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A Framework for Defense Planning

Glenn A. Kent

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DISTRIBUTION STATEMENT A

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The research described in this report was sponsored jointly by the United States Air Force under Contract F49620-86-C-0008 and by the Office of the Secretary of Defense (OSD), under RAND's National Defense Research Institute, an OSD-supported federally funded research and development center, Contract No. MDA903-85-C-0030.

Library of Congress Cataloging in Publication Data

Kent, Glenn A., 1915-

A framework for defense planning / Glenn A. Kent

p. cm.

"Prepared for the United States Air Force and the Office of the Secretary of Defense."

"R-3721-AF/OSD."

ISBN 0-8330-0998-2

1. Military planning—United States. 2. United States—Military policy. I. Project Air Force (RAND Corporation) II. United States. Air Force. III. United States. Dept. of Defense. Office of the Secretary of Defense. IV. RAND Corporation. V. Title.

U153.K46 1989

355'.033573—dc20

89-10911

CIP

The RAND Publication Series: The Report is the principal publication documenting and transmitting RAND's major research findings and final research results. The RAND Note reports other outputs of sponsored research for general distribution. Publications of The RAND Corporation do not necessarily reflect the opinions or policies of the sponsors of RAND research.

Published by The RAND Corporation
1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

89 12 21 015

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER R-3721-AF/OSD	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) A Framework for Defense Planning		5. TYPE OF REPORT & PERIOD COVERED interim
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Glenn A. Kent		8. CONTRACT OR GRANT NUMBER(s) MDA903-85-C-0030
9. PERFORMING ORGANIZATION NAME AND ADDRESS The RAND Corporation 1700 Main Street Santa Monica, CA 90406		10. PROGRAM ELEMENT PROJECT TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Long Range Planning & Doctrine Div. (AF/XOXFP) Directorate of Plns, Ofc. DC/Pins & Operations Hq USAF Wash.DC 20103 /Ofc.Secty of Defense, Wash, D.C. 20301-7000		12. REPORT DATE August 1989
		13. NUMBER OF PAGES 53
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for Public Release; Distribution Unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) No Restrictions		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Defense Planning, National Security, Military Strategy. 		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) see reverse side		

DD FORM 1473
1 JAN 73

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Unclassified

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This report presents an approach to strengthening the U.S. defense planning process. The approach centers on a simple but rigorous framework that links official statements of national security and national military strategy and the operational capabilities of force elements to programs for developing and procuring military systems and services. The author recommends adopting a force-planning procedure that includes the following elements: (1) an operational focus, (2) guidance to Department of Defense components in operational terms, (3) discussion at the level of force elements rather than systems and hardware, (4) developing outlines of capability goals, (5) the allocation of resources to best overall effect, (6) a better process for decisionmaking, (7) streamlining the process for upgrading basic systems, (8) determining performance features of new basic systems, and (9) reducing turmoil and paralysis.

→ keywords →

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

R-3721-AF/OSD

A Framework for Defense Planning

Glenn A. Kent

August 1989

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PREFACE

This report presents an approach to strengthening the U.S. defense planning process. The approach centers on a simple but rigorous framework that links official statements of national security and national military strategy and the operational capabilities of force elements to programs for developing and procuring military systems and services. Although most of the examples used to illustrate the principles of the framework are drawn from the Air Force, the framework applies to all of the military services.

The framework is offered with the full appreciation of the fact that some of the features may be difficult to implement and that others require additional elaboration. The report touches on some of these questions, but in the main they must be the subject of future efforts.

The study was undertaken as part of the research support activity of Project AIR FORCE and the National Defense Research Institute at The RAND Corporation. These federally funded research and development centers are sponsored by the United States Air Force and the Office of the Secretary of Defense, respectively. The report should be of interest to all who seek a more systematic and operationally oriented process for defense planning in general and for force planning in particular.



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NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
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Availability Codes	
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SUMMARY

Congress is growing increasingly critical of the apparent lack of a logical and persuasive relationship between U.S. military strategies and the defense budgets that it is asked to approve. At the same time, the defense community believes that the process of converting demonstrated technology into increased operational capability has become cumbersome and overly time consuming and that it has led to too many new starts and stops. The simple, straightforward, coherent framework proposed in this report would assist the force-planning process and greatly alleviate these problems.

The framework requires only five top-level national policy statements or documents to provide a coherent progression of force planning:

- *The National Security Strategy of the United States*, an annual report by the President
- A report by the Chairman of the Joint Chiefs of Staff (JCS), at the direction of the Secretary of Defense, that develops and evaluates alternative national military strategies
- Presidential guidance on strategy and fiscal constraints
- The annual guidance to DoD components by the Secretary of Defense
- An annual report to Congress by the Secretary of Defense and the Chairman of the JCS.

Within the framework, the principal organizations involved in this process of top-down force planning—the office of the President, Congress, the office of the Secretary of Defense, the Chairman of the Joint Chiefs of Staff and the Joint Staff, the DoD components, and the combatant commands—interact, with repeated feedback loops, to ensure a coherent process of force development. This interactive mode differs from one in which the output from one level imposes a seemingly fixed requirement on the next level down.

The framework demonstrates the relationship of strategies down to tasks—or tasks up through strategies—according to the following hierarchy:

- The capability to accomplish a cluster of operational tasks provides the means of achieving stated operational objectives.

- The capability to achieve a cluster of operational objectives provides the means of underwriting a stated regional strategy.
- The capability to underwrite regional strategies, along with other capabilities, provides the means of underwriting the national military strategy.
- The military power to underwrite the national military strategy, in conjunction with the nation's economic, political, and intellectual power, provides the means of underwriting the national security strategy.

The key to this approach is the formulation of operational concepts to provide the link between development and acquisition programs and operational tasks. Looking upward, operational concepts describe how to accomplish operational tasks to achieve operational objectives. Looking downward, they define the programs to be undertaken to provide the systems and equipment to accomplish the operational tasks according to the agreed-on operational concept. According to the framework, creative people working under two pressures—a requirements push and an opportunity push—would formulate operational concepts of how to accomplish operational tasks. These concepts would define the tactics to be employed and the functions that systems and equipment must perform.

The report urges the following approaches to force planning:

- **An operational focus.**

The force planning process should focus on operational objectives, operational tasks, and operational concepts to accomplish tasks rather than on military hardware and individual programs.

- **Guidance to DoD components in operational terms.**

Guidance to DoD components should be as specific as possible regarding what capabilities are expected (mandated) from the various force elements under each DoD component.

- **Discourse at the level of force elements rather than systems and hardware.**

The DoD and Congress should discuss force planning in terms of how force elements operating in concert are to achieve stated operational objectives. That is, the discourse should take place at the level of force elements, proposals to improve and expand these force elements according to agreed-on operational concepts, and clusters of force elements working in concert to achieve operational objectives. This level of discourse differs markedly from discussions at the level of

systems and hardware. Operational capabilities are the output; systems and hardware are simply the means to provide this output.

- **The development of road maps for capabilities.**

The DoD and the Services should prepare operationally oriented road maps that assess and reflect the progress of this nation toward accomplishing operational tasks more effectively and, at the next higher level, that assess and reflect our capability to achieve critical operational and support objectives. Road maps for operational and support objectives would have such titles as delaying and damaging Soviet follow-on forces in the Central Region; providing tactical warning for the dispersal of strategic bombers on alert; delaying and damaging Soviet forces proceeding southward from northern Iran; deploying forces to Southwest Asia; and enhancing first-strike stability in crisis through better postures of strategic forces.

Road maps for areas of technology (e.g., hypersonic flight) and certain classes of hardware (e.g., unmanned aerial vehicles and standoff weapons) have their place. However, such road maps lack operational content and cannot substitute for the type of road maps recommended here.

- **The allocation of resources to best overall effect.**

Resources should be allocated on the basis of the best overall effect in achieving operational objectives and in winning campaigns and wars. Even though identifying the optimal allocation of resources in a global sense and over time is not feasible, in the presence of a mandate for a more systematic approach for allocating resources, military judgments and common sense, coupled with emerging analytical tools, should go a long way toward making more informed decisions about such allocations.

- **A better process for decisionmaking.**

The DoD should adopt a more logical process for deciding what new programs are to be undertaken than that set forth in DoD Instructions 5000.1 and 5000.2 of September 1, 1987. The proposed approach centers on a clear delineation of *what*—what operational concept is proposed to accomplish what operational tasks to achieve what operational objective; *how*—how are we to go about developing and procuring the systems and equipment defined in the operational concept; and *whether*—whether or not to proceed, depending, in particular, on cost, effectiveness, and other opportunities and, in general, on the allocation of resources to best overall effect.

- **Streamlining the process for upgrading basic systems.**

The DoD should streamline its method of upgrading existing basic systems of force elements. The present approach is paralyzed by an incoherent process of "requirements" that in some instances suggests that we should not formulate or evaluate new concepts until the "requirements" process produces a description of the solution under the heading of a statement of need. By eliminating the useless documents that now paralyze the process, we can hope to achieve upgrades in less than the usual five years.

Central to a more streamlined approach is the formulation of new operational concepts. The formulation of operational concepts to provide increased capabilities and the preparation for the Office of the Secretary of Defense (OSD) of proposals to undertake to underwrite these operational concepts should not take more than four months. The OSD decision as to whether to proceed should not take more than two or three months after the proposal is submitted (after all, OSD will have known of the impending proposal for some time before its submission). Congress will then have to provide a timely source of funds; it may be willing to do so if it deems the overall process more appropriate than current practice.

- **Determining performance features of new basic systems.**

Each Service should adopt a more systematic process for making the trade-offs between the performance and the cost of new basic systems. Too often performance features are presented as "requirements," without a deliberate and informed judgment to determine the point at which further increments of performance no longer justify the additional increment in cost. Presenting early on as "requirements" what really are preliminary performance goals creates a rigidity that hinders the timely and practical reirection of the program in reaction to new knowledge as to what is reasonably achievable.

The framework suggests that each Service institutionalize a procedure whereby a senior review group would have the responsibility and authority both to establish the preliminary performance features of new basic systems or major items of equipment and to change these performance features in a timely and orderly manner in reaction to unfolding events.

All concerned should adopt a more rigorous definition of "requirements." The word "requirements" is now so overused and misused as to stifle meaningful discourse and logical thought. As a beginning, we should remember that the "requirement" is for operational capability and that hardware and systems represent solutions to operational needs.

• **Reducing turmoil and paralysis.**

The criteria for starting new development programs should be demanding, and they should be rigorously applied. Once begun, a program should be sustained unless new evidence indicates reasons for stopping it.

While the proposed framework would not be a panacea for the difficult process of force planning for national defense, adherence to the framework could:

- Promote an easier and more perceptive discourse among all involved.
- Promote a clear and common understanding of a top-down force planning process and foster more purposeful actions and long-term continuity in planning the future postures of our forces.
- Provide a better audit trail than is now available from strategies down through operational tasks to hardware.
- Foster more operationally oriented statements to Congress by the Secretary of Defense, the Chairman of the JCS, and the Service chiefs.
- Define a course and process of purposeful action to promote the timely upgrade of existing force elements.
- Provide a more systematic process for determining and adjusting the performance features of new basic systems.

A more operationally oriented force planning process is an important improvement that seems within reach. It requires a simple, coherent, and rigorous framework to which all Department of Defense organizations would be obliged to adhere. Most of the elements of such a framework are already in place.

Some of the elements, however, will require considerable elaboration before they can be meaningfully implemented. Guidance to DoD components in operational terms and the allocation of resources to the best overall effect will probably present the greatest difficulties.

Global optimization of resource allocations to guide DoD components regarding the specific capabilities expected of their various force elements will require formidable effort. One cannot in practice determine analytically the optimization of resources in a stated region in a stated time, let alone global optimization over all regions for the present and future. The presence of many uncertainties, including the principal threat(s) to U.S. security as the future unfolds, further complicates the process of optimization. However, allocation decisions based on common sense, cou-

plied with emerging analytical tools, would represent a decided improvement over many current analyses based on whether one approach is more cost-effective than another.

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I. INTRODUCTION

Defense planning has come squarely to the forefront of the national discourse on security matters in the United States. Members of Congress are increasingly concerned that military strategies and military budgets are not clearly linked and, in fact, may not be linked at all.

Members of Congress are also concerned that programs to acquire systems and equipment are proliferating and that these programs too often are advocated on an individual basis, without systematic consideration of alternatives and without adequate elaboration of their role in supporting our military strategies. In short, Congress is growing increasingly critical of the apparent lack of a logical and persuasive relationship between the defense budgets that it is asked to approve and increased security for this nation.

Moreover, the defense community believes that the process of translating demonstrated technology into increased operational capabilities has become overly cumbersome and time-consuming and that it has led to too many new starts and stops. Programs, once started, experience undue and serious delays and lack long-term continuity.

In sum, the United States critically needs a *force-planning* process that focuses on the building blocks of *operational capability* rather than on hardware.¹ It needs a framework that promotes the long-term continuity of programs by clearly linking national security objectives to the timely procurement of hardware. It needs a framework that leads to prompt and purposeful action, rather than a system that emphasizes preparing and approving documents over the substance of the goals we seek.

The components of such a framework already exist in traditional methods of force planning. This report proposes a framework for systematically linking these components. The proposal is based on the firm belief that adherence to a simple and coherent framework—one

¹Force planning (or development), an aspect of defense planning, includes organizing, equipping, training, upgrading, maintaining, and supporting various *force elements* to provide specific *operational capabilities*. The force element, an organizational unit, consists of the personnel and major items of equipment—tanks, ships, and aircraft—together with all of the supporting resources needed to provide it with a stated operational capability. The specific operational capabilities provided by a specific force element is the sum of the *operational tasks*, or individual military operations, which that force element is capable of performing. The capability is specific with respect to the type of tasks performed, as well as to the magnitude of the effort over time. Operational tasks are the building blocks of operational capability. See "Operational Concepts" in Sec. III, below.

that encourages timely and purposeful actions by mandating a few critical documents and actions by the organizations involved—would greatly enhance discourse on this complex problem.

Section II of the report describes the overall framework for orchestrating the activities associated with defense planning in general and force planning in particular. Section III describes an approach for linking strategies to operational tasks and programs and for assessing the match between capabilities and strategy.

Sections IV, V, and VI elaborate on three different activities central to force planning: the decision process for initiating new programs; upgrading existing force elements; and introducing new basic systems. Five other important topics related to force planning are addressed in Section VII.

The final section places the proposed framework in a policy context, discusses the advantages of using the proposed framework, identifies some of the difficulties inherent in implementing the framework, and suggests some of the means of overcoming these difficulties.

II. FRAMEWORK FOR DEFENSE PLANNING

Guided by top-level Government decisions and advice as to national security strategy and fiscal constraints, the Department of Defense (DoD) components have the task and responsibility of organizing, equipping, training, upgrading, and supporting the military forces under their command to provide operational capabilities that will support the selected national military strategies. In planning the structure of these forces, the DoD components should clearly link programs for the acquisition of systems and equipment to increases in operational capability and, in turn, to statements of national security strategy. This report proposes a framework that would make this linkage clear, explicit, and coherent.

FIVE PRINCIPAL STATEMENTS

Proceeding from the obvious advantage of a few carefully prepared critical statements or documents to many superficially concocted ones, the proposed framework requires only five top-level policy statements to provide a coherent progression of force planning:

1. *The National Security Strategy of the United States*, an annual report by the President
2. A report by the Chairman of the Joint Chiefs of Staff (JCS) that proposes and assesses alternative national military strategies
3. Presidential guidance on national military strategy and fiscal constraints
4. Guidance to DoD components by the Secretary of Defense
5. An annual report to Congress by the Secretary of Defense and the Chairman of the Joint Chiefs of Staff.

The Defense Reorganization Act of 1986 mandates the first, *The National Security Strategy of the United States*, and the fourth, the annual guidance to DoD components by the Secretary of Defense, as well as the *Annual Report to Congress by the Secretary of Defense*, all three of which are now issued regularly.¹ According to the framework, the annual report to Congress would be issued jointly by the Secretary

¹See the Defense Reorganization Act of 1986 (Public Law 99-433, October 1, 1986 [99th Congress]), Sec. 102 and 603.

of Defense and the Chairman of the JCS. In addition, the President's Commission on Defense Management recommended that the Chairman of the JCS regularly propose and evaluate alternative military strategies and that the President provide regular guidance on strategy and fiscal constraints.² These recommendations form the basis for the second and third documents.

National Security Strategy Report

The President, in collaboration with Congress, defines our national security objectives and our national security strategy. These are articulated, as appropriate, in Presidential decision documents. One such document is *The National Security Strategy of the United States*, a comprehensive annual report to Congress by the President.

National security strategy is the art and science of employing this nation's political, economic, and military power to achieve our stated *national security objectives* in peace and war.³ The perceived goals, intents, and behavior of potential adversaries and the capability of these adversaries to carry out their strategies that threaten our national security drive our national security strategy.

Our most fundamental national security objective is the survival and prosperity of the United States: the maintenance of sovereignty and territorial integrity, the preservation of institutions, the freedom of speech and assembly, and the general well-being. These basic interests and goals stem from our heritage and are embodied in our Constitution. Unchanging with respect to time, environment, and threat, they form the basis for all U.S. statements on national security.

Our national security objectives define what we must do to preserve and protect the fundamental principles, goals, and interests of the United States in the face of threats and challenges. Thus, unlike fundamental national goals, national security objectives react to changing environments and change with time.

Now, and for the foreseeable future, our national security objectives and commitments respond, in large part, to our perception of the aggressive aspirations of the Soviet Union and of the international environment created by its military capability to pursue these

²See the President's Blue Ribbon Commission on Defense Management, *A Quest for Excellence—Final Report to the President*, Washington, D.C., June 1986, pp. 10-20. The author would associate the third document, the report of the Chairman of the JCS on alternative military strategies with two others prepared by the Chairman: the *Joint Strategic Planning Document* and the *Net Assessment for Planning*.

³The author believes that this classical definition should also include intellectual power—the power to outthink the enemy.

aspirations. Our force planning currently focuses primarily on the threats posed by (1) Soviet strategic nuclear forces against our homeland and the homelands of our allies and (2) Soviet conventional forces and theater nuclear forces against the critical regions on the periphery of the USSR—i.e., Western Europe, Southwest Asia, Northeast Asia, and the Pacific Basin. At the same time, the protection of our interests in the Americas and in Africa also mandates commitments for these regions.

The national security strategy report would include, first and foremost, a global overview of

- The threats to our interests, commitments, and alliances
- How to employ our total national power in peace and war to protect our interests in the presence of these threats.

National Military Strategies Report

The *national military strategy* is the military component of the national security strategy. It represents the art and science of employing this nation's military forces to secure the national security objectives set forth in Presidential decisions and in *The National Security Strategy of the United States*.

According to the proposed framework, the Chairman of the Joint Chiefs of Staff, at the direction of the Secretary of Defense, would (1) propose alternative national military strategies from which the President could select and (2) assess the correlation between these strategies and the capabilities expected under alternative budget constraints.⁴ The Chairman's statement would have to provide, first of all, a global overview; specifically, it should:

- Identify where and in what way our national interests are threatened around the globe, i.e., describe the aspirations, goals, and intentions of adversaries that threaten our security and their capability to achieve these goals.

⁴The Defense Reorganization Act of 1986, Sec. 153, lays the foundation for such a report by charging the Chairman of the JCS, "subject to the authority, direction, and control of the President and the Secretary of Defense," with "(2) STRATEGIC PLANNING—(A) Preparing strategic plans, including plans which conform with resource levels projected by the Secretary of Defense to be available for the period of time for which the plans are to be effective. (B) Preparing joint logistic and mobility plans to support those strategic plans and recommending the assignment of logistic and mobility responsibilities to the armed forces in accordance with those logistic and mobility plans. (C) Performing net assessments to determine the capabilities of the armed forces of the United States and its allies as compared with those of their potential adversaries."

- Impart a sense of the criticality of particular threats to our security.
- Define our worldwide commitments and alliances.
- Set forth the peacetime deployment (projection) of forces among theaters and the likely allocation of forces among theaters in case of hostilities.
- Assess (1) the current, midterm, and long-term effectiveness of alternative global strategies in thwarting enemy initiatives and protecting our interests and (2) the capability of our forces to underwrite the stated strategies.
- Make clear the linkage and correlation between objectives and capabilities expected under projected fiscal constraints. This linkage should be explicit with respect to midterm objectives and more general for longer-term goals.

The statement of military strategies should also include a comprehensive analysis for each region. *Regional military strategies* define how forces will be (1) deployed to regions to reinforce alliances and constrain the behavior of adversaries and (2) employed to underwrite stated operational objectives in a conflict. Combatant commanders formulate the regional military strategy for their region within the guidelines and constraints of the national military strategy and guidance from the Chairman of the JCS and the Secretary of Defense. A regional military strategy statement should:

- Describe in detail the threats to our security in that region.
- Set forth the regional military strategy and associated operational objectives and define the criteria for success.⁵
- State the current and projected operational capabilities associated with the various force elements assigned to that region.⁶

⁵More general than operational tasks but more specific than mission statements (e.g., interdiction, offensive counterair), operational objectives are the objectives to be achieved by regional military operations. Examples of operational objectives include disrupt/deny movement and supply of enemy forces by land in a specified area; negate enemy air defense in a specified area for a specified time; neutralize enemy offensive air operations in a specific area during a specified time; deny insertion of enemy forces by air or sea into a specified area; prevent Soviet nuclear-powered submarines from operating in specified areas; ensure safe transport of own forces to reinforce NATO; and ensure safe passage of commerce through critical straits. While an operational objective is specific as to area and, perhaps, time, the capability to accomplish the objective is usually less specific. That is, the capability to achieve the objective of disrupt/deny movement and supply of enemy forces by land in one area can, in most situations, be applied to other operational objectives in other scenarios in other areas at other times.

⁶The proposed framework divides force elements into combat force elements (e.g. B-52 squadrons, F-16 squadrons, Army battalions, and Patriot brigades), combat support force elements (e.g., command, control, and communications units and global positioning

- Explain how the various force elements would operate in concert to achieve operational objectives and underwrite the regional military strategy.
- Assess the current and projected prospects of success in achieving our operational objectives and of denying success to the enemy.
- Identify major deficiencies and suggest remedial action as appropriate.

Presidential Guidance on Strategy and Fiscal Constraints

According to the proposed framework, the President would then review the several recommended strategies developed by the Chairman of the Joint Chiefs of Staff. The review would have to deal with two separate issues:

- Whether a particular strategy would, indeed, underwrite the stated national objectives
- The level of risk that the nation would be taking in underwriting the stated strategies with the operational capabilities expected of forces within stated fiscal constraints.

After reviewing the alternative strategies and associated assessments of risk under various fiscal constraints, the President would issue guidance concerning strategy and fiscal constraints.

Guidance to DoD Components

The annual guidance by the Secretary of Defense provides the basis on which DoD components develop and recommend programs and implementing budgets.⁷ Following Presidential guidance on strategy and fiscal constraints, the Secretary's guidance would:

systems, or GPS) and general support force elements (e.g., units engaged in developing systems and units that provide basic training). Combatant commanders define concepts of operations—i.e., how force elements will operate in some integrated fashion—to achieve operational objectives.

⁷Under the Defense Reorganization Act of 1986, Sec. 102, "(g)(1) The Secretary of Defense, with the advice and assistance of the Chairman of the Joint Chiefs of Staff, shall provide annually to the heads of Department of Defense components written policy guidance for the preparation and review of the program recommendations and budget proposals of their respective components. Such guidance shall include guidance on—(A) national security objectives and policies; (B) the priorities of military missions; and (C) the resource levels projected to be available for the period of time for which such recommendations and proposals are to be effective."

- Describe the national security policy of the United States, based on the President's report on the national security strategy, the report of the Chairman of the Joint Chiefs of Staff on alternative national military strategies, and Presidential guidance on strategy and fiscal constraints.
- State, in general terms, the fiscal and manpower constraints on DoD and each DoD component.
- Set forth, in the context of operational objectives and operational tasks, the capabilities expected of the various force elements under each DoD component.
- Identify the critical problem areas, i.e., those where the capabilities of our forces are assessed as deficient in achieving operational objectives and underwriting selected strategies.
- Provide direction, as appropriate, on the funding of research and development, investment, operations and maintenance, and specific programs.

Annual Report to Congress

Under the proposed framework, the annual joint report by the Secretary of Defense and the Chairman of the Joint Chiefs of Staff would inform Congress of the strategic direction and plans for maintaining the security of the United States.⁸ The report should:

- Outline the global situation in terms of threats to our security.
- Set forth our commitments, alliances, and global strategy for securing our interests in the presence of these threats.
- State the regional strategy and operational objectives for each critical region and the criteria for success.
- Report the peacetime deployment of military forces and the projected assignment of forces to theaters in case of hostilities.
- Describe the forces, force element by force element, along with associated manning.
- Define the operational capability expected of these various force elements.

⁸Under the Defense Reorganization Act of 1986, Sec. 113, "(e)(1) The Secretary of Defense shall include in his annual report to Congress under subsection (c)—(A) A description of the major military missions and of the military force structure of the United States for the next fiscal year; (B) An explanation of the relationship of those military missions to that force structure; and (C) The justification of those military missions and that force structure." As noted above, the statement of the Chairman of the Joint Chiefs of Staff on the *United States Military Posture* might be combined with this report.

- Assess—for both near-term objectives and far-term goals—how our military forces support our commitments, achieve our operational objectives, and underwrite our regional strategies.
- Enumerate the programs and moneys required to maintain, upgrade, and support these force elements.
- Detail the manpower required to man, maintain, and support these force elements and how this manpower is to be acquired and maintained.
- Elaborate on other defense resources—the defense industrial base and defense installations—and how these resources are managed.
- Discuss other items of special importance.

PRINCIPAL INTERACTIONS

The principal interactions among the major organizations involved in force planning under the proposed framework are shown in Fig. 1. These organizations would interact as follows:

- The President would state the national security objectives and formulate the national security strategy.
- The Chairman of the Joint Chiefs of Staff, under the direction of the Secretary of Defense and in consultation with the combatant commanders, would develop recommended national military strategies, and assess the risks of underwriting the defined strategies with forces under various fiscal constraints. After review, the Secretary of Defense would present these alternative strategies and assessments to the President.
- The President, after reviewing these strategies and assessments and conferring with Congress, would issue guidance on strategy and fiscal matters.
- Based on this Presidential guidance, the Secretary of Defense would provide guidance to the DoD components.
- Consistent with this guidance, the Services would define programs and implementing budgets to organize, equip, train, and support force elements under their stewardship.
- The Secretary of Defense would prepare an overall plan for present and future defense, along with implementing budgets, and submit this plan to the President.
- After review by the Office of Management and Budget (OMB) and approval by the President, the national defense budget would be included in the national budget and submitted to Congress.

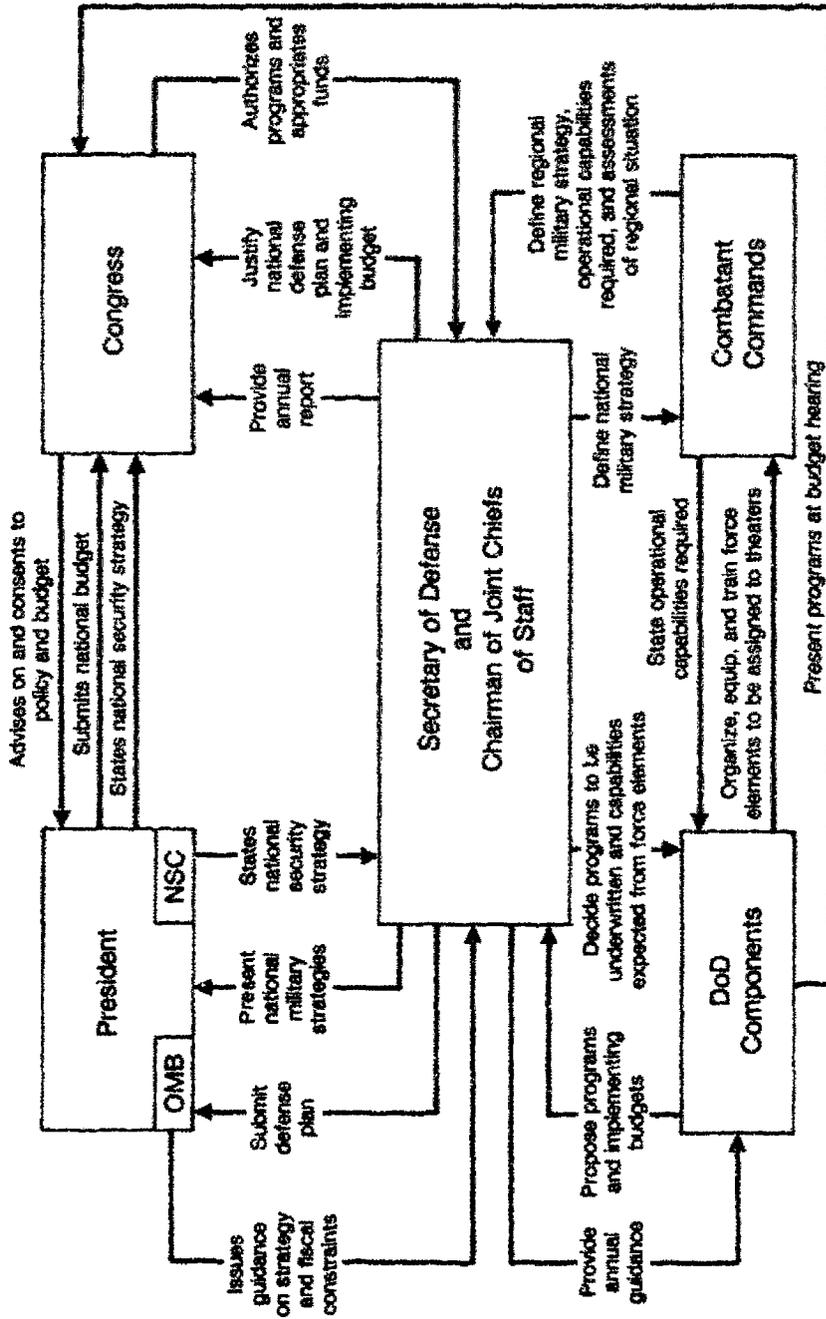


Fig. 1--Principal interactions in the planning process

- The Secretary of Defense and the Chairman of the JCS would prepare an annual report to Congress and submit it, along with implementing budgets. These documents would place before Congress the President's plan for securing the defense of the United States, along with the enabling budgets.
- The Secretary of Defense, the Chairman of the JCS, and the Service secretaries and chiefs would testify as to the appropriateness of the national defense plan and implementing budgets.
- After review and interaction with the Department of Defense, Congress would authorize programs and appropriate funds.

The interactive process described above focuses on *force development*, i.e., the fielding of forces and operational capabilities. Overall defense planning would then turn to *operational planning*, i.e., force deployment and force employment, as follows:

- The President, through the Secretary of Defense (with the assistance of the Chairman of the Joint Chiefs of Staff) would assign forces to combatant commands and deploy forces according to the priorities stemming from the national military strategy and the regional strategies.
- Combatant commanders would prepare plans and, at the direction of the President and the Secretary of Defense, employ assigned forces according to their operational strategies and operational plans.⁹

Interactive Role of Secretary of Defense and Chairman of JCS With All Other Participants

Significantly, in the framework proposed in this report, the Secretary of Defense (supported by the Office of the Secretary of Defense—OSD) and the Chairman of the Joint Chiefs of Staff (supported by the Joint Staff and the Service chiefs) would interact with all other participants.¹⁰ This interactive mode differs from a hierarchical mode in which the output from one level places a seemingly fixed requirement on the next lower level. A hierarchical process can, of course, have feedback loops; however, such a process can become cumbersome and time-consuming when many organizations are involved and many pieces must be fit together.

⁹Operational strategies and operational plans describe how combatant commanders would employ assigned forces in hostilities. The combatant commander would select and adjust operational strategies during hostilities in reaction to the changing combat situation.

¹⁰Henceforth, I shall use "Secretary of Defense" to include OSD and "Chairman of the Joint Chiefs of Staff" to include the Joint Staff and the Service chiefs.

Orchestrating an iterative and interactive process according to Fig. 1, above, will place great demands on the Secretary of Defense and the Chairman of the Joint Chiefs of Staff:

- The Secretary and the Chairman must look upward to the Executive Office—including the National Security Council (NSC) and the OMB—and to Congress for guidance on national military strategies and expected budget levels.
- The Chairman must confer with combatant commanders about the strategies and objectives for each region, the criteria for success, the specific operational capabilities required to achieve success, and the major deficiencies.
- The Chairman must play a key role in determining the priorities among regions, including balancing the demands of all regional combatant commanders at a time when some force elements are committed to providing capabilities to more than one region.
- In turn, the Chairman must confer with the Services about the specific operational capability expected from the various force elements within projected resource levels for the next five or more years. He must also maintain oversight of the Services' activities in organizing, equipping, training, and supporting the various force elements to acquire the expected operational capabilities.
- The Secretary and Chairman must also play the key role in determining the proper allocation of resources among force elements.¹¹
- Most important, the Chairman must provide an assessment—both global and regional—of the correlation between strategies and operational objectives, on the one hand, and expected operational capabilities, on the other. This assessment must recognize alternative fiscal constraints for the present and future.
- With respect to the specific operational capabilities to be provided, the Secretary and Chairman should depend in large part on the Services' assessment of the technical feasibility, operational viability, and attendant costs of underwriting the *operational concepts* that they (the Services) have formulated.¹² At

¹¹This rather complicated matter and the daunting tasks involved are discussed in some detail under Topic 4 in Sec. VII, below.

¹²See "Operational Concepts" in Sec. III, below. Operational concept and concept of operations are often used interchangeably. As used in this report, concept of operations defines how several force elements operate in some integrated fashion to achieve a

the same time, the Secretary and Chairman must finally persuade Congress that the available funds can, within reasonable limits, underwrite the operational concepts proposed by the Services and that the concepts will provide roughly the expected operational capability.

- Finally, the Secretary of Defense must gain the approval of the President on the recommended plan for defense of the United States. Once the President had approved, the Secretary and the Chairman of the JCS would send their annual report to Congress, along with more detailed budgets. Eventually, the Secretary and the Chairman would have to prepare to support the overall plan and budget and to make adjustments when appropriate.

Interface of Secretary of Defense and Chairman of JCS With DoD Components

In a sense, the Services make a commitment to the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and the combatant commanders that designated force elements under their stewardship will have a stated amount of capability over time. To orchestrate this most important responsibility, the Secretary and Service chiefs must:

- Negotiate with the Secretary and the Chairman about the capabilities that force elements under their stewardship are to provide. These capabilities must be stated in terms of the ability to perform operational tasks to achieve operational objectives and must include the dimension of both scope and time.
- Ensure the formulation of operational concepts to perform stated operational tasks.
- Oversee efforts in Service operational commands to organize and train units according to the agreed-on operational concepts.
- Steer programs of the Service acquisition commands to equip force elements.
- Direct efforts in Service personnel and logistic commands to support and maintain force elements.
- Continually assess the match between capabilities expected of particular force elements and commitments to OSD concerning these capabilities and adjust programs or commitments accordingly. These assessments should be made at the level of operational objectives.

specific operational objective, while operational concept describes how a particular force element is to accomplish a stated operational task.

Statements about the capabilities expected (mandated) of force elements will be a central focus in the annual guidance to DoD components and could take the following form: The Navy is to maintain X number of nuclear weapons in submarines at sea at all times; the Air Force is to maintain Y number of nuclear weapons on bombers on alert at all times; the Army is to maintain Z number of combat-ready divisions in the Central Region; the Navy is to maintain presence with carrier task groups in R number of regions; the Air Force is to organize, equip, and train force elements to achieve K number of kills of Soviet follow-on combat vehicles in D number of days; the Air Force is to provide the capability to airlift U number of Army units to the Persian Gulf area in D number of days.

APPROPRIATE LEVEL OF DISCOURSE

The various force elements assigned to a theater, operating in some integrated manner, make up the overall capability in that region. How these force elements are to achieve stated operational objectives and to underwrite stated regional strategies represents the proper level for discourse on force planning, particularly between the DoD and Congress.

A force element may be thought of as a building, and the various force elements that together constitute a regional capability may be compared to a city. The plan or blueprint for a particular building corresponds to the operational concept. From time to time, we create new buildings. More often, we maintain and upgrade existing buildings. A decision to refurbish a particular building according to an agreed-on plan defines the number of rooms to be added or rearranged and mandates the ordering of bricks, mortar, plumbing, and electrical systems.

Similarly, a decision to upgrade a designated force element to accomplish specified tasks according to a well-defined and agreed-to operational concept mandates and defines the ordering of systems, equipment, weapons, munitions, and training for that force element. At the next higher level, a decision to increase our capability to achieve some operational objective according to some agreed-to concept of operations mandates and defines the ordering of the various force elements.

According to this analogy, the discourse on force planning should take place at the level of buildings (force elements), proposals to improve and expand these buildings (operational concepts), and cities (clusters of force elements that, working together, achieve operational

objectives). This differs from discussion at the level of bricks and mortar (hardware). Operational capabilities are the goal; systems and hardware are simply the means to accomplish it.

PRESENTATIONS TO CONGRESS

The statements of the Services to Congress in budget hearings should focus on the responsibility of each to organize, equip, train, and support force elements to provide stated operational capabilities. The Services should focus on demonstrating the relationship of *strategies to operational tasks*, i.e., the relationship between operational objectives defined by regional strategies and the ability of force elements to underwrite these objectives and strategies.¹³

An operationally oriented statement by a Service secretary and/or chief to Congress would

- Affirm that the Service (Army, Navy, Air Force) has made a commitment to the Secretary of Defense and the Chairman of the Joint Chiefs of Staff that the force elements under it will be able to accomplish specific types and numbers of operational tasks and objectives and to sustain this capability over a certain length of time.
- Demonstrate how accomplishing these tasks during the given period of time will achieve stated operational objectives and underwrite selected regional strategies.
- Define the agreed-to operational concepts for performing these tasks, stipulating the specific equipment, weapons, munitions, and personnel to be provided.
- Describe the program that the Service is undertaking to develop and procure the equipment needed to underwrite these operational concepts.
- Show the cost of maintaining and upgrading each force element over the next several years in terms of development, investment, operations and services, and manning.

The implementation of such an approach will require definitive guidance from the Secretary of Defense and the Chairman of the Joint Chiefs of Staff based on the explicit consideration of resource allocation to the best overall effect—over all force elements, over all regions, and over time. Such a global optimization represents a daunting and formidable task, one that cannot be accomplished without considerable time and effort.

¹³The relationship of strategies to tasks is discussed in Sec. III, immediately below.

III. LINKING STRATEGIES TO TASKS AND PROGRAMS

The subsection "The Interface Between the Secretary of Defense and the Chairman of JCS and DoD Components" in Sec. II, above, begins: "In a sense, the Services make a commitment to the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and the combatant commanders that designated force elements under their stewardship will have a stated amount of capability over time." The author is aware of the considerable difficulty, first, in defining these commitments and, second, in assessing whether the commitments have been fulfilled.

Internal RAND research under the heading of "Strategies to Tasks," sponsored by the Chief of Staff of the Air Force, has demonstrated the basic elements of an approach for assessing the degree to which the capabilities expected from various force elements can underwrite stated strategies. The key to this approach is to use operational objectives as a means of defining operational capabilities that a Service is expected to provide. The capabilities are described in both scope and time, i.e., what operational tasks relating to the operational objective can be accomplished at what rate during what period.

The identification of these capabilities enables us to assess the current and future ability of our forces to perform clusters of tasks to achieve the multiple operational objectives that underwrite stated regional strategies. The approach centers on operational concepts.

Looking upward, operational concepts define the means of accomplishing operational tasks and achieving operational objectives. Looking downward, operational concepts define the programs to be implemented to provide the equipment to accomplish the agreed-on concept. In total, the approach provides a systematic tool for assessing the degree to which tasks are accomplished and operational objectives are achieved and for identifying problem areas according to two classifications—critical and important.

FLOW DIAGRAMS RELATING STRATEGIES TO PROGRAMS

Figure 2 demonstrates the flow from the statement of national objectives, regional strategies, and operational objectives to the undertaking of development and acquisition programs to improve capabilities. The

strategies-to-tasks aspect of the process is shown in greater detail in Fig. 3; Fig. 4 elaborates on the *research and development* (R&D) aspect. Figure 5 summarizes the processes and activities involved.

The inputs to the *strategies-to-tasks* process are statements of national objectives, national and regional strategies, and operational and support objectives. The output is the identification of problem areas according to three classifications: critical, important, and less important.

The identification of problem areas creates the *requirements push*, i.e., statements identifying problem areas. These statements constitute inputs to R&D activities. The pursuit of exploratory and advanced developments, coupled with technology application studies, provides the *opportunity push*.

The two pushes—requirements and opportunity—drive the creative process of formulating operational concepts. They mandate that groups be convened to formulate operational concepts (based on the technology opportunities available) to accomplish operational tasks to provide capabilities to alleviate deficiencies in the problem areas identified. Operational concepts define the critical functions that systems and equipment must perform and identify the experiments to be conducted to establish proof of principle that the functions can be performed—i.e., *the designated technology projects*.

The output of a Service's concept-formulation process is, according to this framework, a *concepts package* setting forth the concepts that we seek to accomplish and the systems that we are pursuing to underwrite these concepts. The concepts would describe the program(s) in general, without stating the specific costs. The concepts package would be used to seek approval from OSD and the Joint Staff to pass Milestone 0.¹ It would be updated at each milestone and even between milestones if appropriate.

When the designated technology project(s) and the full-blown proposal are completed, a *proposal package*, which includes an updated version of the concepts package, is submitted to OSD to gain approval to proceed with the first phase. This is the demonstration/validation phase of a development and acquisition program to provide the system, subsystems, and equipment to underwrite the operational concept.

¹See Sec. IV of this report, "Initiating New Programs," for a more detailed accounting of the activities attendant to Milestone 0 and Milestone 1.

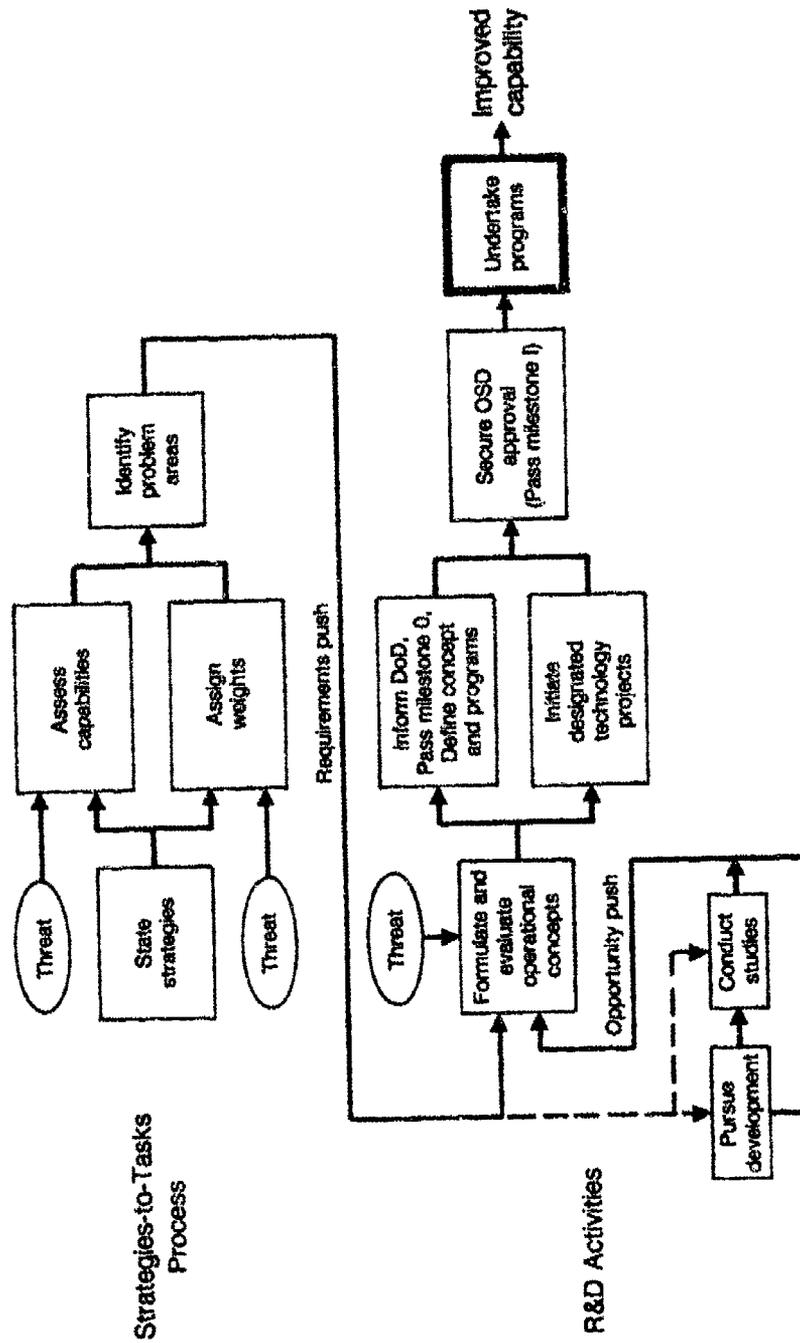


Fig. 2—Force planning process

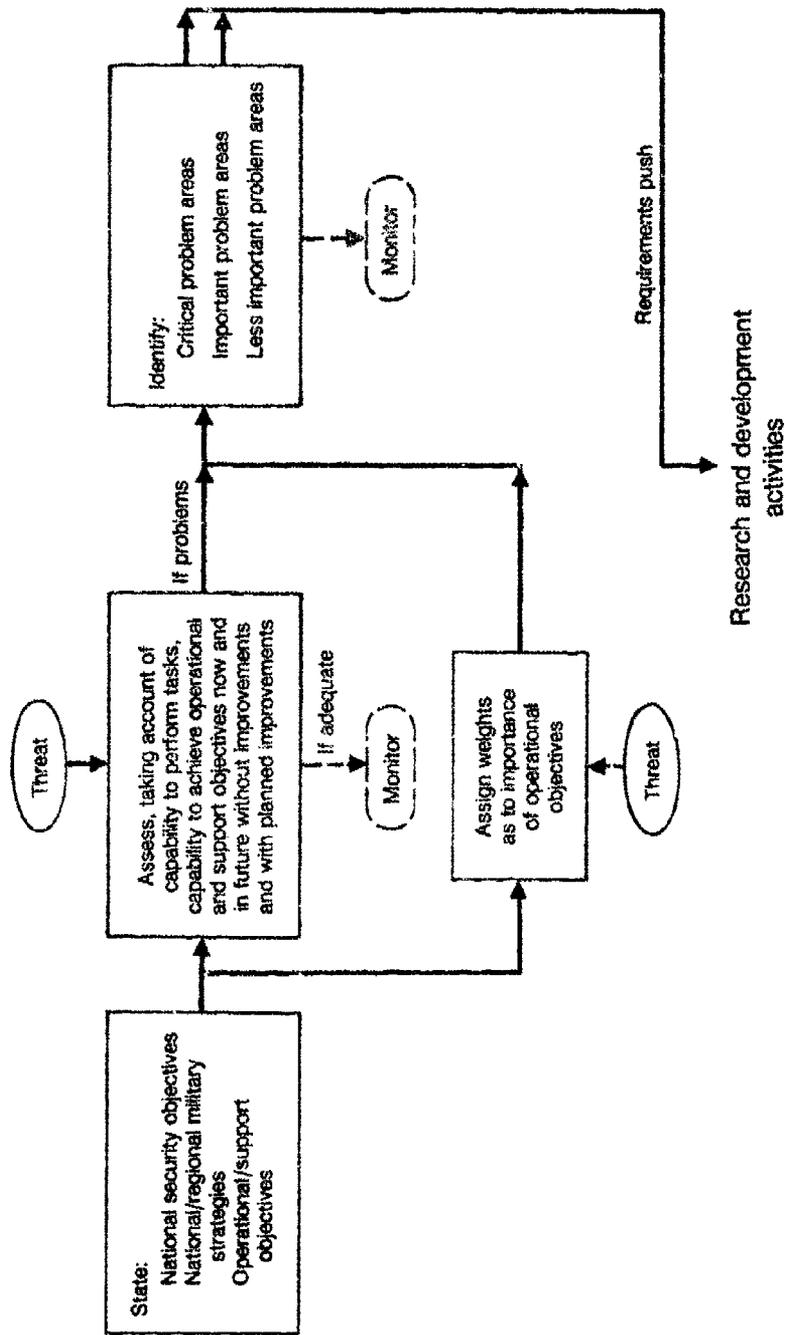


Fig. 3—Linking strategies to tasks

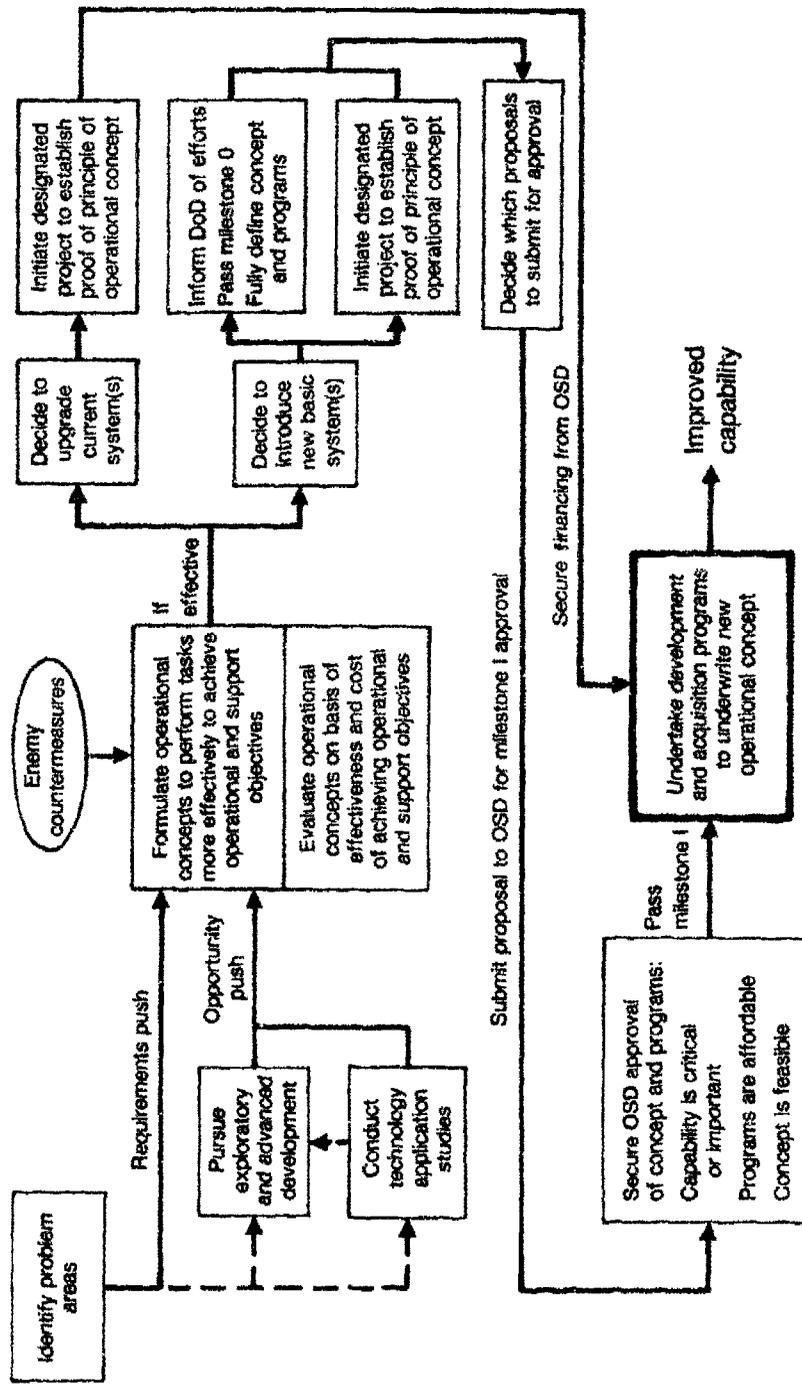


Fig. 4—Research and development activities

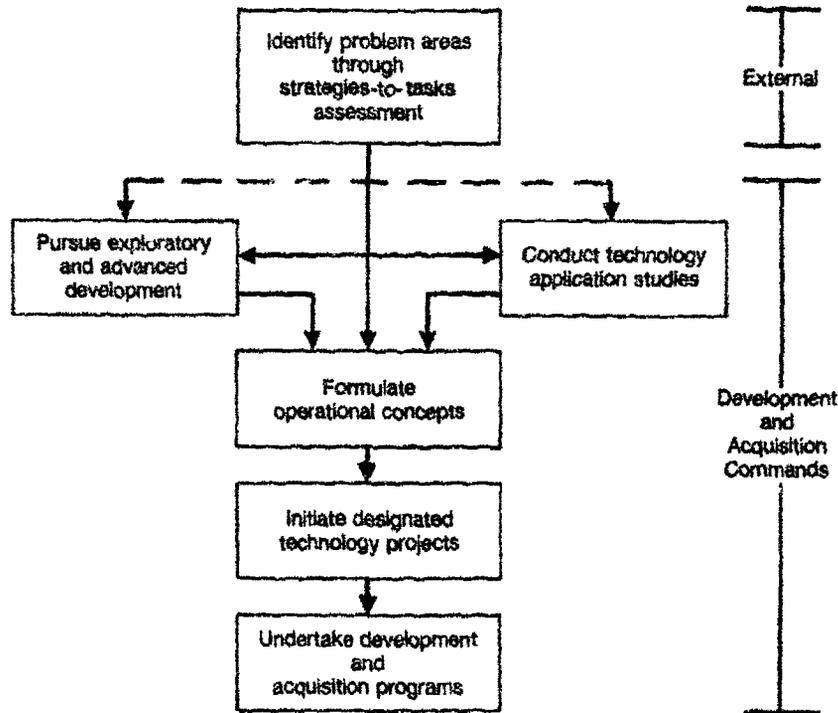


Fig. 5—Summary of activities linking strategies to programs

OPERATIONAL CONCEPTS

A statement of the specific operational capabilities expected from a particular force element requires an end-to-end operational concept for accomplishing specific operational tasks. A force element can usually perform several operational tasks. For example, the potential tasks for an F-16 unit typically include:

- Damage/destroy/delay enemy units in march formation—at night and in bad weather
- Destroy bridges
- Mine roads
- Crater and mine operating surfaces of enemy airfields
- Intercept enemy aircraft in friendly airspace and over the battlefield.

The operational concept provides the "peg" on which to hook the procurement of systems, equipment, weapons, and munitions. The key to linking strategies to tasks is to assess the correlation between achieving a stated operational objective and accomplishing a cluster of operational tasks according to agreed-to end-to-end operational concepts, with a concept for each task. The way to fail in this endeavor is to start by assessing the ability of individual systems to perform functions.

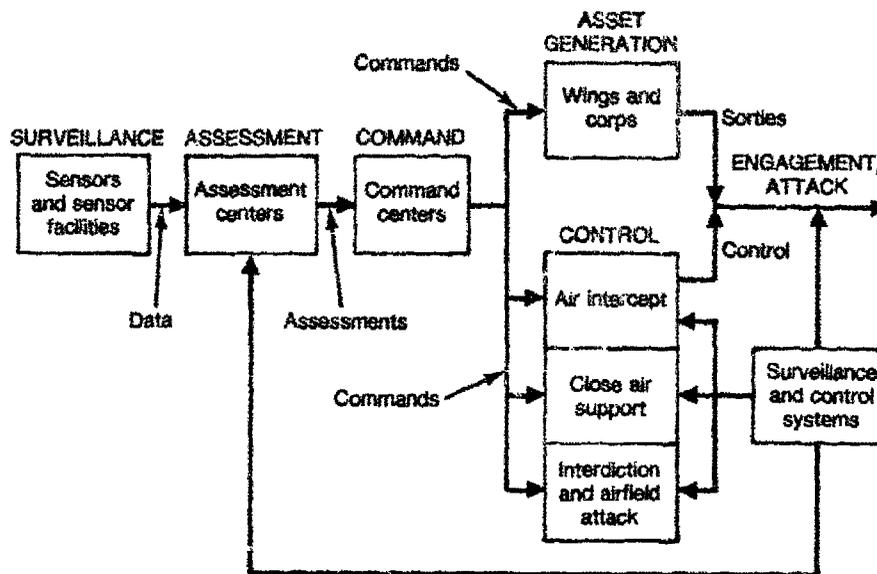
Service headquarters should interact in the process of formulating operational concepts. They should look upward and outward to the Secretary of Defense, the Chairman of the JCS, and the combatant commanders for advice and counsel about problem areas. They should look to themselves to link strategies to tasks. They should look downward to the Service acquisition commands and operational commands for formulating operational concepts.

Formulating operational concepts is a creative process. The first step is to state the operational task to be accomplished: destroy bridges, attack enemy units in march formation on roads, attack enemy units in assault in close-air support, crater runways, intercept enemy aircraft over own airspace, damage/destroy enemy aircraft in shelters, mine railroads, mine roads, and so on. The next step is to define the various environments in which the force element will be expected to operate: daylight, nighttime, high threat, permissive, etc.

Concepts describing how to accomplish stated operational tasks are formulated by a *combined* working group composed of representatives from the Service operational command, the combatant command(s), and the Service acquisition command(s). In the case of an important interface between, say, Air Force elements and units of ground and/or naval forces, the working group should include representatives from the other Service(s).

An end-to-end operational concept must describe a logical flow among the functions of assessment, command, control, and engagement and attack. Figure 6 illustrates such a flow for the employment of air power in theater war. The flow would apply in a generic sense to other operations as well. In Fig. 6, the functions proceed as follows:

- Data from surveillance sensors constitute the input to assessment centers. The outputs of assessment centers are
 - assessments of the current disposition of enemy forces
 - projections of future enemy objectives, movements, and actions
 - projections of future opportunities for effective attack of



SOURCE: Edward L. Warner III and Glenn A. Kent, *A Framework for Planning the Employment of Air Power in Theater War*, N-2038-AF, The RAND Corporation, January 1984.

Fig. 6—Critical functions for employment of air power in theater war

enemy forces and other targets, taking into account enemy doctrine, enemy objectives, and the disposition of friendly forces.

- The outputs of assessment centers form the inputs to command centers. The outputs of command centers include
 - selection of the appropriate operational strategy (or strategies) for the employment of our forces
 - decisions as to the disposition of our forces
 - apportionment of these forces to particular missions.
- The input to control centers is the order to accomplish stated tasks with specified force elements at specified times. The output of control centers is the ordering and controlling of attack assets to engage and attack enemy forces and targets.

Because the process has been described as a logical functional flow, Service acquisition commands have a clear definition of what is to be

accomplished, and they can focus their expertise on how to carry out the specific tasks. Operators from the relevant Service operational command continually evaluate the operational viability of the options suggested by the developers. They evaluate these options in terms of (1) effectiveness, (2) susceptibility to potential enemy countermeasures, and (3) the acceptability of the tactics, especially in terms of exposure of attack assets to enemy defenses. The process can also work the other way. The operators can suggest their own concepts, and the developers then evaluate technical feasibility.

Based on the author's experience, with proper direction and motivation, the process for formulating an operational concept to accomplish stated operational tasks should take no longer than four months.²

ROAD MAPS

The use of "road maps," a popular management tool, is currently applied to both vehicles—for example, unmanned aerial vehicles (UAVs) and standoff weapons—and technology—for example, hypersonic flight. However, we need road maps that are operationally oriented, both to assess and reflect our progress toward accomplishing operational tasks more effectively and, at the next higher level, to assess and reflect our increasing capability to achieve critical operational and support objectives.

Road maps for operational tasks would have such titles as cratering runways; damaging bridges; mining railroads; damaging enemy combat units on roads; sinking ships; generating sorties from airfields during chemical or biological attack; and first shot with impunity in air-to-air combat over the enemy side of forward line of troops. Road maps for operational objectives would have such titles as delaying and damaging Soviet follow-on forces in the Central Region; providing tactical threat warning for the dispersal of strategic bombers on alert; delaying and damaging Soviet forces proceeding southward from northern Iran; deploying forces to southwest Asia; reinforcing forces in the Central Region; and providing first-strike stability in a crisis through better postures of strategic forces.³

²For further elaboration of the formulation of operational concepts, see Glenn A. Kent, *Concepts of Operations: A More Coherent Framework for Defense Planning*, N-2026-AF, The RAND Corporation, August 1983.

³First-strike stability exists when neither side perceives the other as motivated to launch a nuclear strike first; see Glenn A. Kent, Randali J. DeValk, and David E. Thaler, *A Calculus of First-Strike Stability*, N-2526-AF, The RAND Corporation, June 1988.

IV. INITIATING NEW PROGRAMS

WHAT, HOW, AND WHETHER

In beginning the process of initiating new programs, we should think in terms of what, how, and whether. For the case of increasing the capability of force elements by upgrading their existing basic systems, we focus on *what* operational concept is proposed to accomplish *what* tasks to achieve *what* operational objectives. The operational concept will define *what* functional performance is demanded of each system or subsystem. For the case of introducing new basic systems, we focus on *what* are the benchmark characteristics of the new basic system being proposed and *what* operational objectives we seek to achieve.

How involves the methods and procedures for acquiring the systems and subsystems that are selected to underwrite the agreed-to operational concept. After we agree on *what* is to be acquired and *how* it is to be acquired, we must decide *whether* we really want to acquire it. *Whether* or not to proceed will depend on many inputs, discussed in detail under "Forum for Milestone I," in this section.

Guarding against starting too many new systems should be a prime goal of any process for deciding about new programs. We should avoid initiating a program before the information relevant to such a critical decision is available. False starts create turmoil. We do not want to start a new program when it should not be started; once a program is initiated, it is difficult to cancel, even after we recognize that pursuing it does not represent a reasonable allocation of resources.

Once a program is started and continues to look promising, however, we want to maintain the continuity of the effort. Accordingly, each major program should have a definite, demanding, and critical milestone to pass before a Service receives the authorization to undertake it.

NEED FOR LOGICAL MILESTONES

Ambiguities of DoD Instructions 5000.1 and 5000.2

DoD Instructions 5000.1 and 5000.2, both of September 1, 1987, lack the concept of one critical milestone and event for program initiation. Instruction 5000.1 defines the milestones as follows:

Milestone 0—Approval or disapproval of a mission need and entry into the concept exploration/definition phase.

Milestone I—Approval or disapproval to proceed into the concept demonstration/validation phase.

Instruction 5000.2 says the following:

1. Milestone 0—Program Initiation/Mission-Need Decision.
 - a. The Milestone 0 decision determines mission need and approves program initiation and authority to budget for a new major program. Normally, a concept exploration/definition phase follows this approval.
 - b. Primary considerations during this milestone include: 1) mission area analysis; 2) affordability and life-cycle costs. . . .
2. Milestone I—Concept Demonstration/Validation Decision.
 - a. The Milestone I decision approves proceeding with the concept demonstration/validation phase.

As shown, these instructions lack the concept of one critical milestone and event for program initiation. Instruction 5000.2 states that approval for program initiation occurs at Milestone 0; 5000.1 says nothing explicitly about this critical event, at either Milestone 0 or Milestone I.

The approval of program initiation at Milestone 0 (as stated in 5000.2) differs from the approval of further definition of some proposal (in 5000.1). Also, the wording in 5000.2 creates a problem of logic. If, normally, the concept exploration/definition phase follows Milestone 0, then obviously the information available for an informed decision to approve (or not approve) initiation of a major program was not available at Milestone 0.

Recommendations of the Proposed Framework

According to the proposed framework, Milestone 0 would represent the decision on whether a DoD component should fully develop a final *proposal to initiate* a major program or programs to underwrite a stated operational concept to provide some stated operational capability. The proposal would then be presented to the appropriate forum in OSD at some future meeting.

Milestone I would represent the decision on whether or not to *initiate* the program based on review of the complete proposal package. The subordinate decision at Milestone I would be whether the first phase of the program would normally be the concept demonstration/validation phase, or whether the program should proceed directly to full-scale development.

PURPOSES OF MILESTONE 0

Why should Milestone 0 exist in the first place? What would be the purpose of this event if all we were doing was interposing no objection to developing a final and complete proposal? Why not give the Services free rein in formulating proposals? After all, we do not want to stifle innovative efforts to define what opportunities exist to alleviate known and stated deficiencies.

Requiring the DoD components to inform the Secretary of Defense of proposals that they intend to make regarding major defense acquisition programs would accomplish the following:

- Formalize the procedure for DoD components to apprise the OSD, the Joint Staff, and the combatant commanders of possible new opportunities.
- Allow the Secretary of Defense to (1) provide instruction on matters to be addressed in any final proposal, (2) direct that proposals for alternative concepts in the same mission area be formulated by that DoD component or other DoD components for evaluation and comparison at Milestone I, or in what one hopes would be the exceptional case, (3) decide that the concept lacks merit and direct that additional effort be terminated.
- Allow the Joint Staff to begin (1) to interact with the DoD component to ensure that the operational concept being proposed is operationally viable and, after conferring with the combatant commanders, (2) to evaluate the effectiveness of the operational capability to be provided.
- Allow the Under Secretary of Defense for Acquisition to (1) start to examine the technical feasibility of the systems and equipment that will underwrite the operational concept, (2) review the selection of performance features that have been made as a result of trade-off analyses, and (3) advise and instruct on matters relating to the *acquisition package*, in particular, the proper *acquisition strategy*.¹
- Allow the Under Secretary of Defense for Policy to begin to examine the political implications (in the broadest sense) of attaining this capability.
- Allow the Assistant Secretary of Defense for Program Analysis and Evaluation (PA&E) to examine the reasonableness of allocating resources to this concept or system, i.e., to compare the effectiveness and cost of this and other concepts in alleviating the stated deficiency.

¹The information contained in the proposed acquisition package is described in the subsection immediately following.

- Allow the Comptroller to determine how to fund the program according to the schedule proposed.

In sum, presenting the preliminary proposal would allow all of the elements of OSD and the Joint Staff to begin to provide the basis for an informed decision at Milestone I based on the complete proposal package.

THE PROPOSAL

The approval of the Secretary of Defense at Milestone I would require the confluence of wide-ranging inputs at a climactic meeting in a forum designated by the Secretary. At this forum, the DoD component would present a *proposal package* containing (1) a *concept package* (an updated version of the original concept package presented at Milestone 0) and (2) an *acquisition package*.

The concept package would address the subject of *what*. For proposals to upgrade existing force elements, the concept package would:

- State the problem area (in terms of operational objectives) that is addressed and the capability to be attained.
- Describe the end-to-end operational concept (tactics, systems, and equipment) for attaining the operational capability to alleviate the stated deficiency.
- Provide supporting analyses comparing the effectiveness and cost of this concept in alleviating this deficiency with other concepts in alleviating this and other deficiencies.
- Provide the results of experiments (designated technology projects) that demonstrate reasonable confidence that the concept is technically feasible.

For proposals introducing new basic systems or major items of equipment, the concept package would:

- Set forth the benchmark performance features of the proposed new basic system or major item of equipment.
- Provide multidimensional analyses that demonstrate one or both of the following: (a) in the presence of extant and projected threats, the new basic system could contribute greatly to the accomplishment of important operational objectives; (b) the new system would represent a significant advantage over existing systems in terms of effectiveness and cost, i.e., it could maintain a stated level of capability with significantly fewer

resources or could significantly increase the level of capability with the same resources.

- Compare the allocation of moneys to acquire the proposed new system according to the proposed schedule with the following alternative actions: (a) upgrading existing systems to attain similar capabilities in the same mission area; (b) upgrading existing systems or acquiring new systems to attain capabilities in other mission areas; (c) deferring the modernization of forces and allocation of moneys to increase current readiness.

The acquisition package would address the subject of *how*. For the case of upgrading existing systems, the acquisition package would:

- Describe the specific systems and equipment chosen to underwrite the proposed operational concept, along with supporting analyses that demonstrate the appropriate trade-offs in performance within and among the various systems and subsystems.
- Describe the acquisition strategy--how the Service intends to conduct the programs to develop, test, and acquire the systems and equipment set forth in the operational concept; the section on acquisition strategy would specifically address
 - the choice between developing new systems versus buying or adapting existing U.S. or allied military or commercial systems
 - how many contractors would pursue what type of prototypes during the concept demonstration/validation phase
 - what type of contracts would be used during the concept demonstration/validation phase and the full-scale development phase
 - whether it would be appropriate to proceed directly into full-scale development if the systems and subsystems that are to underwrite the operational concept appear sufficiently mature.
- Delineate how, and on what schedule, the systems and subsystems are to be acquired and the force elements are to be equipped.
- Explain how these force elements are to be supported to maintain this capability.
- Present a detailed accounting of the cost of accomplishing each and all of these actions according to the stated schedule.

For proposals to introduce new basic systems, the acquisition package would:

- Describe the benchmark performance features of the new system.
- Provide analyses to demonstrate the appropriate trade-off among the various performance features.
- Provide evidence of reasonable confidence—in terms of technical feasibility—of attaining the stated performance features.
- Provide a detailed accounting of the cost of acquiring the new system according to the proposed schedule.
- Provide a rationale supporting the contention that the proposed strategy for acquiring the new system is indeed the appropriate strategy.

FORUM FOR MILESTONE I

The Secretary of Defense would designate the appropriate forum for considering Milestone I, i.e., the forum for deciding whether to initiate a new major program. In this forum,

- The Chairman (or the Vice Chairman) of the Joint Chiefs of Staff would testify as to whether the proposed concept reacted effectively to critical or important problem areas and was operationally viable.
- The Under Secretary of Defense for Acquisition would testify as to whether (a) the proposed strategy to acquire the systems and equipment was, overall, a sound strategy; (b) the Service estimates for the cost of conducting the programs for acquiring the systems were reasonable; and (c) the proposed concept was technically sound.
- The Under Secretary for Policy would describe the political implications of attaining (or not attaining) the stated capability.
- The Assistant Secretary of Defense for Program Analysis and Evaluation would analyze whether spending resources according to this proposal to gain the stated capability represented a reasonable allocation of resources.
- The Comptroller would testify as to whether the program could be financed within the budget.

In sum, the confluence of all of the above at Milestone I would enable an informed decision on the most critical event—whether or not to undertake to achieve the stated operational capabilities and conduct implementing programs. With this coherent process for making this critical decision, we might perhaps be able to stem the early demise of

sound programs as well as the tendency of those who fail in this forum to seek other forums to gain support for particular programs, especially the forums now provided by Congress for repeated appeals.

V. UPGRADING EXISTING BASIC SYSTEMS IN FORCE ELEMENTS

The Services can increase the capability of combat force elements in several ways:

- By upgrading the existing basic system(s) of the force element, e.g., by providing the systems with greater agility or mobility.
- By upgrading the engagement systems, weapons, and submunitions with which the basic systems are equipped.
- By improving combat support units—including surveillance units, assessment centers, command centers, and control centers—to facilitate command and control.
- By providing better general support to increase readiness.
- By organizing additional force elements of an existing type.

Generally, upgrading existing basic systems of combat force elements to accomplish new operational tasks or existing tasks better is the primary means of increasing operational capability. This applies particularly—in terms of both responsiveness and marginal return of dollars spent—to the first two or three upgrades of the basic system(s) or major item(s) of equipment of a force element.¹ All too often, however, increasing the capabilities of force elements by upgrading existing systems is passed over in favor of introducing new basic systems. When upgrading is undertaken, it often proceeds far slower than it need or should.

For the case of upgrading existing basic systems, formulating the operational concept to achieve increased or new capabilities and actually equipping forces should take a relatively short time. Such upgrades are typically based on existing subsystems or demonstrated technology. In these circumstances, we should strive to achieve the upgrade in five years or less, which used to be the normal time span from the decision to initiate an upgrade program to initial operational capability.

This section focuses on a more systematic and streamlined process to facilitate timely upgrading. While the discussion deals primarily with upgrading force elements of the Air Force, the suggested approach also applies to upgrading force elements of the Army and Navy.

¹After a force element has been in the inventory for many years, effectiveness and cost may make replacement a better option. See Topic 1, "Requirements," in Sec. VII, below.

HOW THE PROCESS WORKS NOW

The process of upgrading the capabilities of existing force elements is sometimes called the "requirements" process.² While this process differs in detail from Service to Service, in all cases it is unduly cumbersome and slow, for the following three reasons:

- The process is hierarchical, and the form of the communication and direction among organizations in the hierarchy does not promote timely and purposeful action.
- When the decision to proceed is finally made, the need to await initial financing often delays the process.
- Once started, the process usually suffers slips in schedule and continuity owing to the lack of long-term support and financing.

The process generally has many participants, including the combatant commands, the Service headquarters, Service operational commands, and Service acquisition commands, as well as the Secretary of Defense and the Chairman of the Joint Chiefs of Staff. Progress depends on sequential actions among these several participants. The process to generate and validate "requirements" becomes fairly elaborate and involved, and too much attention is devoted to receiving and approving documents from other organizations in the hierarchy at the expense of making meaningful decisions to cause timely and purposeful action.

While this elaborate process produces a large array of "requirements" (some validated and others awaiting validation), decisions on whether or not programs will actually proceed are often made (or unmade) in the context of programming and budgeting exercises. Lacking the ability to force purposeful action, the procedure can make only glacial progress toward the real output: increased operational capability.

HOW THE PROCESS COULD WORK

The process could work according to the following hypothetical scenario:

- The NATO commander, say, apprises the Chairman of the Joint Chiefs of Staff of the requirement to increase the capability to achieve the operational objective of delaying and damaging Soviet follow-on forces.

²"Requirements" is used and misused more than any other word in the vocabulary of force planning. See Topic 1, "Requirements," in Sec. VII, below.

- The Chairman evaluates this requirement, i.e., decides whether the request for increased capability warrants further attention and action.
- If the Chairman decides that it does warrant further attention, he recommends to the Secretary of Defense that their staffs query the Services about the opportunities that exist for increasing the capability to accomplish the stated operational objective.³ The process has now passed Milestone 0.
- The Services convene working groups to prepare their proposals. The proposals take the form of explicit end-to-end operational concepts to accomplish tasks that, along with the capability of other forces to accomplish other tasks, will increase the overall capability to achieve the stated operational objective.
- The Air Force submits two proposals for achieving the stated operational objective of delaying and damaging Soviet follow-on forces: (1) equipping four B-52 wings with large, conventionally armed cruise missiles and (2) upgrading the weapons and munitions of F-16 and F-15E force elements. In addition, the Army submits a proposal centering on the use of the Army tactical missile system (ATACMS), a ground-launched ballistic missile. Both Services note that the joint surveillance and target-attack radar system (JSTARS), a combat support element to provide near-real-time surveillance and engagement and control, plays a key role in the operational concepts for both the Air Force fighter/attack aircraft and the ATACMS.

The proposed concept to upgrade the B-52G force element provides insight into this process. The Air Force seeks to equip the aircraft with large cruise missiles to provide both an effective payload and adequate standoff from the targets to be attacked. These missiles are to carry appropriate on-board engagement systems, dispensers, and munitions to accomplish the following specified operational tasks: destroy bridges; mine railroads; derail Soviet trains and damage units on trains; and delay and damage units in trailer march on roads.

Actually the proposal shows that the B-52s will be able to do more than simply accomplish these four operational acts.⁴ In addition, the

³The query, in effect, is tantamount to issuing a request for proposals (RFP) to the Services. Since no commitment is being made at this point to initiate and fund actual programs, the decision as to whether or not to query the Services should not take long—not more than a month or two—after the initial request by the NATO commander.

⁴The form and substance of a proposal to equip four wings of B-52Gs with long-range standoff cruise missiles appears in Stephen T. Hosmer and Glenn A. Kent, *The Military and Political Potential of Conventionally Armed Heavy Bombers*, R-3508-AF, The RAND Corporation, May 1987, pp. 21-33.

large cruise missiles armed with appropriate munitions tailored to each task will be able to destroy specific high-value targets, barrage airfields, crater runways, and mine runways and taxiways.

Based on personal experience of the author, the Service proposal should take no longer than four months to prepare after the query by the Secretary or his office. The proposal should do the following:

- State the operational concepts to accomplish the specific tasks.
- Define the performance (functional) specifications of the systems and subsystems to underwrite the proposed concept.
- Estimate the cost of and schedule for acquiring the selected systems and subsystems (the Service has presumably been studying this matter for some time under technology projects and has a reasonable head start).
- Analyze the effectiveness of the proposed concepts in terms of achieving the stated operational objective.

Now suppose that the Secretary of Defense, after appropriate evaluation by his staff and advice by the Chairman, accepts this proposal and directs that a contract be drawn between the Air Force and OSD/Joint Staff. The contract stipulates that the Air Force will organize, equip, train, and support B-52G force elements to provide the stated capability according to the agreed operational concept. The process has now passed Milestone I.

The Air Force then needs a source of funds so that it can proceed. Streamlining the DoD decision process is a necessary, but not sufficient, condition for timely and purposeful action. Existing programming and budgeting procedures tend to mandate that the moneys to initiate the program be squeezed into the out years of the budget—one or two years later. Thus, unless DoD streamlines the financing process, it can make no immediate progress.

According to this scenario, however, the Secretary of Defense has already conferred with Congress on this operationally oriented process for upgrading existing systems. He so impresses Congress with this concept that

- Congress authorizes and appropriates funds to be used each year solely to initially finance programs to upgrade existing force elements.
- The moneys are to be released only at the direction of the Secretary, based on the recommendation of the Chairman of the JCS, and with the consent of the appropriate committees of Congress.

- The respective Service is obliged to accommodate this program within its own budget for the ensuing years of the Service contract.

This hypothetical case captures the essence of how a streamlined process *could* work. While some of the actions may not appear wholly realistic, no fundamental reasons exist to prevent such a process from becoming a reality. The Congress might endorse such an arrangement for the following reasons:

- The procedure will leave a clear audit trail as to the genesis of the operational requirement; in the example just described, the combatant commander requested an increase in capability for the operational objective of delaying and damaging Soviet follow-on forces.
- The Chairman recommends proceeding to increase our capability with regard to this operational objective, and the Secretary agrees.
- The proposal is clear: The Service attests that it can provide important capabilities toward the stated operational objective by equipping B-52s according to a well-defined, agreed-on operational concept based on existing technology.
- The overall process represents a giant step toward timely upgrading of existing force elements.

Many readers will declare the author completely naive even to suggest that the process could proceed in such a purposeful and timely manner. Perhaps so. Nevertheless, except for the proposed role of Congress in providing a timely source for financing, the hypothetical process set forth is entirely consistent with the provisions of the Defense Reorganization Act of 1986.⁵

⁵According to Sec. 163, "Role of Chairman of Joint Chiefs of Staff": "(2) Subject to the authority, direction, and control of the Secretary of Defense, the Chairman of the Joint Chiefs of Staff serves as the spokesman for the commanders of the combatant commands, especially on the operational requirements of their commands. In performing such function, the Chairman shall—(A) confer with and obtain information from the commanders of the combatant commands with respect to the requirements of their commands; (B) evaluate and integrate such information; (C) advise and make recommendations to the Secretary of Defense with respect to the requirements of the combatant commands, individually and collectively; and (D) communicate, as appropriate, the requirements of the combatant commands to other elements of the Department of Defense."

VI. INTRODUCING NEW BASIC SYSTEMS IN FORCE ELEMENTS

The capabilities of existing force elements are normally upgraded several times in the life cycle of the element. New basic platforms or major items of equipment, in contrast, are introduced every 15 to 20 years—the typical life cycle of such items. Thus, the *upgrading of existing basic systems of force elements*, on the one hand, and the *introduction of new basic equipment*, on the other, are separate processes and should be addressed separately.

CRITERIA

As enemy capabilities improve and opportunities for significantly better U.S. basic systems present themselves, and/or as the life cycle of a present system is coming to an end, we should undertake programs to modernize our forces with new and better basic systems or major items of equipment. Ground combat forces should be provided more capable tanks and armored fighting vehicles; tactical air forces, more capable and maintainable aircraft; artillery forces, more capable guns and launchers; naval forces, more capable ships; and airlift and sealift forces, more capable transports.

The introduction of new basic platforms carries a considerable price tag—in terms of both dollars spent and turmoil incurred.¹ Accordingly, we should undertake such programs only when we see an obvious and significant long-term gain in doing so. Taking into account future threats, we should envisage the new platform as obviously better in important ways. For example, the primary reason for introducing the F-X (eventually the F-15) several years ago was that it could perform much more capably against the new generation of Soviet aircraft than the F-4.

In contrast, we may introduce a new basic system into the operational inventory on the basis of overall force effectiveness. The decision to go ahead with the F-16 was made, in part, on the basis of increasing overall force effectiveness within fiscal constraints by introducing a less costly, albeit less capable, fighter/attack aircraft than the F-15—the concept of the high/low mix. In other cases, we replace basic systems because they are wearing out and cost too much to maintain.

¹See Topic 5, "Reducing Turmoil," in Sec. VII, below.

HOW THE PROCESS WORKS NOW

Usually, the operational commands, in collaboration with Service acquisition commands and Service headquarters, establish the "requirements," or more properly, the performance specifications, for both new basic systems and the critical performance features of these systems. The following four factors shape the advocacy and performance specifications for these new systems:

- Most important, the new system represents the only way to accomplish critical operational objectives in the presence of extant and projected threats.
- The new system represents a significant advantage over existing systems in achieving a stated level of capability; i.e., it can maintain a stated level of capability with significantly fewer resources or it can significantly increase the capability with the same resources.
- Its performance features are reasonably achievable from evolving or evolved technology.
- We can afford it.

The development, acquisition, and operating cost of a complex basic system is inextricably linked to the performance features designed into that system. Although problems of reliability and maintainability can also affect cost, the dominant factor driving the cost of acquiring the basic systems is usually performance.

Each increment of increase in one performance feature of a new fighter, for example, carries an incremental cost. The cost is reflected as an increase in dollar costs and/or as a reduction in other performance features. The demand for a higher maximum airspeed, for example, might degrade other performance features, such as turning ability or short takeoff and landing distances. The rejection of some performance features might also improve reliability and maintainability. Finally, the aggregate of performance features of the system largely determines its overall capability and its total cost.

The initial specifications of performance for basic systems are generally established several years in advance of full-scale development and long before production. Not surprisingly, the passage of time often invalidates or substantially modifies the assumptions that underlay the original statement of performance specifications. Nevertheless, these performance specifications often achieve an unwarranted status approaching sacrosanctity, partly because they are erroneously presented under the label of "requirements."

This process creates a rigidity that hinders the timely, practical redirection of the program as a reaction to new knowledge. The failure to adjust promptly to the new reality leads, in turn, to further delays in schedule, increased costs, and, inexorably, erosion of support. The problem stems largely from the fact that, normally, those who best understand the causes of projected cost increases or schedule delays are those in the development community with no authority to revise the performance specifications and with little motivation to challenge the bureaucracy.

Services have, in certain cases, exhibited the experience, wisdom, and motivation to recognize an overly costly increment of performance and to revise the specifications. Usually, however, this revision occurs only after cost and schedule problems have become so severe as to threaten continued support of the program by the Secretary of Defense or Congress.

IMPROVING THE PROCESS

The demand for trade-offs spawns an iterative process that involves all levels of the Service, combatant commanders, and eventually OSD and the Joint Staff. In many instances, Congressional committees are also drawn in. This iterative process works to a degree, but it can be improved. A few suggestions for reform follow.²

The process needs a well-defined procedure for the systematic and continuing review of the many performance features embedded in a basic system or major item of equipment. The process should allow for deliberate, informed judgment to determine the point at which further increments of performance no longer justify the incremental increase in cost.

Each Service needs to institutionalize a procedure that would provide for such a systematic and continuing review by a senior review group. The group would include members who understand both the technical risk and the operational utility of various levels of performance and those with authority and responsibility for committing resources and mandating appropriate change. The process would proceed as follows:

- Each Service would form a senior review group consisting of representatives from the operational and developmental organizations.

²The author is indebted to Lt. Gen. Kelly Burke (USAF, Ret.) for the genesis of the ideas presented in this subsection.

- Prior to initiating a development program for a new basic system, this senior review group would, based on supporting analysis, establish preliminary performance goals for the new system. These goals would not be described as "requirements" or even "specifications." In fact, in this context, the word "requirement" should be avoided entirely.
- The performance goals would be divided into relevant performance features; for a new fighter the features would include
 - payload and range
 - airspeed
 - altitude
 - acceleration
 - maneuverability
 - observability
 - takeoff and landing distances
 - the capacity to accommodate engagement systems
 - the capacity to carry and deliver weapons
 - the capacity to incorporate defensive measures.
- The developing agency would then examine in detail the cost and technical risk of incorporating increased levels of performance for each of these features. Preliminary estimates of the cost of varying combinations of performance features would be portrayed graphically in traditional curves depicting the incremental cost increase and trade-offs associated with each increment of performance. Estimates of the risk of schedule slips due to technical problems should be made to the extent feasible.
- The senior review group would rigorously review these detailed analyses. Using their best judgment, they would reach agreement on the initial goal for each performance feature.³ This procedure would produce a benchmark for the performance levels of each feature and its concomitant costs, based on the best judgment about the proper trade-off between each performance feature and cost.

We would then be in a position to answer five basic questions:

- Have we made an informed judgment about the trade-off between each performance feature and cost?
- Does the incremental increase in performance afforded by the new basic system, when compared with the cost of upgrading

³These initial goals for performance levels usually would be established near (or just before) the "knee" of the curve, where an additional increase in the performance level begins to induce disproportionate costs—either in money or the degradation of other features. An occasional exception might well be justified, but it would have to be carefully considered.

existing force elements, justify the cost of initiating a new acquisition program?

- Are the technical risks acceptable?
- Is the basic system affordable?
- Is the schedule realistic?

Unless we have reasonable assurance that the answer to all of these questions is yes, the program should be adjusted, deferred, or abandoned until such times as changing circumstances justify proceeding.

If the decision is made to proceed, the preliminary analyses should provide the basis for continuing reassessment. As development proceeds, the initial estimates of cost and performance will change, both usually in an unfavorable direction. The same senior review group should, at appropriate points in the development, reassess their original decisions. If the review group decides that the benchmark performance goals would have an adverse and unforeseen effect on cost and schedule, it could (1) elect to maintain stated performance and prepare to defend higher cost and a longer schedule; (2) maintain cost and schedule by accepting less than the baseline performance; or (3) abandon the project as no longer sensible.

Such a decisionmaking process would greatly reduce the inclination to establish unduly high performance features without reasoned consideration of the value of that particular increment of performance in relation to its adverse effect on cost, schedule, and general support. It would also reduce the compulsion to adhere to every specification when ensuing events argue for change.

VII. SPECIAL TOPICS

This section elaborates on five topics related to the concept for force planning suggested in the earlier sections. The discussion begins with a dissertation on requirements. Topic 2, "Demand and Opportunity," suggests how opportunities can be used to drive the process of upgrading existing force elements and introducing new basic systems. The third and fourth topics address the assessment of the match between capabilities and strategy and the importance and difficulties of allocating resources to best effect. The discussion concludes with some thoughts on reducing turmoil in our force planning.

TOPIC 1—REQUIREMENTS

The word "requirement" may be used legitimately to describe:

- The requirement to protect the fundamental interests of the United States.
- The requirements for a certain number of units of particular force elements (fighters, Army divisions, Naval task forces) to ensure confidence of achieving some operational objective and the underwriting of some stated strategy.
- The requirement—as stated by a combatant commander or the Chairman of the JCS—to increase our operational capabilities to achieve some operational objective.

The following represent corrupted or obsolete uses:

- The "requirement," established by a Service, for a particular system.
- The "requirement" that a particular new weapon or system have certain performance features.

Hierarchy of Requirements

To gain a better insight into the legitimate uses of the word requirement, it is instructive to delineate a hierarchy. The requirement to ensure the survival and prosperity of the United States in all dimensions represents a fundamental goal.

The next lower level involves national security objectives and strategies. Our national security objectives define what we must do to

preserve and protect the fundamental principles, goals, and interests of the United States in the face of threats and challenges by adversaries.

One such national objective is to prevent the Soviet Union from dominating Western Europe, either politically or by military force. Leaders of the free world would, with little hesitation, validate the requirement to provide forces so that they would have reasonable confidence of underwriting the strategies to achieve this objective. The relevant strategies to achieve that national objective include the formation of an alliance, the provision of a robust forward defense with conventional forces, and the persuasion of the Soviet leaders that we have the capability and resolve to use nuclear weapons when required.

At the level of operational objectives, the strategy (or broad objective) of a robust forward defense includes the capabilities to fight the close-in battle; damage Soviet forces engaged (or about to engage) with friendly forces; prevent Soviet air forces from damaging our own ground forces or delaying the movement and maneuver of these forces; and delay/damage/divert Soviet follow-on forces. Accordingly, we might say that we have a requirement to increase our capability to delay/damage Soviet follow-on forces.

Some might hesitate to validate the delay/damage of Soviet follow-on forces as a requirement, as we have alternative means of providing the more general objective of a robust forward defense. In order to decide whether or not we undertake programs to increase our capability to delay/damage Soviet follow-on forces, we must examine the effectiveness and the cost of doing so.

To examine the effectiveness and cost of undertaking a particular program, we must go to the next lower level—that of tasks. The following tasks relate to the operational objective of delay/damage Soviet follow-on forces: damage bridges; mine roads; mine railroads; damage Soviet combat forces in assembly areas; and delay/damage Soviet combat forces in transit from assembly areas to lines of departure.

The decision whether or not to increase our capability to accomplish a particular task depends on the effectiveness and cost of doing so compared with the effectiveness and costs of underwriting other concepts to accomplish other tasks related to the stated operational objectives. In short, whether or not we validate the placement of greater emphasis on this particular operational objective depends on how well we can accomplish the tasks subordinate to the objective.

We must also compare the effectiveness and cost of increasing our capability to achieve the other operational objectives that react to the strategy (or broad objective) of a robust forward defense. The effectiveness in each case must relate to the broad objective of a robust forward defense, and the measure of merit must have something to do with the movement of the forward line of troops (FLOT).

The validation of the concept of increasing our capability to accomplish some operational objective (or even down to tasks) would legitimize the use of the word requirement. To apply it to the level of hardware, however, would represent a misuse. Hardware (systems, subsystems, and weapons) represents the means of underwriting operational concepts to accomplish tasks to achieve operational objectives. At this level, there are generally many alternatives, and the process is more aptly described as evaluation and selection.

In sum, we may legitimately say that we have a requirement to increase our capability to achieve some operational objective. We should exercise caution in saying that we have a requirement to increase our capability to achieve some particular operational task. We should not say that we have a requirement for a particular weapon or system and, then, that we have a requirement for certain performance features in that system.

The requirement process should stop at the level of operational tasks. From then on, we can choose from among the most promising concepts and select systems with performance features adequate to underwrite the chosen operational concept(s).

How the Law Treats Operational Requirements

The Defense Reorganization Act of 1986 (Sec. 163, "Role of Chairman of Joint Chiefs of Staff") deals with the matter of operational requirements as follows:

- (2) Subject to the authority, direction, and control of the Secretary of Defense, the Chairman of the Joint Chiefs of Staff serves as the spokesman for the commanders of the combatant commands, especially on the operational requirements of their commands. In performing such function, the Chairman shall—
 - (A) confer with and obtain information from the commanders of the combatant commands with respect to the requirements of their commands;
 - (B) evaluate and integrate such information;
 - (C) advise and make recommendations to the Secretary of Defense with respect to the requirements of the combatant commands, individually and collectively; and
 - (D) communicate, as appropriate, the requirements of the combatant commands to other elements of the Department of Defense.

The author interprets Section 163 as follows: If there is, indeed, a "requirements" process, it refers to the Chairman of the JCS conferring with the combatant commanders as to their operational requirements, integrating and evaluating these requirements, and advising and making recommendations to the Secretary of Defense. Evaluating these requirements and making recommendations must surely involve allocating resources to best effect. In any event, the requirements process centers on actions by the Chairman of the JCS in conferring, evaluating, advising, and recommending. These actions differ from setting performance features of weapons.

Exception to a Commission Recommendation

The framework suggested in this report generally reflects the letter and spirit of the report of the President's Blue Ribbon Commission on Defense Management. However, the author disagrees with the approach suggested by the Commission for establishing performance features of systems (weapons).

The Commission Report states that "The JRMB [Joint Requirements and Management Board] should define weapon requirements for development, and provide thereby an early trade-off between cost and performance."¹ The use of the term requirement to define performance features of systems is bad enough when practiced at the level of the Services. Elevating the practice to the level of OSD would serve to make these statements about performance even more sacrosanct and thus make a flawed process even worse.

The Secretary of Defense and the Chairman of the Joint Chiefs of Staff should, of course, review the analyses and trade-offs of performance versus cost conducted by the Services and interpose objections when appropriate. However, reviewing the performance features that have been selected as a result of trade-off analyses by the Services and interposing objections when appropriate differs from *defining* weapon requirements and *providing* trade-offs. First, we should not characterize the process of making judgmental selections among alternatives as "defining weapon requirements." Second, it seems more appropriate for the Services to conduct trade-off analyses of performance features.²

In summary, the Secretary of Defense and the Chairman of the Joint Chiefs of Staff should concentrate on what output is expected of the various force elements under the stewardship of each Service.

¹A *Quest for Excellence—Final Report to the President*, June 1986, p. 57. This function, if appropriate, would now presumably come under the Defense Acquisition Board (DAB).

²For an elaboration of this point, see "Improving the Process" in Sec. VI, above.

Most important, this output should be expressed in terms of relevant operational capabilities—not in terms of hardware.

TOPIC 2—DEMAND AND OPPORTUNITY

Many regulations and directives seem to be based on the premise that programs to upgrade force elements are spawned in some deterministic manner as a result of some requirements process. In actual practice, this is not the case. The formulation of concepts to upgrade and modernize force elements is a creative process driven by two pushes—requirements and opportunity.

The Services should know both the requirements for increased operational capability and the existing problem areas. They may rely for their knowledge of requirements for operational capability on three key documents: the President's national security strategy report, the report by the Chairman of the JCS on the national military strategies, and the annual guidance to DoD components of the Secretary of Defense. Also, many forums provide the opportunity for discourse between personnel of Service operational commands and personnel of combatant commands.

Accordingly, as appropriate, the Services should initiate efforts to formulate operational concepts to alleviate stated deficiencies and propose to the Secretary of Defense and Chairman of the JCS that these concepts be evaluated and, when appropriate, pursued. The opportunity-driven process works from the bottom up. However, the process described above differs from a bottom-up process that focuses on individual pieces of hardware in the context of requirements. The proposed process focuses instead on proposals to proceed to acquire a stated operational capability by some particular force element according to an agreed-to operational concept.

TOPIC 3—ASSESSING THE MATCH AT THE STRATEGIC LEVEL

Two separate issues arise when we address the match between objectives and capabilities: whether we have confidence that a stated national strategy will, indeed, secure our national objectives and protect our vital interests and whether our forces possess the capability to underwrite the stated strategy. This section addresses the second issue: the match, or mismatch, between stated strategies and operational capabilities.

The approach proposed here for assessing the match between capabilities and strategy differs importantly from current practice. In the proposed approach, we would examine the match between strategy and capability on the basis of whether the expected operational capabilities were adequate to achieve the operational objectives defined by the regional strategies. Too often, current approaches compare the overall budget levels of the United States and the Soviet Union or examine regional balances based on static measures of forces, such as numbers of tanks, aircraft, and ships.

Static measures of forces have some utility, e.g., they can provide general insights on global and regional balances of power. However, an assessment of the correlation between strategy and capabilities cannot rest on such measures alone. Rather, assessing the match of capabilities to strategy requires a detailed analysis of our prospects of achieving our own operational objectives, of conducting our own campaigns, and of denying success to enemy campaigns. The capability to support a stated strategy does not necessarily require symmetrical or equal forces. Such assessments require *dynamic campaign analysis*—the simulation of a campaign as it evolves over time.

A more systematic examination of the strategy, campaigns, operational objectives, and operational capabilities for each critical region will provide much better understanding of the correlation between capability and strategy. However, we will never know conclusively the answer to the question of how much is enough. There will always be a considerable gap between the posture that a combatant commander states is required to maintain high confidence of prevailing if deterrence fails and the posture that budget-oriented officials might propose as adequate to deter overt aggression in the first place.

The issue is further complicated by the fact that any strategy has many contingencies and branches rather than a single line of action. Even so, we can do much better in illuminating the degree of correlation among strategy, operational objectives, capabilities, and tasks, and we should undertake a more systematic effort to do so.

TOPIC 4—ALLOCATING RESOURCES TO BEST EFFECT

While assessing the match (or mismatch) between strategy and capabilities will always be essentially subjective and judgmental, determining the preferred allocation of defense resources is analytically more tractable. Decisions as to the allocation of resources will depend primarily on informed judgment, but, at least in theory, analyses can greatly assist us in making these judgments.

The process of allocating resources to best effect is, in principle, easily formulated: Given the present inventory and posture of our military forces, *to what end* should we allocate the resources available for defense over the next several years?

The general guiding principle for optimum allocation is well known. Resources should be allocated in such a way that it would be impossible to reassign a resource from its proposed use to some other use and achieve greater overall effectiveness, i.e., greater likelihood of success in conducting potential campaigns and wars and in deterring enemy aggression and the coercion of allies.

However, identifying and attaining this optimal allocation of resources is both analytically and practically infeasible in the real world. Optimal allocation of resources involves (1) determining the effectiveness of a proposed operational concept in enhancing the likelihood of success of campaigns in a given region, as well as the cost of implementing this concept; (2) comparing the effectiveness and cost of this concept with those of other concepts applied to this region, as well as to other regions; and (3) making trade-offs in capabilities with respect to time, i.e., balancing current readiness against modernizing forces for the longer term.

To accomplish global optimization, one would have to try to determine the preferred allocation of resources available for defense within a multidimensional matrix and, in each of the following three categories, to choose:

- Among alternative concepts to enhance outcomes in a particular region or scenario.
- Among all concepts to enhance outcomes in all regions.
- Between maintaining current readiness and modernizing and increasing the force structure for the future.

This task is indeed formidable. One cannot, in practice, determine analytically the global optimization of resources, leaving aside a global optimization over time. Accordingly, major resource allocation decisions must be based on informed judgment and made in the context of judicious suboptimizations under conditions of uncertainty.

Developing appropriate tools for and implementing this concept of analysis is not easy. The models must have an appropriate degree of fidelity to capture the contribution of various force elements to stated measures of merit having to do with the likely outcomes of campaigns. However, we can be cautiously optimistic regarding the prospects for gaining better insights into allocating resources to best effect.

In recent years, rather significant advances have been made in analytical concepts, methods, and techniques for systematically relating the contribution of alternative postures of force elements to the successful outcomes of wars. For example, RAND is currently making a substantial effort to develop tools that could be used to assess the robustness of the capabilities provided by alternative, equal-cost force structures in a region. These assessments can be performed over several alternative future scenarios under conditions of uncertainty. While the assessments would not demonstrate a global optimization, they would identify combinations of force elements that are robust across several possible scenarios in a particular region, as well as among regions.

Were the Secretary of Defense to declare that the allocation of resources is to be made on the basis of the best overall effect, this mandate, in itself, would help to promote an environment for more effective force planning. Once we focus on the process of allocating resources to best overall effect in terms of achieving operational objectives and successful war outcomes, then military experience and common sense, coupled with emerging analytical tools, should go a long way toward enabling us to make informed decisions about these allocations. We could then have something more relevant than cost/effectiveness analyses based on the least cost per kill, or equally bad, allocating resources to match an enemy in each category of equipment.

TOPIC 5—REDUCING TURMOIL

Continuity of Planning and Budgets

The practice of initiating programs, stretching them out, and finally canceling them wastes resources and time. We cannot have efficient and appropriate allocation of resources without long-term continuity in programs and financing. Probably the most important step to reduce the waste of time and resources is to reduce the extreme fluctuations in the overall defense budget and the churning of individual programs within a given budget. The same also applies to fluctuations in manpower.

We could obtain far greater operational capability, as well as net current value, with a steady two percent real growth sustained over eight years than with a ten percent real growth for four years, followed by drastic reductions in the four following years—even though both scenarios would require the same total expenditure of funds over the eight years.

Congress and the Administration should strive to agree on the overall budget to be available to the DoD on a rolling horizon. They should agree on the overall budget and manpower levels for at least the next five years. Both parties would then have to adhere to these overall projections, except in an emergency. Also, both parties would have to agree to minimize the churning within these overall budgets. Only under these circumstances can we give meaning to the concept of allocating resources to best effect.

To project our needs and then to adhere to the projections would require considerable negotiation between the Administration and Congress. While this negotiation may be difficult, it would surely be worthwhile. In fact, seeking such an agreement should take priority for any incoming administration, and it would cut turmoil and retrenchment. Perhaps then the DoD could devote greater attention to making best use of the moneys available.

Longer Planning Horizons

Americans are increasingly aware of the need for long-term planning horizons and reasonable continuity over these horizons. With regard to force planning, the case can be made that this planning horizon extends to 15 years. Maintaining complete continuity over 15 years at the level of regional strategies and operational objectives, while possible, seems unlikely. However, the problem is not as severe as it appears.

The ability to accomplish operational tasks constitutes the building blocks of the capabilities of any force element. We can, in five years, upgrade the basic systems of force elements to accomplish existing tasks better or to accomplish new tasks—or at least we should be able to complete such upgrades in that length of time. In addition, although changes in strategy attract political attention, the capabilities of force elements to accomplish specific operational tasks (the building blocks) are likely to remain quite relevant.

Accordingly, we should not be too pessimistic about the future of the capabilities our current programs portend. In the presence of uncertainties, we must selectively provide force elements the capabilities to accomplish operational tasks that will be relevant and important across many situations.

The framework for top-down planning calls for the annual issuance of five principal statements: the national security strategy report, the national military strategies report, Presidential guidance, guidance to DoD components, and the annual report to Congress. The Defense Reorganization Act of 1986 mandates the annual update of three of the

five: the national security strategy report, the annual guidance to the DoD components, and the annual report to Congress by the Secretary of Defense. These statements must change to reflect the changing environment. One would hope, however, all five will still retain a large degree of continuity and will not be changed and rearranged to include the new buzz words of a new administration, or, worse still, of different writers.

VIII. CONCLUDING REMARKS

ADHERING TO THE FRAMEWORK

Adherence to the proposed framework would not eliminate the difficulties inherent in the process of force planning for and allocating resources to the national defense. However, a more operationally oriented planning and budgeting process would constitute an important improvement and one that seems within reach. This framework would promote the following:

- Easy and perceptive discourse among all involved, because the discourse would be coherent and it would use a consistent lexicon.
- Clear and common understanding of a top-down planning process—who does what when and in what forum. The clarity would result most of all from the fact that the process centers on the correct fundamental items—force elements and the operational capabilities that they are expected to provide to achieve operational objectives and to underwrite stated regional strategies.
- More operationally oriented statements than are now made to Congress by the Secretary of Defense, the Chairman of the JCS, and the Services.
- Better informed insight than is now available into the correlation between strategies and capabilities by mandating assessments in terms of the dynamics of campaigns, rather than in terms of static measures.
- The proper allocation of resources by enforcing the disciplined, systematic analyses of the effectiveness and costs of alternative force elements and combinations of force elements across Services.
- Linkage among strategies, operational tasks, and programs by focusing on operational concepts.
- More timely upgrades than are now made of existing force elements, because it suggests a more streamlined process for identifying and implementing such upgrades.
- A more systematic process than the present one for determining and adjusting the performance features of new basic systems or major items of equipment.

IMPLEMENTING THE FRAMEWORK

Most of the features of this framework can be implemented without undue difficulty:

- Adhering to a top-down process and to a common and logical lexicon is largely a matter of discipline.
- Focusing on operational capability, rather than on pieces of hardware, and providing more operationally oriented statements to Congress by the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and the Service chiefs are matters of orientation and adhering to the structure suggested in this report.
- Using operational concepts to provide an audit trail from strategies to tasks and the procurement of hardware is already practiced, though not systematically.
- Ensuring that deliberations and decisions will be made in the currency of the operational capabilities provided by specific force elements and combinations of force elements is a matter of direction.

Two features, however, will present special difficulties. First, the exact form of any commitment by a Service to the Secretary of Defense and the Chairman of the JCS as to the operational capability to be provided by the force elements under the stewardship of that Service will require additional thought. According to this framework, these commitments will be made in the context of operational objectives, but the exact form of the statements of commitment requires careful definition.

Second, we will have to improve the process of allocating resources to best effect. We have already achieved some progress in making judgments about allocations continually and in the context of preferred alternatives. This report proposes assisting the process with analytic tools already developed or being developed. Rigorous analysis of this type remains difficult, particularly when applied across force elements, regions, and time. This report does not attempt to prescribe how to accomplish this daunting task. Rather, it supports increased efforts, similar to those now under way at RAND, to provide better insight into how these analytic tools can contribute.

Implementing the concepts proposed in this report is primarily a matter of orientation. The author believes that the results will be well worth the effort.