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MONTEREY, CALIFORNIA

BUDGETING FOR NATIONAL DEFENSE ACQUISITION: ASSESSING SYSTEM LINKAGE AND THE IMPACT OF TRANSFORMATION

30 JUNE 2005

by

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EXECUTIVE SUMMARY

In this article we conduct a processual analysis to assess evidence and test the following hypothesis: that the complicated architecture and processes of national defense planning, programming, budgeting and execution and the defense acquisition decision system lead to unintended and negative consequences for defense acquisition and procurement. The purpose of this article is to identify key points of linkage weakness or failure between DoD financial management and acquisition decision systems. We first describe the PPB system and decision process. We then provide an analysis of recent changes to PPB. Next, we describe the defense acquisition system (DAS) in detail. This leads us, by drawing on interview data, to identify systems linkages and areas of misalignment between the PPBES and the DAS. Finally, we provide conclusions with respect to our hypothesis, analysis of consequent key problems and issues, and areas that require further research.

We find that the warfighting-needs system, the acquisition system (DAS), and the PPBE system focus around various points of integration and articulation—from an assessment of the threat in the SPG to a design for joint capabilities in the JPG through the POM building process and into the annual budget preparation and review processes. Most, if not all, of the top leaders in the DoD hold multiple responsibilities in these systems. While formal documents provide for co-ordination, some co-ordination happens by forcing decisions on different aspects of defense needs through the same sets of players. Formal documents are required and reviewed by these players before decisions are made initially and at subsequent important check points, be they milestones, POM, or budget decisions. Additionally, staffs of analysts in different organizational locales have responsibilities for data production and review in program creation, implementation, and execution.

In addition to the complexity inherent in these systems, we conclude that the passage of time itself has important consequences for defense acquisition. Weapon systems take time to develop and build. The procurement effort can span multiple annual PPBE cycles, be under the influence of a series of layered PPBE decisions and

feed data back into any number of current and future PPBE phases. The passage of time means that people, resources, and doctrine change. These are all threats to the orderly integration of the warfighting requirements, DAS and PPBES.

Some operators in the process expressed concerns and frustrations with the outcomes produced by the DAS and the PPBE system. These ranged from process duplications, repetitious calculations of program costs by different staffs, inflated budget estimates for programs and concerns about the efficiency of the concurrent program- and budget-review processes. Research is underway to evaluate how valid these concerns are. We suggest that one way to improve the acquisition process is to change the budget process to a multi-year format; we believe this might reduce end-of-year turbulence and churn and allow for greater rationalization of DoD decision-making systems. Finally, we conclude that the major challenge facing the DoD in the period 2004-2008 and beyond is how to continue to modernize the fighting forces and continue the pace of business transformation while paying the high price of waging the War on Terrorism. In essence, what the DoD must fund and support in the short-term must be traded-off against longer-term investments to improve both business-management efficiency and force readiness. Given this dilemma, it is clear that DoD leadership faces severe challenges in the next decade.

INTRODUCTION

On March 7, 2001, in testimony before Congress, Comptroller General David Walker testified that the United States Department of Defense was the best in the world in its primary mission—that of warfighting; but, in the same testimony, Walker assigned the DoD a failing grade in economy and efficiency: "At the same point in time, the Department of Defense is a D plus as it relates to economy and efficiency." Walker continued, "the acquisitions process is fundamentally broken, the contracts process has got problems, and logistics as well" (McCaffery & Jones, 2004, p. 335). The Government Accountability Office (GAO) estimated that the Department of Defense (DoD) had spent $146 billion in developing and acquiring weapons in 2004. Moreover, the GAO warned that, as a result of inefficient systems and practices, the DoD invited a series of troubling outcomes: "Weapon systems routinely take much longer to field, cost more to buy, and require more support than provided for in investment plans" (GAO, 2005a, p. 68). GAO staff observed:

> For example, programs move forward with unrealistic program cost and schedule estimates, lack clearly defined and stable requirements, use immature technologies in launching product development, and fail to solidify design and manufacturing processes at appropriate junctures in development. As a result, wants are not always distinguished from needs, problems often surface late in the development process, and fixes tend to be more costly than if caught earlier. (GAO, 2005a, p. 68)

Defense acquisition has long been beset by problems related to both politics and efficiency. Numerous reforms since the 1950s have attempted to improve the acquisition process. Recent reforms including more open competition, streamlined acquisition procedures, elimination of obsolete regulations and more effective program management are some of the substantial changes made in the DoD in the last ten years to improve acquisition budgeting and management. Establishing open competition also is a significant part of recent acquisition transformation initiatives. Changes in acquisition information technology (resulting from the passage of the Clinger-Cohen

Act), the use of cost as an independent variable as a means of reducing acquisition costs, and spiral acquisition practices are other changes expected to yield positive results.

Congressional and DoD transformation initiatives under Defense Secretary Donald Rumsfeld have focused on greater reliance on commercial products and processes and more timely infusion of new technology into new and existing systems. Commercial product usage is implemented with an understanding of the complex set of impacts that stem from use of commercial off-the-shelf technology (Oberndorf & Carney, 1998). Procurement solicitation requirements are written to include performance measures. If military specifications are necessary, waivers must first be obtained. Solicitations for new acquisitions that cite military specifications typically encourage bidders to propose alternatives. The DoD has made significant progress in disposing of a portion of its huge inventory of military specifications and standards through cancellation, consolidation, conversion to a guidance handbook, and replacement with performance specifications and non-government standards.

Despite all of this change, the primary criticisms of the acquisition process remain—that it is too complex, too slow, and too costly (Barr, 2005). In some cases it also may produce weapons that are "over-qualified" or irrelevant to the task at hand when they are finally put in the field because the threat and warfighting environment have changed since acquisition and procurement decisions were made to contract for weapons platforms, systems and components. Annual budget cycle procedures and politics within the DoD and between the DoD and Congress add complexity, turbulence and some degree of confusion to this mix.

In this article, we conduct a processual analysis (Barzelay, 2003; Barzelay & Gallego, 2005) to assess evidence and test the following hypothesis: the complicated architecture and processes of national defense planning, programming, budgeting and execution and the defense acquisition decision system lead to unintended and negative consequences for defense acquisition and procurement. The purpose of this article is to identify key points of linkage weakness or failure between DoD financial management

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THE DEFENSE FINANCIAL RESOURCE DECISION SYSTEM

For four decades, the Department of Defense has developed resource plans and budgets using the Planning, Programming, Budgeting System, or PPBS. This system integrates warfighting requirements, the programming for acquisition of assets including airplanes, ships, and tanks, and the specification of annual budget amounts needed to operate the Department of Defense. These latter amounts are converted in appropriation categories and passed along to Congress in the President's budget. Various documents, planning processes and iterations fulfill the mandates of the system.

The Planning, Programming, Budgeting and Execution system **(**now PPBES— see below) is comprised of a series of multistage and multilevel processes that cumulatively allow the DoD to determine capability and needs based on strategic doctrine. It provides the process for decision making on defense programs required to meet deterrence and warfighting demands, and the financing necessary to acquire and sustain capability. The complexities and machinations of the system confound both participants and observers. This is due both to the tangled web of overlapping processes that make up the PPBES and to the sheer size of the budget in terms of numbers of programs, as well as the amounts of money involved. This is compounded by the need to meet a series of deadlines to keep the process on schedule to produce a defense budget for the President and Congress. Congressional appropriation restrictions also create difficulties in the process because Congress provides money differently than the manner in which the DoD budgets (McCaffery & Jones, 2004).

In overview, the PPBES consists of four separate sub-systems: planning, programming, budgeting and execution. Program and budget review operate roughly simultaneously. Program and budget review are shaped by decisions made by DoD senior executives in the Strategic Planning Guidance process (SPG) and by the Senior Leaders Review Group (SLRG)—chaired by the Secretary of Defense and including major players representing the military and DoD leadership. The Chairman of the Joint Chiefs and his staff submit input to the PPBES through the Chairman's Program Recommendation, the Joint Planning Guidance (JPG) and the Chairman's Program Assessment. Combatant Commanders give input through their Integrated Priority Lists (IPLs), through conferences and lessons learned and through participation on the SLRG. The military services have input specifically in building the Program Objectives Memorandum or POM directly, and to the budget through their department secretaries and service of their senior leaders on the SLRG. The military services also conduct numerous special studies, e.g., by the Office of the Assistant Secretary for Program and Analysis (PA&E) or by the planning and programming offices within the military departments and services. The PPBES features myriad individual planning sub-systems and decision making sub-processes, involving a large number of participants, the sum of which defies complete description as a coherent system. Figure 1 shows the most prominent events and their timing in the period of one calendar year in the PPBES decision cycle but excludes budget execution that occurs after Congress and the President have approved appropriations for the DoD.
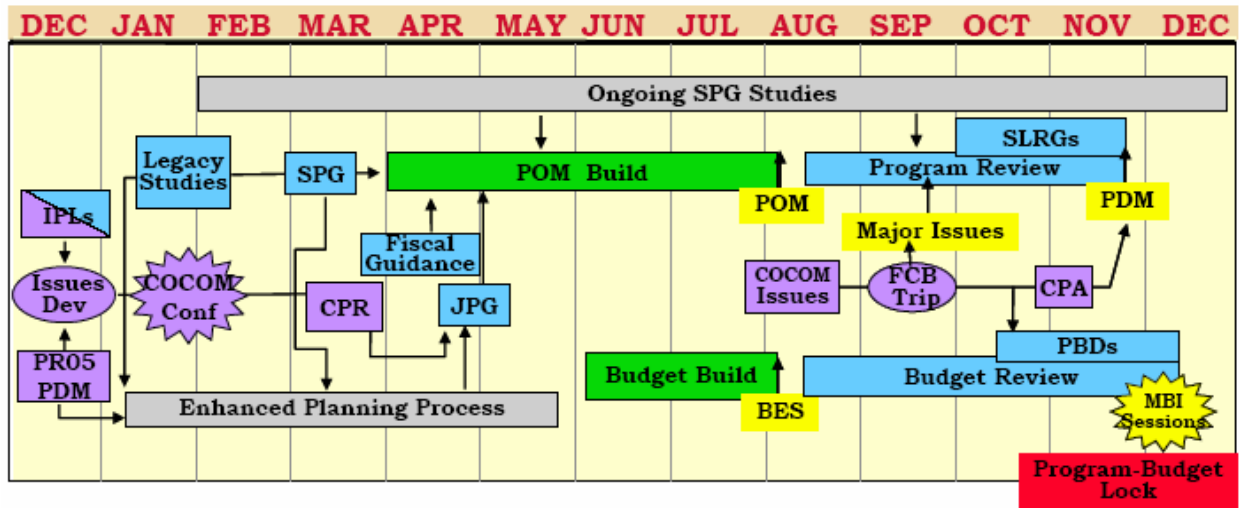
Figure 1. The PPBES Cycle (After Daly, 2004, p. 4)

The purpose of the PPBES is to provide a systematic and structured approach for allocating resources in support of the national security strategy of the US. The ultimate goal of the entire PPBES process is to provide the military Commander-in-Chiefs with the best mix of forces, equipment and support attainable within resource constraints. Before delving into an analysis of the PPBES, it is necessary to understand more about the components of the system. Once we understand how the PPBES operates in general, we will then review changes initiated in 2001 and 2003 to significantly modify the PPBS into what is now the PPBES—the result of significant reforms authorized by Defense Secretary Donald Rumsfeld under the administration of President George W. Bush.

THE FOUR PHASES OF PPBES

PPBES has four distinct phases, with each phase overlapping the other (Jones & Bixler, 1992, p. 19-31).

Planning

The planning phase begins at the Executive Branch level with the President's National Security Strategy (NSS) developed by the National Security Council. The NSS receives input from several federal agencies (including the Department of State, the Central Intelligence Agency and others in the intelligence community) to ascertain the threats to the US in order to form the nation's overall strategic plan to meet those threats, thereby outlining the national defense strategy. Subsequently, the Joint Chiefs of Staff (JCS) produce a fiscally unconstrained document called the National Military Strategy Document (NMSD). The NMSD contains their advice regarding strategic planning to meet the direction given in the National Security Strategy while addressing the military capabilities required to support that objective. As a follow-on to the NMSD, the Chairman of the Joint Chiefs of Staff (CJCS) advises the Secretary of Defense, in the Chairman's Program Recommendation (CPR) and Joint Planning Guidance (JPG), regarding joint capabilities to be realized across DoD military components. The CPR provides the personal recommendations of the Chairman of the Joint Chiefs for promoting joint readiness, doctrine, and training, and for better satisfying joint warfighting requirements to influence formulation of the Joint Planning Guidance. The Chairman's Program Recommendation (CPR) represents key joint staff input from the CJCS and his staff into the PPBES process. It is meant to help steer the content and decisions that produce the Strategic Planning Guidance.

All of the above input is provided to the Secretary of Defense for drafting and ultimate issuance of the Strategic Planning Guidance, the Future Year Defense Plan, a six-year projection of department-wide force structure requirements, and the Quadrennial Defense Review (QDR). The SPG provides the military services official guidance regarding force structure and fiscal guidelines for use in preparing their

Program Objectives Memorandum (POM) during the programming phase of PPBES. For purposes of reporting to Congress on defense planning and programs, the DoD transmits the comprehensive Quadrennial Defense Review (QDR). In the past decade, the QDR has enhanced the FYDP and SPG for purposes of planning for the Office of the Secretary of Defense (OSD) and the DoD. The purposes and outcomes desired from the overall process are shown in Figure 2.
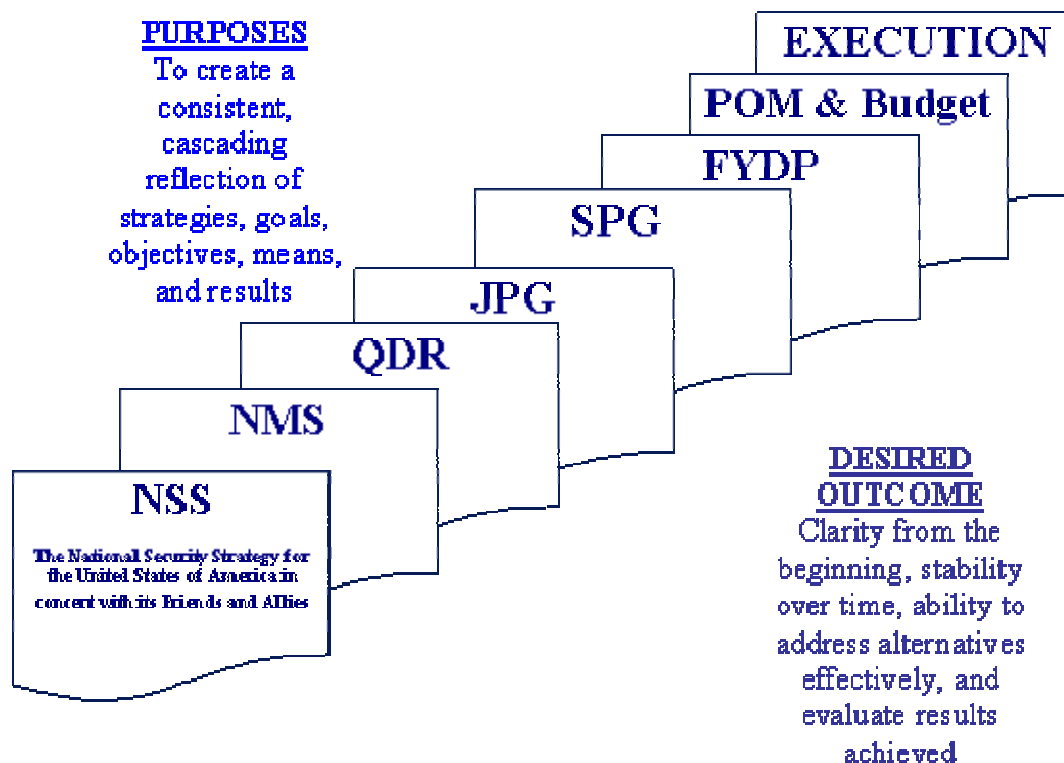
Figure 2. From the National Security Strategy to Budget Execution (After McCaffery & Jones, 2004, p. 99)

Programming

The objective of the programming phase is for each military component to produce a Program Objectives Memorandum (POM) to address how each will allocate resources over a six-year period. The development of the POM, which is done every other year, requires the military services and departments to consider numerous issues—including their Commanders-in-Chiefs' (CINCs) fiscally unconstrained Integrated Priority Lists (IPLs) stipulating programs that must be addressed during its

development. The POM also must support the guidance given in the SPG and operate under fiscal constraints issued within it. The POMs are developed in even-numbered years and, subsequently, reviewed in odd-numbered years.

Woven within the POM are the Sponsor Program Proposals (SPPs) developed by resource sponsors (e.g., the major commands, systems commands and defense agencies) to address military service objectives and preferences of the CINCs. The SPPs are developed within the constraints of military department and service Total Obligation Authority (TOA), defined as the total amount of funds to be available for spending in a given year—including new obligation authority and unspent funds from prior years.

Military department and service POMs are reviewed by the JCS to ensure compliance with the NMSD, the JPG and SPG. This involves assessing force levels, balance, and capabilities. Following the review, the CJCS issues the Chairman's Program Assessment (CPA) to influence the Secretary of Defense decisions delineated in the Program Decision Memoranda (PDM), marking the beginning of the end of the programming phase. The Chairman's Program Assessment is another key steering device that the CJCS uses to give his personal assessment of the adequacy and risks in military department and service (and defense agency) POMs. The CJCS also proposes alternative program recommendations and budget proposals for Secretary of Defense consideration prior to the issuance of Program Decision Memoranda (PDM) by the Office of the Secretary (OSD). The endgame of the POM process occurs when, at the last moment, the military departments and services have the opportunity to appeal and adjust decisions suggested by the OSD. The endgame is notorious for its high-level stakes because often decisions on "big ticket" and expensive items are not decided until the endgame phase. Following this appeal and adjustment process, the PDMs are issued by the OSD that approves and adjusts programs in each POM. The POM amended by the PDM provides the approved baseline for military departments to submit their budget inputs. Critical to the match and linkage of programming and budgeting, while the programming and budgeting phases of the PPBES operated as a separate cycles from the 1960s through the early 2000s, in August 2001, Secretary of Defense

Donald Rumsfeld merged the POM and budget-review cycles, as we explain more fully below.

In acquisition program and budget review and decision making, the Chairman of the Joint Chiefs is supported by the Joint Requirements Oversight Council (JROC)—a committee led by the Vice Chairman of the Joint Chiefs, composed of the service Vice-Chiefs who review all joint acquisition programs and programs where joint interest in interoperability is evident. The Chairman then makes recommendations about acquisition priorities. This input was changed as a result of passage of the Goldwater-Nichols Act in 1986 and from experience in the Grenada operation (in which Army and Marine troops on the ground could not communicate with other units because the radios they used were not interoperable). The JROC approves the mission need and conducts an analysis to see how well the suggested acquisition program meets these needs. The process of staffing a proposal up to the JROC decision level involves assessment and analysis by various committees ending at the Flag level. Analytic effort by the JCS staff can take up to four or five months. A successful program that is vetted and found to meet joint requirements then has a priority attached to it at the JROC level and is passed on into the POM and, later, the budget for funding.

Part of the 2003 reform was intended to accelerate and improve the acquisition process. In April 2002, Defense Planning Guidance study #20 (Secretary of Defense, 2002b) concluded that the resource requirements process frequently produced "stovepiped" systems that were not necessarily based on required capabilities and incorporated decisions from a single service perspective. The study found that the acquisition process did not always develop requirements in the context of how a joint force would fight. Rather, requirements tended to be more service-focused. Moreover, duplication of effort was apparent in smaller and less visible programs. The study observed that the current culture aimed for the 100% (perfect) solution; this aim resulted in lengthy times to field weapons. In addition, the process was found to lack prioritization for joint warfighting demands. Ongoing reform has resulted in a reshaping of the JROC process so that decisions options can be better arrayed for the JROC to make its decision. Two oversight committees now report to it, both headed by flag

officers and focused on distinct functional areas. This was another part of 2003 transitional reforms and is indicative of Secretary Rumsfeld's interest in joint operations, joint warfighting, and a quicker acquisitions process. The Future Year Defense Plan (FYDP) is the database of record in which POM and budget actions are tracked and recorded. The FYDP is updated after every major process action, e.g., submittal of the President's budget, passage of appropriations by Congress, conclusion of program change proposals and budget change proposals.

Some participants in the PPBES process see the Planning and Programming phases as planning and more planning—but they are intended to function very differently to produce different outputs. The Planning phase involves ascertaining the threat and deciding how it may be diminished or avoided. For example, a national strategy that said the US would only intervene in conflict situations where there was an over-riding national interest would have substantially decreased operating tempo (the analog of workload) for the DoD in the 1990s. Agreements between nations in treaties and compacts may either increase or decrease workload for defense. In the Programming phase, the major options have been determined, and the Secretary of Defense introduces fiscal constraints so that choices are subsequently made about the shape of force structure given the decisions made in the Planning process. Thus, the Planning and Programming processes are planning processes, but they are very different in intended outputs, scale and timeframe. The Planning phase involves numerous departments and agencies (some outside of the DoD, including the President's National Security Council, the State Department, the Central Intelligence Agency, the FBI, etc.) to assess the threat on a global basis, and plots US response options to threat without fiscal constraint. The Programming process is internal to the DoD and focuses on providing the force structure (aircraft carriers, tanks, personnel) to meet the threat within a constrained fiscal target. The Budgeting phase then acquires and supports the force structure for a particular fiscal year.

Budgeting

The budgeting phase of the PPBES begins with the approved programs from each military department and service POM. Each military department and service costs-out the programs that support the POM for the next fiscal year, conducts its own bottom-up budget submission and review cycle (receiving budgets from its own Budget Submitting Office (BSO)), and submits its budget to OSD in the Budget Estimate Submission (BES). The BES prepared in even-numbered "POM years" is a two-year submission based on the first two years of the POM as adjusted by the PDM. The BESs are amended by the military department and services during the POM update that occurs in odd-numbered years and covers only one year. Every BES is reviewed by military secretariats under the authority of the military department secretaries because budgeting is a civilian function in the DoD, as mandated by Congress in the 1970s. The budgets of the military department secretaries are then reviewed by the DoD Comptroller, other OSD officials, the JCS and, ultimately, by the Deputy and Secretary of Defense.

The Office of the Secretary of Defense cooperates in this review with the President's Office of Management and Budget. Budget review attempts to ensure compliance with the SPG, the POMs, the PDM and the President's National Security Strategy. The Secretary of Defense and staff mark changes to the military department budgets and provide rationale for these changes in the form of Program Budget Decisions (PBD). Before becoming part of the President's Budget, required for submission to Congress no later than the first Monday in February, PBDs are issued to allow the military department secretaries and budget staff to respond with appeals of cuts (reclamas) to the OSD Comptroller staff and, ultimately if issues are of high enough profile, to the Secretary. Once major budget issues have been resolved, the DoD budget for the upcoming fiscal year is sent to OMB to become part of the President's Budget. This step constitutes the end of the budget proposal and review phase of the PPBES. However, as noted subsequently, budget execution is a critical part of the PPBES and typically is ignored in analysis of this system.

Execution

Budget execution consists of first gaining authority to spend appropriations approved by Congress through a separate budget submission process to the Office of Management and Budget (OMB) and the Treasury—the apportionment process. In apportionment review, the DoD must detail how it intends to spend what has been appropriated, by quarter, month, or fiscal year for multiple-year appropriations in strict conformance with congressional line-item appropriation instructions. The apportionment request is inevitably somewhat changed from what was proposed in the President's budget since Congress appropriates what it wants, not necessarily constrained by what the DoD requests. Further, appropriations are tied to specific programs and account categories. After allotment approval is received from the OMB and the Treasury, the DoD begins the process of allotting shares of the DoD budget to the three military departments and services and other DoD commands and defense agencies. After receiving their spending allotment authority, these commands begin to incur obligations (in contracts and commitments to acquire labor, assets, etc.), and then to liquidate their obligations through outlays (actual expense of funds). During this process, comptrollers and budget officials at all levels of the DoD monitor and control execution of programs and funding. At the mid point of the spending year, the military departments and services (and now since 2003, the OSD) conduct mid-year reviews to find and shift money to areas of highest priority. At the end of the fiscal year or multi-year appropriation period each September, all DoD accounts must be reconciled with appropriations and spending must be accounted for prior to closing accounts for further obligation. Financial and management audits by military department audit agencies, the DoD Inspectors General, the General Accounting Office (GAO) and other entities follow the conclusion of execution and reporting.

In 2003, Secretary of Defense Rumsfeld and staff transformed the PPBES decision cycle and also added an "E" to PPB to emphasize the importance of budget execution. The new PPBE system is part of the transformation of business affairs initiative led by the Secretary of Defense in the DoD, and it constitutes a significant initiative to improve and correct many of the evident problems that have weighed-down

the functioning of the PPBS for decades. First, the change to the PPBES merged separate program and budget review processes into a single review cycle performed concurrently rather than sequentially. Second, it incorporated a budget process matched to the presidential electoral cycle, with major strategic changes slated for the second and fourth years of a Presidential term and minimal updating of plans and programs in the first and third years, given no major change in the threat. Third, it fixed timing of the process so that planning and budgeting were clearly derivative processes driven by the Quadrennial Defense Review and the National Military Strategy. Fourth, it changed the cycle for Office of the Secretary of Defense provision of top-level planning information to the military departments and services from an annual to a multi-year schedule with the combined program and budget review. The essence of the PPBES transformation is establishment of a four-year resource planning and decision cycle.

What transformation of the PPBES allows is that in a four-year Presidential administration, fundamental change is targeted for the second year of the cycle with the first and third years changed only as threat environment demands increased modification. Given a stable environment, year two would result in the most fundamental analysis and change in plans, programs and budgets. Whether the defense environment is stable enough to support a four-year decision system remains to be seen. We now move to address this and other questions with respect to the consequences of recent PPBES transformation.

PPBES TRANSFORMATION: CHANGES AND CONSEQUENCES

As noted, PPBES changes have created a combined two-year program and budget-review decision cycle (but not a biennial budget), with a complete review in year one, followed by limited incremental review in year two. This change in cycle from a full-program review and a full-budget review to a combined review is meant to reduce the inefficiencies of unnecessary re-making of program decisions; the program should drive the budget rather than the opposite. With the programming and budgeting cycles operating contemporaneously, decisions are intended to be arrived at more effectively, whether they are made in the off- or on-year. Changes made in each off-year cycle are intended to have quicker effect by compressing the programming and budgeting cycles while still preserving the decisions made in the on-year cycle through the off-year by limiting reconsideration of decisions to only the most necessary updates. In essence, decisions flow from the Quadrennial Defense Review and other studies; then, a structure is erected in the Strategic and Joint Planning Guidances that provides direction for the remaining years of a Presidential term. This structure remains in place unless dramatic changes in worldwide threat occur. Year-to-year changes in the program structure and budget then are made only to adjust to incremental fact-of-life changes. The inefficiencies of conducting comprehensive reviews every year (as intended in the previous PPBS process) are avoided, and the decision process itself supposedly moves more responsively to warfighting and preparation demands.

In this new PPBES cycle, the first and third years are off-years. During these off-years, military departments and the military commanders of major commands may create Program Change Proposals (PCPs) to affect the POM, and Budget Change Proposals (BCPs) to justify new budget requirements. The PCPs allow for fact-of-life changes to the previous year's POM; they are meant to be few and of relatively large size, and they must be balanced so they pay for themselves. Guidance for 2003 indicated the PCPs had to exceed a set-dollar threshold or had to be driven by serious

policy and programmatic implications. For example, in 2003 the Navy submitted only three PCPs, one worth $100 million that involved 450 line items.

The PCP process provided the combatant commanders (those with direct warfighting responsibilities) with a new tool in the PPBES process, but like the military departments, they have to suggest offsets. For example, if a warfighter wants to increase force protection in one area at a certain cost, he/she has to suggest weakening force protection in another area as an offset or tradeoff for the increase. This is meant to be a zero-sum game. Changes have to be accompanied by offsets. As is usual with any offset procedure, budget claimants who submit either PCPs or BCPs take the risk that the offsets they suggest will be accepted, but the accompanying change proposals the offsets were intended to fund might not be funded. In such cases, the offset reveals a cache of money for a lower-priority item that might be directed to a higher-priority area. The budget change proposals (BCPs) were expected to be more numerous than PCPs, but smaller. They too would be largely fact-of-life changes (e.g., cost increases, schedule delays, new congressional directives) and would have to be paid for by offsets. Although the individual BCP need not be offset, the package of offsets proposed by a military department has to be offset and provide a zero-balance change. Whether in an off-year or an on-year, the results from the above decisions are consolidated into one database. This is an important change to the PPB system which had multiple databases for different purposes.

One significant result of the 2003 budget process reform is that unless a budget change proposal is explicitly approved, then unit budgets are the same as they were in the previous year. This might be termed "re-appropriating the base." Even if an inflation adjustment is given, no new program changes are created. Thus, if a unit does well in the on-year cycle (second year and fourth year), then it may carry some "fat" through the off-years. Since the stakes are now higher, it would seem that one long-run consequence would be an increase in the intensity of the struggle during the on-year process, both within the Pentagon and Congress. Success is rewarded for at least two years, and failure is doubly penalized. In other words, to change in the off-year, offsets

have to be offered up; so, the only way to get better in the off-year is by giving up something else.

Also, this new process puts the Secretary of Defense into the decision environment at an earlier stage than in the old PPB process; it puts him "in the driver's seat," in the words of one budgeteer. Decisions in the new PPBES are intended to reach the Secretary while options are still open, and while important and large-scale changes still can be proposed—before the final decision has become a foregone conclusion at the military department level. When the Defense Secretary's input came at the end of the stream of decisions, some changes that could have been made were pre-empted because they would have caused too much "breakage" in other programs.

DECISION SYSTEMS FOR ACQUISITION

As it is now structured, the architecture of the PPBES interacts with two other major systems for acquisition planning, decision making and execution. These two systems are:

1. The Joint Capabilities Integration and Development System (JCIDS) is employed for determining warfighting requirements;

2. The Defense Acquisition System (DAS) is a system used for planning, decision and execution for research and development, test and evaluation and then procurement of capital assets.

These three systems—the PPBES, the JCIDS and the DAS—comprise the core of the DoD financial resource and acquisition decision making, allocation and execution process. Let us examine the JCIDS and the DAS more closely.

Joint Capabilities Integration and Development System (JCIDS)

The Joint Capabilities System (JCIDS) has replaced what used to be known as the Requirements Generation System (RGS). Through the JCIDS, defense decision makers apply the prevailing precepts of national and defense strategy to create joint fighting forces capable of performing the military operations required by the nature of the threat faced by US armed forces—something that is constantly changing. The JCIDS process is shown in Figure 3.
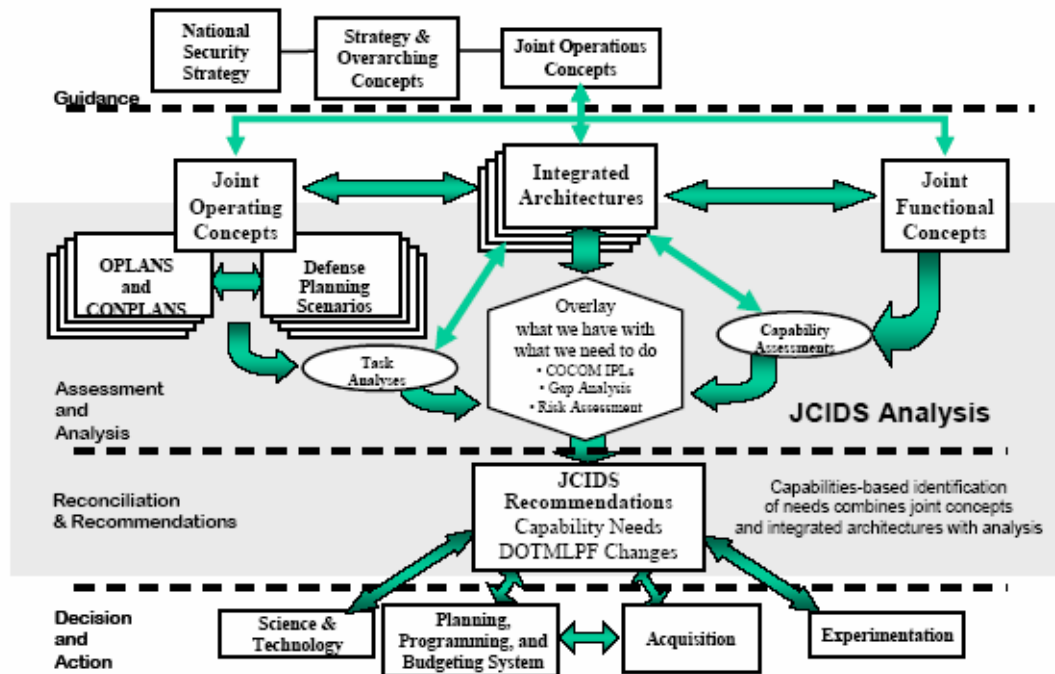
Figure 3. The JCIDS Process (From Bowman, 2003)

The JCIDS was developed to identify joint warfighting requirements and to emphasize a top-down orientation to decision making. Instead of the former process—in which military departments and services determined mission requirements and identified joint needs to increase program funding attractiveness as they prepared and routed their acquisition program proposals up the chain of command—in JCIDS, the Joint Chiefs of Staff (JCS) Chairman first determines if the required capability exists, then pushes it down to the resource sponsor in the military departments and services for acquisition. If jointness in acquisition and procurement is required, then the program is essentially "born joint." In addition, the term "capabilities-based" is a recent refinement of guidance for the entire purpose of the acquisition decision system. In the JCIDS, gaps in warfighting capability, either current or those programmed in the Future Years Defense Plan (FYDP), are identified—and any risks associated with gaps are quantified. JCIDS decision makers then determine future capabilities to address existing gaps. In doing so, it is important the decision makers be specific enough about a new capability to include key attributes with appropriate measures of effectiveness, supportability, time, distance, effect (including scale) and obstacles to be overcome. Additionally, the

capability needs be general enough not to prejudice decisions in favor of a particular means of implementation.

The Defense Acquisition System

Whereas top level DoD decision makers use the JCIDS to identify capability requirements as current and future threat scenarios emerge, the Defense Acquisition System (DAS) evaluates JCIDS-defined capability gaps, and initiates and executes acquisition and procurement programs to field systems to bridge these gaps. In situations where the technology exists to fill a requirement, the DAS exists to acquire a tailored and capable product quickly and in a cost-efficient manner. When new technology is required to fill a capability gap, it is through the DAS that the DoD develops, tests, demonstrates and deploys the new technology in a timely manner and at a fair and reasonable price. In either case, the DAS is forward-looking and tries to ensure that systems fielded support not only today's fighting forces, but also those of the future.

The DAS exists in a highly dynamic and political environment. Since defense acquisition in aggregate involves billions of dollars each year, the process, participants and individual programs are linked to powerful stakeholders. These include the executive branch of the federal government with the DoD acting as its agent, the legislative branch where the Senate and House Armed Services and Appropriations committees decide what assets will be acquired and funded, private industry where large defense contractors compete for business, market share, and product continuity, in which the subcontractors and small businesses seek a piece of the business, and state and local governments where the defense industrial base is located, where the workforce lives, where dollars are spent and taxes are collected. These stakeholders are both supportive in seeking dollars for defense acquisition and rivals for business. This is true not only in the private sector, but between the military departments and the DoD, the military departments and each other, and within the military departments as potential programs compete for approval and budget.

Since the DoD determines DAS policies and procedures, negotiates each annual budget, makes decisions regarding acquisition programs and the awarding of lucrative contracts to private industry, each major player in the process with authority may attempt to exert influence in the DAS, be it for efficiency reasons, career or organizational ambition or relative to other sources of motivation. Ultimately, Congress holds the power of the purse and must balance defense and non-defense spending. Nonetheless, all these stakeholders compete for some sort of corporate, organizational and professional gain. DoD acquisition is performed in the highly competitive, but only partially transparent, environment of the nation's capitol.

To do their jobs well, those who manage projects within the DoD must understand the political, social and economic aspects and consequences of the defense acquisition process. From the lowest echelons of program management to the top, the Under-secretary of Defense for Acquisition, Technology and Logistics (USD, AT&L)), all DoD participants must be both knowledgeable and sensitive to the competing forces and attempt to craft each program and project so that, ultimately, warfighters are provided the best assets to support national security policy. The key stages or milestone points of the DAS process move from requirements setting and concept design to determine weapon system needs by the end users—the fighting forces—through technology and systems development to production (procurement) and deployment to warfighters, and, finally, to post-deployment operations and support.
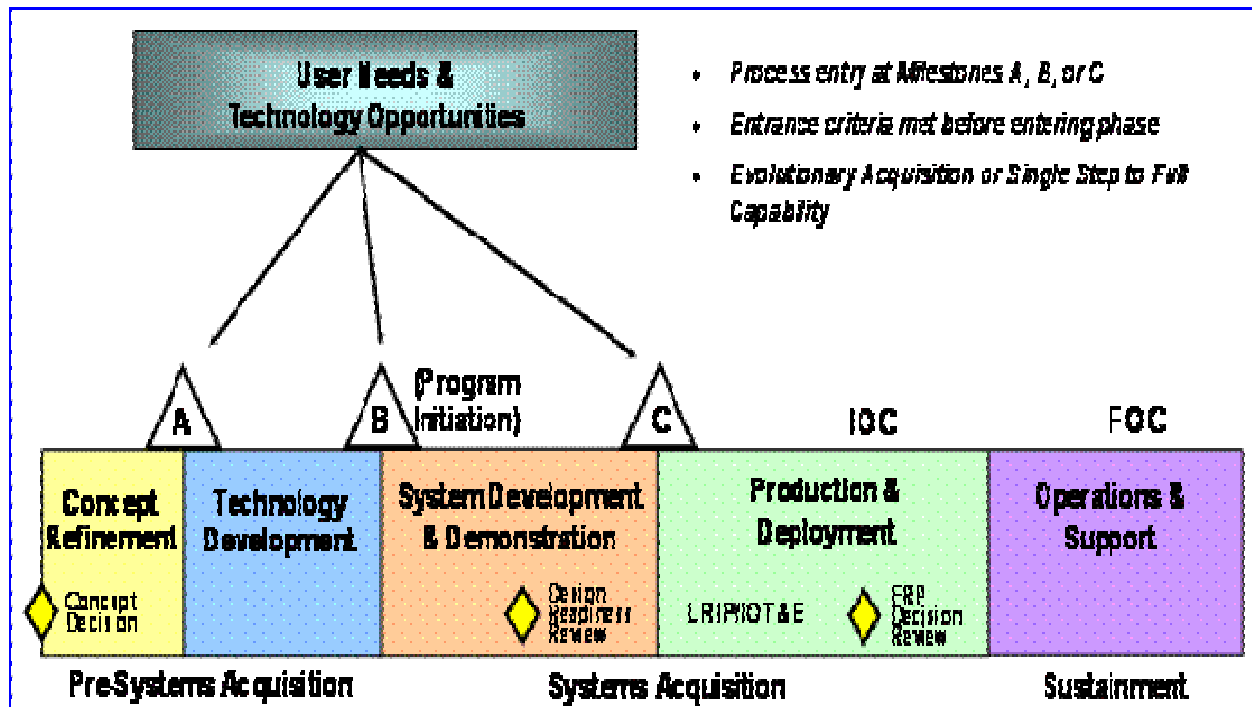
Figure 4. The Defense Acquisition System: Major Phases/Milestones
(From DoD, 2003, DoDD 5000.1, p. 2)

According to the DoD Directive 5000.1 (12 May 2003), Defense Acquisition is, "the management process by which the Department of Defense provides effective, affordable and timely systems to users" (DoDD 5000.1, 2003. p. 2). Whereas decision makers use JCIDS to identify capability requirements as the current and future threat dictates, the DAS takes JCIDS-discovered capability gaps, and initiates and executes procurement programs to field systems to bridge these gaps. In situations where the technology exists to fill a requirement, the DAS exists to acquire a capable product quickly and in a cost-efficient manner. When new technology is required to fill a capability gap, it is through the DAS that DoD develops, tests, demonstrates and deploys the new technology, "in a timely manner, and at a fair and reasonable price" (DoDD 5000.1, 2003, p. 2).

In late 2002, the Deputy Secretary of Defense Paul Wolfowitz canceled the existing set of DoD 5000 series acquisition regulations. In his memorandum, he explained that the acquisition system as defined by these regulations was not flexible, creative or efficient enough to meet the needs of the DoD. Therefore, he ordered a revision of the acquisition process and a reissue of the directives to, "rapidly deliver

affordable, sustainable capability to the warfighter that meets the warfighter's needs."
(Wolfowitz, 2003, p. 1).

The DAS process breaks the project lifecycle into three general stages:
presystems acquisition, systems acquisition, and sustainment. These three stages are
further divided into five distinct sub-phases: Concept Refinement (CR), Technology
Development (TD), System Development and Demonstration (SDD), Production and
Deployment (P&D), and Operations and Support (O&S), as shown in Figure 4. These
processes guide a program from initial exploration of required capability (as detailed in
an Initial Capabilities Document (ICD)), to the production and deployment of a
technologically mature weapons system, including required operational support.

Additionally, each program has a distinct chain of command through which
decisions are made. Depending on the size and visibility of a particular program, there
may be up to four levels in the chain of command before the ultimate decision is made
by the Milestone Decision Authority (MDA). Complex programs are sometimes divided
into smaller elements and assigned groups of acquisition professionals across a range
of functional disciplines. These groups are called Integrated Process Teams (IPTs).
Some serve as executors of their respective functional program area. Others serve as
advisory bodies.

The Program Manager is at the bottom of the chain of command. According to
the new DoDD 5000.1, the PM, a middle-range military or defense civilian (O-5/O-6) is
the individual with responsibility for and authority to accomplish program objectives for
development, production, and sustainment to include "credible cost, schedule, and
performance reporting to the MDA" (DAU 2003, p. 2). The PM reports to a Program
Executive Officer (PEO). The PEO, a one- or two-star flag officer or senior executive
service (SES) equivalent, is responsible for a group of like programs within each military
department and service. PEOs report to Component Acquisition Executives (CAEs).
Each service has one CAE responsible for the management direction of their respective
procurement system. The Secretary of the Navy has delegated this position to the
Assistant Secretary of the Navy for Research Development and Acquisition

(ASN(RDA)). Finally, the CAE reports to the Defense Acquisition Executive (DAE). The DoD has only one DAE, the Under-Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)). The USD (AT&L) is authorized under title 10, US Code to be, "the Principal Staff Assistant and advisor to the Secretary and Deputy Secretary of Defense for all matters relating to the DoD acquisition system; research and development; advanced technology; developmental test and evaluation; production; logistics; etc." Also, as the DAE, he presides over the military department and service secretaries and, "is responsible for establishing acquisition policies and procedures for the Department. He also chairs the Defense Acquisition Board (DAB), and makes milestone decisions on Acquisition Category (ACAT) ID programs" (DAU 2003, p. 31). Programs are categorized by whether they are a DoD-wide asset or an asset for one service and by estimated dollars to be expended, with different rules applying to different-sized programs.

The Milestone Decision Authority (MDA), i.e., overall responsibility for all programs, may be delegated to anyone in this chain of command. The MDA for many small programs is the PM, whereas MDA for the large procurement programs and the most politically sensitive programs is usually held at the top by the USD (AT&L).

The DAS Process

Program movement through the three DAS stages is strictly controlled through a series of six decision points and program reviews. The first stage of the DAS is pre-systems acquisition. Pre-systems acquisition activities are focused on refining material solutions to needs as defined in a published Initial Capabilities Document (ICD). This stage is split into two phases: Concept Resolution and Technological Development. Before entering the CR phase, the first decision, the Concept Decision (CD), must be made. Using information provided by the ICD, as well as the "plan" to conduct an Analysis of Alternatives (AoA) documented in the ICD, the MDA uses the CD to initiate the acquisition process. The CD is used to approve the AoA plan, to set a date for Milestone A review and to designate a lead Service for the program. All of these MDA decisions are formally documented in the Acquisition Decision Memorandum (ADM). Under the directional guidance from the ADM and the ICD, the CR phase is used to

conduct the AoA that will refine the concept presented in the ICD and develop the associated Technology Development Strategy (TDS) to be used to guide the follow-on phase. The AoA hones the concept by assessing a variety of current (to include commercial-off-the-shelf or COTS) and future technologies, the maturity of these technologies and the risk associated with each. Competition and innovation are deemed critical early in the process so that concept solutions from a variety of large and small suppliers are considered to achieve the highest probability of program efficiency, effectiveness, stakeholder buy-in and ultimately, success. The TDS establishes the justification for either an evolutionary (spiral) or single-step-to-full-capability acquisition strategy. It describes, "how the program will be divided into technology spirals and development increments, an appropriate limitation on the number of prototype units that may be produced and deployed during (TD), how these units will be supported, and specific performance goals and exit criteria that must be met before exceeding the number of prototypes that may be produced under the (R&D) program" (DAU 2003, p. 5). Because an official acquisition program has not yet been initiated, funding for pre-Milestone A efforts is normally restricted to only work that is done in the CR phase. The first phase concludes, and the second major decision point (Milestone A) is reached when the MDA approves both the preferred solution supported by the AoA and the TDS.

Once Milestone A is achieved, the Technology Development stage begins. With the exception of some high-dollar shipbuilding programs, an official acquisition program has still not considered to have been initiated at this point. Therefore, funding is restricted to work that is done in this phase, the intent of which is to, "reduce technology risk and to determine the appropriate set of technologies to be integrated into a full system" (DAU 2003, p. 6). This stage is iterative in that the technologies to be refined are continuously developed and processed through close interaction between the S&T community, the users and the developers. As such, the TDS is constantly reviewed and updated with each incremental effort as the technology demonstrations gradually show the proposed solution to be, "affordable, militarily useful, and based on mature technology" (DAU 2003, p. 6).

The TD phase ends when either the MDA decides to terminate the effort, or the third major decision point (Milestone B) is achieved. To be granted Milestone B approval, the second major JCIDS analysis (the Capability Development Document (CDD)) must be approved through the JCIDS process, and the MDA must approve both the acquisition strategy and the acquisition program baseline. The MDA must be satisfied that an affordable increment of militarily useful capability has been identified, the technology for that increment has been demonstrated in a relevant environment, and development and production of a system can be achieved within a relatively acceptable timeframe (normally less than five years). With an ICD providing the context, and an approved CDD describing specific program requirements, Milestone B approval is achieved, signaling the availability of sufficient technology maturity. When funding is approved by Congress and apportioned from the DoD—critical steps—then a formal acquisition program is born and moves forward in the DAS process.

If a program is to be executed in increments or spirals through an evolutionary acquisition process, each increment will be its own program from the Development and Demonstration phase forward. Each increment or spiral must have its own Milestone B and C approval. Additionally, increment-specific KPPs must be delineated in the CDD for each increment or spiral. Finally, before beginning this phase, and with the current increment TDS as a basis, the program manager must build and the MDA must approve an acquisition strategy for follow-on increments. Solutions to capability needs can come from a variety of sources, including COTS as well as previously discovered mature technologies that heretofore had no obvious DoD application. As such, not all acquisition efforts need start in CR. Some programs can enter the DAS at later stages; the System Development and Demonstration (SDD) stage marks the first point at which a more mature technology with an approved ICD and CDD may enter the DAS for further refinement without undergoing the scrutiny of CR or TD.

System Development and Demonstration (SDD) has two main purposes: system integration and system demonstration. Systems integration involves integration of both mature technologies and component subsystems into one complete design that meets the stated requirement. Additionally, at this point, design detail should be achieved as

well as tradeoffs considered between risk and technology maturity. Risk is defined as how much less capability is allowable while still providing the warfighter with a system that meets the intent of the ICD. Thus, decisions must be made to ascertain what is necessary and what is achievable based on the maturity of the technologies involved. During this stage, such risk decisions must be objectively determined by the program decision makers to limit program costs and the overall time required for systems development.

CDDs are promulgated in the Joint Capabilities Integration and Development System (JCIDS) and include lifecycle or total ownership cost estimations that are then used to fulfill the requirement to fully fund the program throughout the FYDP. Even though these estimates are based on technologies deemed mature enough to move on to SDD, technologies in many cases are still very new. Still, it is the maturity of the elements of a procurement program that ultimately determines the course of the acquisition process, the cost, and the time required to field the system. Coupled with the fact that the entire acquisition process evidences considerable spontaneous discovery, the probability that an entire program with many subparts will come together through the systems integration phase and beyond as initially predicted in the CDD is close to nil. Therefore, a continuous stream of tradeoffs between system-combined technologies (that have yet to be fully demonstrated as a whole system) and the time required to develop the technologies make the forecasting of program cost difficult. It is the job of the PM to manage the three variables (cost, schedule and performance) and to make hard choices to field a system in a timely manner to meet program prerequisites while attempting to control costs.

Systems integration is considered complete when a working prototype has been designed, tested, and documented as functional in an environment appropriate to that in which the user will employ it. Another decision, the design readiness review (DRR), must be successfully negotiated to move to the next part of SDD: systems development. The DRR is a mid-phase assessment of the design to document the complete system in terms of:

the percentage of drawings completed; planned corrective actions to hardware/software deficiencies; adequate development testing; an assessment of environment, safety and occupational health risks; a completed failure modes and effects analysis; the identification of key system characteristics and critical manufacturing processes; an estimate of system reliability based on demonstrated reliability rates; etc. (DAU 2003, p. 8)

The DRR is somewhat flexible in that the MDA may format it as applicable to the nature of the specific program. Systems demonstration is the process of taking the whole system as designed and proven "functional" in systems integration, and applying it to the appropriate environment such that the stated KPPs may be effectively demonstrated. This phase is complete when both the whole system is verified as useful and capable, and the appropriate industrial capability exists to allow the program to move on to the next phase, production and deployment (P&D). Additionally, to gain Milestone C approval, the MDA needs to be satisfied that the program is ready to be committed to production. Otherwise, the MDA must terminate the program. Finally, the CPD must be obtained through the JCIDS process. This step declares that the performance required to exit the SDD phase and the forecasted production capability required to successfully accomplish the P&D phase are in place.

The objective of the fourth phase of acquisition, P&D, is to establish the full operational capability of the program, the ability to produce it in an optimal manner, and to ensure that the final system meets original JCIDS intent as stated in the ICD. P&D begins with Milestone C approval that commits the DoD to production of the program. As such, it authorizes the program to enter either low-rate initial production (LRIP) for large programs that require this approach, full production for smaller programs that do not, or limited deployment and test for information systems that are software intensive.

There are two aspects to P&D. The first is operational test and evaluation (OT&E), including both initial (IOT&E) and follow-on (FOT&E). The test products used come from the production line (either LRIP or otherwise as applicable) and the Director, Operational Test and Evaluation (DOT&E)—for those products requiring DOT&E

oversight—or the appropriate Operational Test Agency (OTA) determines the number of production-line units required for the testing regimen. The other aspect to the P&D phase is the ability of the established production line to handle the job of producing the required units at the rate required by contract. For large-scale production efforts, LRIP is required to ensure adequate and efficient manufacturing capability, to produce the minimum quantity necessary to provide units for IOT&E, to establish an initial production base for the system, and to permit an orderly increase in the production rate for the system (sufficient to lead to full-rate production upon successful testing) (DAU 2003, p. 9).

For programs requiring Low Rate Initial Production (LRIP), the final decision analysis, provided in the Full Rate Production (FRP) Decision Review, is required before moving into full-speed production. This decision is made by the MDA after consideration of, "initial operational test and evaluation and live fire test and evaluation results (if applicable); demonstrated interoperability; supportability; cost and manpower estimates; and command, control, communications, computer, and intelligence supportability and certification (if applicable)" (DAU 2003, p. 56). During FRP, the fully funded program is produced and delivered to the user. The PM is busy ensuring that systems are produced efficiently and arrive in the field in the manner established in the CPD. Also, as program changes are required, DOT&E may direct FOT&E to verify that the corrections are sufficient and that the system still meets operational requirements.

Finally, as the first production units are delivered to the user, the O&S phase begins. There is an overlap in the last two phases, and the PM must maintain oversight of both. O&S has two distinct parts: sustainment and disposal. Logistics and readiness matters at this point include maintenance, transportation, manpower, personnel, training, safety, survivability, etc.; these matters are a primary focus of the PM during sustainment. There are a number of post-design and production factors, such as the fleet logistics capability for the Navy, for example, that must be addressed and tested during this phase before ascertaining the supportability of the program through established channels, be they military or commercial. Assets also are tested for efficiency to determine system ability to effectively provide support to the user in the

most cost-efficient manner to achieve the lowest possible lifecycle and, to the extent possible, total ownership cost. Since many programs stay in the field for years, even decades, the PM must work with the user to document the O&S requirements to continuously evaluate the lifecycle costs, making improvements or service life extensions as necessary in an attempt to control and contain total ownership costs.

The last phase of the DAS, disposal, is focused on meeting the costs associated with the end of the useful life of an asset. Throughout the design process, the PM must detail hazards that will affect end-of-life costs and must estimate and plan for eventual disposal costs. When the system finally reaches the end of its useful life, the PM is responsible for ushering it through the process of demilitarization and disposal, "in accordance with all legal and regulatory requirements and policy relating to safety (including explosives safety), security, and the environment" (DAU 2003, p. 11). In summary, from the description above it is clear that the DAS is a highly complex, protracted decision process and management control system, which explains in part why it takes so long to acquire new defense assets. Could this process be reduced in terms of complexity, number of decision steps, players, and decision cycle-time through process reengineering? This is a question tangential to the thrust of this article, but one that deserves further attention.

LINKAGES BETWEEN DECISION SYSTEMS

The JCIDS and the DAS systems are tied to each other a number of different ways. The primary goal of the DAS is to acquire capabilities for the DoD as directed through the Joint Chiefs. This relationship is carried out formally through the four formal JCIDS documents as well as through the many required DAS program reviews. They are also informally linked through the leaders of each process, some of whom have multiple roles to play in both.

As noted in part, the JCIDS documents include the Initial Capabilities Documents (ICDs), Capability Development Documents (CDDs), Capability Production Documents (CPDs) and the Capstone Requirements Documents (CRDs). These are directly and formally linked to DAS events. They are governed by policy and regulation and provide critical information to DAS leaders with respect to critical program elements like performance criteria, program size, impacts and constraints. They also help specify the level of administrative oversight required.

Generally, different JCIDS documents are required before each DAS milestone review; also, DAS players have to submit documents to JCIDS players for approval before a program can proceed past a milestone; for example, before milestone B approval, "the CDD must be received from the JCIDS leadership. For the JCIDS decision-makers to approve the CDD, they must receive data from the DAS representatives and review the progress of the program" (Fierstine, 2004, p. 55). This represents a formal relationship where documents are passed back and forth between players in these two systems, with one set providing data and the other approving it before the first may give milestone approval. Notice in the schematic how each of the milestone decision points (MS A, MS B, MS C) is accompanied by input from the JCIDS via JROC and DAS via DAB.

Figure 5. Formal Pathways from the JCIDS to the DAS
Source: (DoDI 5000.2, 2003, p. 3). Note: Circles indicate linkage zones between the JCIDS and the DAS.

Also, critical formal links are created between the two systems when the same players hold important positions in both systems. First among these is the Secretary of Defense and his staff, the Deputy Secretary of Defense, the Undersecretary for Acquisition, Technology and Logistics, and Assistant Secretaries including the DoD Comptroller and Chief Financial Officer, and the Secretary for Planning, Analysis and Evaluation. The USD (AT&L) is central to this process as he chairs the DAB and is the Milestone Decision Authority for all the large procurement programs. He also has the authority to ask the JROC to review a program at any time. This gives him a powerful hand in both the JCIDS and DAS processes. The Deputy Secretary of Defense chairs the Senior Leaders Review Group (SLRG), in which all the important decisions are made which involve both JCIDS and DAS items. Various Under and Assistant Secretaries of Defense serve on the SLRG, the DAB, and Functional Capabilities Boards (FCB). Probably the most important of these is the Assistant Secretary of

Defense for Networks and Information Integration (ASD(NII)) who serves on both the DAB, the SLRG and the FCBs.

On the military side of the house, the most important link is probably the Vice Chairman of the Joint Chiefs (VCJCS) who functions as chairman of the Joint Requirements Oversight Council (JROC) and is Vice Chair of both the Senior Leader Review Group (SLRG) and the Defense Acquisition Board (DAB). Staff organizations within the Joint Staff apparatus also are important. These include the offices of J-8 (the Joint Potential Designator (JPD) Gatekeeper), J-7, (the executive agent for transformation), and J-6 (the agent who ensures IT/NSS interoperability and provides review, coordination and certification functions in support of the JCIDS and DAS) (CJCS, 2004, 3170.01D, p. B-4).

Within the military departments, the vice chiefs of each service sit on the JROC, and the service secretaries sit on both the DAB and the SLRG. It should be remembered that individual military personnel form the lion's share of representation on oversight and analysis bodies related to both processes. Also, the Services are the sponsors for every program and research effort, and they staff the program offices. Furthermore, the Services run the JCIDS analysis processes.

Since the JCIDS and the DAS are event-driven systems, they follow similar patterns and are linked through their programs and documentation. In contrast, the PPBES is a calendar-driven sequence of events. JCIDS or DAS events may or may not fit neatly in the POM/budget cycle. DAS events may or may not fit neatly into the off-year or on-year cycle. For example, when a major program gets a "go" signal in an off-year, what this does to the basic concept of off-year is yet to be determined. It hardly seems like the program will be told to wait until next year, but if resources then are committed, does this mean that decision space is pre-empted from the following on-year? Does this mean the on-year becomes an off-year? What if the "go" signal occurs in the first year of a Presidential regime? Will this mean a wait? If it is a major capacity-enhancing acquisition, what will this mean for the QDR scheduled to arrive some 12 months later? Will strategy and doctrinal changes be pre-empted? What if a large

program appears about to fail a major milestone, but it has been counted on as a part of a Presidential legacy in the fourth year of a Presidency: will the program be "forced" and the assumption made that it will get well (that its difficulty will be corrected) in the off-years (e.g., the USMC V-22 Osprey aircraft)? These decisions have consequences for each other, just as the battlefield concept in the late 1990s when the decision about armoring Humvees was made; doctrine appears to have envisioned a front-line/rear-area split with little need to armor Humvees because only a few would be used in or near the front line. Iraq did not turn out that way, hence the scramble to uparmor Humvees.

The point is that any procurement effort can span multiple annual PPBES cycles, be under the influence of a series of layered PPBES decisions and feed data back into any number of current and future PPBES phases. The link to the PPBES formally comes from the Strategic Planning Council (SPC) which develops the Strategic Planning Guidance (SPG). The SPC is led by SECDEF and made up of the Senior Leaders Review Group (SLRG) and the Combatant Commanders; it includes virtually all of the senior leadership in the DoD, civilian and military, including 19 four-star billets, the service secretaries and various OSD-level representatives. This group produces the Strategic Planning Guidance, although it probably would be most correct to say that it is produced for SECDEF, belongs to him, and that his views are predominant in the end product. The SPG sets the scene for the POM-budget process, feeding directly into the POM. It identifies and sets up DoD-wide trade-offs and identifies joint needs, excesses and gaps; it focuses on such things as threat changes, war-plans analysis, new concepts, and lessons learned.

For example, one lesson learned might be that US forces may have to be prepared to fight in both traditional and non-traditional battlefields (e.g., Iraq); this lesson has significant consequences for both doctrine and attributes of warfighting platforms. If Humvees are going to be at risk of taking direct and high-powered fire wherever they go (in a front-line is everywhere GWOT scenario), then their armor needs change. The POM process is also informed by issues surfaced by the Combatant Commanders (COCOMS) routed through an extended planning process to the joint staff. The result of

this input of information is the Chairman's Program Recommendation (CPR) and the Joint Planning Guidance (JPG), which help integrate joint capabilities into the POM process. The link between the DAS and the PPBES is that the JCIDS's capabilities analysis model is used to examine current and forecasted capability needs.

At the service level, a number of other interactions exist. In the Department of the Navy, for example, during the POM and budget build/review processes, the Navy requirements officers and analysts under N7 and the Financial Managers and analysts under N8 independently conduct their own campaigns, scenario and program analyses. In doing so, they use the same scenarios, simulations and models as are used in the JCIDS by OSD, the joint staff and the rest of the MILDEPS. Additionally, all the data regarding past, current and future program cost comes from the program offices who manage the Services' acquisition programs.

At the most basic level, the PPBE system and the Defense Acquisition system are linked through program cost data. Program offices build OSIPs (Operational Safety Improvement Programs); these are used to create the budget line items that detail program cost data and to feed that data through their budget offices for their programs (BFMs) to the Navy Budget office (FMB); here, it is used during program-cost analysis throughout the year. When the Navy Budget Office asks questions about a program or recommends changes, those are answered or completed based on the data provided in these OSIPs. These requests may happen during the budgeting phase, when marks and reclamas (appeals of budget cuts) are made, or during budget execution. The analysts in N7, who represent the warfare requirements community, and the analysts in N8, who are the budgeters and linked to the PPBE, closely monitor the acquisition programs. In the current year, if a program is under-executing, then the program and budget analysts will make adjustments as necessary to ensure that money is diverted to those programs that will spend it by the end of the appropriation period.

The result is that the warfighting-needs system, the acquisition system (DAS), and the PPBE system focus around various points of integration and articulation—from an assessment of the threat in the SPG to a design for joint capabilities in the JPG

through the POM building process and into the annual budget preparation and review processes. Most, if not all, of the top leaders hold multiple responsibilities in these systems. While formal documents provide for co-ordination, some co-ordination happens by forcing decisions on different aspects of defense needs through the same sets of players. Formal documents are required and reviewed by these players before decisions are made initially and at subsequent important check points, be they milestones, POM, or budget decisions. Additionally, staffs of analysts in different organizational locales have responsibilities for data production and review in program creation, implementation, and execution. They tend to be focused on a single-issue— on, for example, the best weapon system, or the most weapon systems for the money available this year. These players assume coordination and integration is done at levels above them or prior to program starts, or whenever the POM is built and reviewed, or whenever the threat changes or when new capabilities are needed or old capabilities may be foregone, or even when a strike in a tin mine in South America may imperil the pace of a program.

There is no doubt but that this is a complicated arrangement. Perhaps the single most confounding factor in these equations is time. Weapon systems take time to develop and build. The V-22 for the Marine Corps has been in development of one sort or another since the late 1980s, the Navy LPD-17 since 1998. The engineering and deploying of the surveillance drone in Afghanistan in 18 months is the exception to the rule. Most weapons acquisition programs take years to develop. The procurement effort can span multiple annual PPBES cycles, be under the influence of a series of layered PPBES decisions and feed data back into any number of current and future PPBES phases.

What this means is that when complicated programs (all weapons programs are complicated) are conceived and developed, they proceed through a series of PPBES processes. What this means in practice is that they also are reviewed by different individuals. Turnover in personnel in the DoD is high. This happens by law and practice for military leaders; the effect is that turnover happens every two to three years. This level of turnover is just as true on the civilian side. Thus, the Marine V-22 program has

seen six different Secretaries of Defense. It was begun under Secretary of Defense Caspar Weinberger and continued under Secretaries Dick Cheney, Les Aspin, William Perry, William Cohen, and Donald Rumsfeld. In fact, the average tenure of senior leadership in the DoD is 1.7 years. Thus, co-ordination by position is riskier than it seems. If the distance between milestones A and B or B and C is more than two years, it is highly likely that most of the players in the SLRG will have changed. Even when they are the same people, they may be sitting in new positions and have changed the interests they represent. This is true for both civilian and military leaders. The result is that one should not count on the effectiveness of coordination by position. This leaves coordination by document as the fall-back position. Fiscal climate is also a complicating factor. Weapons systems that take years to develop and field will go thru varying fiscal climates: for example, the V-22 started in a rich procurement environment in the mid-1980s and was kept alive in the procurement holiday in the1990s. Change also comes from change in the threat situation or battlefield doctrine: Secretary Rumsfeld's goal of transforming the Army to a lighter, agile, and more lethal organization doomed the Crusader artillery system. Another aspect of this happens when a service can not decide on the capabilities it wants and, thus, decides to maximize all capabilities; this is roughly what happened to Navy air plans in the early 1990s. The result was a years-long delay for plans for new aircraft. Thus, the passage of time means that people, resources, and doctrine change. These are all threats to the orderly integration of the warfighting requirements, DAS and PPBEs.

ASSESSING PROBLEMS WITH PPBES AND DAS ALIGNMENT

In the research project that produced this article, interviews were conducted in the Pentagon environment on the topic of the degree of fit between PPBES and Acquisition decision systems. A number of current and past DoD process players in and around the Beltway were interviewed, including some now working in the private sector doing business with the DoD. Those interviewed in this project included representatives of Navy contractors, representatives from Navy air and sea system commands, Washington-based Navy resource management officials, OSD acquisition officials and active and retired JCS officials. Interviews were supplemented by discussions and briefings by high-level military officials in the Office of Program Analysis and Evaluation (PA&E) and the Joint Chiefs' staff (J-8).

We make no claim that our interview findings are definitive, but they provide insight into potential (perceived as real) dysfunctions within and between the PPBES and DAS analysis and decision processes. First, interviewees voiced concern with what we may term political issues: that all levels of the chain of command produce budget estimates that are above guidance, that the political sensitivity of large weapons programs affects requirements analysis and resource decisions, and that many decision makers use political clout to stave off directives from higher authority. Secondly, they criticized process: that a small number of people in the processes have disproportionate influence, that decisions are adversely affected by time compression—compounded by the lack of sufficient information—and that decisions are adversely impacted by the existence of too many approval levels in the acquisition chain of command. Thirdly, they focused on management and cost issues: there is excessive duplication within and between the PPBES and DAS processes at all levels; that repetitious calculation of program costs in response to program and budget "drills" has an adverse effect on motivation, and that absence of clarity and consensus on costs causes significant difficulty in execution when budgeted funds are lower than required. Insofar as transformation is concerned, they reported that concurrent program and budget review

in the new PPBES process has caused a significant increase in workload without a significant increase in benefits; transformation has not resolved the issue of communicating appropriate information to decision makers, and transformational change actually has slowed down many stages of the review and decision processes. They identified barriers to change to include: (a) emergent user needs are not addressed adequately; (b) there is an over-reliance on correct verbiage in the OSIPs; (c) blanket joint requirements are ill-defined and cumbersome to work through; (d) the distribution of common funds is inequitable; (e) innovation is hindered because the type of rigid control exercised over multiyear procurements constrains program flexibility; (f) with regard to program documentation, required process forms and "semantics" sometimes confuses intent; (g) budgetary constraints drive changes in schedule and/or performance requirements that, in turn, have an unintended and negative impact on cost control.

Some interview respondents thought that, as budgets "moved up" the organizational hierarchy, there was a tendency to overestimate dollars to get the correct amount of warfighting capability; they felt this resulted in budgets exceeding guidance. Some respondents also felt that the large and expensive weapons systems which were built over several congressional districts or states were, perhaps, not subjected to as searching a warfare analysis scrutiny as they should have been. Respondents were concerned that "leadership can and does direct funding for programs deemed important, yet not supported by the analysis, given the info available to mid-level experts" (Fierstine, 2004, p. 99). They also said the lack of time and insufficient data or expertise impacted the quality of the budget decisions that were made. Respondents also worried about the degree of overlap and churn in the system. We speculate further on this below.

The military departments and services, the joint staff and OSD all do very similar analyses using the same data, models and simulations (and in some cases the same personnel). All of this adds time and manpower usage to the process without necessarily reducing the necessity for guesswork and intuition. With respect to transformation, respondents felt that the PPBES was still a work in progress and had

not produced a significant increase in benefits. We would observe the primary difficulty here is that the budgeters begin to work on the budget before a POM package has been completed; furthermore, the budget is constantly changing rather than having a fixed package after the programmers are through with their work. In addition, the work level increases while the timeline stays relatively fixed. Further, in the budget and programming process, people routinely make decisions without a full grasp of all the facts and data. This was evident at all levels, from those in the program and requirements offices who had to route paperwork through people unfamiliar with their platform, to those in FMB making spot judgments due to time constraints. Finally, everyone interviewed complained about the length of time it takes to route paperwork and receive decisions.

Respondents also worried that emergent needs were not identified and integrated into the system soon enough—in effect, that joint needs had priority, and some programs were identified as joint and given priority when the likelihood of their being used in a joint environment was low. They also criticized the cumbersome procedures necessary to gain approval in the JCS review process. Some of those interviewed expressed the view that some program and requirements officer emergent needs for existing programs are not adequately addressed in the current system. Most argued that a big part of the current problem is the fact that the comptrollers were tied to the exact terminology in the OSIPs; therefore, anything not specifically delineated in the OSIPs had to endure the lengthy delay of a new program start-up. They all complained about the difficulty of navigating through the vague joint requirements required of all communication gear; these requirements force them to route all associated programs and upgrades through numerous joint wickets, even though many of the programs would not be used in such a manner as to require the joint standard. Finally, a few interviewees took issue with the equitable distribution of funds in programs that took money from everyone in order to provide commonality to all platforms. They claimed that these funds were effectively an under-the-table system for certain airframes to get capability funded by everyone else.

Those interviewed explained that playing the game carefully is important. One interviewee had a list of the correct words to use when writing justification for dollars in different appropriations. Although a number of terms were virtually synonymous and would appear to mean approximately the same thing, a word that was wrong for the account could lead to a turndown or a do-over. For example, a careful analyst would use the terms "investigate or research" when writing justification for an RDT&E account, but use the terms "analyze or assess" when doing the same activity for an APN justification. And an O&M request using these words would be looked upon unfavorably. The word "track" is probably as close as the O&M accounts get to in depth analysis.

Respondents were concerned with innovative adaptations to organizational stress. Here we point out how requirements change (downward) as programs fail to meet requirements; moreover we will illustrate how Program Managers have found that if they can move their programs to a multi-year profile, they can fend off much of the churn that is driven by the annual budget process, particularly one that takes place in an era of scarce resources. Programmers have begun to increasingly use multi-year procurement strategies in an attempt to fence off programs from the annual churn that is inevitable…breaking a MYP contract is a tremendously powerful argument for use in reclamas. The programmers also have used BTRs (Below Threshold Reprogramming) to their advantage to protect their accounts from raids during execution. This has the added benefit of cushioning them against the end of the year need to spend their money or lose it by designating the recipient of moneys unspent and then possibly getting reciprocation after the new budget comes along.

Reflecting on the above research, we may observe that the most significant issue discovered during our research was that an overwhelming amount of redundancy exists at all levels of the chain of command. This finding is supported by a study by the Center for Strategic and International Studies warning, "that various military bureaucracies "unnecessarily overlap", resulting in duplicative and, in some cases, overly large staffs that require wasteful coordination processes and impede necessary innovation" (Schmitt, 2004).

The research for this project found that almost every Secretary, Under Secretary, Assistant Secretary and Flag Officer with a required signature anywhere in these three decision-making processes has their own group of analysts to recheck, re-verify and recertify the data provided them from others (all of which are in or near the Pentagon). An example with regard to aviation would be how the individual programs, BFMs, N7, N8 and OSD all have cost-analysis experts on staff looking at the same data, yet coming up with different conclusions. Although risk reduction is important, it seems that DoD analysis capability has grown (in aggregate) past the point of diminishing returns.

The results of this research project call for an effort to reduce these redundancies. The authors also would like to see improved communication among the three processes and to suggest the creation of an information system to communicate (near) real-time, highly detailed, accurate and useful programmatic cost, schedule, and performance information to decision makers. Included in this system should be highly detailed prioritization lists so that when decisions have to be made at subsequent levels of the budgeting process, those having to make those decisions can more adequately determine what should be cut when necessary, or what should be bought when there is extra funding available.

We must add that this might increase decision speed since top leadership officials would be able to make decisions based on data in the system without having to drill back down into the program offices to get data that may or may not satisfy their needs. Our study indicates a need for simplifying the entire acquisition document-and-review process, but makes no specific recommendation. We suggest that current operators are reducing the risk of making the wrong decision by increasing the time to make the decision. We also worry that currently there is no satisfactory way to address ideas or concerns that "bubble up" from the fleet that would add small increases in capability in the near-term. Currently this is divided between existing programs that require attention and emergent ideas that require immediate funding and could be fielded quickly and at low cost. An example of a less urgent nature includes F-14 adaptation of the Air Force LANTERN pod. This upgrade was on the community's "top-ten upgrade list" for years, but was only able to get funding after a monumental

demonstration of fleet innovation. Had the acquisition pipeline been able to rapidly and cost-effectively address this need, then the fleet would not have been motivated to enter the process of test, evaluation and demonstration. Since changes like this are relatively small and tend to be focused on the short term versus the JCIDS horizon of decades, fleet operators are unable to enter the funding debate without great difficulty. We would argue that this item is a small but important thing to field users (in this case the fleets); it suggests a better system needs to be established that will allow the adequate prioritization and swift communication of these fleet concerns up the chain of command.

We believe these ideas deserve further study. What may first be observed is that these recommendations call for reduction in staffs to eliminate redundancies, and also for the installation of a comprehensive real-time information system that would serve the same information to all participants; additionally, we urge the creation of a failure-analysis unit and system. The risk here is that adding a new and complex information system and a new organizational entity to systems already rife with information systems and complexity is problematic. Additionally, the proposal to allow some systems to perform unique functions for specific military departments more quickly and in a more direct manner pushes against the joint and centralizing management trend currently in progress under transformation. Lastly, changes suggested here would be imposed on decision systems already undergoing substantial and continuous reform; in other words, these systems constitute moving targets. Any further changes would have to be made to systems that are already in the process of changing, and too much change at the same time is highly destabilizing to decision processes, especially during time of war.

CONCLUSIONS

Our findings relative to our primary research hypothesis, i.e., the degree of integration of the PPBES and Defense Acquisition System decision cycles, indicate there are some points at which substantial and reinforcing linkages exist, and others where the systems operate separately. The question is to what degree should parts that are not integrated presently be better integrated in the future? A key point in the PPBES (with respect to increased integration) that has been reinforced under the leadership of Secretary Rumsfeld is in the programming "endgame"—the last part of the programming phase of the PPBES. This is where the Senior Leadership Review Group established by the Secretary reviews, approves and sometimes is forced to cut major acquisition programs. In 2004 and 2005, the Secretary and the SLRG have had to consider both significant increases in acquisition and reductions forced by the tight fiscal constraints of POM 07 and the FY 2006 defense budget. The SLRG review, forced by the need to reduce spending projections due to the costs of the Global War on Terrorism (GWOT) and other budgetary costs (including those for personnel and personnel entitlements programs), resulted in some major acquisition program shifts and reductions. These include approval of the Navy's decision to retire an aircraft carrier early (the Kennedy), cancellation of the C-130J buy and reductions in the size of buys in submarines and surface vessels for the Navy, modularization for the Army (the acquisition portion of this initiative), and cuts in the Joint Strike Fighter and the F/A-22 aircraft program for the Air Force.

In budget execution, the problems we have identified in this article remain as far as we can ascertain. This is an area where "the budget drives the program" to a great degree. Some of this is inevitable, e.g., as a result of congressional politics that produce changes in defense budgets and acquisition programs beyond the ability of the DoD to resist. When this ordering occurs, it causes significant disruption in the budget—both in preparation of future budgets and in the execution of current appropriations. It also forces changes in both the structure and content of the POM and QDR, causing the

programming process to have to move in reverse (to accommodate budget changes) in a way that almost always causes discontinuity in program management and execution.

Overall, we conclude that, up to this point in time, under Secretary Rumsfeld a number of changes have been made to improve the manner in which the PPBES serves as a decision system for the DoD to better integrate financial decisions with acquisition decision making. This is, in part, a result of Rumsfeld's demand for better information upon which to base decisions and his willingness to listen carefully and to question vigorously the data and options provided to him from his staff. In addition, it is a result of the changes made in the PPBES to better connect the process to the Secretary's decision preferences. We also conclude that this linkage has been strengthened through program review by the JCS (J8) where not just defense-wide acquisition programs (as was the case before transformation of PPBES), but all DoD acquisition programs now are reviewed for jointness and feasibility.

With respect to budget formulation as opposed to execution, the DoD comptroller staff holds the view that budgeting always has integrated acquisition programming. However, programmers do not share this view, contending that too many budget decisions have driven the POM rather than the other way around. This may have changed to some extent over the past four years, but there is insufficient evidence available to us to show a demonstrable change in how DoD budgeting operates now compared to prior to 2001. What we can document is that DoD budgeting has had to be highly responsive to changes in the threatening and warfighting environment in the past four years.

In this regard, we might wonder what would happen to DoD resource decision making if the POM were eliminated and replaced by a process of longer-term budgeting. In traditional budgeting (as it is practiced in almost all jurisdictions in the US), budgeteers have to answer several important questions as they ascertain what they need in the budget and as they justify their requests to funding sources. These questions include "what," "why," "when," "where," and "how." The answer to "how much" flows from the answers to the prior questions. All of these questions are important, but

possibly the two most important questions in this set are the "what" and "why" questions. They set the stage for the fact-finding that causes answers to the how, where, and when questions to surface. For example, if there is no need for a ship or a tank, then there is no need to define when you might need it, where you might need it, or how it might be configured or delivered. This interrogative pattern is the whole cloth upon which budget decisions are based. Much academic research has focused on the concept of incrementalism, i.e., that budgets change only by small amounts on the margin and not much as a percentage of the total from one year to the next. This is a tested analytic finding, but not one that is useful for the PPBES decision makers because they do not build budgets by focusing on percent of change. Rather, they first determine what it is they need (requirements). They do this by analyzing the world around them and its impact on the organization and its systems. They then establish what is needed to improve or operate more efficiently or effectively than in the previous planning period or fiscal year. Finally, they evaluate in detail what this will cost and what can be executed in the annual budget.

With the implementation of the PPBS in 1964 under Robert McNamara, the defense budget system split the focus of these questions into three parts. The planning and programming functions (in which the SPG and POM are built) deal with the "what" and "why" questions, and to some extent "where" and "when." Most of what is left for the budget process is the task of answering the question, "how much this year?" Still, budget formulators do have to present their fully justified budget to reviewers in the DoD, the OMB, and Congress. This means that they have to convey the part of the POM that answers the "how" and "what" questions along with the request for "how much." To do this, budget offices have to put back together the pieces of the program that is built in different places for different purposes by different sponsors. Asking what the best profile for the ingredients for an aircraft carrier battle group over the next ten years (a planning and programming question) is different from asking how much is needed to operate the battle group for the next year. But in the PPBS, to decide "how much," the budgeters have to know what the total program will look like.

So long as there is clear articulation and separation of these processes and one feeds carefully into the other, this system can work—as long as the POM feeds information into the budget process. For the most part, budgeters may have been happy to have many of the big resource questions decided for them, leaving them to focus on pricing out next year's needs. For their part, programmers have developed rules that allowed them to develop a good POM for each cycle. Usually, this means everyone gets something, but nobody gets everything they want.

With the passage of time, dysfunctions appeared in this scenario. First, the military departments created POMs that were more conducive to their needs than to joint warfighting needs. The Goldwater-Nichols Act reforms (1986) were intended to rectify this situation. Then, with the drawdown after the fall of the Soviet Union, budget offices were placed in the awkward position of having to make decisions because the calendar said it was time to do so—even when the POM had not been completed—because those who built the POM could not decide which was the best way to downsize while maintaining the capacity to deter or fight future wars. Military department and DoD budget offices were, by and large, unhappy at having to make programmatic drawdown decisions under this circumstance. In the 1990s, and now in the last two years, the program decision-making process has not been completed in time to meet the needs of the budget. Most recently, this is allegedly due to the combined program- and budget-review process under the PPBES. Various improvements have been made to the processes of planning and programming for weapons acquisition, but none has been fully successful. Perhaps the problem with the system is not with the acquisition process, but rather the overly complicated programming and budgeting process. Secretary of Defense Rumsfeld has characterized the PPB process as too slow and too complicated. As part of his transformation effort, Rumsfeld changed PPB so that the programming and budgeting analysis and decision phases are roughly concurrent. The POM process begins first, but both the budget and the POM process are supposed to end at the same time. In effect, the failure of the programming system to reach decisions may be viewed as having broken the budget process.

In reality, the budget process can only reach the "how much" question by answering the "what" and "why" questions. If the answers to these questions all appear at the same time, or when they are not answered at all, then the budget process has to, in effect, duplicate what is supposed to be done in the POM process to produce a budget on time. Indeed, under the new PPBES process, some parts of the budget process have had to operate as if there was no POM process.

This leads to the question: is there/would there be a genuine need to prepare a POM, especially if budgeting were done on a longer-term basis of two to five years? Perhaps it would be useful to take the transformation PPBES reform one step further and discard the separate POM process by simply incorporating the POM questions and POM process outputs into the budget process? This is a more sizeable task than it appears due to the existence of a bureaucracy which produces the POM. Conversely, it is perhaps a less sizeable task than it seems because the military staff involved in the POM process have other career lines and can perform functions as warfighters, and/or players in the defense-acquisition process or the warfare-requirements-setting system. There would be some civilian positions, mainly those in the Pentagon, that would disappear in this new integrated POM/budget cycle—a cycle that could perhaps be called the planning, budgeting and execution system (PBES).

While creating a two-phase planning and budgeting system would rationalize the operation of PBE within the DoD, a useful further step would be to create a longer-term appropriation period. DoD fiscal execution patterns are needlessly complicated by the rush to spend one-year appropriations before the close of the fiscal year. And the mixing of different appropriation periods for different appropriations needlessly complicates administration for those who execute budgets. Most of the DoD budget functions on a multi-year pattern—longer for military construction and procurement of long-lived assets such as ships and aircraft, and shorter for personnel and supporting expenses (O&M). However, even if personnel is legally an annual appropriation, in reality the force size and composition is relatively fixed and will remain so until some external crisis event forces review and change. Personnel could as well be a two-, three-, of even five-year appropriation. We suggest that the DoD budget is, in effect, a

multiple-year budget now. It would make sense to recognize it as such and to appropriate for multiple-year periods for all accounts, and to extend the obligation period for short-term accounts beyond one year at minimum.

A two-year appropriation (or obligation period) for personnel and O&M would be a useful starting point for Congress. Critics of such an approach often point to Congress's need to exercise oversight through the budget. But Congress can exercise whatever oversight it cares to in various ways, for example by focusing on execution review in off-budget years in a two-year cycle. A two-year budget also would reduce the opportunity for Congress and the President to insert what all recognize as "pork" into defense appropriations. The suggestions we make here would reduce opportunities for pork, but would also allow for meaningful oversight by Congress, and would reduce the size of the Pentagon bureaucracy while releasing some military officers for duty in their warfare specialties.

Moving to our primary area of interest in this article, given the above and other reservations made in this article, we cannot at present paint a rosy picture of our results of transformation of budgeting for acquisition. We observe that at the program and project-management level (within budget execution from the financial management perspective), there remains a high level of uncertainty regarding financial stability and management control. While macro changes at the DoD level may make participants in the OSD believe that the system has been changed (and they probably are right with respect to their position perspective), the larger question remains whether macro system changes have improved the cost, performance, speed of delivery of weapons and weapons systems in reality. This improvement will only result from better management and management control at the point of relationship of the buyer (DoD) and the supplier (the private-sector contractors). It is evident from preliminary analysis (and from the experience-based knowledge of serving and retired program and project managers) that there still is much to be improved in the nature of contracting, contract management, and enforcement of DoD and government controls through a properly designed and enforced management control system (Jones & Thompson, 1994).

The dilemma is, in part, a result of management failure on the part of government in assuming that private-sector contractors will obey DoD and federal acquisition rules and guidelines and the restrictions built into contracts, without sufficient DoD leadership, oversight, and enforcement of law and contracts. Is the blame for project-cost overruns the fault of greedy contractors that attempt to take advantage of government incompetence or lax enforcement? Is the blame due to this absence of control on the part of the DoD? It appears that both are causes of the problems of costs exceeding estimates, the extended time taken to develop and deliver new and increasingly more technologically complex weapons systems, late delivery, system failures (despite higher-than-projected costs), inadequate documentation provided for training of end-users, installation deficiencies and many other problems with the quality and performance of systems delivered to the fighting forces.

Our point is that it is unwise and incorrect to gloat about or claim victory in the battle to make acquisition and its funding more efficient at the top levels of the Pentagon, when at the level at which programs and projects must be managed so little has changed to achieve the improved efficiency and effectiveness goals of transformation. No amount of change at the Pentagon level will achieve these goals. To bring meaningful reform, change must reach down to the level at which spending occurs and programs are executed, where the government and contractor interface and relationships are so crucial to improving performance and results.

How can the process of transformation reach down to the program and project level? Some may argue that a great deal of effort has been exerted toward deregulating and contracting out, much to the benefit of the DoD (generally) and acquisition (specifically). That deregulation (e.g., of the FAR and DAR, the DoD 5000 series, etc.) has been a focus is undeniable. However, the attempts to improve management of acquisition programs at the government/contractor interface have concentrated on auditing. The problem with this approach is that of closing the barn door after the horses have escaped. It is fine to discover contractor overcharging ex ante and to extract penalty payments from contractors as a result. However, this is merely a financial transaction that does little or nothing to improve the services to and benefits of the end-

user—the warfighter. When unworkable products are manufactured and delivered, no matter what the cost to government, the result for the end-user ranges from frustration in the best of circumstances to casualties and death under the worst of circumstances.

It may be argued that what is needed is not more deregulation but adequate level of effort in enforcing the rules that are in place, which can only happen through high-quality, knowledgeable and skilled leadership. This, in turn, implies investment in the education of leaders and decision makers, better selection of those properly prepared to lead, increased continuity of leadership and the ability to manage looking forward rather than backward in the manner that characterizes the "reform by audit" mentality. Who advanced the conclusion that auditors would be the best source of the management knowledge and expertise needed to improve business practice? Even the audit community itself would not advance this proposition. So, where do we go from here? We believe the knowledge about how to improve acquisition management at the ground level resides, to a great extent, with those who have done the job, i.e., experienced (and typically retired) program and project managers. If this were not the case, then why would the private sector hire and pay these people so well to represent them in dealing with the DoD? The question of leadership in ground-level transformation, where it will make the most difference for the end-user, thus becomes how to retain this expertise rather than force it into retirement to engage in profit generation for contractors?

In addition, improvement in the nature of contracting instrumentation is vital—and much effort has gone into this initiative in the past several decades. As a colleague remarked, "What kind of cost-plus contract haven't we tried to create the right incentives to perform and deliver the results? We have tried them all!" We would suggest that it is one thing to write a good and enforceable contract and another to actually enforce it. Learning how to do this is one obstacle; getting the attention of a revolving crew of leadership to either do it or permit it to be done is another. Our hope is that pointing out that improved management and control is a start to moving in the right direction (to be realized through adopting the appropriate control system design and execution strategy) and should be a prime target for transformation—equally worthy to the reformulation of

the PPBE system—will bring reform home to the level where it matters most (Thompson & Jones, 1994; Jones & McCaffery, 2005, forthcoming).

With respect to the continuing pace of transformation throughout the DoD, no Secretary of Defense can alone manage an enterprise as complex as the Department of Defense. And in fact, it is important to point out that in the past and presently, input to program and budget decisions in the DoD is provided by the Deputy Secretary of Defense and staff, the position in the DoD that bears a large part of the responsibility for actually attempting to manage the DoD. In addition, the Under Secretary Comptroller, the Under Secretary for Acquisition, Technology, Logistics, and Assistant Secretaries for other OSD functional areas including program analysis and evaluation, policy, force management and personnel, legislative affairs, health, reserve affairs and others, all provide views and analyses to guide program and budget decision making.

From this perspective, it must be observed that the task of defense resource planning and budgeting is part managerial and part political. Thus, from our perspective, no amount of budget process, PPBES or business process transformation reforms will reconcile the different value systems and funding priorities for national defense and security represented by opposing political parties, nor will it eliminate the budgetary influence of special-interest politics. Value conflict was evident in the early 1980s when public support, combined with strong Presidential will and successful budget strategy, produced unprecedented peacetime growth in the defense budget, in particular in the investment accounts. And despite the implementation of deficit-control reforms since 1985 and the Peace Dividend drawdown of the 1990s, constituent and special-interest pressures made it difficult for Congress and the DoD to realign the defense budget. While we applaud the changes made in 2001-2004, reform of defense budgeting process does not mean that producing a budget for national defense politically will be much easier in the future than it has been in the past. Threat perception and assessment and politics drive the defense budget, not the budget process itself (McCaffery & Jones, 2004). Additionally, the size of the deficit and rate of increase in mandatory expenditures make top-line financial relief for the DoD unlikely.

We also may observe that a sequence of annual budget increases for national defense in the early and mid-2000s have not brought relief to many accounts within the DoD budget. At the same time, requirements of fighting the War on Terrorism have intensified the use of DoD assets and the costs of military operations. Because the need for major asset renewal has been postponed for too long, new appropriations have gone (and will go in the future) largely to pay for new weapons system acquisition, and for war fighting in battles against terrorism. What this means is that accounts such as those for Operations and Maintenance for all branches of the armed services will continue to be under pressure and budget instability; restraint will remain a way of life for much of the DoD. This places a heavy burden on DoD leadership, analysts and resource-process participants to achieve balance in all phases of defense budgeting and resource management.

We may observe, in conclusion, that numerous transformation initiatives beyond improved financial management, PPBES and acquisition process reforms are in progress. In the areas of acquisition and logistics, transformation to spiral (continuous and simultaneous) and "sense and respond logistics" processes is underway. Improving information technology for management of inventory systems in real time to permit managers to know how much and where material is located on a worldwide basis also has been addressed and is fully operational in the Air Force. In the area of information technology, network-centric combat information systems are under development in all of the military services. Such systems coordinate various types of data to a single command point in real time to improve the ability to see and manage military operations. Applications of network-centric IT in the area of business management may be the next steps, although they are costly. However, such applications are one approach to coordination of decision making in flatter, network-types of organization (i. e., hyperarchies), rather than through traditional bureaucratic forms of organizing to solve complex and sometimes "wicked" problems (Jones & Thompson, 1999; Roberts, 2000). Given the vital importance of information technology, it is essential for the DoD to address the knowledge, skills and abilities of its workforce to fully leverage the potential of IT and other business-management methods.

These and the other initiatives identified in this article are only a sample of the many transformational measures currently under some degree of implementation and experimentation in the DoD. Given the progression from the industrial age to the age of technology in an increasingly global commercial marketplace, capitalization on new technologies is a key part of transformation to create "knowledge warriors" for significant battlefield advantage. Most of these initiatives are not under implementation independent of budgets and cost accountability—virtually all are expected to reduce costs while cutting cycle time with either improvement of quality or, at least, no diminution of quality of service to customers. The business models and plans developed for these initiatives are mirrored on business processes tested and used in the private sector. Transformation also stresses continuous learning and the creation of self-learning organizations that can observe and orient themselves more quickly to new threat environments; they must then make decisions and take action to learn more quickly by trial-and-error in a cycle of restructuring, reengineering, reinvention, realignment and rethinking both means and objectives (Jones & Thompson, 1999). Further, critical issues related to transition management, organizational change, organizational design and appropriate institutional arrangements are raised whenever DoD reform is significant.

Overall, the major challenge facing the DoD in the period 2004-2008 and beyond is how to continue to modernize the fighting forces and continue the pace of business transformation while paying the high price of waging the War on Terrorism. In essence, what the DoD must fund and support in the short-term must be traded-off against longer-term investments to improve both business-management efficiency and force readiness. Given this dilemma, it is clear that DoD leadership faces severe challenges in the next decade.

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