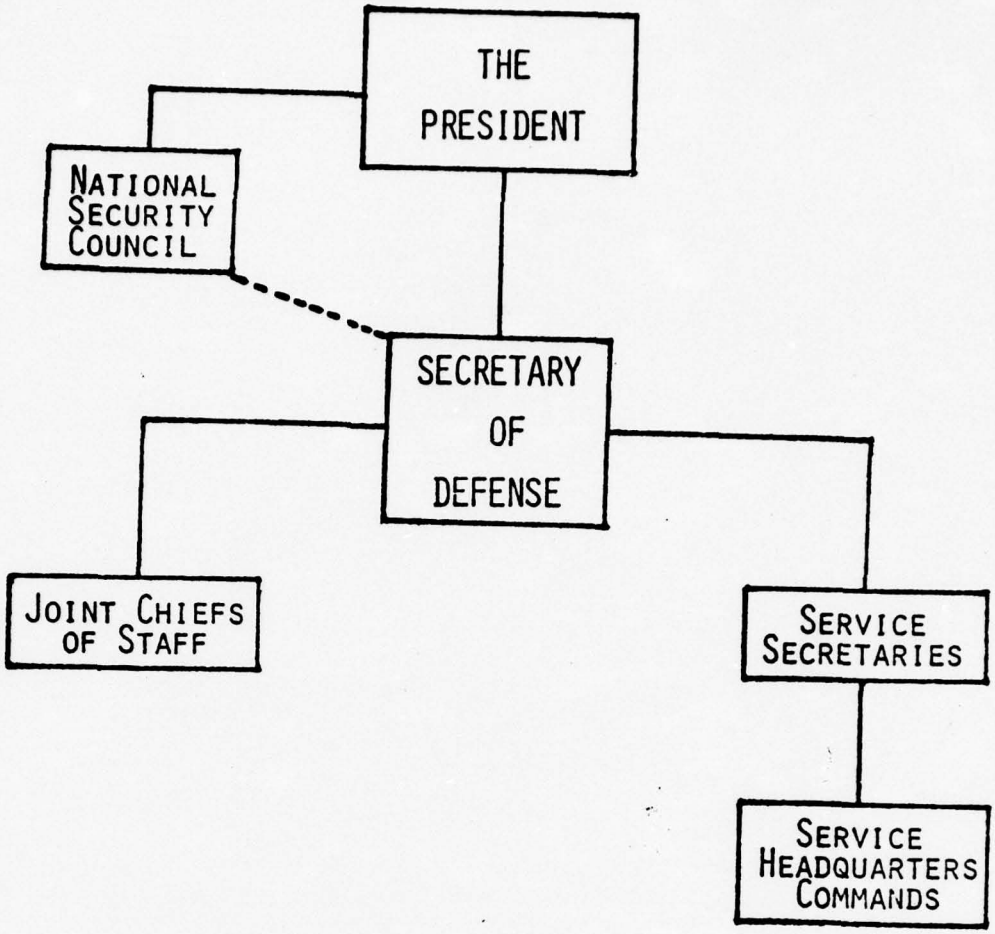


Figure 6

Organizational Relationships

Source: Garverick (32) adapted

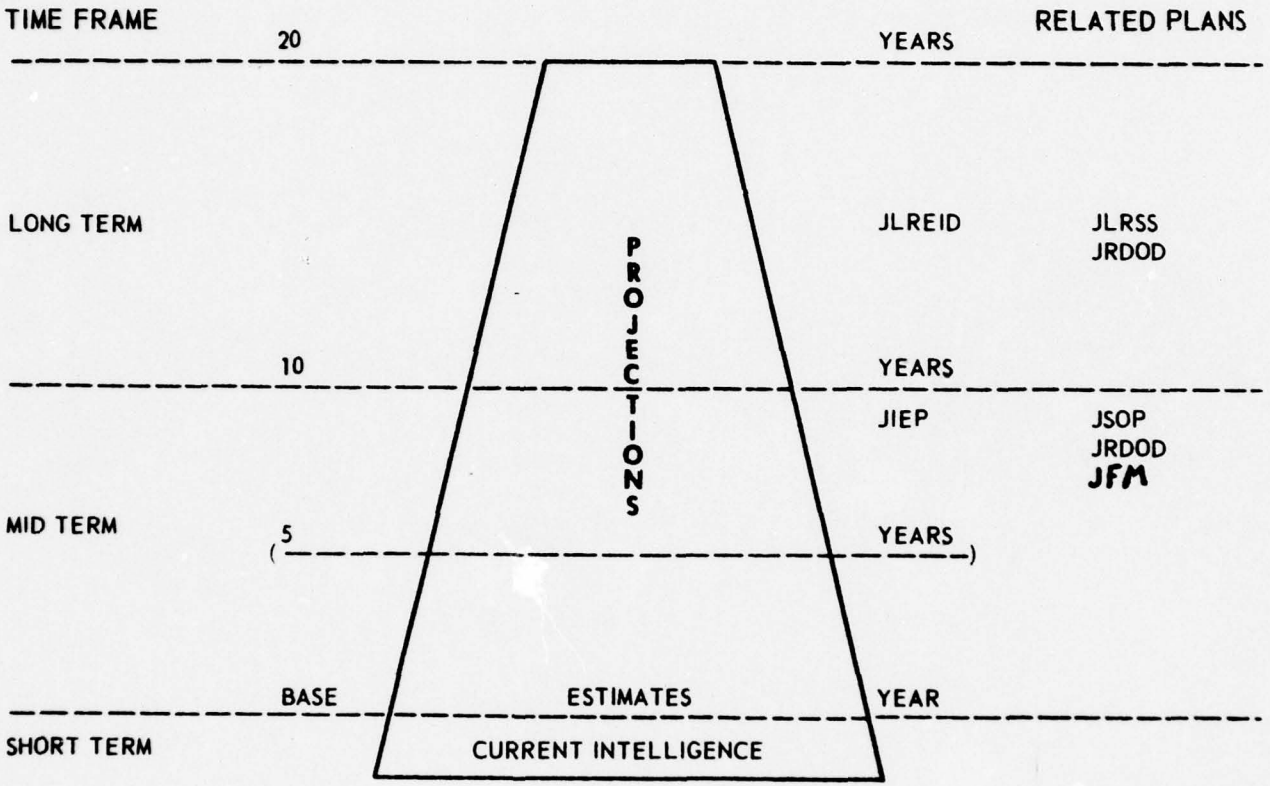
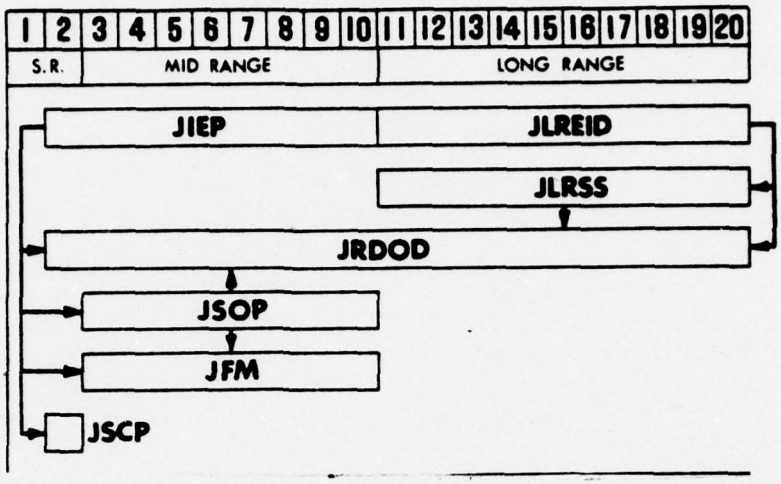


Figure 7

Time Frames of JSPS Documents

Source: GAO Report (31) adapted

JSPS DOCUMENT INTERRELATIONSHIPS



Intelligence : JIEP, JLREID

Strategic : JLRSS, JSOP, JFM, JSCP

R&D : JRDOD

Figure 8

JSPS Documents

Source: GAO Report (31)

vulnerabilities, likely courses of actions of potential enemies of the United States, probable enemy strategy, and likely courses of actions of important communist and non-communist nations are examples of relevant information for short term planning required of a formulator of acquisition strategy. Such information is currently contained in the Joint Intelligence Estimate for Planning (JIEP), a major output of the JSPS. Intelligence estimates summarizing factors and trends and the liklihood and capabilities of important foreign nations to undertake courses of action which could affect the national interest of the United States are examples of relevant information for long term planning required of the acquisition manager formulating acquisition strategy. Such information is currently contained in the Joint Long Range Estimative Intelligence Document (JLREID), another major output of the JSPS. The two documents referenced above contain the intelligence input to the DPPG. In the past, long range documents have been vague and general in nature and have thereby been rendered almost useless as planning documents. Additionally, intelligence documents have been based on a "cover all bets" philosophy by projecting a "greater than expected" threat. If the information contained in these documents is to be of value for the formulation of acquisition strategy, it must

be objective and a realistic evaluation of projected future trends based on information which is understood to be imperfect. However, purposely overcautious or inflated estimates of enemy threat can only invalidate the goals and objectives which are formulated in stage one, and contribute to problems later in the acquisition process. A potential result on the allocation of resources for example, of inflated estimates, is to eliminate potentially needed systems from emerging in some mission areas at the expense of excessive development in others. So called "gold-plating" or premature obsolesence of systems may be viewed as the eventual outgrowth of improper intelligence estimates, or improper assessment.

Strategic considerations are also of interest to formulators of acquisition strategy. The DPPG is based in part on strategic considerations as perceived by the JCS. Short and mid range military strategy and force structure to attain stated United States National Security Policy objectives is contained in another product of the JSPS, the Joint Strategic Objectives Plan (JSOP). The long range strategic implications of the projected worldwide economic, political, social and technical trends are covered by the Joint Long Range Strategic Study (JLRSS), another output of the JSPS. Thus, the DPPG is viewed as an analysis of both

worldwide intelligence information and the strategic world situation providing an acquisition manager the framework from which to develop an acquisition strategy. It provides the basic statement by the SECDEF of current DOD objectives, policies, and planning guidance for the United States Defense program.

2. Stage 2 - Allocation of Resources

Allocation of resources to provide for fulfillment of goals and objectives established in stage one and promulgated in the DPPG must be based upon analysis of military strategy and force structures (necessary to attain National Security Objectives), available technology, and perceptions of the individual services of resources necessary to comply with published guidance. It is common knowledge that past problems which were manifested by interservice rivalry for funds and poor cost estimating, have always plagued this stage. It is not surprising that each service should see an existing or developing enemy threat predominantly in terms of its own capabilities to counter such threat. The proper balance of forces to counter the threat, as seen from the perspective of each service will be to maximize its own role. This general phenomenon which has been labeled "parochialism" will be discussed in greater detail in following sections when dealing with Navy determination of

needs. Of greater importance here, than the actual reasons for parochialism within the services is the potential created for needless waste of scarce government resources. It is here, particularly, that the "general management" perspective of the SECDEF is necessary to ensure that as nearly an optimal allocation of resources as possible is accomplished. We therefore believe that the proper role of the SECDEF in carrying out this phase of acquisition strategy is to reconcile specific deficiencies noted in phase one with overall defense goals and objectives, and determine appropriate allocation of resources to the services which will best support National Security Objectives. In many cases, the SECDEF may take advantage of interservice rivalry when investment of small amounts may result in the availability of alternative approaches from which to make final decisions. However, this activity must be pursued carefully and rationally in order to avoid a runaway competition which escalates into numerous unnecessary solutions looking for problems to solve.

Strategic considerations such as force structure requirements to cope with global and regional threats; the capabilities of the major programmed forces to meet the assessed threat; requirements for possible mobilization of United States forces, and planning, modernization and

procurement objectives must be clearly defined if definitive resource allocation is to be promulgated by SECDEF. The JCS publish such data in the Joint Strategic Objectives Plan (JSOP) volume II. Additionally, the JCS interpret R&D objectives responsive to the strategy and force recommendations referred to above, based on broad trends and anticipated future technologies required to furnish military forces with the capabilities needed to execute the prescribed military role. The relative importance of the R&D objectives considered essential to support strategy and military objectives are analyzed by the JCS and published for SECDEF review in the Joint Research and Development Objectives Document (JRDOD). To further provide the SECDEF an overall orientation to R&D programs being carried out by the services, DDR&E prepares Area Coordinating Papers (ACP), Mission Concept Papers (MCP), and Mission Area Summaries (MAS) as well as the Technology Coordinating Paper (TCP). These documents provide the SECDEF with an overview of each mission by identifying existing or anticipated problems and describing the current programs for their solutions. The Policy and Planning Guidance Memorandum (PPGM) is based on the information discussed above as well as the information in the DPPG.

The specific allocation of resources is made by the SECDEF after review of major force and force related issues requiring decisions during the current year as proposed by the individual services in their Program Objectives Memorandums (POM). POMS provide force, manpower and material recommendations and the risk assessment and military advantages to be gained by pursuit of the courses of action recommended. POMs are supported in Program Element (PE) terms for major weapon systems. The Program Decision Memorandum (PDM) promulgates the definitive decisions of the SECDEF on resource allocation and provides for incorporation of the major systems approved into the Five Year Defense Plan (FYDP). Final resource allocation is accomplished, at the DOD level, by Program Budget Decisions (PBD), and ultimately by the President and Congress in their budget reviews and appropriation processes. Thus, SECDEF allocates resources realistically assumed available via the process described above and in doing so completes stage two of the formulation of acquisition strategy.

3. Stage 3 - Determination of Preferred Approaches

The determination of preferred approaches to fulfill goals and objectives, by the SECDEF, is inextricably linked to the process for identifying needs and establishing requirements by the individual services. Our discussion will

center upon the process as it exists within the Navy and its role in the formulation of acquisition strategy at the SECDEF level. Similar processes exist within the other services and therefore this discussion as well as the general concept of acquisition strategy which we espouse is believed to be equally applicable to the Army, Air Force and Marine Corps.

Overall policy for the carrying out of acquisition strategy (formulation stage four) is contained in DODD 5000.1. The Navy has implemented that instruction in OPNAVINST 5000.42A of 3 March 1976. That directive serves as the primary guide to the research and development community for the establishment of future weapon systems programs. Figures 3 and 4 demonstrate the relationship of policy to the other phases of acquisition strategy in the formulation segment. Figure 9 provides for ready reference, a summary of the various categories of programs defined in the OPNAVINST and Figure 10 represents a conceptual model of the documents and organizations comprising the third stage of the formulation phase within the Navy.

The Chief of Naval Operations (CNO) publishes his views regarding changes in the international scene, the military threat, domestic attitudes and national asperations affecting the long range direction of the Navy and describes

ACQUISITION CATEGORIES (ACAT)

ACAT	DESIGNATED BY	NOMINAL DOLLAR VALUE THRESHOLD		OTHER CRITERIA
		RDT&E	PRODUCTION	
I	SECRETARY OF DEFENSE OR DEPUTY SECRETARY OF DEFENSE	$75M	$300M	LESSER PROGRAMS MAY BE DESIGNATED BY SECRETARY OF DEFENSE OR HIS DEPUTY.
II	DSARC PRINCIPAL, SECRETARY OF THE NAVY, OR CNO	$20M	$50M	LESSER PROGRAMS MAY RECOMMENDED BY CHIEF OF NAVAL MATERIAL, OP-090, OP-098, OR PROGRAM SPONSOR.
III*	PROGRAM SPONSOR	$5M	$20M	LESSER PROGRAMS RECOMMENDED BY CHIEF OF NAVAL MATERIAL, OP-090, OP-098, OR DEVELOPING AGENCY.
IV*	CHIEF OF NAVAL MATERIAL			INCLUDES ALL PROGRAMS NOT DESIGNATED ACAT-I, II, OR III.

*NOTE: PROGRAMS BELOW THE ACAT-III DOLLAR THRESHOLD WILL NORMALLY BE DESIGNATED ACAT-III IF (A) THEY DIRECTLY AFFECT THE MILITARY CHARACTERISTICS OF SHIPS, AIRCRAFT, OR OTHER COMBATANT UNITS; OR (B) THEY REQUIRE OPERATIONAL TEST AND EVALUATION TO SUPPORT KEY PROGRAM DECISIONS; OR (C) THEY REQUIRE FLEET RDT&E SUPPORT.

Figure 9

Source: Garverick (32)

DOCUMENTATION AND REVIEW PROCEDURE

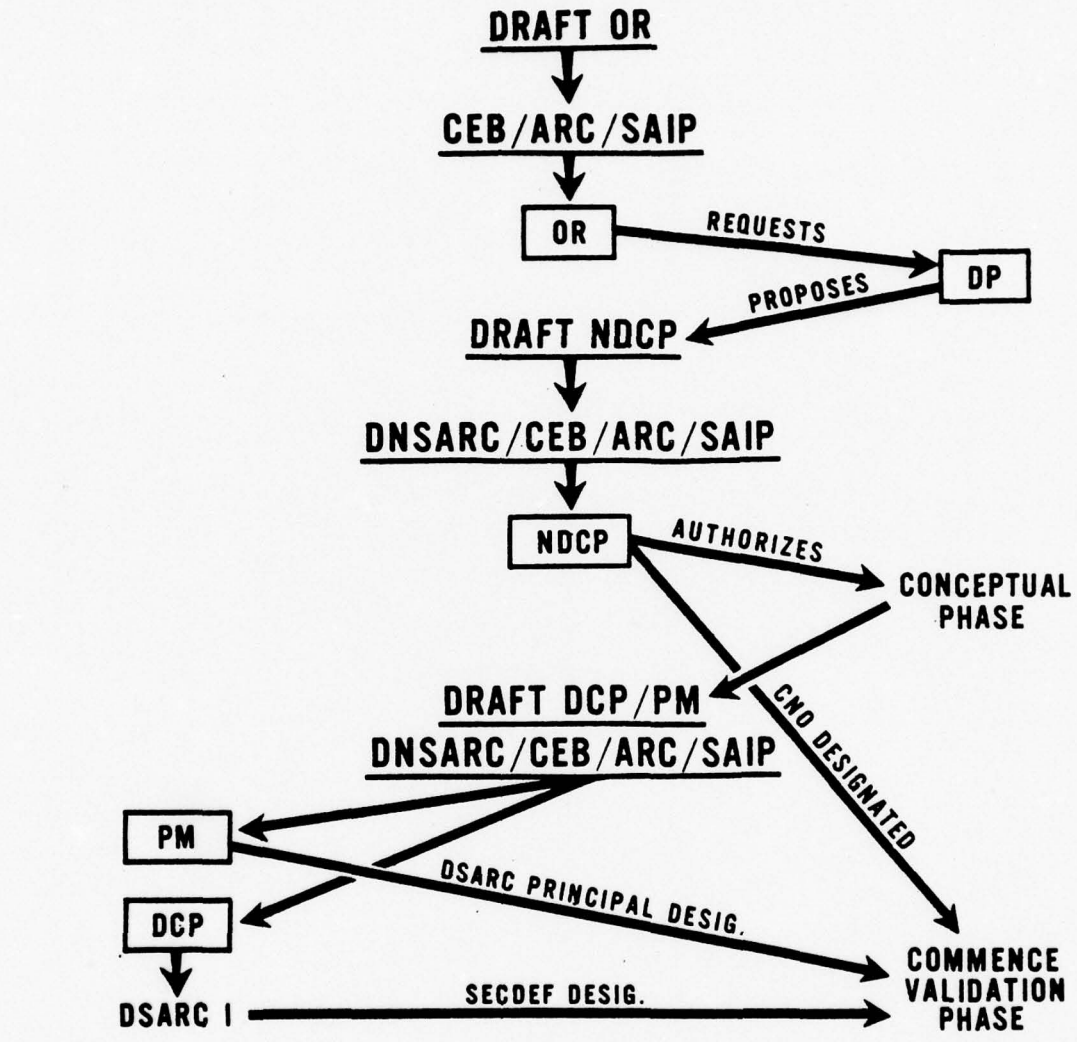


Figure 10

Source: OPNAVINST 5000.42A of 3 Mar 76

ways in which he hopes to meet the SECDEF guidance contained in the DPPG, in the CNO Policy and Planning Guidance (CPPG). Force and Mission Sponsors (FMS)-DCNO Subsurface Warfare (OP-02), DCNO Surface Warfare (OP-03) and DCNO Air Warfare (OP-05)-issue Force and Mission Sponsor Plans (FMSP) which contain guidance for the introduction of new or modernized weapons systems and set forth user requirements in consonance with the CPPG. These plans set forth, as concisely as possible, the FMS perceived needs which will carry out CPPG guidance including current FYDP approved force levels, FYDP procurement/modification plans, and a long range projection. It should be noted that here, the lowest level of formulation of acquisition strategy which we perceive (for major systems), is being carried out. The officials responsible for the preparation of FMSP later will issue definitive Operational Requirements and sit as members of the CNO Executive Board. Operational Requirements eventually give rise to new or modernized weapon systems. We view the issuance of Operational Requirements by officials, inherently functional specialists (i.e. Air Warfare), and members of a specific community of Naval Officers (i.e. Naval Aviators) to violate our concept for generalists to be in formulation positions. The ramifications of this condition will be discussed shortly.

Based on the FMSP, the Director of Research, Development, Test and Evaluation (DRDT&E) prepares Science and Technology Objectives (STO) which describe in broad terms, the Navy's roles and objectives anticipated in particular warfare areas during the 10-20 year time frame. It describes the threat which the Navy anticipates encountering, and needed capabilities to neutralize or overcome that threat. Using STO's, FMSP's and other pertinent documents, a Research and Development Plan (RDP) is created which serves as a central repository of research and development planning guidance. That plan is divided into twelve RDT&E planning areas which are grouped into the following major categories:

I Strategic Deterrence

II Sea Control

III Projection of Power Ashore

IV Mission Support

The Chief of Naval Material (CNM) is tasked with detailed analysis and review of the RDP and is required to propose potential solutions to STO's. Such documentation is called Advance Systems Concepts (ASC) and is packaged in Navy Advanced Concepts (NAC) documents. ASC's are then used in an iterative fashion by FMS in refinement of their perceptions of needs expressed in STO's. At the same time, at the OSD level, DDR&E is preparing the TCP, referenced earlier,

to provide SECDEF a broad overview of available technology. Figure 11 represents a conceptual model of this process.

FMSP's set forth "mission or support plans which contain guidance for introduction of new or modernized systems and set forth user requirements objectives in consonance with the CPPG" (15). These documents then can be viewed as Navy interpretation of the acquisition strategy formulated by the SECDEF. FMS later issue Operational Requirements (OR) as was indicated earlier, when they are able to define the specific performance parameters needed which are within the state of the art as reflected in the NAC. The OR is designed to be a concise statement of operational needs, and represents an attempt to state requirements in terms of broad objectives and thereby encourage imaginative and innovative responses from potential developers. In fact, the OR appears to restrict and encumber imaginative and innovative responses by requiring in a scant three pages such information as performance characteristics, flight profiles, and firing rates, etc. As noted earlier, FMS both interpret CPPG and issue OR's. Since these officers are platform oriented by training and position, there is evidence that they have exibited a propensity for developing, procuring and operating their own platform types rather than truly acting as generalists who act without loyalty to any functional specialty.

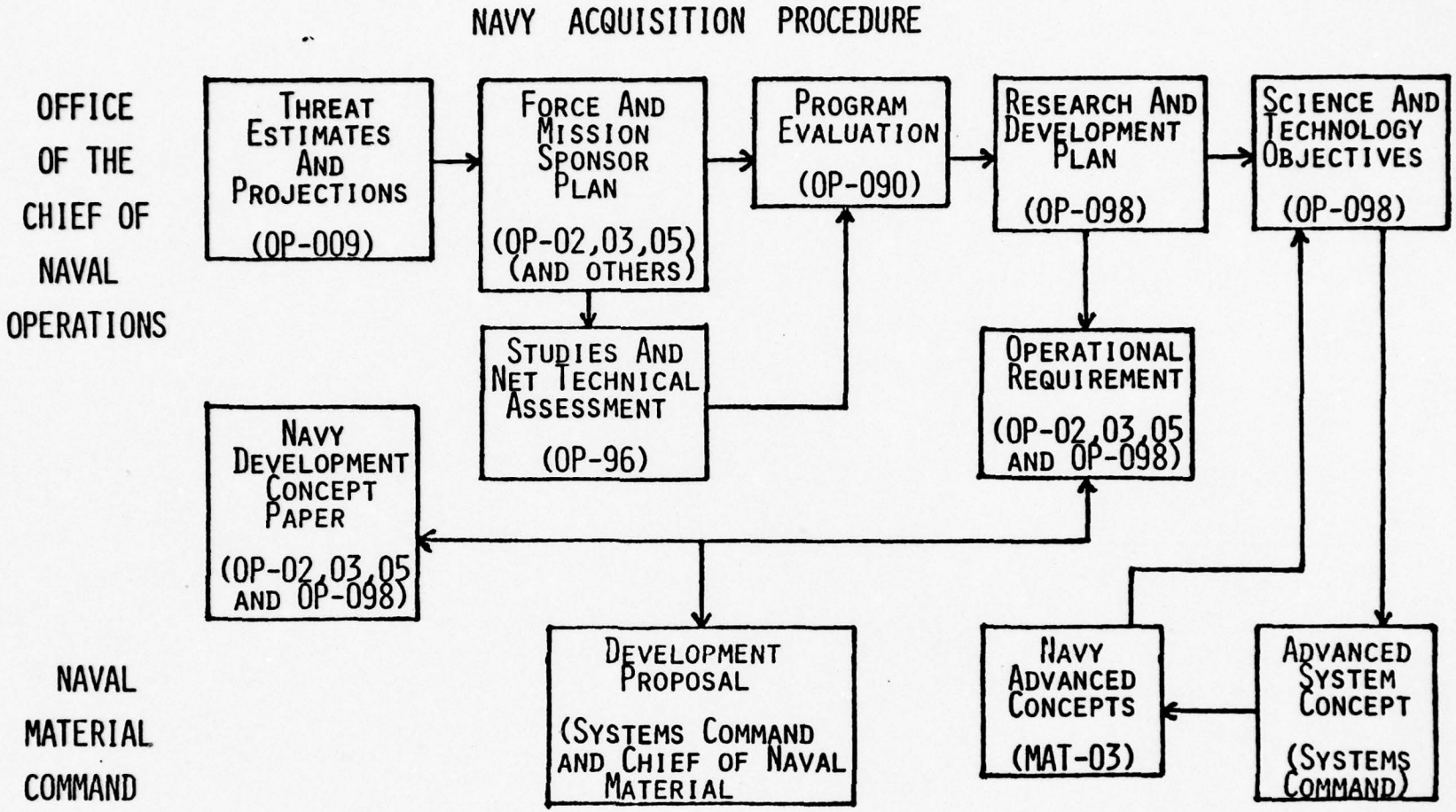


Figure 11

Source: Gaverick (32) adapted

According to Probst and Wilson (16), FMS view everything from their platform type and interpret the CPPG in a parochial manner without exercising objectivity. This general tendency was noted earlier in the discussion of resource allocation where military services were noted to view everything with their role as the center of solutions to newly emerging mission deficiencies. OR's therefore are developed, possibly unintentionally, with a built in advocacy for one platform type. Such product orientation has contributed to the follow-on imperative, acquisition preceding the need, subversion of user-producer dialogue, and restrictive statements of need. (16) Replacement of existing weapons and ideas for new weapons is based on familiarity rather than objectivity. These manifestations have lead to a lack of true mission oversight by the FMS. We do not view this situation as startling, but rather a logical, though regretable, outcome of failure to have acquisition managers with a general management orientation. FMS should attempt to guard against this natural propensity if acquisition strategy is to be of value to either formulators or implementers.

When an OR appears to lead to a major weapon system acquisition, will require costly R&D expenditures, or early conceptual effort, it must be submitted to the CNO Executive Board (CEB) and Acquisition Review Committee (ARC) for review

and approval. It is at this point, in accordance with OMB Circular A-109, that the SECDEF must review and approve the need if that need is expected to lead to a major weapon system development program. With this relatively new requirement for the so called "milestone zero," the SECDEF is entering the acquisition process earlier than in the past when viewed from the standpoint of an implementer. Here, the SECDEF is partially fulfilling stage three of the formulation segment of acquisition strategy. He is, at milestone zero, making the first determination of preferred approaches to counter the threat identified in the manner described above.

When an approved OR is promulgated by OPNAV, CNM responds with a Development Proposal (DP). The DP represents a range of alternatives and trade-offs to achieve the particular range of capabilities solicited by the OR. The DP is reviewed by OPNAV and after an iterative process of changes, if necessary, may find the DP acceptable. It is then reviewed by the ARC and if approved, a Navy Decision Coordinating Paper (NDCP) will be prepared by OPNAV. The NDCP includes a definition of program issues, the considerations which support the operational need, program objectives, program plans, performance parameters, areas of risk and development alternatives. The NDCP is submitted to the CEB

for approval. Once approved, it is forwarded to CNM for start of the conceptual effort. The entry of the project manager in accordance with A-109 into the process is interpreted by the authors to be shortly after the SECDEF approves the need. This point of entry is substantially earlier than in the past. Question can be raised as to whether the program manager, an implementer of strategy, can perform his role during this phase where the formulation of policy is actively being pursued. It would seem that conflicts may arise between the program manager and those acquisition managers traditionally in charge of this phase of the acquisition process. If it is true that the program manager is an advocate of his system, it is questionable that he is needed this early in the process. Certainly some general manager must be in charge of the program as opposed to a committee; however, the program manager as he is thought of today is not the proper individual. The concept of acquisition strategy expressed to this point would call for a general manager with broader perspective than today's program manager, to act as a central decision maker for the program being developed.

Upon completion of the conceptual phase, CNM submits the results and recommendations to OPNAV. After OPNAV review, if the project is ready to start the validation phase, a

Decision Coordinating Paper (DCP) outline is submitted to OSD for approval. Based on the approved outline, OPNAV, with assistance from CNM, the program manager, and other cognizant commands, prepares the DCP draft. That document is submitted to the CEB for review and approval where the CNO establishes his formal position. The approved DCP is then submitted to the Department of the Navy Systems Acquisition Review Council (DNSARC) for approval. Once approved, the DCP represents the official SECNAV position. The DCP is then forwarded to DDR&E where it formally enters the DSARC process. The DSARC decision formally completes phase three of the formulation segment of acquisition strategy.

The central role of the generalist in the formulation of acquisition strategy has been reviewed and the pitfalls resulting from his absence, or the lack of that perspective he brings to the process, have been reviewed and analyzed. The formulation phase of acquisition strategy with the exception of the formulation of policy (stage four) has been described in depth using current terminology. The formulation phase of acquisition strategy which has been at first mission and force oriented now gives way to a more specific product orientation in order to permit the development of specific weapon systems. The implementation phase will now be discussed.

IV. THE PROCESS OF IMPLEMENTATION OF ACQUISITION STRATEGY

A. SEGMENT OVERVIEW

The implementation of acquisition strategy is comprised of a series of activities which are primarily administrative in nature. The use of the terminology administrative is not meant to imply any sense of the routine, or meniality. In our usage of the term, administration is an identifiable activity which includes executive action and orders as well as the decisions necessary for coordination, appraisal and planning the work of a department and for the appropriate use of its resources. The implementation of acquisition strategy must employ the same acquisition management skills as formulation does.* In general, however, the perspective that the implementer has is less broadly defined than that of the formulator. Once purpose or direction is determined in the formulation segment, the resources made available must be mobilized in support of the goals and objectives formulated (refer to Figure 2). The implementation of acquisition strategy accomplishes this mobilization by establishing a detailed organizational structure including organizational interrelationships to carry out the strategy as formulated. This activity includes establishing proper

*Much of this discussion is adapted from Andrews (33).

division of labor, coordination of divided responsibilities and establishment of information systems sufficient to carry out strategy. It is this latter activity, mobilization of resources, which is the responsibility of both the Department Secretary, the individual service head, and also partly the responsibility of the project manager which has caused ambiguity in the roles played by each.

The implementer of strategy must also develop formal plans and budgets to carry out policy. This activity would include establishment of control systems, standards and measurements of results obtained. Implementation of strategy also includes the establishment of a system to provide feedback to senior management regarding the status of ongoing programs including the reporting of changes in technology or funding which may have impact on the future of the program or entail changes in policy. This latter activity represents the iterative nature of defense system acquisition. While feedback is continually provided to senior management, it is formally provided in the DSARC and SAR processes. Feedback is therefore provided both through the mechanisms of the formulation process as well as the implementation process.

The following discussion traces the development of the implementation phase of acquisition strategy. It is presented

using an historical perspective in order to reveal how the role of the implementer has changed and evolved over time. As noted earlier, the two phases of acquisition strategy described are difficult to separate. The discussion will take advantage of that inherent relationship by revealing how its very presence has contributed to development of the implementation function as it exists today.

B. IMPLEMENTATION OF ACQUISITION STRATEGY IN MAJOR WEAPON SYSTEM ACQUISITION

1. Acquisition Strategy During the 1950's Era

During the 1950's and into the early 1960's, one of the main forces driving the DOD acquisition policies was the so-called "lead-time" problem. The U.S. was in the midst of the "Cold War" era, with the DOD focus directed at overcoming the Soviet missile threat. The general perception at that time was that in the technology race, the Soviet Union could put advanced weapons through development into inventory much more rapidly than the U.S.

If any strategy could be said to exist in most of the DOD programs of this period, it would be characterized by having performance and schedule as the driving factors. Requirements were vague and poorly defined. The practice of a high degree of concurrency in development and production became the accepted norm. Concurrency made sense in

the ballistic missile programs when there was at least a possibility that national existence might be at stake. However, for most other programs, it proved to be an overreaction resulting in unnecessary costs.

Not only was the evolving technology new, but also the concept of acquisition of total systems was new, untested and unstructured. The interface relationships between formulation and implementation in the acquisition process varied from program to program. The Services played a major role in both areas, with OSD having only a minor part in requirements determination. Acquisition strategy was largely absent except in terms of the intense interservice rivalry created by the Services in trying to expand their authority and their share of the budget.

Cost growth, poor performance, slipped schedules, inadequate cost estimation, duplication and overlap of weapons among the Services, inadequate training and high turnover of program personnel were the evident problems of this environment. These problems and others were detailed by Peck and Scherer (8) in 1962 in their published work, which was the first total analysis of the weapons acquisition process.

2. Acquisition Strategy in the McNamara Era (1961-1968)

Concurrent with the publication of Peck and Scherer's work, the public, the press, industry, Congress, as well as many officials in DOD felt that improvements were necessary and recognized that changes were needed in the way major weapon systems were being managed.

In July 1965, DODD 3200.9, a major policy guidance directive, was issued on Concept Formulation and Contract Definition by Secretary of Defense McNamara (17). This detailed 16 page directive provided structure by delineating prerequisite activities that must be accomplished before Engineering Development can be initiated. Figure 12 represents the concept of a weapon system life cycle based on the interpretation of the above directive. The essence of this directive is presented in Appendix A. This policy directive had a definite impact on the acquisition process as it existed in the decade of the 1960's. It was the first "building block" in the establishment of a coordinated framework of policy formulation and implementation for system acquisition. The impacts on acquisition strategy that were a derivative of this policy directive would include the following:

CONCEPT FORMULATION/CONTRACT DEFINITION IN THE RESEARCH AND DEVELOPMENT CYCLE

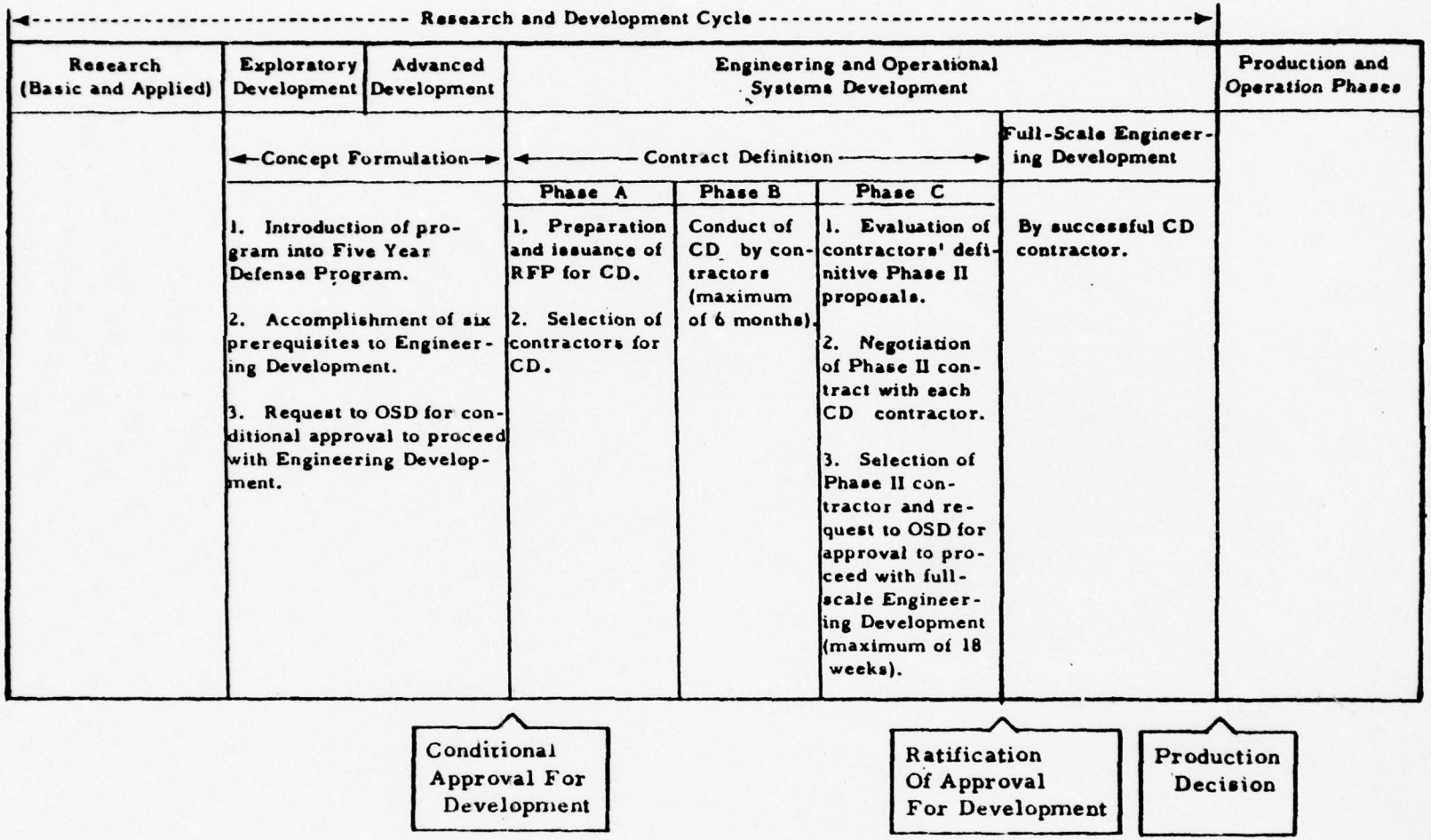


Figure 12

a. Centralization of authority in OSD

Centralization of policy formulation and decision-making governing the acquisition of major systems shifted from the Service level to the highest levels in OSD. The initiation of a weapon system development cycle was keyed to a single SECDEF decision point, the conditional approval to proceed into Engineering Development. The Secretary of Defense now had a greatly expanded authority, responsibility and visibility through the ability to control the start of new programs. Subsequently, this process was expanded to three formalized decision points and became the DSARC process as it is known today.

b. Deficiencies in policy

This directive attempted to establish a logical framework of decision-making for program implementation that would apply to all major DOD programs; however, it failed to achieve this goal because of the rigid and inflexible "means" prescribed for implementing acquisition strategy within this directive and the prevailing SECDEF policies of the time. Examples which illustrate the inflexibility and rigid procedures prescribed would include the following:

(1) Contracting was viewed as the primary instrument for conducting "business" and therefore for preventing cost overruns. Fixed price and fully structured

multi-incentive contracts were mandatory* based on the policy statement for the objective of the Contract Definition Phase. Total Package Procurement (TPP) was used to eliminate risk and minimize management on the part of the Government. The attitude toward the inherent "goodness" of this technique, as espoused by a policy implementation guide of that period, is amusing retrospectively in view of the results achieved.

> "Because TPP was designed to extend the advantages of competition at the development stage to the full life cycle, the more requirements that can be included in the package, the more successful the use of TPP will be." (18)

It was not recognized that these types of contracts and techniques may be inappropriate in many cases, nor was it recognized that contracting by itself would fail to solve overruns on programs destined to an overrun situation because of a poorly defined need or inadequate requirements determination during Concept Formulation.

(2) By explicitly limiting Exploratory and Advanced Development to in-house effort and Government

---

*"The ultimate goal of Contract Definition, where Engineering Development is to be performed by a contractor is achievable performance specifications, backed by a <u>firm fixed price</u> or <u>fully structured incentive</u> proposal for Engineering Development. Any action that suggests cost sharing,...shall be avoided. Contract Definition <u>shall be conducted using fixed price</u>." (17)

laboratories*, OSD was involving itself too deeply in the program implementation functions of the Services and was committing programs to suboptimal weapons systems concepts.

Former Deputy Secretary of Defense, David Packard levied this criticism against primary reliance on Government in-house design effort:

> "One particular characteristic of a military organization is that it tends to think more in terms of getting what was effective in the last war rather than thinking ahead in an imaginative way about what might be needed for the future." (19)

A more fundamental issue in the above paragraph and throughout this timeframe is the degree of control that OSD had not only in formulation, but also in the implementation of programs. OSD determined not only what was needed but also how it shall be done and who shall do it.

(3) A proliferation of new management tools were forced into both the formulation of needs and program implementation. JSPS, PPBS, FYDP, CF/CD, TPP, systems analysis, cost effectiveness, Pert/Cost, Advance Procurement Planning, Multi-incentive contracting, Life Cycle Costing,

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*An excerpt from DODD 3200.9 confirms this point. "...the interests of the Government will be best served by using industrial organizations for the conduct of Engineering Development. Normally, in-house laboratories can contribute most effectively to the Exploratory and Advanced Development effort. It is recognized that exceptions to this policy may be necessary; where necessary, such exceptions will be authorized on a case-by-case basis."

Integrated Logistic Support, and "ilities;" i.e. reliability, maintainability, availability, producibility, etc., partially enumerates the techniques that were developed to provide overview and control of the weapons acquisition process.

Some of the above techniques, such as TPP have fallen into disfavor because of "spectacular" and much publicized failures. Inappropriate use of others, such as multi-incentive contracting, and useless voluminous management reporting requirements produced questionable results. Many of the above techniques can be useful when applied intelligently as a part of an overall acquisition strategy; i.e., a strategy that integrates both the need formulation and program implementation considerations. But this was not to be recognized until almost a decade later.

(4) There is a total absence of any reference to a Program Manager in this directive. The implied assumption is that the implementation activities listed under Concept Formulation and Contract Definition would be made to happen because of the OSD overview and the prescribed implementation structure in the directive itself. The program manager was not recognized as an element in the Concept Formulation process because so much of the early conceptual effort was prescribed by higher authority and performed without having a program manager present. Nor was the

importance of his role recognized in the implementation of acquisition strategy because the policy guidance for that phase of the program was rigid and inflexible. It constrained the Program Managers' latitude for implementation to a checklist of activities for satisfying the OSD criterion for proceeding to the next phase in system development. Consequently, history has demonstrated that many programs were able to fulfill all the prerequisite activities listed in DODD 3200.9, but could not develop a weapon system that fulfilled a definite need or meet the program objectives for cost, schedule, and mission capability.

3. Blue Ribbon Defense Panel-Staff Report on Major Weapon Systems Acquisition (1969-1970)

This study briefly analyzed the problem areas in major weapon system acquisition under the policy as established by DODD 3200.9. Specific areas of focus were on the "then current" DOD policy and deficiencies in the four areas of requirements determination, the OSD decision process, acquisition strategy, and program management. This study, in general, was able to identify superficial and obvious problem areas but was unable to view the acquisition process from a broad perspective to identify causative factors for these problems. Consequently, the recommendations proposed, in many cases, were not true solutions to the "real" causes

of problems which existed in the formulation of needs but were stated to be in program implementation. Thus, many of the Panel's recommendations restated the obvious and tried to treat the symptoms rather than the problems in weapons acquisition. The following will identify in more detail the essence of this report and how it does or does not relate to our previous discussion of formulation and implementation.

a. Requirements Determination

Under this subhead, the panel noted three deficiencies in requirements determination. The Military Services were faulted for developing formalized requirements that were too specific. The second criticism focused on the subordination of the needs of the operating forces, as noted earlier, to parochial interests within the Services. This criticism implied that requirements were being formulated that were nonresponsive to the needs of the users but were aimed more toward expanding the mission area of each Service. The third deficiency noted was the Services' bias toward needless oversophistication of weapon systems and the inability of Services to agree on common requirements where multi-Service needs existed for fulfilling similar missions.

What these three criticisms of the Requirements Determination were basically implying was that the formulation of needs was still unstructured, uncoordinated, and lacked control.

To counter the above three deficiencies, the Report recommended more centralization of authority at the SECDEF and OSD levels for formulation of needs. Specifically that

> "(i). The Secretary of Defense take appropriate steps to insure that operational requirements from Operating Commands be submitted directly to his office for establishment of priorities and assignment to the proper Service or Services for implementation.
>
> (ii). The Secretary of Defense issue policy guidance to insure that operational requirements be stated in terms of broad objectives to encourage imagination and innovative responses from potential developers." (20)

The thrust of these two recommendations was to signal the need for improving the formulation process. These recommendations subsequently received SECDEF concurrence and were incorporated as part of DODD 5000.1, which will be discussed in a later section.

b. OSD Decision Process

The SECDEF role, based on DODD 3200.9 was criticized for having only one major decision point which commenced Engineering Development. While the decision point itself was considered beneficial in the formulation process because it gave the Secretary of Defense greater control over large commitments of resources to new programs, the deficiencies it created were felt to be detrimental to program implementation below the OSD level.

Of the four deficiencies identified by the Panel report, we feel only one had validity. That one was "the lack of meaningful review after the initial OSD decision of conditional approval to proceed into Engineering Development."

The other three deficiencies identified by the Panel report, as resulting from the OSD decision process, included (1) the overoptimism of the Services and contractors to deal with technical unknowns; (2) increased effort on detailed justifications and "paper studies" by the Services in order to gain approval, rather than devoting needed effort on development proofing of critical components; and (3) the inhibiting effects on innovation, due to system "lock-in" caused by the initial OSD approval with the later unwillingness of the Services to challenge the credibility of the initial OSD decision.

The problems identified were valid, but their cause was wrongly, we feel, attributed by the Panel to the OSD decision process. The problem of overoptimism existed before DODD 3200.9, and we believe it exists today in programs going through the multi-review point DSARC process. Similar rebutals can be made to counter the other two deficiencies attributed to the OSD decision process.

In response to the four above deficiencies, the Panel recommended a multi-decision point management system

with three distinct decision points as contained in the current DSARC process. However, in retrospect, the Blue Ribbon Panel may not have arrived at the above mentioned recommendation independently and may have been reacting to avoid being overtaken by events in process at that time. Mr. Packard's policy guidance memorandum on major systems acquisition (21) in the spring of 1970 outlined the objectives and the framework of the DSARC process. Interpretation of Mr. Packard's memorandum indicates that the basic purpose of the DSARC decision process was not for eliminating the problems noted by the Blue Ribbon Defense Panel. Rather it was, as we see it, to allow the formulators to view program implementation at certain key milestones to ensure that the program was proceeding in accordance with the original policy objectives. Subsequently, this six page memorandum was in total translated into DODD 5000.1, the policy document that formalized the DSARC process. A discussion of this document will be deferred to a later section.

c. Acquisition Strategy

We are forced to be critical of the Blue Ribbon Defense Panel recommendations and analyses in the "acquisition strategy" section of their report. Although they have reached the right conclusion,

> "The present policy on acquisition strategies as set forth in DODD 3200.9, ...is highly inflexible and does not reflect the fact that much development effort occurs in an unstructured manner." (20)

it was arrived at for the wrong reasons. More appropriately this subsection in the Panel's report should have been entitled "acquisition techniques." Primarily, the Panel recommends substitution of the inflexible techniques of the McNamara era with numerous and equally inflexible techniques of their own making. The following examples from their report should support the above contentions.

The first recommendation by the Panel in this section was a "giant step backwards" for systems acquisition of major weapons. It stated, in essence, that there was too much DOD policy emphasis on the development of full weapon systems to the detriment of the development of subsystems, components, and parts. Therefore, it was recommended by the Panel to fragment the development process allowing subsystems, components, and parts to be developed independently of the system needs. It is not certain that this recommendation was adopted and deliberately implemented; however, subsequent studies, such as AMARC, NMARC, and the COGP reports specifically pointed out the fallacies of this type of approach and criticized the Services in cases where it was done.

The second recommendation also supports the contention that the Blue Ribbon Defense Panel did not understand acquisition strategy nor the acquisition process. They recommended the stretch-out of production over a longer period of time to reduce the cost of modifications and changes introduced during the production phase. Although supporting data was not presented, the Panel stated that their "...staff study indicated that stretched-out production is no more expensive to the Government." (20)

Again, we do not agree with the above and we disclaim the total concept of acquisition strategy as presented in the Blue Ribbon Defense Panel report. Although their report did go on to identify further problems and make additional recommendations in this section, we feel it contributed little to the understanding of acquisition strategy.

d. Program Management

The Blue Ribbon Defense Panel recognized that the caliber and effectiveness of a program's management team had a major impact on, what we would term, the successful program implementation of a major weapon system. The Panel's observations on deficiencies inherent in program management included the following:

(1) "Program managers have neither a substantial, well delegated, clearly defined responsibility, nor do they

have authority commensurate with exercising the responsibility..." (20)

(2) Excessive layers of management exist between the program manager and his source of authority. (20)

(3) "Program Management is generally not considered an assignment which furthers a man's career. Therefore, it is difficult to attract and retain top quality personnel." (20)

The Panel's recommendations essentially restated the above deficiencies in a positive fashion; i.e., "Military Program Managers should be given authority in program management decisions commensurate with responsibility placed upon them." (20)

The above again illustrates that the Blue Ribbon Defense Panel did not carry through on their analyses in any depth beyond the restatement of the obvious. It is not enough to state that a PM's authority is not commensurate with his responsibilities. What, we feel, needed to be discussed in light of the above criticism, is what the role of the program manager should be. Is it to be limited to program implementation or will his role also include responsibilities that should logically be performed by higher level formulators? In performing his role as implementer, we contend, the program manager does have sufficient authority to

carry out the responsibilities needed to achieve program objectives. It is when the program manager is dealing with OSD or when he is having to justify the need for his program before Congress, that he lacks sufficient authority. Should the PM's authority be expanded or should the scope of his direct and assumed responsibilities be decreased in order to equalize his responsibilities with his authority? What should the role and the responsibilities be for the intervening OSD Staff layers in relation to both, the formulation of needs and program implementation?

These are all questions that needed to be addressed but were not understood at the time of the Panel's report. The main impact of the Blue Ribbon Defense Panel report is that it identified some key issues but left them to be resolved by policy-makers at a later date. We feel it contributed little to acquisition strategy as depicted in our framework earlier. Historical analysis of documents indicates that many of the issues that the Panel was grappling with were being overtaken by the dynamic guidance provided in DEPSECDEF David Packard's memo mentioned earlier. Thus, the Blue Ribbon Panel was essentially confirming established DOD policy, which preceded it several months earlier.

4. Acquisition Strategy in DODD 5000.1 of 13 July 1971 (1971-1976)

This was a new and refreshing policy approach on the acquisition of major systems. The first point of significance was that the policy directive governing the acquisition of major systems decreased from 16 to 6 pages. Then Deputy Secretary of Defense Packard intended the following changes to occur as a result of this directive:

-Decentralization of decision-making from the OSD to the Service Component level.

-Clarification and delineation of authority and responsibility for key organizations and individuals involved in the acquisition process.

-Definition of the SECDEF milestone decision points and the enumeration of the substantiating elements that support each SECDEF decision.

The first and second objectives were meant to be achieved through redefinition of the authority and responsibilities of the formulators and implementers we have described. The Secretary of Defense would retain the decision-making authority for initiating new programs and redirecting existing programs. The DSARC would support the SECDEF decision-making and need formulation process.

OSD would retain formulation and overview responsibilities that include establishing acquisition policy, assuring that major defense systems were pursued in response to valid needs, and evaluating policy implementation on each

approved program. Program monitoring would be the joint responsibility of OSD and the Service Component as defined in this directive.

The Service components were defined to have a role in formulation which was limited to identification of valid needs. However, they were to have a larger role in program implementation consisting of the definition, development and production of systems to satisfy those needs when approval was given by SECDEF. This directive did state a subtle split inside Service Component responsibilities. The identification of valid needs and the definition of requirements were to be assigned to the Assistant Service Secretary for R&D. The responsibility for the development and production phases were assigned to the designated Program Manager. The intent of policy-makers in DODD 5000.1 from our perspective was to separate the program manager from formulation responsibilities and recognize his role as program implementer. There was a weakness in policy application, and it occurred at the interface of need formulation and program implementation. In real life there was a disconnect between the two processes. The "front end" formulators often did not include considerations that would "vitally" affect program implementation. The program manager was ineffective in dealing with many of those problems because they were incapable of being

solved by traditional program management tools of contracting, management control systems, etc.

Overall coordination was to be achieved through OSD overview in the DSARC process. "Mr. Packard's" directive established the three key milestones in this process. These program milestones consisted of the Program Initiation Decision, the Full Scale Development Decision and the Production Decision as transition points where SECDEF should have increased visibility. Figure 13 represents the weapons development cycle based on the above concepts and as defined in this directive.

Each of the phases leading to a DSARC decision point had to demonstrate a valid need and an acquisition strategy for obtaining the requirement to fulfill the need. The acquisition strategy was to be documented in the DCP and would consist of, "The considerations which support the determination of the need for a system program, together with a plan for that program..." (11) A complete description of the content and the objectives of the DCP are listed in Appendix B. A summary of the major contributions of "Mr. Packard's" directive would include the following:

a. Establishment of three major decision points in each program for the SECDEF to reassess mission needs, review program progress, and determine if the program was

WEAPON SYSTEM DEVELOPMENT CYCLE

UNDER DODD 5000.1

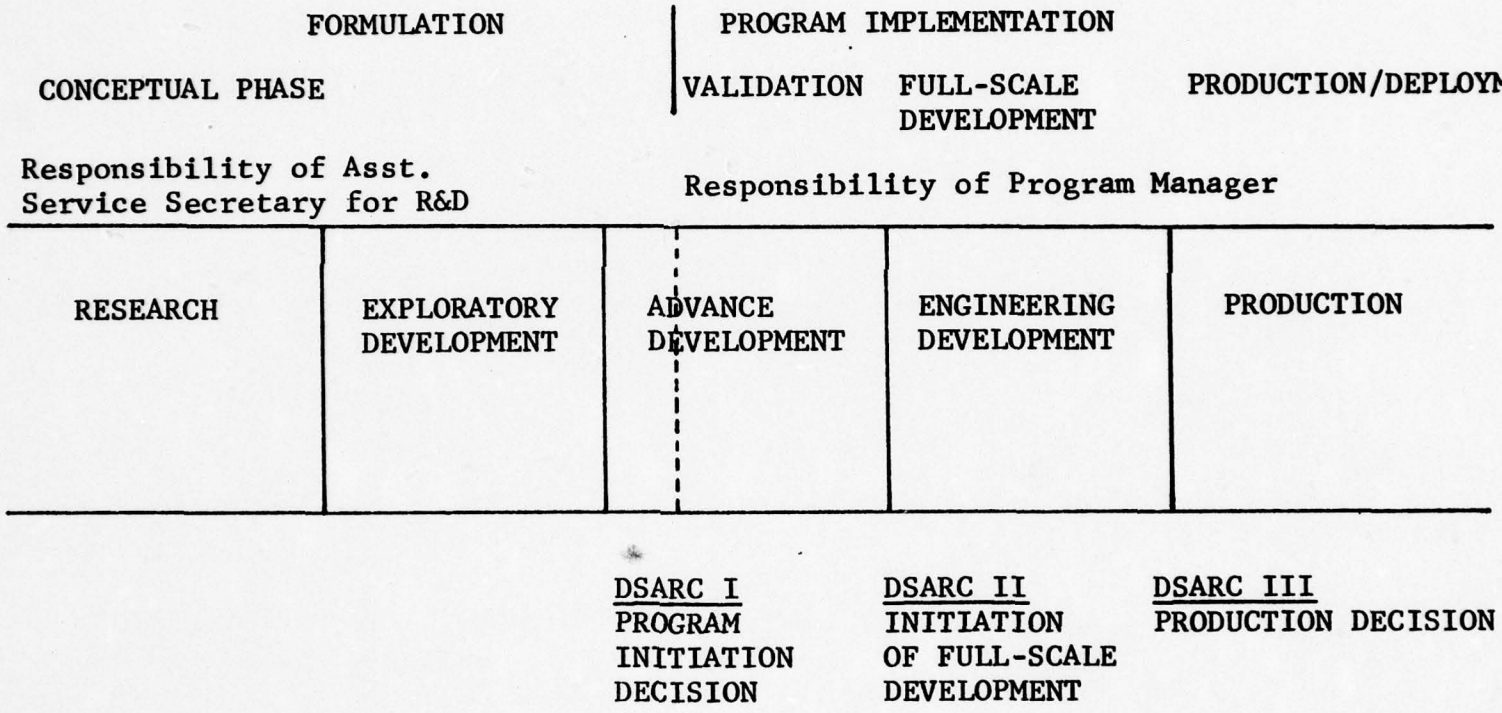


Figure 13

ready for approval of additional funds commitment to proceed into the next phase.

b. Clearly defining SECDEF, OSD, Service Component, and Program Manager responsibility in the weapon acquisition process. (Implementation of the intent of this policy point; however, has not occurred in real life. The program manager is still faced by staff layering, many meaningless staff review briefings and reporting requirements.)

c. Recognition of the program manager's role in carrying out acquisition policy, managing the program, and meeting its objectives.

d. Recognition that an implementation plan was needed by the PM to carry out program objectives as established by the Services and approved by SECDEF. This was the "acquisition strategy," and the Program Manager was responsible for its development at program initiation.

The implicit meaning of acquisition strategy as used in this directive was not clear. Four years later DODD 5000.2 made an attempt at clarifying terminology by expanding the scope of DODD 5000.1 and defining many of the elements listed under each decision point. New terms appeared such as "program plan," "contractual plan," but acquisition strategy was left open to interpretation.

5. Contribution of the Commission on Government Procurement to the Major Weapon Systems Acquisition Process (1972)

The previously mentioned problems in the acquisition of major systems persisted with no apparent solutions in sight even with the numerous attempts to bring about change. The following statement is illustrative of the frustrations expressed by Congress.

> "The need to improve major system acquisition has been made apparent by the succession of cost overruns, contract claims, contested awards, buy-ins, bail-outs, and defective systems that have drawn sharp criticism to one or more programs in recent years. The clutter of programs and problems has made it difficult to understand or grapple with the underlying causes of acquisition difficulties, some of which are subtly removed from time and place that the symptoms appear.
>
> ...too many past attempts have tried to deal with the symptomatic problems, such as those just enumerated, on an individual piecemeal basis. Patchwork corrective action has become counterproductive, leading to more regulations to amend regulations, more people to check people, more procedures to correct procedures, and more organizations to correct organization problems." (19)

Therefore, unlike many of the past studies* that were constrained to deal with segments of the major systems acquisition process, an exceedingly broad charter was given to the Commission on Government Procurement (COGP) by Congress. This broad charter allowed the Commission to take

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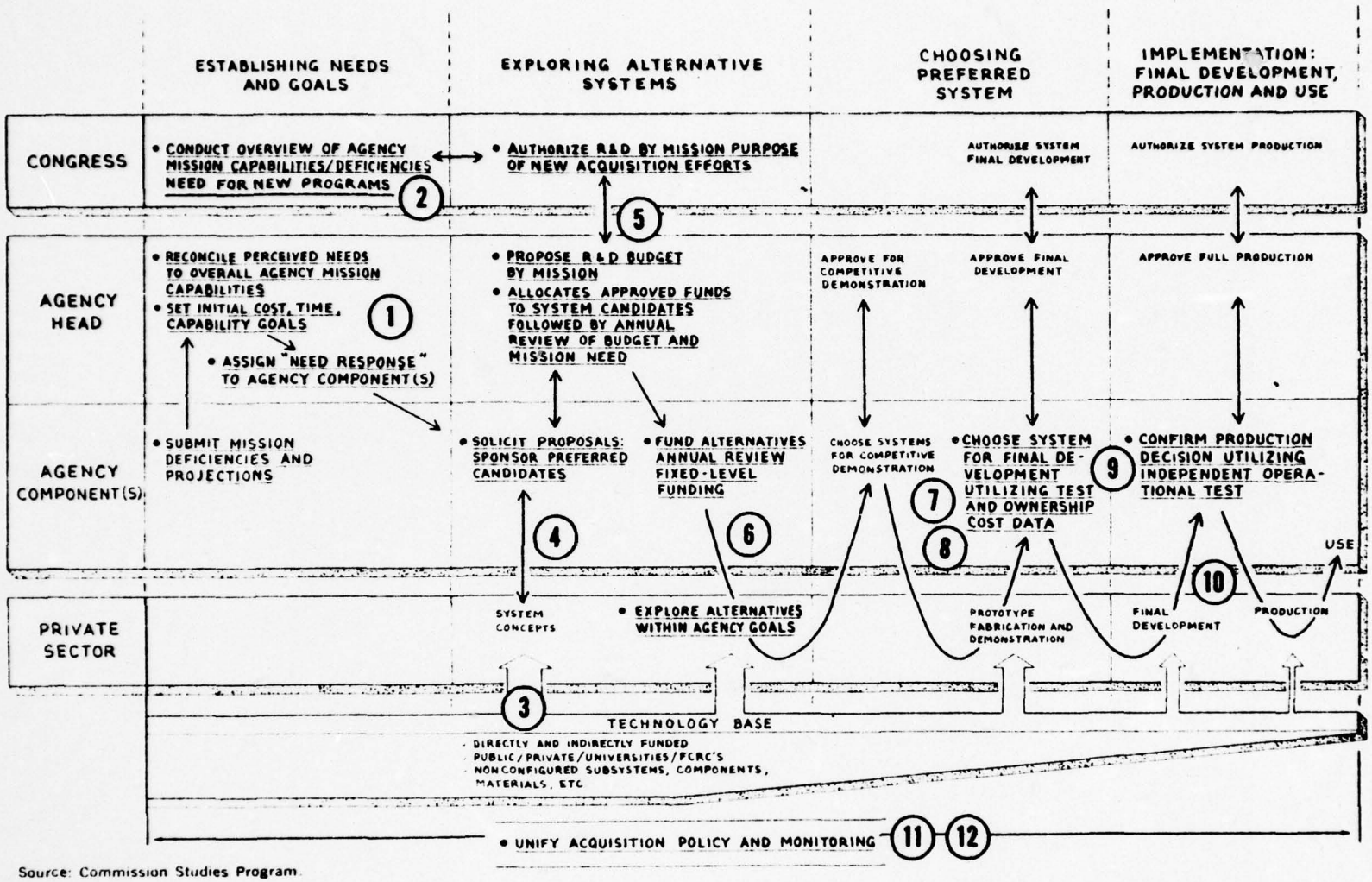
*A chronological list of DOD management studies dealing with various aspects of the acquisition process during the past 30 years are summarized in Appendix D.

an integrated view of the deficiencies in major systems acquisition and identify the consequential problems (such as those described in the above quote from the COGP report) that surface in program implementation and relate them to actions or inactions of the earlier formulation phase. The Commission's analyses resulted in 12 recommendations for improving both the formulation and implementation phases of major systems acquisition. The complete list of the 12 recommendations of the COGP are presented in Appendix C. These recommendations indicate that a "systems approach" is needed to improve the acquisition process for major systems.

The framework of this systems approach is presented in Figure 14. This Figure clearly defines the recommended roles and responsibilities that must be assumed by formulators and implementers at each policy level and depicts how formulation, as we previously described in Figure 5, is inseparably linked to program implementation. Each numbered action in the diagram correlates with the corresponding COGP recommendation in Appendix C. It must be emphasized that neither the problems, as identified by the COGP, nor its recommendations, can be viewed or intended to be applied separately, selectively, or incrementally.

In procedural terms, the Commission's aim was to accomplish four objectives in the overall goal of improving

MAJOR SYSTEM ACQUISITION
• RECOMMENDED ACTIONS



Source: Commission Studies Program

Figure 14

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the acquisition process. These were:

-Establishing a common framework that highlights the key decisions for all involved organizations--Congress, agency heads, service components, and the private sector for the purpose of having a common set of procedures for initiating, conducting, and controlling programs.

-Defining the role each organization is to play in order to exercise its proper level of responsibility and control over acquisition programs.

-Giving visibility to Congress and agency heads to exercise their responsibilities by providing them with the information needed to make key program decisions and commitments.

-Improving the means for assuring public accountability as a substitute for the burden of present administrative reporting and surveillance procedures.

Some of the broad existing problem areas analyzed by the Commission are presented in Column 1 of Table 1; Column 2 lists the current DOD approach, based on the policy in DODD 5000.1, for solving those problems. The third column summarizes the major changes recommended by the Commission's report, many of which not only support current DOD policy, but also extend to the fundamentals of the acquisition process not previously addressed in DOD policy.

In a broader context, the Commission's 12 recommendations present an acquisition strategy framework which unifies formulation and implementation in weapons acquisition. There was a recognition in DODD 5000.1 that ..."It is crucial that the right decisions be made during this conceptual effort;

Table 1.

COMPARISON OF PAST PROBLEMS, CURRENT CHANGES, AND RECOMMENDED ACTIONS
(Department of Defense)

PAST PROBLEMS	MAJOR CURRENT CHANGES	MAJOR RECOMMENDED ACTIONS
ESTABLISHING NEEDS & GOALS		
-Needs/goals set by each service; unplanned duplication	-Mission area coordinating papers	-Agency head reconciliation of needs/goals and service responsibilities
-No formal congressional overview		-Congressional review of mission deficiencies, needs/goals for new acquisition programs
EXPLORING ALTERNATIVE SYSTEMS		
-Centralized agency-level control over systems	-Decentralization; more authority for military services	
-Lack of congressional visibility; scattered R&D line items		-Congressional authorization and appropriation of RDT&E funds for systems candidates by mission need
-Premature commitment to single technical approach	-Attempt to broaden choice of system options at first agency-level review	-Solicit system proposals using broad need statement; maintain integrity of separate candidate systems
-Multiple information sources; uncommitted industry proposals; pressures for goldplating; high unit costs		-Annual review and fixed-level awards to each selected competitor; agency technical staff assistance

Table 1. (Continued)

PAST PROBLEMS	MAJOR CURRENT CHANGES	MAJOR RECOMMENDED ACTIONS
-Narrow technical latitude for competition; paper information; buy-ins	-Greater design latitude; more time for exploration and hardware development	-Commit best competitors to prototype system-level demonstration
CHOOSING PREFERRED SYSTEM		
-Paper competition; complicated source selection; contentious awards	-Some hardware prototypes; less reliance on paper	-Choose system based on mission performance measurements, total ownership costs derived from competitive demonstration and operational tests
-Single contract covering both development and production	-No "total package" awards	
IMPLEMENTATION		
-Overlapped development and production ("concurrency")	-Reduced concurrency	-Independent operational test before full-production release; strengthened test organizations
-Late and inadequate operational tests for production decision	-Emphasis on early and better operational testing	

Source: Commission Studies Program

wrong decisions create problems not easily overcome later in the program." (11) However, there was no coherent acquisition strategy framework to assure that the formulation process would interface with program implementation. For the most part formulation was the driving factor on all programs, and in many instances great difficulties were imposed on program implementation because "impossible" schedule or mission capability parameters were established early in the formulation phase.

It is the authors' belief that the COGP report and its recommendations provide a new way of understanding and viewing the acquisition of major systems. This new concept is, what we term, the unified acquisition strategy that is articulated by the Commission's report; it is a "systems approach" that integrates both formulation and implementation.

A further discussion dealing with the application of the acquisition strategy framework contained in the COGP recommendations will be deferred until the last section in this chapter which will discuss OMB Circular A-109, the policy implementation document for the COGP recommendations.

6. AMARC, NMARC, and Project ACE Studies (1974-1975)

After the Commission of Government Procurement report, the above three studies were conducted by the Army, Navy, and Air Force, respectively. Each report analyzed and critiqued

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the problems associated with the acq
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None of the above three studies iden
that were significantly different fr
COGP report, or in the Blue Ribbon D
Collectively these three studies cou
tion to the COGP report rather than
dealing with the acquisition of majo
it is not surprising that many of th
conclusions reached in these three r
concept and content as those in the
not attempt to cover all the recomme
of the NMARC, AMARC, and Project ACE
identification of significant insigh
from the COGP report will be present
significance identified from the ana
are as follows:

a. Identification of missio

The AMARC study made a "
it also applies equally to the Navy
acknowledged that

> "...the lack of a complete definit
> specifically oriented to a mission
> biggest contributor to criticism o
> process. The term 'mission defici
> broad mission area and the ability

> totally perform that mission. The fulfillment of a mission deficiency may require more than one weapon system. It may require a change not only in weapons systems but also in doctrine, tactics, and force structure. The functional alignments contained in the Department of the Army staff reorganization as yet do not clearly define responsibilities associated with the delineation of mission deficiencies." (23)

This implies that in order for the Services to perform their formulation roles and to comply with COGP recommendation 1(a), it will be necessary for each Service to reorganize/realign its operations and planning staffs from the current hardware system concept to a mission area basis. Unless the other two Services acknowledge this problem as the AMARC study did for the Army, it is our belief that the Navy and Air Force will continue to experience a great deal of difficulty in the formulation of future needs in terms of mission deficiencies. The current formulators in the Services can only identify deficiencies in terms of a given hardware system because of the organizational constraints. For example, in the Navy DCNO (OP-02) Submarine Warfare, DCNO (OP-03) Surface Warfare, and, DCNO (OP-05) Air Warfare are platform advocates rather than mission sponsors because of the current organizational framework.

b. Role of the Program Manager as Implementer

In 1969, the Logistics Management Institute (LMI) noted that higher authority called upon project managers and

their key subordinates to engage in tasks which did not lie within their charter, knowledge, or expertise. Primary among such tasks mentioned was justification of the total program. "Project managers believe that higher authority should present and defend the programs to OSD, OMB, Congress and the public. They believe such activity is not a proper role of project people, who should be left to run the project." (26)

Program managers, in the current environment, devote considerable time and effort preparing for and testifying at Congressional hearings pertaining to their programs. This should be part of the formulator's rather than the implementer's role. AMARC concurred in the above assessment and delineated the difference between the formulation role and the implementation role by affirming that "...the program manager should be involved in such matters when the subject concerns the <u>management</u> as opposed to the <u>defense</u>, of the program. It is someone else's job to defend the program at higher levels of authority within the DOD and before Congressional committees. Project managers should be allowed to manage their programs. Their military and civilian superiors, we believe, should assume the role of program advocate." (23)

NMARC and Project ACE were not able to make the above distinction; however, these two studies classified the above problem as part of the broader problem of OSD staff "layering." Nevertheless, the implication was that the program manager's responsibilities should focus on meeting the program objectives, and management of the program; program justification should fall under the responsibility of a formulator at a level above the program manager.

c. Acquisition Strategy--An Implementation Framework to Carry Out Program Objectives

All three studies indicate that there is a lack of realistic and thorough planning for system acquisition. Although DODD 5000.2 contains a recommended framework and lists the considerations that should be included in an acquisition strategy (see Appendix B). However, "There seems to be no substantial evidence or assurance that such strategy and plans are developed by a PM supported by experts knowledgeable in all functional areas including operations, requirements, procurement, production, costing, logistical support, equipment technology, or industrial inputs." (24)

Of the three studies, AMARC shows the clearest understanding of and similarity to our concept of acquisition strategy. The development "...of a detailed 'acquisition strategy' for individual systems or programs prior to

program initiation is the single most important factor in establishing a weapon system acquisition program. 'Acquisition strategy,' as used herein, refers to a mutually supporting series of plans for translating the goals and management needs of the total life of a specific program into a series of interrelated actions to accomplish the program. The purpose of an acquisition strategy is not to gain approval to initiate a program, but to establish a foundation through a series of plans upon which the acquisition and logistical support of weapon systems can be accomplished." (23)

It is important to note from the above definition that acquisition strategy is to be developed after the approval for the initiation of a program is given by OSD, and therefore it should be concerned with implementation, achieving DOD management goals and program objectives within the resource constraints of the FYDP. It should also be noted from the above definition that the acquisition strategy is not to be inferred as necessarily being a document or a checklist with time phased actions. A rigid plan or paper document can only lead to problems as a PM tries to "stick to an approved plan" and at the same time accomodate changes in needs, goals, schedules, and funding levels. There is ample evidence of the problems caused by inflexibility in program implementation under DODD 3200.9 which tried to

force each program into a rigid framework with predetermined contracting techniques. The task of developing a sound acquisition strategy must be vested in the program manager who has the responsibility of managing the program and carrying out its objectives. He must be the one to structure the acquisition strategy for his own program for the total development cycle from the initial design through production. It is an inevitable fact that changes dictated by formulators will take place during the course of the program. This is when the full value of an acquisition strategy will be realized. It will allow the program manager to assess the impact of the formulator directed changes and provide him a framework to minimize the effects on the program.

The basic thrust of the three studies is to reaffirm the guidelines for acquisition strategy in DODD 5000.1 and 5000.2, and the need for continuing effort within the Services to amplify and perfect the principles therein.

7. Acquisition Advisory Group (AAG) Report (1975)

Shortly after the completion of AMARC, NMARC, and Project ACE, the AAG was established. Its scope was not meant to cover the total acquisition process but was limited to weapon system management activities at OSD and Service levels including the OSD/Service interfaces over the life cycle of a system. Specific points of analysis by the AAG

were COGP recommendations 1, 2, 11, and 12. The most significant AAG conclusions with respect to the formulation and implementation of acquisition strategy will be presented below.

a. Formulation of Mission Needs

The AAG takes issue with the COGP recommendation 1, the portion that deals with the start of new programs with an agency head statement of needs and goals. It is clearly against the direct interjection of SECDEF at this point in the formulation of requirements.

> "It would not be useful and could be counterproductive if OSD were to institutionalize, review and approve all of the 'requirements' documents which are generated and harbored within the Services prior to the time when major advanced or engineering development programs are proposed to meet the requirement." (10)

Similarly it is against the use of the DSARC process, DSARC "0", for the initial need statement or the involvement of DSARC principles in that activity. This may in part reflect the AAG's fear of the possibility toward greater centralization of authority in OSD with their earlier direct involvement in the determination of mission needs. Instead, AAG proposes that the SECDEF establish broad mission areas through agreements with the services and allow them to pursue the definition of needs on their own initiative through mission area analyses and mission concept

studies. The SECDEF would still formally document approval or disapproval of Service recommended mission needs arising from the mission area/concept studies. Up to this point it would appear that AAG is recommending a reduction in centralization and layering, as it does throughout the report. However, a contradiction is evident when the AAG proposes to interject another OSD layer in the formulation process.

> "To assist the SECDEF in overseeing this 'front end' activity, it is suggested that a disinterested third party staff group such as the Weapons System Evaluation Group (WSEG) be charged with this responsibility." (10)

The Director of WSEG would ensure that the individual Service needs are coordinated on a DOD-wide basis, this individual would report to the DEPSECDEF.

b. Acquisition Executive

The AAG recommended the establishment of an acquisition executive to eliminate the previously identified conflicting staff/line relationships. With one individual serving as the DSARC Chairman at all times, the layering and staff/line ambiguities of having both DDR&E and ASD(I&L) involved at different decision points would be resolved. This would also tend to unify the technical and business strategy, which up till now have been relatively isolated from each other both in policy formulation and in program implementation.

c. Rejustification/Reverification of Needs During the DSARC Process

The AAG takes issue with the requirement for the program manager having to reverify the need at each DSARC decision point. The AAG goes on to imply that this should not be the role of an individual who is the implementer and is assigned to carry out program objectives; it should be the responsibility of individuals who are primarily formulators in the weapons acquisition cycle.

> "In most instances the program manager and his supporting program office are neither well qualified nor responsible for justifying the need or requirement for his program. On the other hand, they are primarily responsible for cost, performance, and schedule trade-offs with a given system. Overall justification of the need for a specific new system is a Service Headquarters and OSD function with advice and counsel from JCS and DIA." (10)

This reaffirms the continuing unresolved problem in DOD of not having responsibilities clearly spelled out for the program manager and for OSD policy formulators involved in various aspects of system acquisition.

d. The Impact of AAG on Acquisition Policy

The problems that AAG identified have all been noted in previous studies, and its recommendations are not "different" or new. It is the authors' belief that the major contribution to acquisition policy by AAG is its attempt to consolidate the individual Service perceptions

of problems relating to OSD-Service interface in systems acquisition into singular recommendations for SECDEF review, analysis, and action. However these problems will have to be worked out jointly through the efforts of both OSD and the Services to realize any improvement. The other areas addressed by the AAG report are in relatively close conformance with COGP recommendations 2, 11, and 12, and will therefore not be repeated.

8. Office of Management and Budget Circular A-109 (1976)

a. A Unified Need Formulation/Program Implementation Framework

Circular A-109 represents the culmination of 20 years of policy evolution concerning the acquisition of major weapons systems and provides the guidance for the establishment of a common framework for policy formulation and program implementation to all Executive Agencies. It is unanimously consistent with the 12 recommendations of the COGP. The individual recommendations as proposed in COGP and as incorporated in A-109 do not seem basically new or startling. Their overall goal is to eliminate the persistent problems commonly associated with the acquisition of major systems. What is different, is the integrated framework which unifies the formulation of needs with program implementation. The A-109 framework, as promulgated, is built

on four cornerstone objectives, each one contributing to the others.

> "-To clarify roles and responsibilities of industry, agency components, agency top management and the Congress so that each can perform its logical role in systems acquisition under our desired economic and political systems.
>
> -To structure new programs according to basic steps in problem solving that would separate a need from its solution, encourage research along several paths, and introduce early, meaningful competition into the acquisition process.
>
> -To give agency top management and the Congress the visibility over crucial turning points that shape program purpose and direction.
>
> -To assure better public accountability with fewer government controls by timely visibility on key decisions and restoring the government-industry contractual relationship to one based on real competition, thereby placing less reliance on costly and burdensome administrative controls and requirements." (27)

The essence of the first cornerstone was to define the roles and responsibilities for the formulators and the implementers involved in systems acquisition. The source of recurring problems has been that these roles were often reversed and the responsibilities for key decisions were organizationally misplaced and poorly timed. Further, design responsibilities for new systems were diffused or totally absent.

The second cornerstone represents the coordination of need formulation and program implementation

through the four problem solving steps derived from COGP:

1. Establishing needs and goals
2. Exploring alternate systems
3. Choosing the preferred approach
4. Final development, production and use.

The above are graphically depicted in Figure 15; it is a macroview of the major system acquisition cycle based on the A-109 concept.

The third cornerstone provides visibility to top formulators and provides the information necessary for them to exercise their responsibilities at these key milestones:

-when first determining needs and goals;

-when initiating competitive systems demonstration;

-when choosing the preferred system(s) for full scale development; and

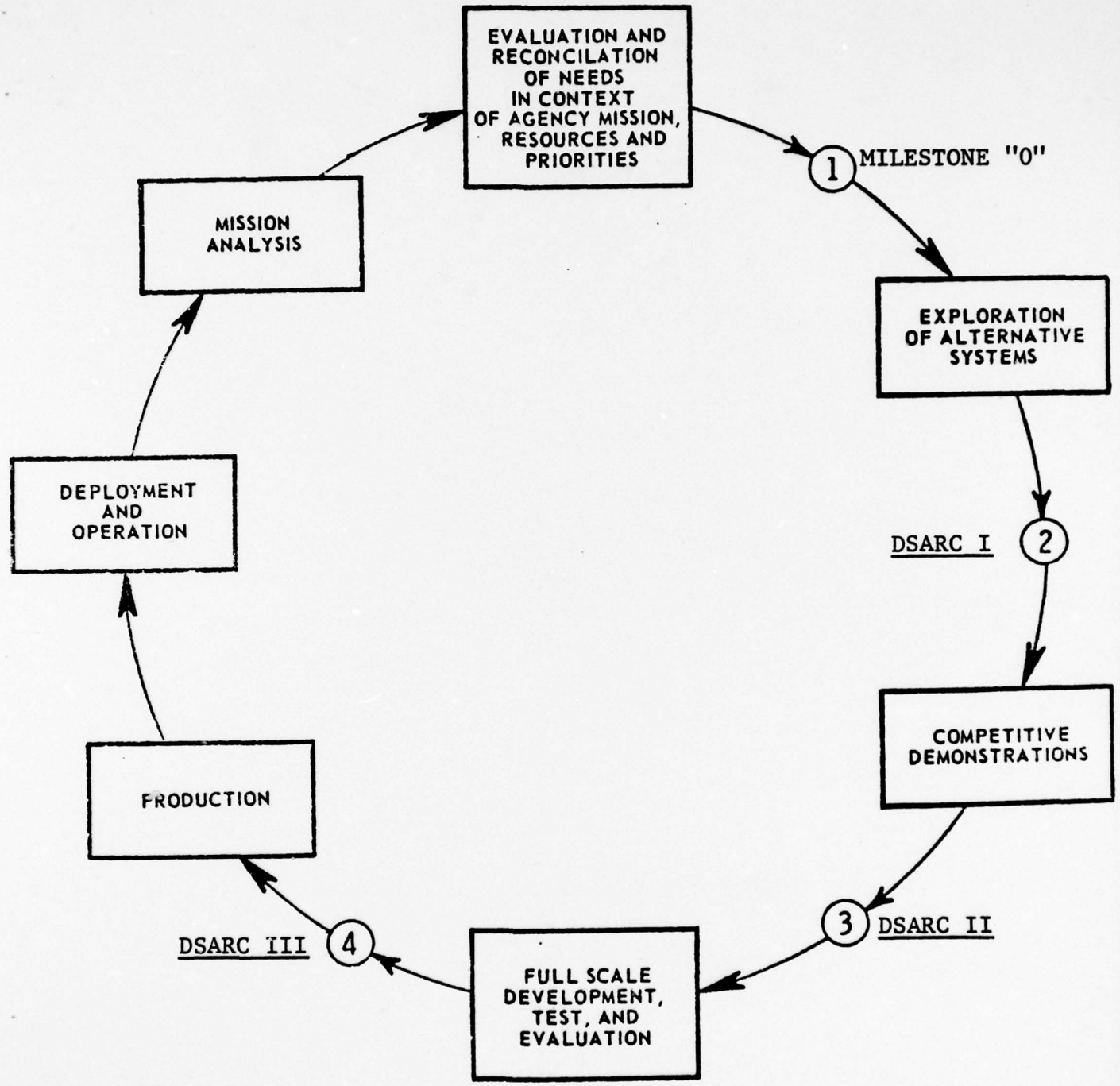
-when entering production.

Figure 15 also depicts where in the acquisition cycle these decision points would occur.

The fourth cornerstone objective of A-109 was to establish accountability in the acquisition process. Past policymakers have tried to solve the accountability issue with more management controls, more reporting systems, and regulations imposed on both industry and the program manager;

FIGURE 15

MAJOR SYSTEM ACQUISITION CYCLE



Source: Ref. 29

these attempts have been unsuccessful. The concept of competition inherent in the A-109 framework coupled with the visibility for the top formulators is designed to eliminate the need for the many controls and regulations and will establish the desired accountability.

Up until now we have tried to provide a historical perspective of the major contributing policy documents that led up to A-109, with sidelights on their failings to deal with the real problems in the acquisition process. The COGP was the first study to analyze the acquisition process using an integrated systems approach; A-109 provides the implementation framework for the systems approach by building on the concept of the above four objectives. An explanation of how the A-109 framework is meant to be applied will be presented below.

Refer again to Figure 15, which presents the macro-view of the life cycle of a major weapon system under the A-109 concept. Milestone "0" is the first key decision in this cycle and is designated by circle 1. There are activities that precede Milestone "0"; Mission analysis and the evaluation and reconciliation of needs in context of agency mission, resources and priorities. However, these two were discussed earlier in the context of Phase 1 and Phase 2 of the formulation process in Figure 3 and won't be repeated

at this point. Approval of the mission need starts the major system acquisition process by granting authority to explore alternative system design concepts. The mission need statement includes the mission purpose, capability, time constraints, value of meeting the need, relative priority, and operating constraints; it is not to be expressed in terms of specific equipment or hardware which might satisfy the need.

Several important events are initiated or take place shortly after Milestone "0" in the A-109 framework. The need must be communicated to Congress as part of the budget process, in order to permit Congress to consider the need within the context of overall national priorities of other programs and needs. This step is consistent with the previously summarized objectives which include involving Congress in its proper role of formulation by providing visibility to Congress before the commitment of major resources and selection of solutions. It also establishes accountability at program inception.

This is also the point at which A-109 proposes to bring in the program manager. His prime purpose at this point would be to initiate program implementation. Program implementation activities at this point would be directed at assembling a program team and initiating acquisition

strategy from the implementer's vice the formulator's perspective. This acquisition strategy should form the basis for the program manager's system implementation plan. He will use this plan to communicate with higher level formulators, his management team, interfacing OSD and Service functional groups, and with industry. The acquisition strategy should encompass the entire program implementation phase with emphasis on the near term time phased actions. As the program proceeds and periodic reviews are made, the next increment of near term considerations would be emphasized. Such an approach, implicit in A-109, would minimize the planning burden and provide a basis for program direction and for measurement of success against program goals and objectives. At program initiation, it is neither possible nor desirable to address all considerations in detail. It is possible and desirable, however, to examine and schedule when decisions on each consideration can and must be made throughout the acquisition process and to refine the strategy planning as the program proceeds.

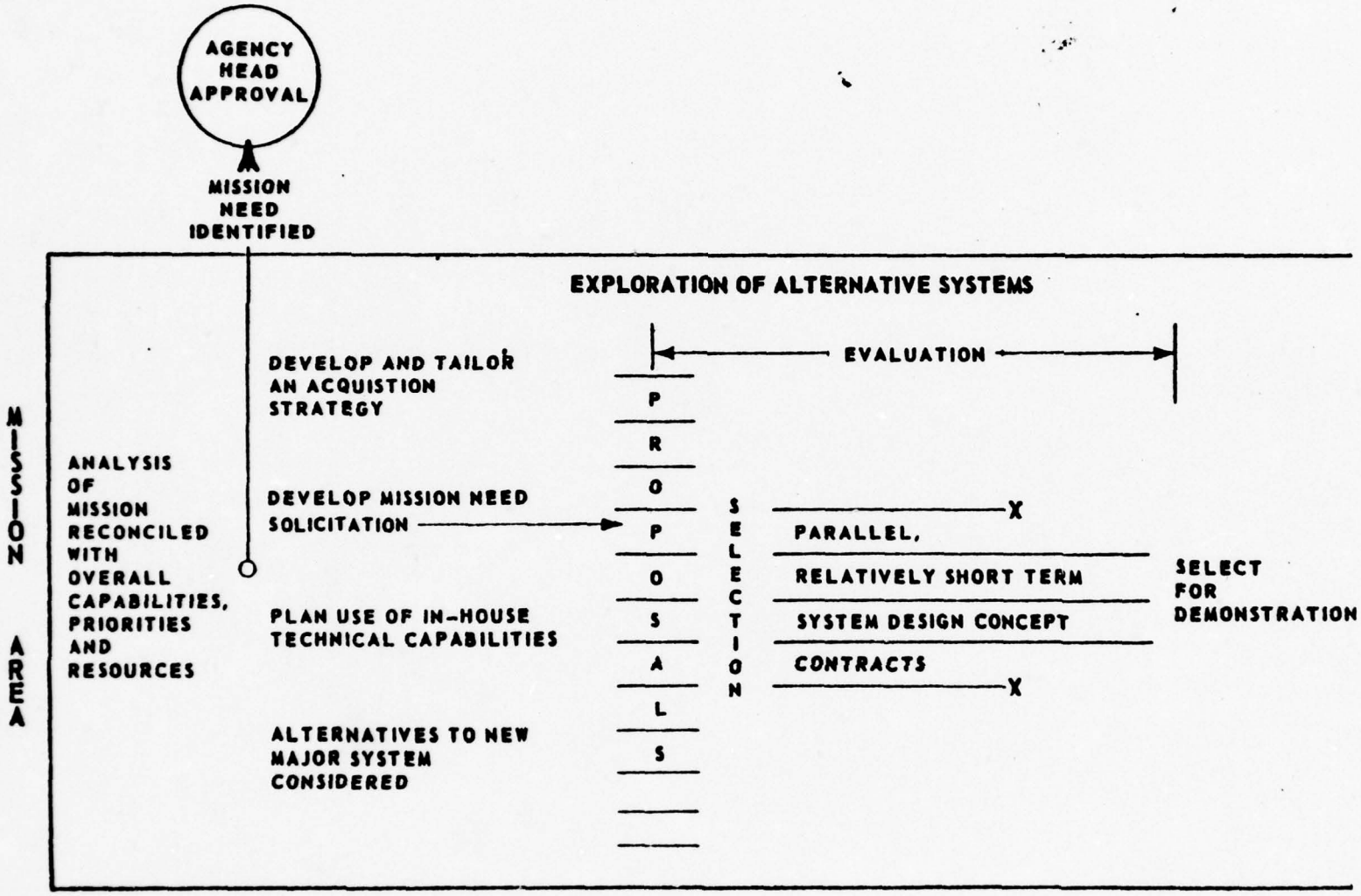
However, it must also be realized that there may be very little a program manager can do at Milestone "0" toward the development of an acquisition strategy. A more likely role would be his involvement in providing support to a higher level formulator. This is because the identification

of a mission need may involve considerations that affect more than one existing weapon system, it may involve a change in doctrine, Service manning levels, force structures, etc. These are areas where an implementer would lack authority to effect changes. It is visualized that the Program Manager would be providing support to a higher level formulator, possibly a Mission Manager during this phase, who would have the authority to coordinate actions in these different areas.

After the Milestone "0" decision, the acquisition strategy would focus on obtaining meaningful competition by soliciting industry on a wide basis to develop alternative system concepts. Figure 16 presents a proposed framework for exploring alternative systems concepts and is directly related to the previous figure. The methodology illustrated by Figure 16 would be to issue an RFQ with the widest possible dissemination; both, large known producers and small contractors would be solicited. The main purpose at this stage would be to obtain a wide range of ideas and innovative systems approach concepts. The emphasis would <u>not</u> be on system details, government specifications nor for a prescribed hardware solution. Evaluation would be done by an in-house team of technical specialists or through the assistance of Government labs. After evaluating each of the proposals, and dropping the non-feasible, the top firms with

FIGURE 16

EXPLORATION OF ALTERNATIVE SYSTEMS



Source: Ref. 29

the superior system concepts would be provided funding through short term parallel contracts to refine their own separate approaches and develop the following:

-A set of system functional requirements.

-System parameters and constraints.

-Criteria to determine responsiveness of system design concepts to meet the mission need.

-Feasibility analysis to demonstrate that the proposed system concept is within the state-of-the-art, within the framework of resource capabilities, and realizable in terms of allocated budget and in terms of schedule.

The output of this state, coupled with a re-assessment of the threat, and reaffirmation of the need, would be the basis for making the DSARC I decision to proceed into the Competitive Demonstration Phase or into Validation in the current erminology. This is the second key decision (Circle 2, Figure 15). Also, at this point, further analysis and evaluation would be performed to determine which of the competing systems approaches merit funding for competitive demonstrations.

Competitive demonstrations are intended to verify that the chosen concepts are sound, perform in an operational environment, and provide a basis for selection of the system design concept(s) to be continued into full-scale development. Such demonstrations normally involve some type of prototypes;

these may range from a principal end item or critical subsystem, to a limited and less than complete development model. The winning concept(s) and contractor(s) of the demonstration evaluation may then move into full-scale development and initial production.

By now a definite pattern can be seen emerging in the progression of a program through the weapons system acquisition process. The pattern is keyed to the DSARC decision points, which reaffirm mission need, program objectives, risk; etc., at each milestone. From program inception to the production decision genuine alternatives exist in system concepts. Each contractor carries his own unique concept through the competition leading to the production award. The number of alternatives are narrowed at each decision point by elimination of non-feasible or ineffective systems approaches. Successful contractors are funded through parallel short term contracts to refine their own "unique" concepts for the next stage of demonstration, testing, and evaluation. Evaluation of these systems concepts are based on actual testing and demonstrations of mock-ups, breadboard models, and fully operational prototypes, depending on the stage of the program in the development cycle. The final stage leading to the production award can be based on a "fly-off," if feasible, with due consideration given

to life cycle program cost. The production decision makes the final elimination among the remaining competitors to choose the system which "best" meets the mission need within overall life cycle cost considerations. Figure 17 presents a graphic view of the major system acquisition process as outlined above using the framework of A-109.

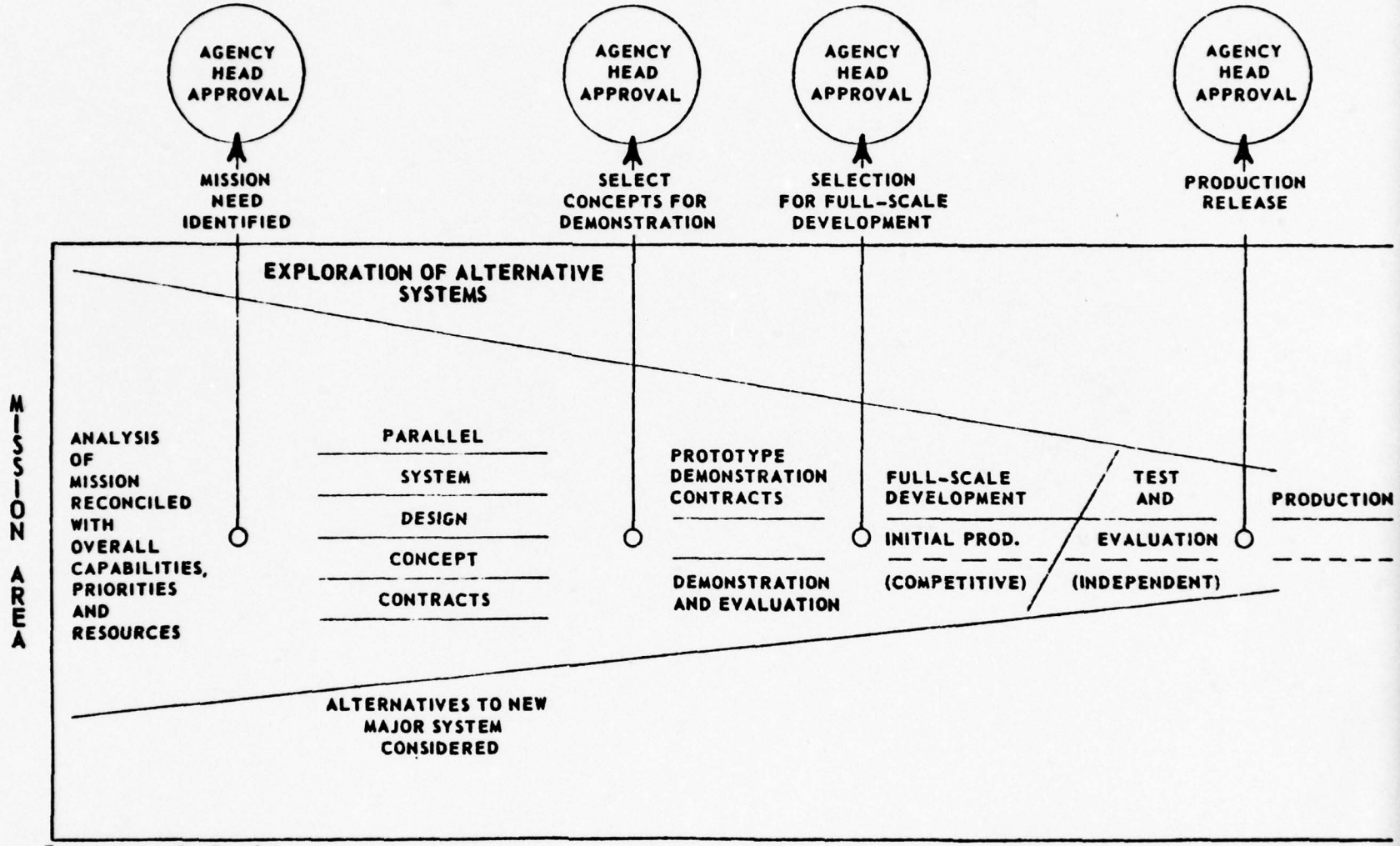
b. Impact of A-109

Although A-109 has not been fully implemented in practice by DOD, recent revisions have been made to update DODD 5000.1 and 5000.2 so that they conform to the intent of A-109. Therefore, certain valid assumptions can be made about the probable impact of these changes on the acquisition process for major systems. Some of the more significant ones will be discussed below.

(1) Elimination of the Symptomatic Problems. Many of the symptomatic and persistent problems commonly associated with the acquisition process should be eliminated by implementation of the A-109 framework. A listing of the problems and the rationale for A-109's impact in eliminating them are presented below.

FIGURE 17

MAJOR SYSTEM ACQUISITION PROCESS



Source: Ref. 29

Source	Nature of Symptomatic Problem	Impact of the A-109
Industry	Too much Government surveillance, red tape, regulation.	Agency will oversee programs at crucial turning points; rely on competition, test demonstrations and fixed-price contracting; and reserve detailed regulatory approach for new noncompetitive exceptions.
	Inflexible system requirements	Instead of stipulating system requirements at the outset, such requirements will result from a competitive development effort oriented to needed mission functions and program goals.
	Technical leveling of proposals; auctioneering of contracts	Contractors will have the design freedom to differentiate their system solutions; technical transfusion between proposals will be precluded; basis for award will be performance values and long-term acquisition/ ownership costs; losing contractors' technical features which enhance winning contractor's design will be procured directly by him from the source.
	Premature fixed-price arrangements	Short steps in the initial program phase, focused on high risk areas, will develop high confidence information for continued use of fixed-price arrangements

Source	Nature of Symptomatic Problem	Impact of A-109
	Low profits, worsened by inflation	Profits will not be solely cost-based, but rather will depend more on the results of competition. Higher profits will accrue from innovative simpler, lower cost solutions to agency needs and from efficiency of contractor operations under fixed price contracts.
Government Agencies	Endless regulations, management reviews, studies, audits	Government agencies will rely principally on competitive forces, test demonstrations and visibility on key program decisions, unless program is sole source. Agency components will have full flexibility to explore system alternatives. Overall, a simplified and flexible decisionmaking process is called for that places greater reliance on sound judgment and less reliance on detailed regulations and complicated contracts and clauses.
	Buy-ins; runaway cost growth	Cost growth will continue to occur but large unanticipated growth will be precluded by no longer specifying premature system requirements, by short risk reduction steps in the initial program phase, by higher confidence information acquired for decisions and by reduced emphasis on initial system prices that encourages buy-ins.

Source	Nature of Symptomatic Problem	Impact of the A-109
	Contract claims without end	Large claims are unlikely because (1) the Government will not make design decisions or impose commercially impractical system requirements at the beginning of development and (2) higher confidence information developed in initial steps will improve estimating and resultant commitments.
	Product reliability, maintainability	Performance factors will be important criteria in evaluating alternatives to be explored and in choosing the preferred system; test demonstrations will yield information for final choice and undue reliance will not be placed on contractor proposals.
Congress	Burgeoning systems costs; reductions in agency capabilities	Only system alternatives within the reach of program cost goals and at quantities needed to perform the agency function will be explored and sustained. Criteria used for system choice will compare competing alternatives as to the cost to acquire, operate and maintain in the field.
	Congressional uncertainty as to system need, performance, cost, and better alternatives	Congress will have the opportunity to affirm program need at the outset and authorize R&D monies for exploring competing candidates; Congress will

Source	Nature of Symptomatic Problem	Impact of the A-109
		not be asked to fund program implementations until system performance and cost can be reasonably forecasted and at least partially validated through test demonstrations. (28)

(2) Acquisition Executive. Neither DOD nor the Service components have had an acquisition executive. Presently the responsibility for making policy and monitoring acquisition programs is split between the technical and business functions at top DOD and individual Service levels. This split in authority between the R&D and procurement policy staff functions makes it difficult to integrate technical and business management planning, correlate changes in acquisition policies, monitor implementation of the separate policies, or determine the ultimate results of the policies.

As part of his responsibility for the early phases of major system acquisition programs, DDR&E develops overall acquisition policies; these are expressed in DODD 5000.1, DODD 5000.2, DODD 5000.3, etc. The Assistant Secretary of Defense (I&L) also issues policy in the form of ASPR regulations. These regulations set policy for all

DOD procurement including some aspects of major system contracting. This situation illustrates that the acquisition policy for program implementation was split between ASPR and DOD directives. Similarly the split exists in the monitoring and the DSARC decision process. DDR&E chairs DSARC I and II and ASD(I&L) is the chairman of DSARC III. As a result of this split, not only does the problem of discontinuity exist but also it is evidenced in the duplication of responsibilities, layering and management overstaffing which occur below the top levels of DOD and Service components.

The recent establishment of an acquisition executive in DOD to have overall responsibility for acquisition policy was directed by A-109. Future policy from business and technical policy formulators will have to be coordinated through the acquisition executive. This should act to unify the DDR&E and ASD(I&L) roles through the acquisition process.

V. CONCLUSIONS

A. SUMMARY OF INFORMATION PRESENTED

The concept of acquisition strategy which has been expressed thus far has assumed that it is possible for a rational, conscious and deliberate process of decision making to govern the acquisition of major weapon systems within the Department of Defense. Our use of the principals of the field of study of corporate strategy/corporate policy in the development of our concept itself implies the presence of a general manager with an overall, organizational, perspective. The general manager, not the process per se, is the element lending rationality, consciousness and deliberatness to decision making. It is then, the general manager, or in our context, the acquisition manager, who must learn to guide the acquisition process rather than becoming its slave.

We believe ample evidence exists which confirms that no policy or procedure can be developed which is so comprehensive or fool proof as to render the art of decision making obsolete. The process of acquisition of major weapon systems has never been considered to be well developed or well defined. It has never proved to be fully capable of delivering weapons which consistently meet performance, schedule, and cost constraints.

Attempts to improve the acquisition process by adding organization, rationality, and farsightedness have been discussed earlier, for example, the contributions of DODD 3200.9, the Blue Ribbon Panel, and the AAG. Many of such attempts to critically appraise the system have been in reality, attempts to isolate specific procedural disconnects within the acquisition process and make recommendations for instant success. Few dramatic achievements have been realized. Even the contribution of the Commission on Government Procurement, the most comprehensive of all studies, cannot be ascertained at this time since many of the recommendations are only now being implemented. Our research would predict success when the recommendations are fully implemented due to the overall approach taken by the Commission.

When the acquisition process is viewed from an historical perspective, the major works which describe acquisition problems in each of the last three decades point out nearly identical manifestations of existing problems. Cost overruns, gold-plating, inadequate performance achievement, inadequately trained personnel, and continued personnel shortages are universally discussed. The absence of strong centralized decision making in the 1950's, the presence of centralized decision making in the early and late 1960's coupled with the "new management" tools, such as total

package procurement, and fixed price incentive contracting, and the return to decentralized decision making in the late 1960's and early 1970's has not aleviated the basic and recurrent problems pointed out by both Peck and Scherer (8) and Fox (9).

The evidence would seem to suggest that try as we may, the acquisition of major weapon systems is a process which is either not well enough understood or of such a nature as not to be controllable by men. Contrary to intuition, there is also evidence that while most of the problems so frequently identified by outsiders, to the system, are real, those operating within the system are on the whole quite content to simply accept their insolubility. Comments such as "lets face it, that idea will never work, we've tried it before," and "that new procedure you just described, well, we already do it that way" are comments often heard from professional acquisition specialists at all levels when faced with new or innovative techniques. There is almost what can be described as a protective response prevalent in acquisition circles, a response which attempts to justify the existing system no matter how inadequate and wasteful it may be. It appears that in the acquisition process, familiarity does not breed contempt.

There is an overwhelming resistence to change within the Department of Defense. Such resistence cannot be simply attributed to personal shortsightedness of past and current practitioners within the acquisition process. The sprawling size and complexity of the Department of Defense fractionates decision making and creates so called empires. The existence of these "fiefdoms" adds to the resistence to change through the creation of individual office procedures or protocols where the protective response described earlier is most intense. The concept of acquisition strategy which we espouse does not require an explicit change in procedure, policy or structure. We suggest rather, that a change in thinking, a new mentality regarding the acquisition process, is necessary. If organizational or structural changes can contribute to improvement in the acquisition process, it is only after a new mentality is developed, that such change can be considered.

It was noted earlier that the acquisition manager must be a generalist. Acquiring the perspective of a generalist implies elimination of long standing personal ties to one functional specialty or another, and acquiring a higher order dedication to efficient acquisition planning. To be more specific, for example within the Navy, we would advocate that Force and Mission Sponsors become solely mission sponsors.

In doing so, they would become mission specialists, and therefore broadly speaking functional specialists. However, they would become functional specialists of a higher order. Thus, the inherent platform orientation which these specific officers bring with them can only be a burden to the successful accomplishment of their mission. Such a shift in mentality would entail elimination of deep seated affiliation with platform types and in some respects would require severing ties with ones "community" of fellow officers. The mission area, thus would become the object for optimization rather than the platform type. Parenthetically, it is noted, that the newest development in the acquisition process, the requirement for mission area budgeting, must be incorporated in future acquisition strategy formulation. The mission orientation, just discussed can only facilitate the transition to this new policy.

The Mission Sponsor, whom we will refer to as the Mission Manager would depend on a number of program managers to counter mission area deficiencies. Each program manager would be responsible for product management rather than continued substantiation of needs or requirements. Such responsibility would be returned to the Mission Manager who has a broad mission perspective rather than a narrow product orientation.

The Mission Manager would also serve as a point for decisions required to be made prior to the assignment of a program manager. Once assigned, the program manager can then dedicate his full attention to the development of a weapon system. He will no longer be required to divide his time among the various activities required to continually justify the continuance of his program. The proper time for assignment of the program manager would then be, in accordance with our concept of acquisition strategy during the time period between Milestone "0" and DSARC I. The most opportune point would seem to be when the process of formulation, in the moving balance which exists between phases, gives way to a predominance of the implementation phase. Clearly, the program manager would be most effective at a time when formulation has been formalized and alternative product or hardware solutions actually are being considered.

Our concept of acquisition strategy identifies the period bounded by Milestone "0" and DSARC I as the most critical period in the acquisition process due to the high degree of mixing of the two phases at that time. It is therefore suggested that future research be directed toward in depth analysis of the mechanisms at work during that transition or overlap period. Many of the untoward results which can be

attributed to poor coordination during that transition period may possibly be eliminated, or mechanisms for control be developed, by additional research.

The concept of acquisition strategy developed in the thesis can be viewed as an integrating mechanism which can lend coordination to the widely dispersed activities which exist in the acquisition process. Acquisition strategy is not a new procedure or policy to be added to an intolerably long list which already exists. It advocates a new way of thinking about the acquisition process, it provides a conceptual matrix or index, the use of which may aid in revealing the intense and complicated relationships which exist amongst the players of the "acquisition game."

B. EPILOGUE

The reader, after having been led through a complete evolution of policy directives and studies of the major system acquisition process, may wonder, "Are we any closer to understanding and solving problems of the 1950's, most of which are still with us today?"

We feel that the review of the historical perspective was necessary to gain an appreciation for the well-intentioned but unguided efforts of past policy-makers in trying to eliminate the seemingly inevitable problems associated with the weapons acquisition process.

Attempts in the past have been to legislate, regulate, over-control, overstaff, organize, and reorganize. The result has been that directives, regulations, and controls have grown voluminous, and procedures have become exceedingly complex. More organizations were created to staff, manage, and review every action of the Program Manager and industry to assure policy compliance. The result has been that much of the Program Manager's time and resources have been dissipated in complying with reporting procedures and in providing a never-ending series of briefings to various management levels within the Service component and to OSD organizations. He has had correspondingly less time and fewer resources to devote to the actual management of his program. Patchwork procurement and contracting techniques have been infused into the acquisition process with few beneficial results. This list can be continued, but what is presented should serve to illustrate to the reader that he should now have a better understanding of the problems and why past solutions didn't eliminate them, but actually created additional, unforeseen problems of their own.

The reader may also wonder if the most recent major policy document, OMB Circular A-109, is not just another directive similar to all the others that were presented in the historical perspective.

We contend this document is different from all past policy. It demands that a new way of "thinking" be implemented about the acquisition of major weapons; a new way of thinking about the development of requirements, about the nature of competition, about acquisition strategy, and about accountability in the acquisition process. The value of this document lies not necessarily in its procedures, but in the basic framework as described in an earlier section. Procedures will change with changes in formulators and implementers. However, the basic framework, we believe, will not change. This framework consisted of the four cornerstones outlined below:

-Clear roles and responsibilities for Congress, OSD, Service Components, and industry, so each can perform its logical role in systems acquisition.

-Development of an acquisition strategy which separates the problem from the solution for new programs and includes each of the formulation/ implementation steps of:

.Establishing needs and goals;
.Exploring alternatives;
.Choosing the preferred system; and
.Final development, production and use.

-Providing to formulators the needed visibility over early decisions to shape program purpose and direction.

-Restoration of public accountability through genuine competition vice the burdens of ineffective administrative controls.

This framework is the essence of our earlier discussion which dealt from the theoretical perspective of formulation, implementation and the integration of these two phases in the weapons acquisition process.

The final question which remains to be answered is "Will the problems be solved?" We believe that many of the symptomatic problems, as previously discussed, will be eliminated in accordance with the rationale presented. We also realize the potential practical difficulties involved in the implementation of this new evolutionary concept. It is not a checklist, nor a "cookbook approach," it is a way of thinking. One of the major difficulties will be in educating both the formulators and implementers. The acceptance of and understanding of a new concept is typically met with bureaucratic inertia and resistence, no matter how great its "inherent goodness." "We're already doing it" is the usual response. It is also certain that new unforeseen problems will evolve in the acquisition process as the full implementation of this concept progresses. However, now the framework exists, where it did not before, to build rational solutions.

APPENDIX A

CONCEPT FORMULATION/CONTRACT DEFINITION UNDER DODD 3200.9

Concept Formulation encompassed Exploratory and Advance Development. It was the process preceding Engineering Development whereby the validity and attainability of program was established through comprehensive system and experimental hardware studies. Evidence of validity and attainability would be submitted for the approval of DDR&E in terms of six prerequisites.* This evidence was submitted as part of a Technical Development Plan (TDP). Also submitted with the TDP was a memorandum to DDR&E requesting approval to proceed with full-scale development. (A Program Change Request (PCR) was used in lieu of a memorandum if a PCR had not already been forwarded to introduce the end item into the Five Year Defense Program). Approval was given by the Secretary of Defense upon the recommendation of DDR&E. It is a conditional approval to proceed with Engineering Development, the first phase of which is Contract Definition.

The purpose of the Contract Definition phase (CD) was to confirm this conditional approval through refinement of the technical, cost, schedule, and management aspects of the program. This phase consisted of three subphases and was normally (but not necessarily) conducted by competing contractors. Under certain conditions it was done on a non-competitive basis or was even done in-house. Phase A was the preparation and issuance of the Request for Proposal (RFP) for the CD effort, and the selection of two or more contractors to conduct the effort. Phase B was the actual CD effort by the contractors and would not exceed six months,

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1. Primarily engineering rather than experimental effort is required, and the technology needed is sufficiently in hand.
2. The mission and performance envelopes are defined.
3. The best technical approaches have been selected.
4. A thorough trade-off analysis has been made.
5. The cost effectiveness of the proposed item has been determined to be favorable in relationship to the cost effectiveness of competing items on a DOD-wide basis.
6. Cost and schedule estimates are credible and acceptable.

Source: Ref. 18

with three to four months being the norm. Phase C was the evaluation and selection of the successful contractor for Engineering Development, and this phase could not exceed 18 weeks. During the CD effort, the contractors developed projections for the development effort and for the production and operating phases as well. In some procurements the successful CD contractor would be expected to undertake contractual commitments for these phases, i.e. Total Package Procurement. Upon completion of the CD effort, a contractor was selected for the full-scale development effort, and where a CD was required by the dollars involved, DDR&E requested to confirm the conditional approval it gave earlier.

APPENDIX B

THE DECISION COORDINATING PAPER (DCP)*

I. GENERAL

A. The DCP is a summary document of not more than 20 standard pages that provides management with the essential information on a major defense system program (DoD Directive 5000.1, reference (a)). There will be a DCP for each major defense system program. The DCP will also be used to accommodate programs which represent major modifications to existing deployed systems.

B. The form and content of each DCP issued shall focus on the particular phase of the program it is intended to support, related issues, and the specific decision it seeks.

C. The "initial" draft DCP is a Military Service prepared draft which after preliminary review within the OSD becomes a "for comment" draft. This "for comment" draft is forwarded to all interested groups for review and comments. When revised to reflect these comments it becomes the "for coordination" draft which is used (1) as the basis for DSARC review, (2) for final coordination, and (3) signature by the DSARC Principals; the Deputy DDR&E (T&E); and other appropriate signatories; and the Secretary of Defense (see subsection III.A). The "for coordination" draft will be modified, if necessary to reflect the Secretary of Defense decision prior to signature.

D. During the DCP coordination, key issues and the substance of disagreements shall be clearly defined. While the coordination process will resolve many major issues, it may not be possible to resolve all issues. However, it is required that the unresolved issues be clearly identified in the DCP. Conflicting viewpoints shall be documented, supported and highlighted in the DCP.

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*Formerly referred to as "Development Concept Paper."

Source: Ref. 22

E. Each DCP will identify any approved Area Coordinating Paper (ACP), or Mission Concept Paper (MCP) encompassing the specific mission area to which it relates.

F. Each DCP shall contain a Resource Annex. For each program alternative in the DCP, this annex shall specify Cost Data, Production Data, and Inventory/ Objectives Data using the same format as that employed in the submission of Congressional Data Sheets, as described in the Budget Guidance manual, DoD 7110-1-M. The Annex will indicate, for each program alternative, the required changes to previously allocated DoD component resources and any changes to previous estimates for the program.

G. The DCP will remain in existence throughout the complete acquisition phase of a program. The DCP shall be reviewed annually and updated as appropriate (see subsection III.E.).

H. Cost escalation shall be handled in the DCP in the same manner as in the Selected Acquisition Report (SAR), prescribed by DoD Instruction 7000.3.

II. DCP OBJECTIVES

A. The basic objectives of each DCP, regardless of which Secretary of Defense decision it supports, are to:

1. Ensure collaboration and essential debate by DSARC Principals, and other key officials as appropriate, before Secretary of Defense decisions.

2. Relate the phasing of the development and acquisition program to force modernization needs in the apporpriate mission area, utilizing information on projected budgetary constraints when possible.

3. Identify major issues or differences of opinion that bear on the immediate Secretary of Defense decision.

4. Identify and evaluate feasible program alternatives based on their acquisition and ownership costs and projected performance against the

established need. Evaluations shall include consideration of new development, improving existing systems, and foreign developments.

5. Show how the program relates to similar programs in other Military Services and ensure no unnecessary duplication.

6. Identify, and present a plan for the resolution of those issues and risks that are anticipated during the next program phase.

7. Establish the plan, including test and evaluation effort, for the next program phase (DoD Directive 5000.3). Develop a fall-back plan for an alternative program if objectives are not achieved.

8. Define considerations of interoperability with other force elements. This shall include a statement of the plan to address such factors as electromagnetic compatibility and identification needs when applicable.

9. Summarize the technical readiness of subsystems and the degree of standardization including test and support equipment.

10. Establish cost, performance and schedule thresholds for the total program and the next program phase, including funding limits for maintaining alternatives. Address the estimated probability of producing and supporting the adequate number of systems within realistic resource and time limitations.

11. Describe management responsibility, structure and planned management systems.

12. Establish objectives and limits of authority that are delegated to the cognizant DoD Component(s) for conducting the next phase of the program.

13. Assure that the acquisition strategy and related contract plan are consistent with program characteristics, including risk.

Assure that economic and technical competition to the maximum extent feasible is planned.

14. Identify the environmental considerations as required by DoD Directive 6050.1.

15. Identify impact of the proposed system program on the utilization or expansion of DoD facilities.

16. Ensure consideration of such international aspects as buying foreign systems, joint development programs, and sales to allied countries.

17. Identify the elements of the program that require protection by security classification.

18. Identify any document(s) that develop the analytical rationale for force-level projections or goals.

B. Normally, the DCP I, which supports the decision by the Secretary of Defense to enter the Program Validation Phase, will accommodate the basic objectives above and place added emphasis on the following areas:

1. Identify threat factors as analyzed in appropriate documents.

2. Describe and substantiate the operational need.

3. Identify broad performance objectives; substantiate that these performance objectives meet the operational need.

4. Identify the critical questions and areas of risk to be resolved by test and evaluation and provide a summary statement of test objectives, schedules and milestones.

5. Identify preliminary cost and schedule estimates, and identify design-to-cost goals or indicate when these will be established.

6. Identify critical logistics support factors that must be considered during the acquisition.

7. Identify issues which must be resolved prior to DSARC II and ensure that the program is adequate to resolve them.

C. Normally, DCP II, which supports the decision by the Secretary of Defense to enter the Full-Scale Engineering Development Phase, will accommodate the basic objectives above and place added emphasis on the following areas:

1. Confirm the operational need, considering changes in policy or threat since the initial Secretary of Defense decision.

2. Establish and substantiate the specific performance objectives including the reliability and maintainability requirements.

3. Present results of test and evaluation accomplished to date, an updated statement of critical questions and areas of risk still needing resolution by test, and a detailed statement of test plans and milestones (DoD Directive 5000.3).

4. Present results of cost, performance, and schedule trade-off analyses, and cost effectiveness studies as required.

5. Present the design-to-cost goals and rationale.

6. Identify and evaluate the logistic support alternatives including their impact on design.

7. Identify issues which must be resolved prior to DSARC III and ensure that the program is adequate to resolve them.

D. Normally, DCP III, which supports the decision by the Secretary of Defense to enter the Production/ Deployment Phase will accommodate the basic objectives above and place added emphasis on the following areas:

1. Confirm the operational need, considering changes in policy or threat since the previous Secretary of Defense decision.

2. Evaluate the degree of achievement of performance objectives including reliability and maintainability.

3. Provide an assessment of system producibility, operational suitability, and logistic supportability.

4. Present (a) an assessment of the development and operational test and evaluation results and readiness of the system to enter production, and (b) the scope and schedule for any test and evaluation still to be accomplished. (DoD Directive 5000.3).

5. Present results of cost, performance, and schedule trade-off analyses and cost effectiveness analyses as required. (These analyses shall relate to acquisition, operating and support costs).

6. Describe the procurement plan, including any options and how it relates to the proposed contract.

7. Validate that technical risks have been eliminated or are in hand.

8. Present the integrated logistic support plan and production plan.

E. Normally, for ship programs, DCP I, II and III will be developed when preparing to start Preliminary Design, Contract Design and Detailed Design (for the first procurement-funded ship) respectively. The DCP III will be updated for the follow-ship procurement DSARC review.

APPENDIX C

LIST OF RECOMMENDATIONS

ESTABLISHING NEEDS AND GOALS

1. Start new system acquisition program with agency head statements of needs and goals that have been reconciled with overall agency capabilities and resources.

   (a) State program needs and goals independently of any system product. Use long-term projections of mission capabilities and deficiencies prepared and coordinated by agency component(s) to set program goals that specify:

   (1) Total mission costs within which new systems should be bought and used
   (2) The level of mission capability to be achieved above that of projected inventories and existing systems
   (3) The time period in which the new capability is to be achieved.

   (b) Assign responsibility for responding to statements of needs and goals to agency components in such a way that either:

   (1) A single agency component is responsible for developing system alternatives when the mission need is clearly the responsibility of one component; or
   (2) Competition between agency components is formally recognized with each offering alternative system solutions when the mission responsibilities overlap.

2. Begin congressional budget proceedings with an annual review by the appropriate committees of agency missions, capabilities, deficiencies, and the needs and goals for new acquisition programs as a basis for reviewing agency budgets.

3. Support the general fields of knowledge that are related to an agency's assigned responsibilities by funding private sector sources and Government in-house technical centers to do:

   (a) Basic and applied research
   (b) Proof of concept work
   (c) Exploratory subsystem development. Restrict subsystem development to less than fully designed hardware until identified as part of a system candidate to meet a specific operational need.

4. Create alternative system candidates by:

   (a) Soliciting industry proposals for new systems with a statement of the need (mission deficiency); time, cost, and capability goals; and operating constraints of the responsible agency and component(s), with each contractor free to propose system technical approach, subsystems, and main design features.
   (b) Soliciting system proposals from smaller firms that do not own production facilities if they have:

      (1) Personnel experienced in major development and production activities
      (2) Contingent plans for later use of required equipment and facilities.

   (c) Sponsoring, for agency funding, the most promising system candidates selected by agency component heads from a review of those proposed, using a team of experts from inside and outside the agency component development organization.

5. Finance the exploration of alternative systems by:

   (a) Proposing agency development budgets according to mission need to support the exploration of alternative system candidates.
   (b) Authorizing and appropriating funds by agency mission area in accordance with review of agency mission needs and goals for new acquisition programs.
   (c) Allocating agency development funds to components by mission need to support the most promising system candidates. Monitor components' exploration of

alternatives at the agency head level through annual budget and approval reviews using updated mission needs and goals.

6. Maintain competition between contractors exploring alternative systems by:

   (a) Limiting commitments to each contractor to annual fixed-level awards, subject to annual review of their technical progress by the sponsoring agency component.
   (b) Assigning agency representatives with relevant operational experience to advise competing contractors as necessary in developing performance and other requirements for each candidate system as tests and tradeoffs are made.
   (c) Concentrating activities of agency development organizations, Government laboratories, and technical management staffs during the private sector competition on monitoring and evaluating contractor development efforts, and participating in those tests critical to determining whether the system candidate should be continued.

CHOOSING A PREFERRED SYSTEM

7. Limit premature system commitments and retain the benefit of system-level competition with an agency head decision to conduct competitive demonstration of candidate systems by:

   (a) Choosing contractors for system demonstration depending on their relative technical progress, remaining uncertainties, and economic constraints. The overriding objective should be to have competition at least through the initial critical development stages and to permit use of firm commitments for final development and initial production.
   (b) Providing selected contractors with the operational test conditions, mission performance criteria, and lifetime ownership cost that will be used in the final system evaluation and selection.
   (c) Proceeding with final development and initial production and with commitments to a firm date for operational use after the agency needs and goals are reaffirmed and competitive demonstration results prove that the chosen technical approach is sound

and definition of a system procurement program is practical.

(d) Strengthening each agency's cost estimating capability for:

(1) Developing lifetime ownership costs for use in choosing preferred major systems
(2) Developing total cost projections for the number and kind of systems to be bought for operational use
(3) Preparing budget requests for final development and procurement.

8. Obtain agency head approval if an agency component determines that it should concentrate development resources on a single system without funding exploration of competitive system candidates. Related actions should:

(a) Establish a strong centralized program office within an agency component to take direct technical and management control of the program.
(b) Integrate selected technical and management contributions from in-house groups and contractors.
(c) Select contractors with proven management, financial, and technical capabilities as related to the problems at hand. Use cost-reimbursement contracts for high technical risk portions of the program.
(d) Estimate program cost within a probable range until the system reaches the final development phase.

SYSTEM IMPLEMENTATION

9. Withhold agency head approval and congressional commitments for full production and use of new systems until the need has been reconfirmed and the system performance has been tested and evaluated in an environment that closely approximates the expected operational conditions.

(a) Establish in each agency component an operational test and evaluation activity separate from the developer and user organizations.
(b) Continue efforts to strengthen test and evaluation capabilities in the military services with emphasis on:

(1) Tactically oriented test designers
(2) Test personnel with operational and scientific background

(3) Tactical and environmental realism
(4) Setting critical test objectives, evaluation, and reporting.

(c) Establish an agencywide definition of the scope of operational test and evaluation to include:

(1) Assessment of critical performance characteristics of an emerging system to determine usefulness to ultimate users
(2) Joint testing of systems whose missions cross service lines
(3) Two-sided adversary-type testing when needed to provide operational realism
(4) Operational test and evaluation during the system life cycle as changes occur in need assessment, mission goals, and as a result of technical modifications to the system.

10. Use contracting as an important tool of system acquisition, not as a substitute for management of acquisition programs. In so doing:

(a) Set policy guidelines within which experienced personnel may exercise judgment in selectively applying detailed contracting regulations.
(b) Develop simplified contractual arrangements and clauses for use in awarding final development and production contracts for demonstrated systems tested under competitive conditions.
(c) Allow contracting officials to use priced production options if critical test milestones have reduced risk to the point that the remaining development work is relatively straight forward.

ORGANIZATION, MANAGEMENT, AND PERSONNEL

11. Unify policymaking and monitoring responsibilities for major system acquisitions within each agency and agency component. Responsibilities and authority of unified offices should be to:

(a) Set system acquisition policy.
(b) Monitor results of acquisition policy.
(c) Integrate technical and business management policy for major systems.

(d) Act for the secretary in agency head decision points for each system acquisition program.
(e) Establish a policy for assigning program managers when acquisition programs are initiated.
(f) Insure that key personnel have long-term experience in a variety of Government/industry system acquisition activities and institute a career program to enlarge on that experience.
(g) Minimize management layering, staff reviews, coordinating points, unnecessary procedures, reporting, and paperwork on both the agency and industry side of major system acquisitions.

12. Delegate authority for all technical and program decisions to the operating agency components except for the key agency head decisions of:

(a) Defining and updating the mission need and the goals that an acquisition effort is to achieve.
(b) Approving alternative systems to be committed to system fabrication and demonstration.
(c) Approving the preferred system chosen for final development and limited production.
(d) Approving full production release.

Summary Chart of Management Studies

Date	Name of Study	For	Conducted by	Purpose and Scope
1947	Steelman Report	President	President's Scientific Research Board	A comprehensive review of science and public policy including research administration, personnel problems, and the Government's policy.
16 Apr 1954	Gates Committee	SECNAV	In-house committee on organization of the Department of the Navy (DON)	Review of organizational structure of the Department of the Navy to identify overlapping or duplicative functions, problems, and difficulties.
4 Aug 1954	Riehlman Subcommittee	Congress	Subcommittee of Committee on Government Operations	Organization and administration of R&D in DOD.
May 1955	Second Hoover Commission	Congress	Commission chaired by Herbert Hoover	Comprehensive review of the Executive Branch of the Government.
31 Jan 1959	Franke Board	SECNAV	In-house committee on organization of the DON	Review of organization of the Navy in view of DOD Reorganization Act of 1958 and technological advances since the Gates report.
1 Jun 1959	A.D. Little	NRAC/SECNAV	A.D. Little, Inc.	Review of basic research in the Navy for appropriate level, etc.
1961/1962	Task Force 97	SECDEF	In-house committee chaired by Deputy DDR&E	Review of operations of in-house laboratories and recommendations of changes.
17 May 1962	Bell Report	President/Congress	Cabinet-level committee chaired by D. Bell, Director, Bureau of Budget	Comprehensive review of Government contracting for R&D to improve effectiveness.
Apr 1962	Asten Panel	Federal Council for Science and Technology	Standing Committee of FCST	Study of factors affecting ability to select, recruit, develop, and retain superior scientific and engineering personnel in the Federal Government.
6 Sep 1962	Furnas Report	SECDEF	Defense Science Board Subcommittee	Review of "health" of DOD laboratories and recommendations of improvements. Also review of Bell report and development of recommendations.
15 Dec 1962	Dillon Review	SECNAV	Committee of in-house representatives and consultants	Comprehensive review of entire Navy organization; in-depth review of functions and operations down to and within bureaus and offices.
Nov 1964	Sherwin Plan	DDR&E	Chalmers Sherwin (Deputy DDR&E)	Improvement of operation and management of DOD in-house laboratories.
17 Dec 1964	Task Group B	ASN(R&D)	In-house group headed by RADM Ruckner	Enable ASN(R&D) to respond to Sherwin Plan.
1965	Morse Study	ASN(R&D)	In-house group chaired by Dr. Raney	Review of functions and operations of Navy laboratories in light of current and future needs. Recommendations of consolidations, closures, etc.
6 Dec 1966	Benson Study	SECNAV/CNO	In-house group chaired by Rear Admiral Benson	Review of Navy Department staff functions in light of change from bilateral to unilateral system.
1 Jul 1970	Blue Ribbon Defense Panel	President/SECDEF	Distinguished out-of-house committee	Study of entire organization and structure of DOD.
1 Jul 1971	Glass Committee	SECDEF	In-house group chaired by Dr. Glass	Review of BRDP report, review of DOD laboratories, and recommendation of actions.
Dec 1972	Commission on Government Procurement	Senate	High-level, congressional, industry, and Government team	Broad, in-depth study of procurement practices Government-wide.

Source: Ref. 22

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