
THE
LAND
WARFARE
PAPERS

No. 64 June 2007

# The Evolution of the Pentagon's Strategic Warfighting Resource and Risk Process

Robert F. Larsen

A National Security Affairs Paper
published on occasion by
THE INSTITUTE OF
LAND WARFARE
ASSOCIATION OF THE
UNITED STATES ARMY
Arlington, Virginia

# The Evolution of the Pentagon's Strategic Warfighting Resource and Risk Process

by

Robert F. Larsen

The Institute of Land Warfare
ASSOCIATION OF THE UNITED STATES ARMY

**AN AUSA INSTITUTE OF LAND WARFARE PAPER**

The purpose of the Institute of Land Warfare is to extend the educational work of AUSA by sponsoring scholarly publications, to include books, monographs and essays on key defense issues, as well as workshops and symposia. A work selected for publication as a Land Warfare Paper represents research by the author which, in the opinion of the editorial board, will contribute to a better understanding of a particular defense or national security issue. Publication as an Institute of Land Warfare Paper does not indicate that the Association of the United States Army agrees with everything in the paper, but does suggest that the Association believes the paper will stimulate the thinking of AUSA members and others concerned about important defense issues.

**Land Warfare Paper No. 64, June 2007**

# The Evolution of the Pentagon's Strategic Warfighting Resource and Risk Process

**by Robert F. Larsen**

Colonel Robert F. Larsen currently serves as the U.S. Army staff's division chief of Acquisition and Sustainment Program Analysis in the Program Analysis Evaluation Directorate, G-8, providing systems engineering and system analysis support. His previous assignment was as the Plans Branch Chief, Joint Capability Division, J-8, where he wrote and managed the Chairman's Program Assessment and the Chairman's Program Recommendation, and assisted the Functional Capability Boards in their support of the Joint Requirement Oversight Council and the Chairman of the Joint Chiefs of Staff. He was the Army's lead operational analyst working with the Department of Defense and Joint Force Structure challenges in the 1997 Quadrennial Defense Review (QDR). He was also the lead operational analyst for the Army's modernizations alternatives during QDR 2001. Following that he was the division chief, leading the Army's risk analysis to pay for Future Combat Systems and to conduct the affordability analysis for the Milestone B decision in 2003.

He has written and presented numerous papers for the International Council on Systems Engineering, the American Institute of Aeronautics and Astronautics, the Military Operations Research Society and many other organizations, and has written articles for military journals. Colonel Larsen holds a Ph.D. in Systems Engineering from George Mason University.



Inquiries regarding this and future Land Warfare Papers should be directed to: Director, ILW Programs, AUSA's Institute of Land Warfare, e-mail sdaugherty@ausa.org or telephone: (direct dial) 703-907-2627 or (toll free) 1-800-336-4570, ext. 226.

**Contents**

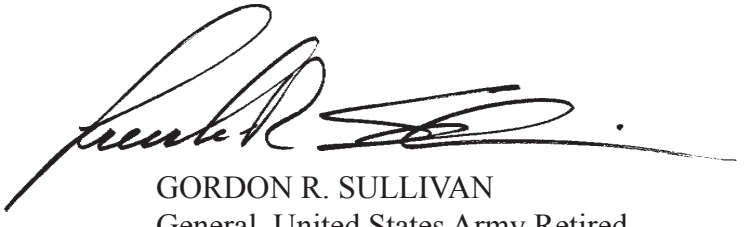
# Foreword

Since 2001, there have been major strides in the Pentagon's strategic warfighting resource and risk process for creating systems that are "born joint." The Joint Requirement Oversight Council has evolved and established itself as the central process that provides the Department of Defense's (DoD's) transformed joint force to meet the nation's needs in this uncertain time.

Before 2002, virtually every military system was born from either service-centric doctrine or worse—an actual operational disaster. The services had unique strategic interpretations of the National Defense Strategy, operational viewpoints and ways to identify and test solutions. After this work had been done, the joint community attempted to combine these independent proposals into an integrated force. Perhaps this was possible in the past, when the enemy fought us through service domains, but not in today's environment.

Today, military planners understand the importance of interoperability—the ability to share meaningful operational information and act on it. As with any major transformation, there will be areas where we can continue to improve. In the fall of 2004 DoD defined what "capability" means, and in May 2005 it agreed upon common capability taxonomy to use to debate the issues surrounding the nation's defense. DoD is still trying to establish a common framework for a capability-based planning process for all the services, but has made major strides.

This paper discusses DoD's actions to date and recommends several changes to ensure it develops a joint force to meet the nation's needs, with the intent to help senior leaders optimize investments in joint capabilities areas to meet current and future security challenges.



GORDON R. SULLIVAN
General, United States Army Retired
President

June 2007

# The Evolution of the Pentagon's Strategic Warfighting Resource and Risk Process

## Introduction

The last significant management change that the Department of Defense (DoD) underwent occurred under Secretary Robert McNamara. In 1962, during the first year of his tenure, he introduced the Planning, Programming and Budgeting System (PPBS), Operational Research Systems Analysis to help determine defense policy, and the Program Analysis and Evaluation Division, which was designed to help reduce waste and duplication in the services' procurement and systems management. Even though DoD had greater oversight on procurement and research and development (R&D), each service maintained its responsibility to develop, fund, procure and manage weapon systems. This resource management approach has been in place since the early 1960s with few other changes—but the fight has dramatically changed.

Specifically, the Army has evolved to become a more joint interdependent force with a focus on combatant commanders as joint commanders, bearing the burden of warfighting in their respective regions. The Bush administration came into office with the intent of changing the approach to the old methodology, to streamline it and to provide for a more joint outlook to weapon systems procurement and capabilities development. The following research will highlight the latest changes through Quadrennial Defense Review (QDR) 2006 and discuss potential changes to make the process better.

## Need for Change

To understand the evolution of the joint capabilities-based process, it is important first to discuss the reasons for the change. Figure 1 shows where DoD is and where it needs to take the process. The left side of figure 1 illustrates the challenges to developing interoperable and integrated joint forces.

Before 2002, virtually every military system was born from service doctrine, a service-focused operational need or an operational disaster. Typically, the services had unique strategic interpretations of the National Defense Strategy, unique operational viewpoints and unique ways to identify and test solutions.[1] Service developments were conceived and tested against service-focused scenarios that often assumed away the contributions of other services to the fight. After a massive amount of work had been done, the joint community, at nearly the very end, attempted to combine these independent proposals into an integrated force. Perhaps this was possible in the past when the military conducted operations along rigid geographical and service boundaries, but that process is unsatisfactory now in a truly integrated joint operational environment and amidst the resource challenges of becoming a joint networked and interdependent force. If nothing else, the military's realization of interoperability—

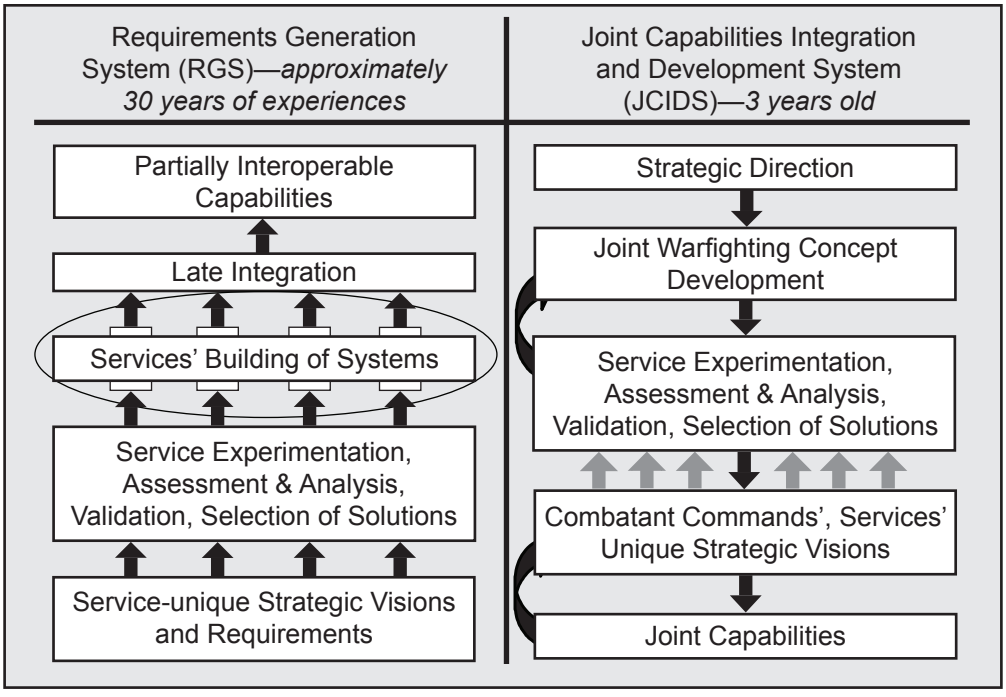



Figure 1: Old Requirements Process vs. Joint Requirements Oversight Council (JROC) Capability-based Process

including the ability to share meaningful operational information and act on it—means that, for the first time, it can choose among courses of action available in the *entire* force. In the old system, however, information interoperability happened only by accident or, in the case of many major weapon systems, was retrofitted *decades* after the system was fielded.

## Evolution of the Capabilities-Based Process

### *Introduction of "Capabilities"*

In QDR 2001, Secretary of Defense Donald H. Rumsfeld introduced the term "capabilities" so DoD would not focus on a specific solution for a specific threat, but rather an overall level of readiness. To solve many of the problems identified, DoD undertook a number of initiatives to implement a capabilities-based approach for determining joint military needs. Primarily, they started developing the necessary tools such as metrics, methods and capability categories. However, a capabilities-based approach still has not been institutionalized. In the fall of 2004, *Rumsfeld agreed that a capability is the ability to achieve a desired effect under specified standards and conditions through combinations of means and ways to perform a set of tasks*.[2] The Capability-Based Planning (CBP) process is defined as an overarching framework for planning under uncertainty that provides capabilities suitable for a wide range of modern-day challenges and circumstances while working within an

economic framework that necessitates choice. The 2006 QDR sought to address the process challenge to ensure the department develops a joint military needs process to implement the goal of the improved process—but it fell short.

Because the services receive more defense planning guidance than they can resource, they are forced to make their own trade-offs within their respective weapon system portfolios to comply with fiscal constraints. Service needs compete against joint needs, with tough choices required to create a fiscally responsible program. Service decisions made in their own best interests are then second-guessed by the combatant commands, the joint staff and the Office of the Secretary of Defense (OSD), then often overturned during the program review. Consequently, the services have little incentive to fund joint needs before the program review.

This lack of motivation has resulted in an annual "train wreck" during the program review. The train wreck occurs because joint needs are forced into the process after each service has developed its own integrated program. The resulting budget does not optimize capabilities at either the DoD or service level, and the subsequent effort to modify the program and budget so late in the process is labor-intensive and adversarial.

In addition, the United States does not know the true face of its next adversary or the exact method of engagement. The threat may come from terrorists, but it could come in the form of cyber-war, a traditional state-on-state conflict, some entirely new form of attack or a natural or man-made disaster. This uncertainty requires the United States to move away from its past threat-based view (i.e., one enemy for one future period of time) of the world and force development.

Since 2001, DoD's new strategic approach has focused more on how the United States can defeat a broad array of capabilities (e.g., multiple types of enemies) that any adversary may employ rather than who the adversaries are and where they may threaten joint forces or U.S. interests. This does not mean DoD is not considering what weapons or tactics other countries may develop to defeat the United States, but it means it is broadening its view of the next adversary, enabling U.S. forces to be prepared for a thinking enemy who will adapt to situations, too. The joint force must have attributes to make it fully integrated, expeditionary in nature, networked, decentralized, adaptable, able to achieve decision superiority, lethal and decisive during and after major conflicts.

The Joint Requirements Oversight Council (JROC)-evolved process tries to reconcile service-developed views as they evolve joint warfighting concepts. The right side of figure 1 illustrates how the JROC process has inverted the paradigm, driving strategy into the process from the top and from the very beginning of the cycle. The strategy provides guidance at a high level on how to match military means to national ends, but the process needs further development before solutions

can be considered. Service participation is critical to developing joint perspectives throughout the process. With joint concepts in hand, experiments, analysis, assessments of existing proposals and determination of how to achieve warfighting concepts can be accomplished. The resulting warfighting capabilities will have jointness built in; they start that way, and finish that way.

According to Secretary Rumsfeld, the transformation to joint capabilities involves a shift in the traditional ways of thinking about military activities.[3] In earlier days, systems were justified by traditional battlefield challenges. The degree to which they provided capabilities against irregular or catastrophic challenges was viewed as an "additive good." The transformation to joint capabilities is about reshaping the nature of military competition and cooperation through new combinations of concepts, capabilities, people and organizations. The goal is to provide military forces with the capability to adapt quickly to new challenges and unexpected circumstances. The late Arthur Cebrowski, former head of the Office of Force Transformation and retired Navy vice admiral, stated that knowledge and agility derived from joint capabilities allow military planners to advance from traditional *inductive planning approaches* (approaches that look for weaknesses, gaps, deficiencies and problems and determine how to correct them) to *flexible deductive approaches* (those that stress the conscious search for the unexpected and deviate from the usual bounds of feasibility). Now, planners are expected to justify systems based on their capabilities to proactively address irregular and unexpected challenges.[4]

A capabilities-based approach elevates the discussion of joint needs to a more strategic level, centering on desired effects rather than on specific weapon systems and platforms. In this approach, strategic objectives frame the desired effects, which in turn define the needed capabilities, and ultimately the platforms and weapon systems DoD should acquire. This reverses their current approach of packaging weapon systems and platforms into capabilities, assessing what effects they can achieve on the battlefield, and planning operations based on those achievable effects that accomplish an object in support of one or more tasks. The capabilities-based approach begins at the strategic level; top-down guidance is easier to incorporate, and the entire process is more responsive to the senior leader's opportunities to make decisions earlier.[5]

Another advantage to a capabilities-based approach is that each capability has a materiel and nonmateriel aspect to it. Every capability can be broken into doctrine, organization, training, materiel, leadership, personnel and facilities (DOTMLPF) elements. As a result, all resources are considered when planning for capabilities. This holistic approach considers enterprise needs simultaneously with warfighting needs, supporting a fiscally constrained resourcing process.[6]

Capabilities' planning characterizes and quantifies warfighting and enterprise needs, ensuring integration of the full range of materiel and nonmateriel considerations.

DOTMLPF issues should be considered simultaneously with platforms, weapon systems and costs. The key differences from the current approach are that capability planning:

- attempts to meet needs and maximize output at the joint level, rather than individual component level;
- expresses strategic objectives and joint needs in terms of outcomes (what is to be accomplished) instead of specific platforms and systems;
- provides an array of innovative solutions to joint needs, conducting trade analysis across services and defense agencies—with all key stakeholders—to determine the best options; and
- addresses a wide range of threats rather than a single or primary threat in meeting the needs of the current and future warfighter.

***Highlights of the Change***

The Department of Defense continues to strive to find a better way of developing joint warfighting capabilities. In the past two years, the Pentagon has changed the way it does business in the following ways:

- **Planning Guidance:** Defense Planning Guidance (DPG) has been broken into two parts. The Strategic Planning Guidance (SPG) is the more strategic guidance document and provides high-level guidance, while the second is a separate programming guidance document called the Joint Programming Guidance (JPG). The SPG does not get into specific programs and is fiscally informed—in a rough order of magnitude affordable that the Office of the Under Secretary of Defense (USD) for Program Analysis and Evaluation (PA&E) will independently validate. The JPG provides specific decisions, which senior officials make for issues that have a joint implication, and is also fiscally informed (with a specific offset or risk area to pay for the joint issue that is directed to be corrected).
- **Program and Budget Review:** Program Review (PR) and Budget Review (BR) have been consolidated so that an issue will no longer take two passes to be resourced. The second major change has been the impact of a 2003 management initiative decision (No. 913) that aims to develop a more stable resource plan by creating a two-year cycle that discourages major changes to the budget during an "off" year, and permits them during an "on" year. For example, in an off year DoD senior leadership is not expecting any major changes. If an organization recommends a program change, the proposal must be accompanied by offsets before it is considered—a policy that has impacted the resource debate in the department. This impact is especially evident in the combatant commander's integrated priority list (IPL), which has been dramatically changed to provide the senior department leadership those capability issues that are important to the

senior warfighting commanders and potential places to consider taking risks to pay for a potential gap.

- **Quadrennial Defense Review:** In 2005, DoD went through a thorough congressionally mandated QDR. A team led by OSD examined and reduced a large number of cross-agency issues to a manageable number that they then brought to senior leaders through senior leader review groups (SLRGs), Deputy's Advisory Working Groups (DAWGs) and the Combatant Commanders' Conference and Strategic Planning Council (SPC). These new senior review groups allow the highest-level leadership to come together on a regular basis to make policy and resourcing decisions in DoD.
- **The Analytical Agenda:** Through Operational Availability studies, the Analytical Agenda has underpinned department decisions by providing common assumptions and issues to enable tradespace for the big issues. Synchronizing the Analytical Agenda to the completed Base Realignment and Closure (BRAC) efforts will have significant impact on the development of the joint force for 2015 and 2020.

***Joint Defense Capabilities Study***

In 2003, the Secretary of Defense chartered the Joint Defense Capabilities Study to examine how DoD develops, resources and provides joint capabilities. The secretary selected Edward "Pete" Aldridge, former USD for Acquisition, Technology and Logistics (AT&L), to lead the study. The study team's task was to examine and improve DoD processes for determining needs, creating solutions, making decisions and providing capabilities to support joint warfighting needs. Based on that examination, the panel developed streamlined processes and alternative organizations to better integrate defense capabilities in support of joint objectives. Figure 2 summarizes the main recommendation of this study—that the department have a single resource process. On 31 October 2003 the secretary tasked the Director of J-8 (Force Structure and Assessment), the Chairman of the Joint Chiefs of Staff, the Director of the Office of the USD for PA&E and the Deputy USD for Policy to lead the new process. The new integrated joint defense process has four major elements: strategy, enhanced planning, resourcing, and execution and accountability. These elements differ from the processes they replace in the following ways:[7]

- **Strategy.** Combatant commanders are assigned a much larger role in shaping the defense strategy articulated in the SPG. The SPG focuses on strategic objectives, priorities and risk tolerance, rather than on programmatic solutions. It initiates the planning process and dictates those areas where joint planning efforts must focus.
- **Enhanced planning.** The Enhanced Planning Process (EPP) supports assessment of capabilities to meet joint needs. Military needs are identified primarily through

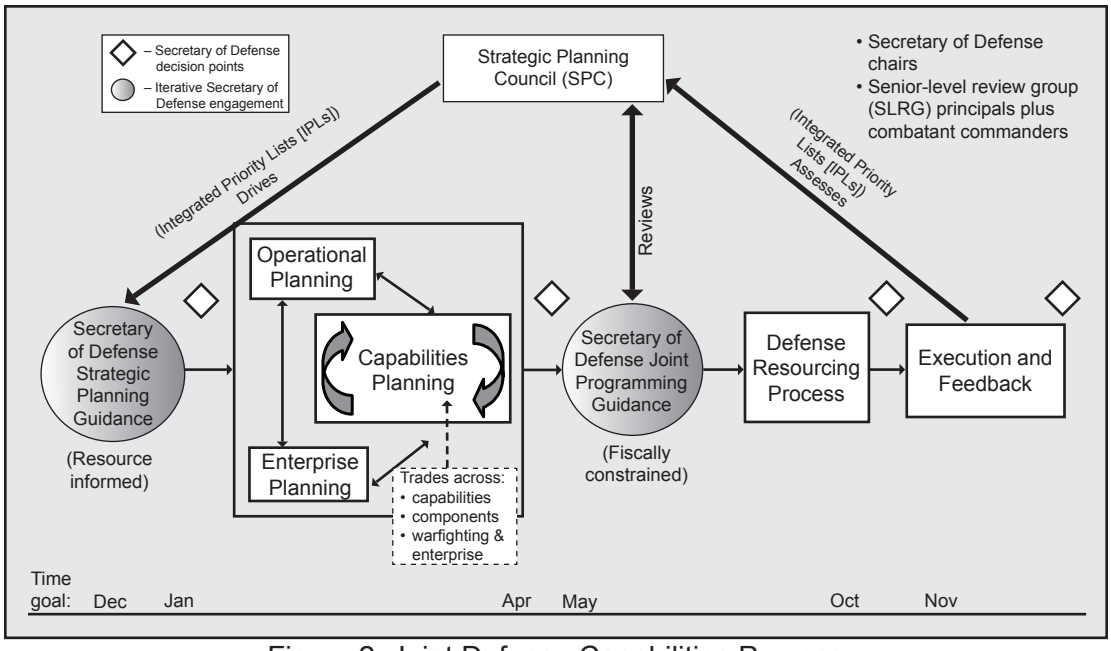



Figure 2: Joint Defense Capabilities Process

combatant command operational plans and operating concepts. Enterprise (nonwarfighting or institutional consideration) needs are identified by the services and OSD.

- **Resourcing.** The JPG reflects the decisions made in the EPP and provides fiscally executable guidance for the development of the components' programs (e.g., services). Because the guidance is fiscally executable, the remainder of the resourcing process is simplified, and the program and budget reviews are reduced in scope and level of effort.
- **Execution and accountability.** The new process focuses on performance assessment and is organized around the capabilities categories and objectives outlined in the SPG and addressed in the JPG. Outcome-oriented capability categories spanning both operational and enterprise functions will serve as the framework for every phase of the new process.[8]

The intent of these changes is to help senior leaders optimize the U.S. military investment in joint capabilities to meet current and future security challenges.[9] As stated in the December 2003 Joint Defense Capabilities Study Report:

- **Joint needs will form the foundation for the Defense program.** These needs must be developed using a consistent view of priorities and risks, provided by the Secretary of Defense. Combatant commanders will have major input into the formulation of joint needs.
- **Planning for major joint capabilities will be done at the department rather than the component level.** The process in which all stakeholders participate will

encourage innovation and seek the "best solution" to meet joint capability needs. Needs will be expressed as "capabilities" or "desired effects" to allow for the widest range of possible solutions. The solutions will be evaluated using open and explicit analysis to provide the best possible information for decisionmakers.

- **Senior leaders will focus on providing guidance and making decisions in the "front end" of the process.** The Secretary of Defense will provide strategic direction for capabilities planning and be iteratively engaged in the entire process. Major issues currently addressed in the program review will be examined early in the process, when there is more time for deliberate analysis and greater solution space for the secretary's decisionmaking.[10]

***Warfighter Support to the Joint Defense Capability Study Insights***

The process proposed by the 2003–2004 Joint Defense Capabilities Study begins with a unified, resource-informed strategy that guides planning, resourcing and budget execution. The intent was to ensure DoD had a collaborative analytical process to define joint needs that drive the Defense program, and that the services offer competing solutions to meet those needs. Senior leadership is engaged early when greater decision space exists, to provide top-down guidance and make decisions on key issues. Past experience has also made it abundantly clear that the earlier a problem in a program is found the less expensive it is to fix. Performance reporting is focused on outcome to ensure that the delivered capabilities fully support the defense strategy. The goal of this process is to move DoD from where it is now (the "as is") to a desired end state. *The desired end state is a streamlined, collaborative yet competitive process that produces a fully integrated joint warfighting capability*.[11]

Then-Vice Chairman of the Joint Chiefs of Staff General Peter Pace led the overall effort with the evolved JROC capabilities-based process. A key part of this effort was work by the Functional Capabilities Boards (FCBs), which sorted through the combatant commanders' IPLs in 2003 and identified requests that required correction and others that DoD could take risks to correct or resource. The JROC staffing process was under an accelerated timeline to help facilitate the new "top down" process with the help of the Offices of the USDs for Policy, PA&E, Intelligence and AT&L and the Office of the Assistant Secretary of Defense for Networks and Information Integration (NII). The following section will highlight the theory behind the new process.

Before this process was implemented, combatant command involvement was minimal. Their needs were implicitly communicated through operational plans and IPLs rather than explicitly through requirements documents. However, IPLs, in particular, have been problematic. The services view IPLs as an unconstrained wish list, while the combatant commands see IPLs as largely ignored until the services are forced to fund aspects of them during program review. In the aggregate, the lack of

strong combatant command influence results in capabilities being "pushed" *to* them rather than their identifying and "pulling" the capabilities they need.

The JROC addresses many of the problems identified above and provides a process for nonservice input, but the analytical capability continues to reside predominantly in the services. The combatant commands have an "on ramp" to the JROC via capability change recommendations, but it remains unclear if the services will embrace those recommendations because they compete with service priorities. Cross-service prioritization also continues to be a challenge, and enterprise needs do not receive the same degree of attention as warfighting needs. General Richard B. Myers, when he was Chairman of the Joint Chiefs of Staff, used the Chairman's Program Assessment (CPA) and the Chairman's Program Recommendation (CPR) to highlight for the Secretary of Defense the most critical joint capabilities issues of the combatant commanders.

***JROC Capabilities-Based Process***

Figure 3 contains many of the complex ideas that comprise the JROC capabilities-based planning process. In the cycle, systems must be built from the bottom up with top-down strategies and a robust operational foundation in place. Any new joint system or capability gap must fit into an established joint operational concept, traced to the military strategy.

The JROC supports the capability-based planning process with a set of Defense Planning Scenarios (DPSs), established by USD Policy, that provide the strategic context of how the military will fight in the future. They provide the stretch goals for meeting the nation's strategic objectives. Perhaps the best known of these is the "10-30-30" goal, which calls for U.S. forces to seize the initiative in 10 days, swiftly defeat an enemy in 30 days and be prepared within another 30 days to shift the fight to another area of the world.

In addition, DoD is looking at the three nontraditional areas (irregular, catastrophic and disruptive) for types of capabilities it will need in the future. These areas will ensure the military will develop capabilities that are necessary to meet the nation's future unknown needs.

In the next step DoD takes its resource plans for developing and building capabilities in the planned budget and applies them to the Operational Availability (OA) study. The OA provides senior leaders, including the President, insights *by looking across the range of military operations and identifying the needed capabilities and force structure under future constructs*. This is accomplished by using advanced metrics and tools for assessing risks, gaps and potential excesses under agreed-upon assumptions and conditions. The basis of these analyses stems from the Analytical Agenda that OSD and J-8 manage for the Secretary of Defense.

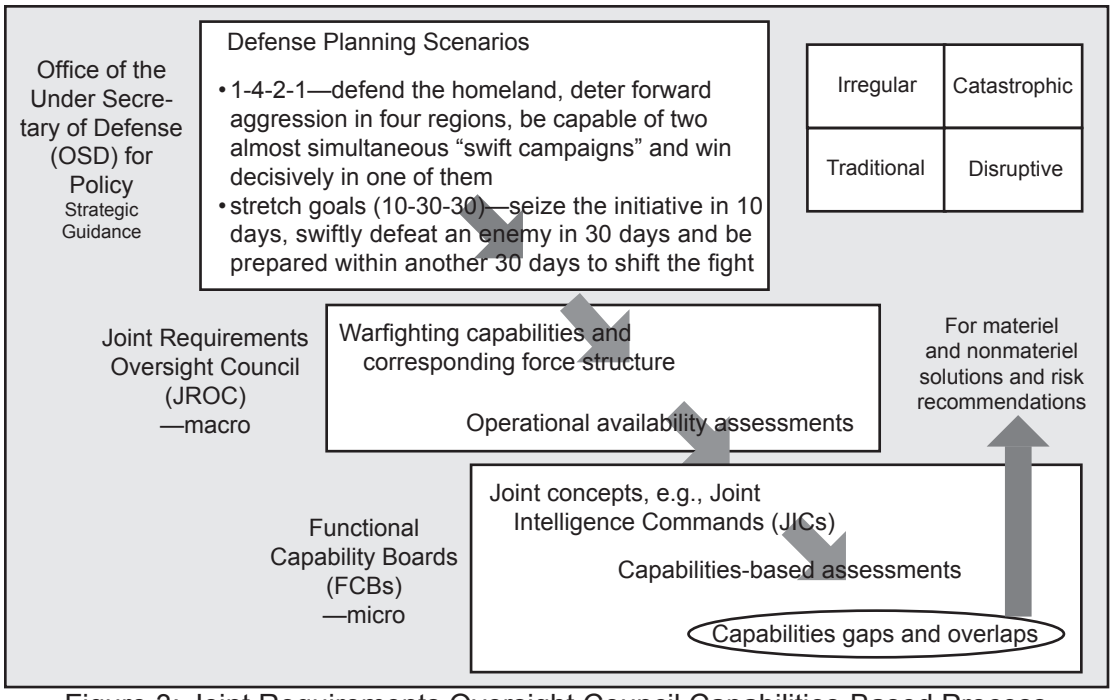



Figure 3: Joint Requirements Oversight Council Capabilities-Based Process

### *Warfighting Analysis and the Analytical Agenda*

In recent years there have been several major analytical studies, such as the 1997 Deep Attack Weapons Mix Study (DAWMS) and the Mobility Capability Study (MCS). The problem with these studies is that first, they took a long time to get everyone to agree on the scenarios (e.g., U.S. forces and the potential threats), and second, those involved exhausted themselves on data collection and fighting over assumptions, leaving inadequate time for analysis. Then, when the studies ended, the participants scattered and everyone forgot how anything was done, which created little attention for the results.

In early 2001 this situation became unacceptable to the senior OSD and Joint Staff communities, who realized that DoD must make continuous assessments, not do inefficient start-and-stop analysis. The USD PA&E and J-8 lead the Analytical Agenda, which is trying to cure many of these problems with a series of OA studies that the analytical community has been doing in DoD over the past three years. These strategies are executed at the theater-campaign level.

A common misconception is that a capabilities-based analysis is somehow a "scenario-free" analysis. Nothing can be considered or compared without operational context, but the problem for the analytical community in support of DoD is that there are many operational contexts. Like everything else, DoD's approach to warfighting analysis is evolving, but trying to find solutions that cover a wide range of capabilities

demands is a *real* challenge—a challenge that this community has been excited to take on to help further the joint warfighting capability development process.

OA studies have used DoD's holistic analytical capability—Thunder, Joint Integrated Contingency Model (JICM), etc.—to provide insights into some of the most difficult issues facing the department. It has evolved in a manner that has provided the "trade space" the senior leaders up to the President have needed to make the hard decisions. The OA studies played a major role in the 2006 QDR.

***The Joint Portfolio Manager—Functional Capability Boards***

The figurative engine room that propels the four-star JROC toward major decisions is a collection of requirements experts divided into Functional Capability Boards (FCBs) who do the heavy lifting for the JROC process. They are using standard metrics and tools for assessing risks, gaps and potential excesses. This organization construct started with the old Joint Warfighting Capability Area (JWCA). The key changes to the organization are:

- it is led by a flag officer instead of a colonel and cochaired by Senior Executive Service (SES)-level representatives from various OSD organizations who help manage the portfolio;
- it brings all stakeholders together (combatant commanders interested in the portfolio area, services and interested OSD agencies);
- it verifies and validates early materiel and nonmateriel solutions for their portfolio for the JROC portion of the department's process; and
- it prioritizes and assesses capabilities issues and gaps and recommends areas to take risks for resourcing discussions.

In the fall of 2003, the JROC started with five FCBs: Command and Control (C2), Battlespace Awareness (BA), Focused Logistics (FL), Force Application (FA) and Force Protection (FP). In early 2004, a net-centric (NC) board was added to support the U.S. military's effort to become an automated, networked joint force. In late 2004, the JROC added Joint Training (JT) and Force Management (FM) to round out the other aspects of most of DoD's joint functional needs. Other FCBs may be chartered as directed by the JROC to oversee capability development and integration in other functional areas—e.g., an infrastructure FCB after BRAC.

The importance of a department-level joint portfolio manager was central to QDR 2006. There was concern about whether the JROC could manage this or whether DoD required a new organization to carry out this task. The JROC FCBs have been developing a full-time staff to enable the department to have portfolio discussions. The Joint Defense Capability Study recommended this type of organization and General Pace provided the forum for these important debates. The JROC process has evolved to provide relevant insights to the important issues of "what are the optimal

joint solutions" in a portfolio and where to take risks, if resources are constrained. DoD must have a forum that has the authority to keep everyone honest about what are the right solutions for the warfighters of today and tomorrow. The real challenge has been how to use the evolution of the joint concepts.

To get to the right location DoD must have a vision of what the end is supposed to look like. The Joint Staff and OSD started using the ideas of joint concepts to provide the context for what they want and what will be the characteristics and attributes of warfighting capabilities in 15 to 20 years. In November 2003, Secretary Rumsfeld agreed on the importance of joint concepts 15 to 20 years in the future. The JROC used this guidance and approved the first five joint functional concepts. The net-centric functional concept was approved in early spring 2005. However, the vision of the future portfolio is only one part of getting the right materiel and nonmateriel solutions resourced. There has to be a way to be sure we are solving the right problem with changes in the environment. The JROC started to use the following few items to help with their assessments of the issues.

## Requirements to Systems

### *Continuous Early Validation*

Many, if not most, of the initiatives are being implemented, but they do not completely solve the problem because, in the end, the wrong problem is being addressed. Capabilities-based requirements are the precursor to system development. A major cause for this shortfall in system development is changes in the operational environment of the intended system while the development process is ongoing. Significant sections of the literature discuss the need to get stakeholders involved earlier in the development process to correct this problem. However, only one framework—a method called Continuous Early Validation (CEaVa)—was fully developed to accomplish this.

CEaVa involves a four-step sequence that validates the entire system design process early and continuously to ensure that the right problem is being solved, a method that increases the likelihood of producing the correct system. The method develops visibility of potential disconnects among stakeholders' needs, original written requirements, organizational policy and derived requirements, and validates the external and internal consistency of the problem statement. In addition, CEaVa facilitates consensus on trade-offs and priorities, resolving the potential disconnects with decision analytical reasoning for trade-off analysis.[12]

CEaVa, first described in the paper "A Plug-and-Play Early Validation Module,"[13] is the only complete method that focuses the systems' engineers on the formulation and continuous solution of the right problem. CEaVa builds on requirements traceability but goes far beyond that; it is an enhancement process method that stabilizes and refines the problem definition.

There are four components to CEaVa, as illustrated in figure 4:

- Conceptual validity applies a consistency check of the stakeholders' needs to the operational concept.
- Requirements/capability validity is the assurance of conformity between the operational concept and the originating written requirements (stakeholders' language).
- Design validity addresses the congruence between the originating written requirements and the derived requirements (engineers' language).
- Policy validity analyzes potential solutions to the organizational policies relating to the system.

The key to CEaVa is putting issues into the context of the impact they have on the objective system so they will have organizational objectives and consider the impacts on other interdependent programs. It provides a near-real time impact assessment that has been automated for the Army over the last few years.

The goal of the improved process is to build a product that has a higher probability of meeting the users' needs in a complex environment. This complex environment is made up of ever-changing requirements, organizational structures and personnel; conflicting organizational needs; and both evolutionary and revolutionary technology changes. In this environment, the ability to change continuously is a "core" capability of successful firms and programs. The goal is to build the right product with collaboration, cooperation and communication instilled as the core competence of a system life cycle team and stakeholders.

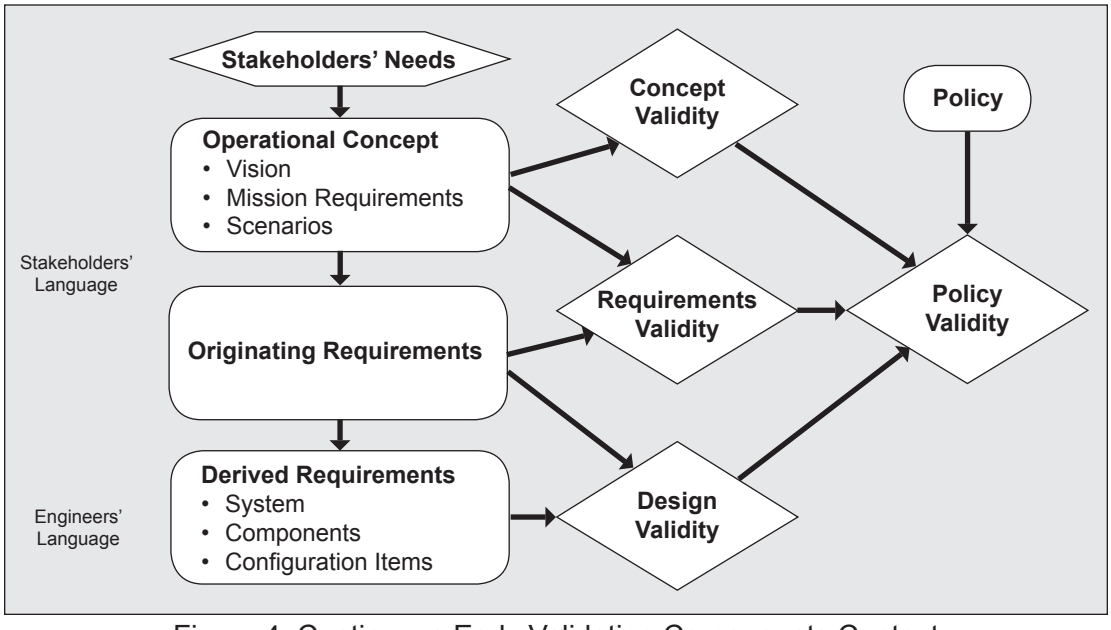



Figure 4: Continuous Early Validation Components Context

To make the problem even tougher, development times and many product life cycles have shortened dramatically, forcing companies to develop and commercialize new technologies faster than ever. To shorten timelines and improve the quality of their products, modern organizations are trying techniques such as total quality management, business reengineering, continuous process improvement and concurrent (or simultaneous) engineering. However, these techniques can be made too resource-intensive and complex for real-world implementation. In particular, these techniques may not be flexible enough to adapt to the volatility of the environment in which the requirements are developed. These drawbacks should be considered in context with how decisions are made in the problem-solving environment.

***Structured and Unstructured Problems***

The problem-solving process involves moving through a number of activities ranging from identification, to formulation, to alternative selection, to implementation and then to evaluation.[14] When a given problem has a well-tested definable solution, it is often referred to as a "structured problem."[15] In this case, the movement through the problem-to-solution space is often a straightforward linear process. This type of challenge might be considered more like the old JROC process when a service has a mature understanding of the problem, because of traditional understandings of warfare. Moreover, because solutions are well known, the cost of the resource investments for searching for or identifying an appropriate solution is low, and the resource requirements are known *a priori*.

Conversely, unstructured problems do not have well-tested, definable solutions. Instead, the solutions must be crafted.[16] Choosing one solution over another is highly resource-intensive and tends to be based on a careful analysis of various trade-offs and risks (e.g., technology risk and interdependence considerations). In addition, the choice is often based on the alternative that is least disruptive and has the highest probability of success. The degree of reconciliation effort that must take place to reach a solution conveys the complexity level. Today's joint and asymmetrical environment provides a more challenging environment for the United States to develop joint warfighting capabilities. For most organizations, the transition to agility (i.e., DoD's transformation effort) is an unstructured problem.

The difference between these two types of problems has tremendous impact on the challenges DoD encounters in its attempt to use joint capabilities.[17] It can mean the difference between success and failure. Unfortunately, for a variety of reasons, most public organizations operate in a world of unstructured problems and unstructured threats. This requires agility. Agile organizations are masters at threat prevention, detection and eradication because they have the ability to flexibly use a wide range of prevention, detection and eradication resources.[18]

The search for a collective solution is complicated by several factors. First, optimal trade-off solutions require that the decisionmakers have good information from which to consider the competing alternatives.[19] More often than not, the information that feeds the decision process often lacks quality and scope. The lack of quality information for decisionmaking is especially problematic when solutions must span a wide range of organizational needs (i.e., the entire DOTMLPF spectrum).

Second, collective solutions often demand the reconciliation of professional and domain-specific vocabulary and semantics. This can also mean reconciling competing worldviews over goals and objectives. Moreover, collective solutions are complicated by the fact that they are often zero-sum calculations.[20] The participants typically determine how the delta is absorbed, creating insurmountable impediments to goal accomplishment. Ideally, participants will discover ways to accommodate others' interests without damaging their own, but win-win situations can be hard to achieve and the costs of compromise can lead to a situation wherein everyone sacrifices and no one truly gains.

***Cost as an Independent Variable***

Finally, when authority structures are in place and capable of exercising power, they provide an appeals process to resolve impasses. However, collaborative efforts tend to lack the central authority structures that can intervene when stand-offs occur. In participatory decentralized decision arenas where authority structures are weak or absent, the search for a mutually acceptable solution is likely to demand greater resource investments in time, attention and energy.[21] Not surprisingly, power and conflict issues can be a major challenge.

**Joint Solution Trade Space Consideration**. The next part of this dynamic process is to establish the trade-off process, which is based on DoD cost as an independent variable (CAIV). The CAIV is a process to reduce the life cycle cost of new and fielded systems.[22] All acquisition programs/issues consist of three fundamental elements: cost, performance and schedule. Under CAIV, performance and schedule are considered a function of cost. Cost and affordability should be a driving force to the development of potential joint solutions processes, not an output after performance, acquisition strategy, system design, potential solutions and schedule are established.

The objective of CAIV is to deliver to the user superior products that meet or exceed expectations (requirements). CAIV is the "best value" approach to system development and has applicability in developing joint solutions to capability gaps. Through CAIV the stakeholders can maximize investment resources across the total spectrum of capability areas.

Cost-performance trade-offs are a basic and indispensable element of the CAIV process. Trade-offs are by nature an iterative operation considering performance, design solutions, potential solutions and cost. The key to success is working closely

with the warfighter/user (customer) and solutions representatives to identify cost drivers and to scrub the gap (return to figure 4). Scrub program goals are for marginal performance improvements that tend to drive up life cycle cost (see figure 5).

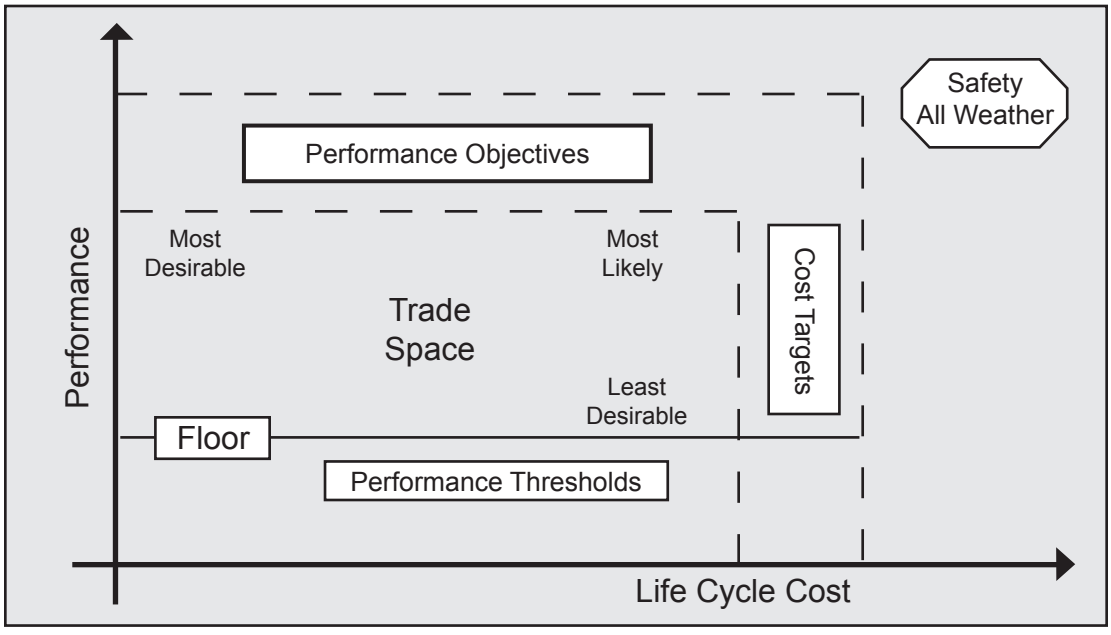



Figure 5: Trade Space for Cost-Performance Tradeoffs

The stakeholders and solutions representatives are free to make trade-offs as long as a capability performance (CP) threshold is not broken. Trade-off analyses, however, should include threshold values for the user and materiel developer to fully understand the cost impact of a particular performance value. It is important that decisionmakers make decisions based on a thorough understanding of the total trade space including the cost-benefit for each CP threshold and objective value.

Cost-performance trade-offs can often be expressed as "knees-of-the-curve" analyses (see figure 6). Analyses need to cover the complete "trade space" to the point where all the knees are identified. If a CP threshold value can be achieved, or even nearly achieved, at a minimum cost, then that performance value and cost should be considered by the warfighter/user and solution developer for meeting the capability gap. Similarly, if it is possible to reach an objective value through a marginal improvement in performance, but at a substantial increase in cost, then the stakeholder and developer need to weigh the cost-benefit of such an increase in performance. The "best bang [warfighting capability] for the buck [life cycle cost, schedule, technology risk]" is a region characterized by a substantial performance improvement at a reasonable increase in cost. Cost-performance trade-off analyses need to be broad enough that all costs are considered when making early decisions on alternatives.

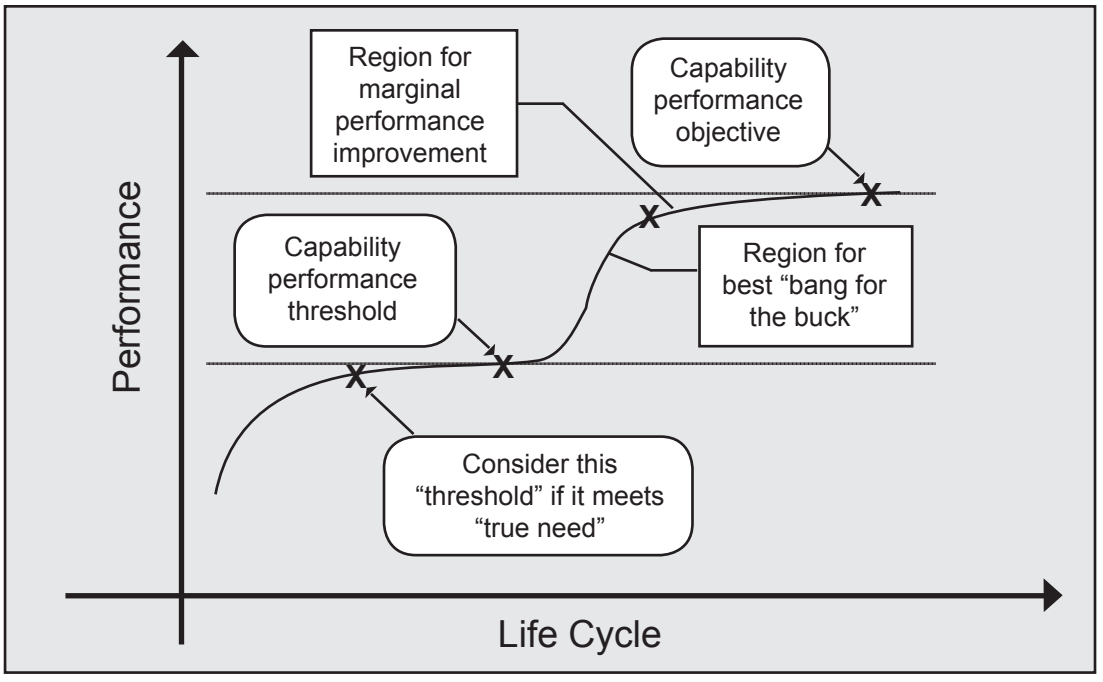



Figure 6: Cost as an Independent Variable (CAIV)
"Knees-of-the-curve analysis"

Cost-performance trade-offs should be an essential part of the capability-based process. However, when resourcing discussions occur, people will look at the immediate savings versus looking at the long-term impact, hurting the overall organization. Cost is a design constraint just like any other performance parameter. Cost drivers identify areas that need special attention. The solution developer and stakeholder should work to reduce high cost drivers and maintain performance. Under CAIV, cost is also a system parameter that directly impacts the success of the final product or solutions.

**Establish Cost-Performance Targets.** The bottom-line result of cost-performance trade-offs is the establishment of cost and performance targets. Realistic and aggressive targets focus and drive the ensuing program and all solutions are considered. Capability characteristics and attributes, like performance targets, characterize the system design objectives and relate directly to CP objective and threshold values. Cost targets relate directly to affordability.

It is important to address total life cycle costs during every phase of the capability-based planning process. Interactions and relationships among concepts, development, procurement and sustainment considerations will be addressed early and continuously throughout the life cycle. Through proper CAIV analyses, for example, an up-front increase in development funding may be justifiable if it leads to a

reduction in subsequent procurement or sustainment costs. If the return-on-investment is great enough, an increase in development funding turns into a "best value" for the organization.

***Tools for Continuous Early Validation***

As the joint concepts are evolving, the FCBs are learning the importance of a couple of assessment output tools. The joint capability road map and the DOTMLPF assessment are critical in providing insight to how a potential materiel or nonmateriel solution fits into a particular capability portfolio.

For example, in fall 2004, the Director of the J-8 directed a quick-turn capability roadmap assessment (five working days) for intelligence, surveillance and reconnaissance, also known as battlespace awareness (BA). The audience comprised the Chairman of the Joint Chiefs of Staff, the USD for Intelligence and the USD for AT&L in preparation for a Senior Leader Review Group meeting to determine whether the department was resourcing the right programs to develop the right capabilities in the areas needed for 2015. Figure 7 is the unclassified chart summarizing this output and the output expected in the future, used to evaluate how well a subcapability contributes to the overall capability area and how the program is progressing with respect to performance, schedule and technology risk. This assessment helped DoD simplify capability roadmaps and provide quick and high-level information to decisionmakers to ensure that the military is on the right path to becoming a joint force.

The FCBs were directed by the JROC to continuously review what the combatant commanders needed, and to determine what is needed to enhance and improve their portfolio. This is largely based on Secretary Rumsfeld's vision of what the joint force will look like in 2015–2020.

FCBs are responsible for the organization, analysis and prioritization of joint warfighting capability needs proposals within assigned functional areas. This process will also ensure that multiple nonmateriel and materiel approaches or concepts, across the spectrum of DOTMLPF and policy across DoD components, are adequately considered to provide desired capabilities. The second output in figure 8 highlights this aspect of the output tool that has been used by the JROC process.

The FCB analysis process requires continuous evaluation to ensure it is identifying capability gaps and redundancies, leading to a review of the attributes of a capability or combination of capabilities that would resolve the gaps, identify materiel and/or nonmateriel approaches for implementation and estimate the cost and operational effectiveness of the joint force for each of the identified approaches. This second assessment output is needed since the environment (strategic and enterprise) changes as part of the development of future capabilities.

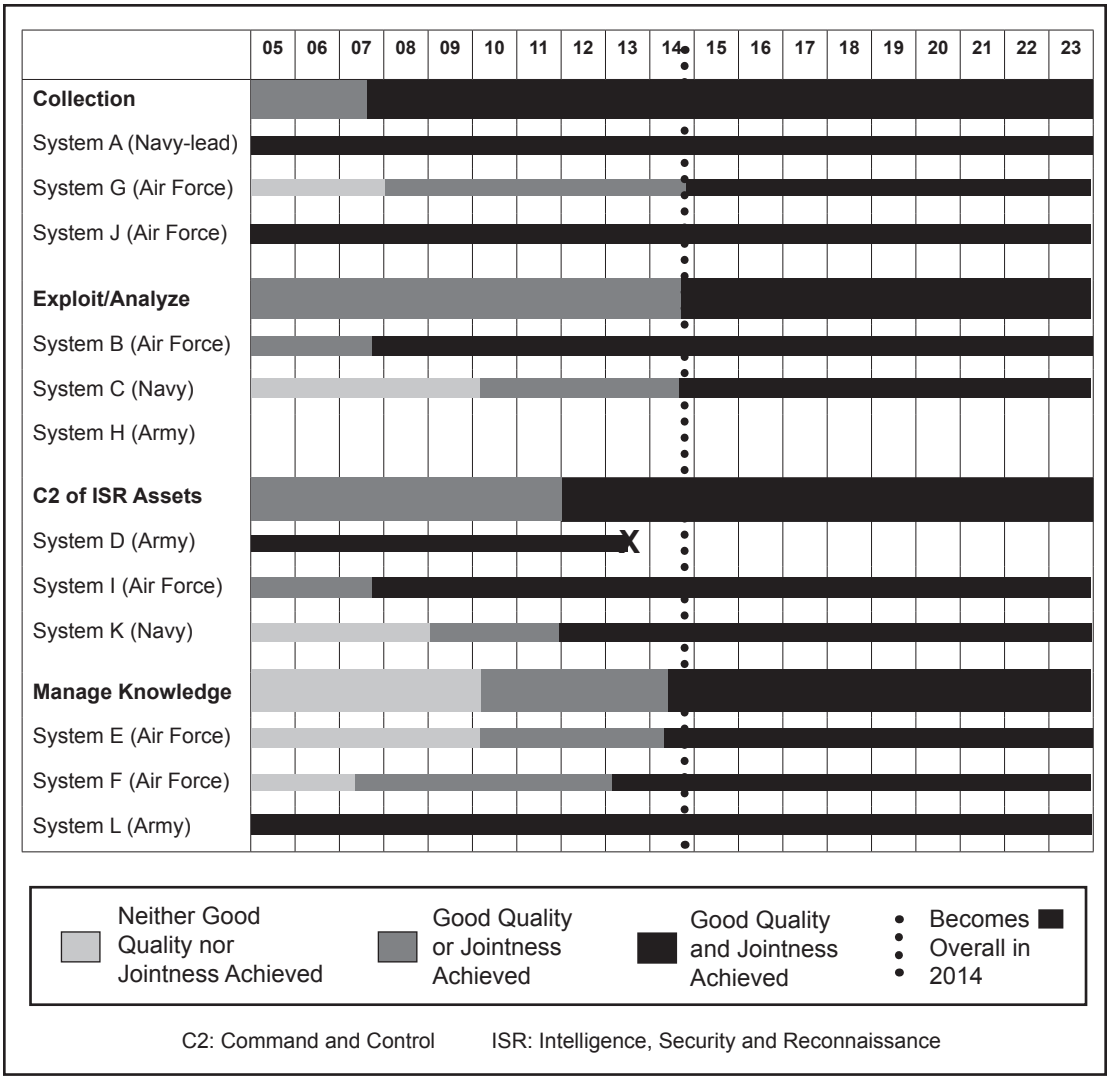



Figure 7: Joint Capability Roadmap by Category

This method will result in a joint concepts-centric, capabilities-based analysis/assessment process to work a cross-component analysis to maintain interoperability and independence challenges for the warfighter, ensuring the sponsor considers what the warfighter values most in joint force capabilities and the integration of those capabilities early in the process.

The development of DOTMLPF and policy solutions must consider appropriate component, cross-component and interagency expertise; integrated architectures, capability roadmaps, science and technology community initiatives and experimentation results; and joint testing results. Due to the wide array of issues that will be considered in the Joint Capabilities Integration and Development System (JCIDS) process, the breadth and depth of the analysis must be tailored to suit the issue.

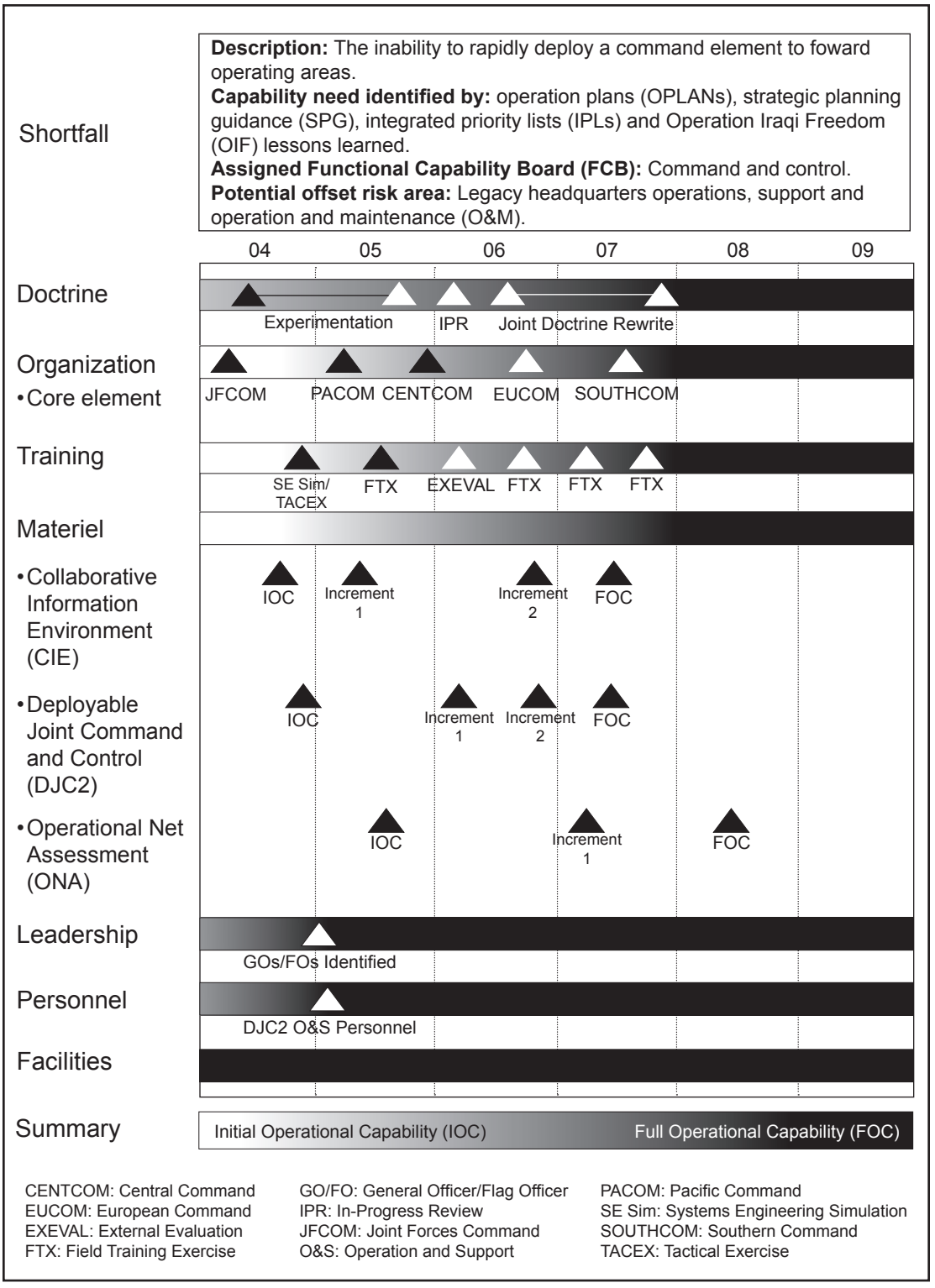



Figure 8: Materiel and Nonmateriel Assessment

## DoD Strategic Resource and Risk Challenges

### *Joint Warfighters' Perspective Consideration*

Only the combatant commanders have strategic operational requirements; joint capability requirements, both near- and far-term, must drive DoD resource allocation and acquisition policies and decisions. The combatant commanders' staffs' far-term development has not been as robust, but in the past two years of JROC, combatant commanders have helped their staffs improve their value added. The Beyond Goldwater-Nichols Phase 2 reports noted that the first budgetary documents in the Pentagon's Planning, Programming, Budgeting and Execution (PPBE) system are the service-prepared program objective memorandums (POMs) and that "there is weak advocacy of the joint perspective in this service-centric process, as service-prepared budgets, not surprisingly, reflect service priorities."[23] The Phase 1 report also documented that during the Rumsfeld era, DoD made many changes to PPBE, including determining joint capability requirements that "have the potential to strengthen both the strategic direction and the joint perspective in the resource allocation process; provided of course, that the changes work as intended."[24]

Under the leadership of Generals Myers and Pace, the Joint Staff—particularly the J-8—continued to make significant changes to the processes for determining both near-term and far-term joint capability requirements. During the spring 2004 review of the IPLs submitted by the combatant commands, the new FCBs identified more than 69 capability gaps based on 117 separate combatant command IPL capability shortfalls and submitted them to the three-star programmers (chaired by USD PA&E). This critical decisionmaking body includes the uniformed heads of the services' POM-building divisions and their civilian counterparts in the OSD comptroller and acquisition offices. Many issues were resolved at this level, with outstanding issues going forward to the newly established Strategic Planning Council (SPC), which was chaired by Secretary Rumsfeld and included the most senior-level civilian and uniformed heads of OSD, the military departments and the combatant commands. The SPC IPL decisions were incorporated into the first-ever Joint Programming Guidance for Fiscal Years 2006–2011. All told, 26 separate combatant command capability gaps were addressed in this process, and while this is a promising development, it involved the movement of $3 billion in the current year and around $7 billion in the out years. The key is moving the services to provide joint solutions, and the past two years of changes to the process are an important step.

### *Context within DoD's Joint Development Process*

There is a solid joint development foundation of strategic policy guidance, followed by a set of concept documents that refine the strategy for a set of operations, functions and warfighting capabilities. Subsequent activities assess DoD's ability to provide these capabilities (by looking at the entire force) and seek joint solutions.

However, DoD needs to grasp the role of the FCBs and how the JROC fits into the process as a whole. The evolved FCBs process is less than three years old, but the behavior has already changed. People are asking the right questions, such as:

- Is the right problem being addressed?
- How many different rifles does the U.S. military need? (They have more than ten 7.62 rounds because of the different kinds of rifles.)
- How many different unmanned aerial vehicles does the U.S. military need?
- How many different trucks does the U.S. military need?

The process still needs a great deal of refinement, but in the past 40 years has DoD asked the tough question: How much is enough in this capability area versus another?

The joint analysis engine forms the heart of the enhanced planning process and performs five key functions: defining joint needs; identifying gaps and excesses in current and future capabilities; conducting top-level trade analysis in capability terms; assessing alternatives that have been nominated by the services to fill capability gaps; and prioritizing these actions to ensure that the most pressing issues are resourced. This should be placed in the context of the joint operations concepts and how DoD should consider joint interdependencies.

***Evolution to Joint Interdependency***

A joint transformational mindset seeks to create joint competencies from the separate service capabilities, making service capabilities interdependent and the joint warrior more capable, not less. Interdependence is a service's purposeful reliance on another service's capabilities to maximize complementary and reinforcing effects, while minimizing relative vulnerabilities to achieve the mission objectives of the joint force commander. It also reduces unnecessary redundancy without reducing effectiveness. Interdependency does not happen overnight; rather, it occurs over time as DoD trains joint leaders and builds tomorrow's capabilities. However, joint leaders must change how they think about capabilities. Interdependent capabilities require leaders to look at the range of possible capabilities and make decisions about what is possible with consideration of the knees-in-the-curve analysis, given the defense budget.

Integrating joint forces toward a common goal enhances effectiveness and provides a "bigger bang for the buck," a quality especially critical to a force operating globally with finite resources. The idea of integrated actions applies to agencies within the joint force and other elements—military coalition partners and nonmilitary agencies—coordinating closely with the joint force. It also applies in a broader scope to unified actions involving the joint force and other elements of national power. All agencies

must operate with expected levels of integration and interfaces to most effectively and efficiently achieve national objectives.

Interdependence prerequisites are interoperable systems; a broad understanding of the differing strengths and limitations of each service's capabilities and how they are applied; clear agreement about how those capabilities will be integrated in any given operational setting; and absolute mutual trust in and commitment to interdependence throughout the force. Taken too far, reliance on interdependent capabilities could *deprive* future warfighters of necessary capabilities to be successful in combat. Force development and force employment decisions must therefore emphasize effectiveness *and* efficiency rather than efficiency alone and continuously be evaluated over time to assess the risk of these interdependent relationships. This approach will require a departmental organization with the authority to assess and validate the joint development over time (e.g., stronger FCBs).

Central to the transformation is the desire for enhanced coordination among agencies and across all levels of government (federal, state and local). According to Secretary Rumsfeld, greater levels of coordination will promote increased cooperation, more rapid response and an ability to conduct seamless operations. He called on DoD to work with other departments and agencies to share information on its transformation programs to help ensure compatibility and build relationships. According to Comptroller General David Walker, "Most federal agencies today are too hierarchical, stove-piped, process-oriented and inwardly focused. They must become flatter, more collaborative, results-oriented, flexible and externally aware. Agencies will have to become more open to opportunities for partnering."[25] This is important to understanding the complexity of the challenge facing the joint force and addressing the need for a centralized group managing the development of a joint force.

In addressing the need for interagency cooperation, Vice Chairman of the Joint Chiefs of Staff Admiral Edmund Giambastiani states that "the integrated force has got to be interdependent; it has to be capabilities-based, collaborative and network-centric."[26] Military efforts require "the ability to conduct high-level, or large-scale, vertical and horizontal collaboration. That means up and down the chain of command and across all of your capabilities and forces. The ability to collaborate is what allows you to do command and control—plus collecting and sharing information—and then you have a better understanding of the commander's intent."[27] It can be argued that interoperability needs to encompass far more than military-to-military solutions; it must include government agencies, private volunteer organizations and a variety of nongovernment organizations.

Challenges associated with the technical issues that impact cost overruns and schedule slippages for establishing these attributes to the force are complex. As the joint forces continue to evolve, DoD must continue to assess and question if it is on

the right track, if it is solving the right problem and adding value to ensure it provides the best forces to the nation in the future.

## Recommendations to Improve the Pentagon's Strategic Warfighting Resource and Risk Process

As with any major transformation, there will be areas wherein DoD can continue to improve. Shortcomings due to immaturity are not a reason to retreat to the comfort of old and inefficient ways of doing business; DoD has to be committed to the philosophy underlying the JROC process.

### *JROC*

There are certainly areas that JROC CBP should focus on to include the military stakeholder advocate in the DoD resourcing process, such as:

- prioritizing gaps and overmatches within FCBs;
- assessing capability gaps and overmatches across FCB portfolios within a continuous early validation construct;
- refining and developing capability roadmaps;
- developing cross-FCB prioritization of gaps and overmatch for larger DoD issues within smaller groupings (see figure 9, from QDR 2006, Integrated Product

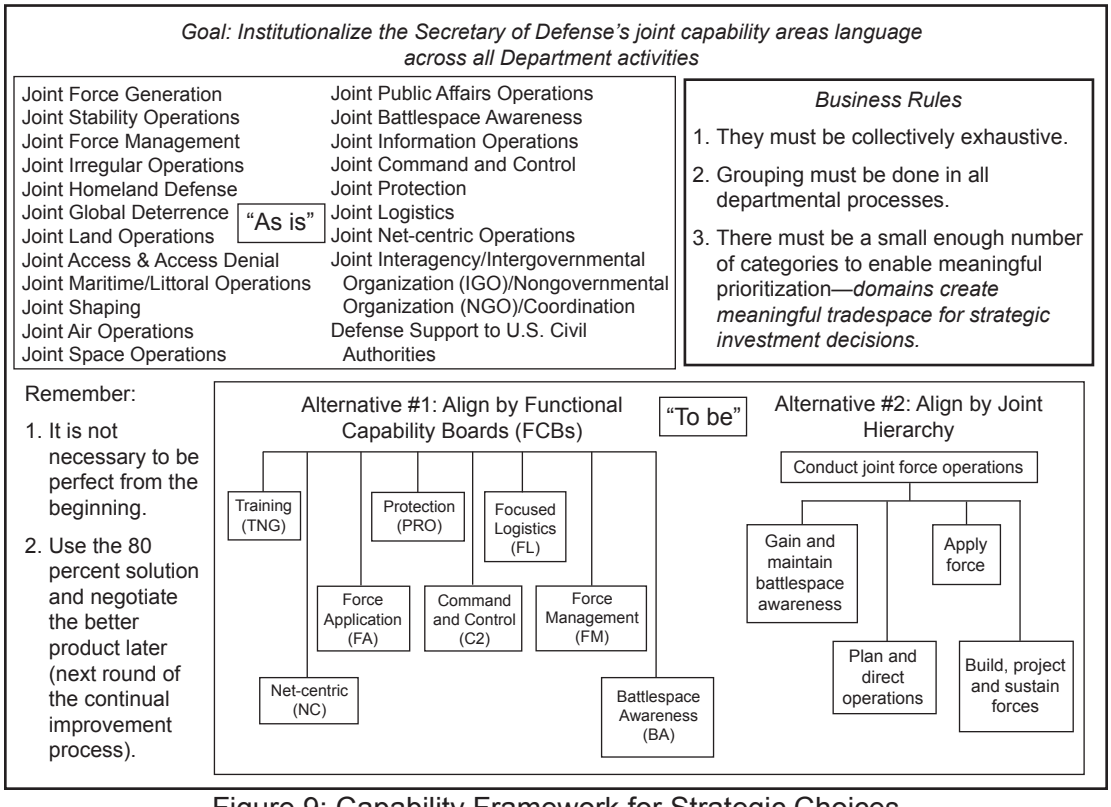



Figure 9: Capability Framework for Strategic Choices

Team [IPT] 5—Strategic Process Integration Working Group recommendation), to ensure the senior leadership will clearly understand and prioritize added capabilities and determine logical risk areas to support the strategy; and

- implementing the extended JROC that Goldwater-Nichols Phase 2 recommended by adding OSD PA&E and USD AT&L to the JROC, enabling awareness of affordability, schedule and technology challenges to ensure DoD is solving the right problem for the warfighter.

These five items should support the important linkages that the JROC undertook in 2006. In addition, the continued linkage of OA and the FCB assessment should be the underpinning for the yearly resourcing debate. The future capability road maps and the tie-to-risk metrics assist the senior decisionmakers on where to consider divesting to ensure that the U.S. military continues to win the nation's wars.

The next step is to bring about the necessary changes in DoD by implementing these recommendations, an important and challenging task that is critical to successfully meeting the security demands of the future.

***DoD Joint Capability Development Process***

DoD needs to endorse FCBs as joint warfighting portfolio managers. The FCBs should work for the JROC and DAWG. DoD needs to continuously evolve the process by:

- creating and maintaining the methodologies and tools required to conduct capabilities analysis at the department level;
- articulating outcome-oriented joint needs from a department rather than a component view;
- assessing the impact on capabilities of strategic planning guidance, lessons learned, experimentation, technical opportunities, study recommendations, operating concepts and emerging threats; and
- creating a "living" audit trail of capabilities decisions and associated rationale in a transparent rolling capabilities plan, and translating joint capabilities decisions, where appropriate, into programmatic decisions for inclusion in the JPG and Program Review.

The FCB will provide a DoD-wide view of capabilities, which requires substantial analytical support and warfighter assessment. The Joint Staff and OSD PA&E need additional analytical capacity that should be contracted or moved from other parts of the department. Federally funded research and development centers are potential candidates. Warfighters and analysts need to be brought together in a structured way to provide the FCBs the analysis and assessment capabilities with the necessary experts.

Since DoD has moved out with departmental joint capability areas and capability teams, the expertise will evolve to provide the needed analytical support. These teams should be arrayed by capability category or by functional discipline. The goal is to facilitate capabilities analysis and assessments to ensure that they capture the debate for the warfighters and enterprise teams in a manageable number of issues for the Enhanced Planning Process.

In addition, improving the analytical capability at the department level through a consolidated FCB analysis/assessment discussion will help identify cross-service interoperability issues and concerns. The analysis engine requires a counterpart activity, also at the department level, to assess interoperability needs and communicate the technical standards to resolve them. Systems engineering support is required, perhaps led by a group from OSD AT&L and NII to provide interoperability standards and harmonize net-centric and command and control needs across the joint community through the NC FCB. *The most difficult challenge is how to improve joint capability resourcing* that falls across several service and organizations competencies. The Center for Strategic and International Studies (CSIS) Goldwater-Nichols Phase 2 report addressed several options to meet this challenge, but under the present climate this is a key challenge to achieve a truly joint warfighting force. How is DoD going to create an incentive for a service or an organization to resource a nontraditional joint solution, which is becoming the norm for future warfighting? The joint interdependences and the complexity of network-centric warfare have blurred the roles and missions lines for resourcing as well.

***Joint Resourcing***

Although the JROC Capabilities-Based Process, JPG and EPP have not produced 100 percent results yet, they have produced several cases of actionable joint results, of which there have been two promising developments:

- More authoritative DoD-wide forums in PPBE have emerged.[28] The FCBs should evolve into "departmental" bodies with DoD-wide representation.
- The FCB body would allow the Joint Staff and combatant commanders' staffs the opportunity to advocate items that do not gain consensus or traction in the traditional DoD process. They can appeal through the Chairman, who has the ability to advocate the joint capability requirements, both near- and long-term, using the Chairman's Program Recommendation and Chairman's Program Assessment. The Chairman would be provided an opportunity to suggest changes in the front-end guidance to the services' POM build and to assess how well the service POMs address joint capability requirements at the end.

These developments will allow the use of an extended JROC and the DAWG to support the warfighting resource and risk process, which will determine the critical warfighting capabilities that need enhancing and where DoD should take risk.

## Conclusion

As the CBP process evolves, the Pentagon is still learning how to make it better. So far, though, there are few critics who can refute that there needs to be a process that goes from policy, to warfighting concepts, to capability assessments, to fielded solutions. The previous requirements process—in which everyone brought a brick and hoped they added up to a building—has been rendered unworkable by both security challenges and opportunities to field a truly integrated force.

As DoD evolves the JROC and CBP process, there must be a continuous debate about whether it is solving the right problem. There have been major strides made in the process of creating interoperable systems that are "born joint," as well as ensuring that service-developed systems will best serve joint forces commanders' needs. JROC's capability-based process is on the right track, and they will continue to evolve to the next level of capability-based analysis and assessments. DoD must embrace the FCBs as its capability portfolio managers so that the department can unite to help ensure there is one process to debate the tough issues for the United States' current and future challenges.

**The success of moving to a joint capabilities-based process depends on leadership support and involvement and a strong implementation team. Secretary of Defense Robert M. Gates needs to set clear goals, map out what it takes to achieve those goals, and hold people accountable for meeting them. These are the essential ingredients to implementing change.[29]**

If DoD works through these steps, it will be successful. The recommendations for change found in this paper are ideas to improve the process. As DoD evolves to resource capabilities, it is crucial to get to the finish line and make the changes stick. This effort is too important to DoD not to see it through to a successful conclusion.

The United States cannot predict who its next adversary will be or where the next conflict will occur; nevertheless, its military forces must be able to successfully meet the uncertainties of this new era. DoD may have produced the best armed forces in the world, but its processes do not optimize the investment in joint capabilities to meet current and future security challenges. The time is ripe to examine and improve DoD processes for determining needs, creating solutions, making decisions and providing capabilities to support joint warfighting needs. A capabilities-based approach to joint warfighting mitigates uncertainty by emphasizing the nation's ability to shape the battlefield, regardless of whom or where they fight.

The Defense Department's organizations (e.g., Joint Staff and OSD organizations) are trying to develop processes to ensure the future joint commander has doctrine, concepts, smarter science and technology investments, and future capabilities that will enable him to accomplish his objectives and to minimize loss of life.

The JROC process can validate the capabilities needed. DoD should not build anything unless it fits appropriately into its continuous joint capabilities development process (e.g., a roadmap to a joint concept in 2015–2020)—*a truly joint interoperable and interdependent force*. If it isn't "truly joint value added," DoD should not build or resource the capability. The joint force warfighters must be included to meet this end state; the process needs everyone's help to evolve.

## Endnotes

[1] Robert F. Larsen and Major General Kenneth W. Hunzeker, "The Evolution of the JROC Warfighting Capability Assessment Process," Military Operations Research Society, *PHALANX* Online, December 2004, http://www.mors.org/publications/phalanx/v37n4.pdf.

[2] Chairman of the Joint Chiefs of Staff Instruction, "Joint Capabilities Integration and Development System," 11 May 2005, available online at http://www.dtic.mil/cjcs_directives/cdata/unlimit/3170_01.pdf.

[3] Arthur Cebrowski, "Transforming Transformation," 2004, available online at http://www.afei.org/transformation/pdf/TransTrends_2004_april_19.pdf.

[4] Pete Aldridge et al., "Joint Defense Capabilities Study Report," Department of Defense, January 2004, available online at http://www.paxriver.org/files/ACF1223.pdf.

[5] *Ibid*.

[6] *Ibid*.

[7] Robert F. Larsen and D. M. Buede, "A Plug-and-Play Early Validation Module," The International Council on Systems Engineering (INCOSE) Proceedings, England, 1999.

[8] Cebrowski, "Transforming Transformation."

[9] *Ibid*.

[10] *Ibid*.

[11] *Ibid*.

[12] Robert F. Larsen and D. M. Buede, "Theoretical Framework for the Continuous Early Validation (CEaVa) Method," *Systems Engineering*, v. 5, no. 3, 2002.

[13] Aldridge et al., "Joint Defense Capabilities Study Report."

[14] Richard L. Daft, *Organization Theory and Design* (Cincinnati: South-Western College Publishing, 1998).

[15] H. Rittel and M. Webber, "Dilemmas in a General Theory of Planning," *Policy Sciences,* v. 4, 1973, pp. 155–169.

[16] Eugene Bardach, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship* (Washington, D.C.: Brookings Institution Press, 1998).

[17] Jane E. Fountain, *Building the Virtual State: Information Technology and Institutional Change* (Washington, D.C.: Brookings Institution Press, 2001).

[18] David L. Weimer and Aidan R. Vining, *Policy Analysis: Concepts and Practice, 3rd ed*. (Upper Saddle River, N.J.: Prentice Hall, 1999).

[19] James Wilson, *Bureaucracy: What Government Agencies Do and Why They Do It* (New York: Basic Books, 1989).

[20] Daft, *Organization Theory and Design.*

[21] *Ibid.*

[22] Department of the Army Pamphlet (DA Pam) 70-3, "Army Acquisition Procedures," Section 3.3.4, "Cost as an Independent Variable (CAIV)" (Washington, D.C.: Headquarters, Department of the Army, July 1999, available online at http://www.army.mil/usapa/epubs/pdf/p70_3.pdf).

[23] Clark Murdock et al., "Beyond Goldwater-Nichols: Defense Reform for a New Strategic Era, Center for Strategic and International Studies (CSIS) Task Force Report, Phase 1," March 2004; and Clark Murdock et al., "Beyond Goldwater-Nichols: Defense Reform for a New Strategic Era, CSIS Task Force Report, Phase 2," July 2005.

[24] Weimer and Vining, *Policy Analysis: Concepts and Practice.*

[25] U.S. General Accounting Office, "9/11 Commission Report: Reorganization, Transformation, and Information Sharing," (GAO-04-1033T) (Washington, D.C.: Government Printing Office, 2004).

[26] Hunter C. Keeter, "Giambastiani: Change in Culture Key to Joint Transformation," *Sea Power,* September 2004.

[27] *Ibid*.

[28] Cebrowski, "Transforming Transformation."

[29] *Ibid*.

## Glossary

AT&L—Acquisition, Technology and Logistics

BA—Battlespace Awareness

BR—Budget Review

BRAC—Base Realignment and Closure

C2—Command and control

CAIV—Cost as an independent variable

CBP—Capability-Based Planning

CEaVa—Continuous Early Validation

CP—Capability performance

CPA—Chairman's Program Assessment

CPR—Chairman's Program Recommendation

CSIS—Center for Strategic and International Studies

DAWGs—Deputy's Advisory Working Groups

DAWMS—Deep Attack Weapons Mix Study

DoD— Department of Defense

DOTMLPF—Doctrine, organization, training, materiel, leadership, personnel and facilities

DPG—Defense Planning Guidance

DPSs—Defense Planning Scenarios

EPP—Enhanced Planning Process

FA—Force Application

FCB—Functional Capabilities Board

FL— Focused Logistics

FM—Force Management

FP—Force Protection

IPL—Integrated priority list

IPT—Integrated Product Team

JCIDS—Joint Capabilities Integration and Development System

JICM—Joint Integrated Contingency Model

JPG—Joint Programming Guidance

JROC—Joint Requirements Oversight Council

JT—Joint Training

JWCA—Joint Warfighting Capability Area

MCS—Mobility Capability Study

NC—Net-centric

NII—Networks and Information Integration

OA—Operational Availability

OSD—Office of the Secretary of Defense

PA&E—Program Analysis and Evaluation

POM—Program objective memorandum

PPBE—Planning, Programming, Budgeting and Execution

PPBS—Planning, Programming and Budgeting System

PR—Program Review

QDR—Quadrennial Defense Review

R&D—research and development

RGS—Requirements Generation System

SES—Senior Executive Service

SLRGs—Senior leader review groups

SPC—Strategic Planning Council

SPG—Strategic Planning Guidance

USD—Office of the Under Secretary of Defense