STRATEGY RESEARCH PROJECT

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STREAMLINING PPBS TO SUPPORT A RESPONSIVE SYSTEM ACQUISITION PROCESS

BY

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Streamlining PPBS to Support a Responsive System Acquisition Process

by

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ABSTRACT

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The Army has embarked on an information technology development and requirements determination process called Spiral Development to implement a modern, state of the art military command and control structure in a more responsive and faster manner than the "standard" acquisition management system allows. As implemented within industry and the Army, the process calls for the frequent use of experimentation, testing and evaluation to evolve, verify and validate requirements and capabilities. At each increment or evolution of the process, the Army finds itself faced with a set of updated requirements that are unable to be resourced due to the existing deliberate structure of the Programming, Planning, Budgeting, System, (PPBS) process. The thesis of this paper is that PPBS as currently structured and implemented does not support the Spiral Development model.

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STREAMLINING PPBS TO SUPPORT A RESPONSIVE SYSTEM ACQUISITION PROCESS

Joint Vision 2010 (JV2010) published by the CJCS describes the future direction of our Joint Warfighting efforts, building on the premise that modern and emerging technologies should enable our military forces to proceed to new levels of operational capabilities, especially in the areas of information technology, precision engagement, focused logistics, and full dimension protection. "Sustaining the responsive, high quality data processing and information needed for joint military operations will require more than just an edge over an adversary. We must have information superiority: the ability to collect, process and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same."[1] Former Vice Chairman of the Joint Chiefs of Staff, Admiral William Owens has stated the need most succinctly. He predicts that by 2010 within a battlespace 200 by 200 miles, warfighters must know everything that matters to achieve dominance.

As our means to fight and win wars change, the environment in which defense acquisition programs occur also needs to change. For at least the past 20 years, leadership within the Department of Defense has recognized the burgeoning civilian market place as providing the cutting edge in business management concepts, and solutions. Due to the changing nature of the American economy, private enterprise has been developing and exploiting cutting edge information based technology at an ever-increasing rate. One tenant of this rate of change has recently become known as "Moore's Law"; the unappreciated prediction that the growth of computing power will continually double every 18 months while the hardware cost remains constant. This "law" has been touted as one of the explanations for the capability growth of information technology based systems and for seemingly limitless possibilities in the future. Because of the expected benefits from the interaction of time, technology and what is nominally considered external forces, our leaders are insistent that we in the military should institute similar practices and techniques to modernize our forces realizing similar advances in our abilities to wage war. When we compare the requirements of commercial enterprises to that of the DoD, there are adequate commonalties that may be built upon to deliver systems to the services that are suitable for mission critical operations.

While our own developmental process is under review, our adversaries are also capable of obtaining the same technology at a much reduced cost and in less time than it would take for them to independently develop similar capabilities. It may also be easier for them to implement techniques and procedures to efficiently employ this technology against us. "Current development cycle times run as long a 18 years for major defense weapon systems. If we are to continue to outpace our adversaries, we must begin to think in terms of very short cycles – 18 months is the norm for current commercial information technology based systems. In order to meet the demands for such vastly reduced cycle times, we must be willing to abandon traditional methods of acquiring and applying advanced technology."[2]. It is in our best interests to adapt and adopt the best practices and procedures from the commercial world if we are to effectively modernize our information technology based command and

control systems to meet the requirements of Joint Vision 2010. No doubt long development cycle times cause various problems, including high costs, technological obsolescence, evolution of the threat beyond the capabilities being procured, and the continuing evolution of user requirements. For this reason, our current requirements generation, and resourcing processes or methods need to be reevaluated to put capability into the warfighter's hand in the shortest feasible period.

This paper begins with a review of the Army Warfighting Experiment and Battlefield Digitization, used as a practical framework for analysis. It then discusses how a commercially utilized software process model known as Spiral Development was employed as a methodology for managing change by the Battlefield Digitization effort; followed by a discussion of the Planning, Programming, Budgeting System (PPBS). The paper concludes with recommendations for changes within the PPBS system to support reduced development and resourcing time-frames.

ARMY BATTLEFIELD DIGITIZATION

In a paper presented to the Fourth Annual Strategy Conference (1993), at the U.S. Army War College, the Chief of Staff of the Army stated that "changes in military technology are culminating in a military technical revolution that brings depth and transparency to the battlefield. The perception is that recent information age innovations indicate that smaller land forces will create decisive effects if the technology is used by high quality, well trained and well led troops employing proper doctrine." [3] An extension of the Chief of Staff's concept is that "connectivity between and among all echelons in the Army will result in speed and precision of communications, and that the entire organization's situational awareness and agility will far exceed that of today's forces. This greatly enhances the force's speed, precision, agility and will result in significantly improved lethality, survivability, tempo and versatility in the force – in short, a better Army."[4]

To begin the process of taking the Chief's statement forward; the implementation of integrated and interoperable systems across the entire combined arms spectrum; the Army initiated the Force XXI Campaign Plan, of which the Army War Fighting Experiment (AWE) is a component. The focused experimentation and development effort of the AWE translated concepts into realities; implemented the ongoing advances in information technology; fundamentally changed how a commander gathers, analyzes and distributes information to combat organizations; and brought a fundamental change in the way that wars will be fought and won. The Chief's 1993 presentation continued to find support and validation in the Chairman of the Joint Chiefs of Staff vision statement "Joint Vision 2010" which defined goals and strategies necessary to move the Military Services into the 21st century. JV 2010 and the Chief's statement comprise a strategic view for the future of DoD. Both documents illustrate how we must exploit technology to execute the Revolution in Military Affairs.

Battlefield digitization is the keystone of the AWE. Digitization is expected to provide the commander the ability to command and control the battlefield with complete awareness of the situation,

through the utilization of state of the art hardware and software technologies. Command and control as a process consists of the decisions a commander makes, the degree to which his perception of the situation, and his intent are shared among the forces. The central premise of the Army's digitization experimentation process has been: If information age, battle command capabilities and connectivity exist across all battlefield operating systems, then increases in lethality, survivability and operations tempo will be achieved. Transitioning from paper charts, mapboards and grease pencils, to modern systems, the commander is capable of achieving a high degree of situational awareness and will recognize an improvement of his ability to decisively fight and win the battle.

The specific demonstration of the Army's commitment to improving capabilities has been the series of exercises and experiments at Fort Hood, Texas, and the National Training Center, Fort Irwin, California. To this end, the Army has conducted several major events to show that the modernization effort taken in support of JV 2010 is on the correct path.

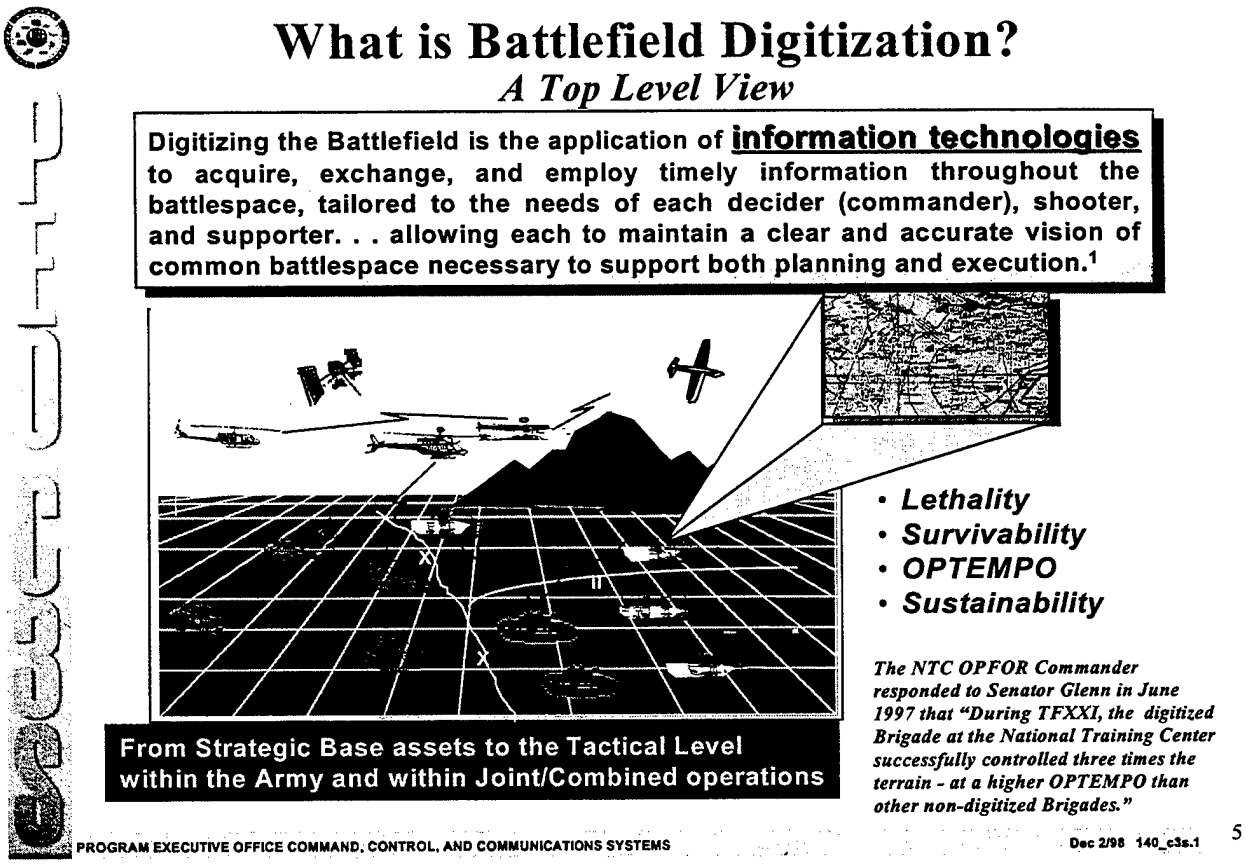


FIGURE 1 - BATTLEFIELD DIGITIZATION

The Task Force XXI Army Warfighting Experiment (AWE) in 1997 equipped a brigade from the 4th Infantry Division with updated Army Tactical Command and Control Systems in the Tactical Operations Centers and Applique hardware in nearly 1600 vehicle-based systems. The brigade trained with the new

digital equipment and supporting communications systems, among dozens of other initiatives, for about eight months, then deployed to the National Training Center for a series of battles with a live opposing force. After the NTC rotation, it was assessed that due to the immaturity and limited interoperability capabilities of many of the updated systems, progress toward digitization was not sufficient to satisfy the original concept of enabling an increased operational tempo. Additionally, shortcomings were noted in that the systems fielded to facilitate the C2 for this exercise were not suitable for tactical operations due to their operational complexity and the relatively fragile, commercial nature of the hardware. The system immaturity also significantly degraded the training readiness of the rotation unit in support of their primary operational mission and delayed the development of digital tactics, techniques and procedures.

Since the NTC rotation, exercises have been conducted to evaluate the improvements made toward digitization. Reviews have been hosted by the Commander of the Training and Doctrine Command (TRADOC) and the Army Deputy Chief of Staff for Operations and Plans to assess the maturity of the technology and readiness of the unit to proceed toward complete battlefield awareness as determined by Army leadership. The results of the Initial Operational Test and Evaluation for the Maneuver Control System, (MCS) and the Limited User Test for the Force XXI Battle Command, Brigade and Below, (FBCB2) demonstrated that while there was much room for improvement, significant progress had been made. System performance, stability, and the ability to provide enhanced friendly and enemy situational awareness information have significantly improved from the original AWE, this has permitted operators and commanders to employ this information in the execution of their missions. The maturity of the systems demonstrated in these follow-on events also permitted the units to achieve a higher state of training and readiness than the original TF XXI unit, and have furthered the refinement of digital tactics, techniques and procedures.

Military command and control systems are fragile, and so are similar systems in the commercial sector, development and implementation schedules are optimistically planned with no flex or inadequate critical resources consideration. The results are missed performance goals in conventional acquisition programs. This also results in schedule slips, near term resource decrements and long term cost growth. This serves as the foundation for the application for Spiral Development Model, a process that takes into account the development of requirements, the means to demonstrate compliance, and a methodology to evaluate the degree of risk of melding the customers needs to the program manager's ability to deliver on cost and on schedule.

SPIRAL DEVELOPMENT

The successfully employed development and enhancement model that the Army is using to manage the battlefield digitization effort is an adaptation of a development process for information technology based systems called "Spiral Development." The Spiral Development model is a relatively recent innovation within the software-engineering field espoused by Barry Boehm of the TRW Defense Systems Group. Spiral Development is based on an iterative development environment, increasingly

detailed elaboration of systems definition, and incremental improvements to a system's operational capability. This process model is a significant departure from the traditional methodology of system development calling for structured processes and products that were successively and systematically passed from one community of experts to another as the system matured through each level of the development process. Each stage of the transition was bureaucratically entrenched and based on separate standards of success or failure. Using the traditional approach, it would take many years to meet a requirement on a go or no go basis. It was seen that the spiral development model could work as a means to reduce the cycle time necessary to bring new systems to the field by the early and continuing interaction of all communities concerned with the effort. "Rather than go with a linear process of having a concept, building one of something, trying it out, building a few more and all of the different things that you go through with a seven year or eight year development cycle, we put all of that into a holistic two year process."[6] The spiral development process provides for continual improvement, focusing on enhancing the product from the prototype to the delivered product in record time, integrating entire organizations; doctrine and material developers, trainers and other support organizations, to place the system in the hands of the soldiers in the fastest possible time.

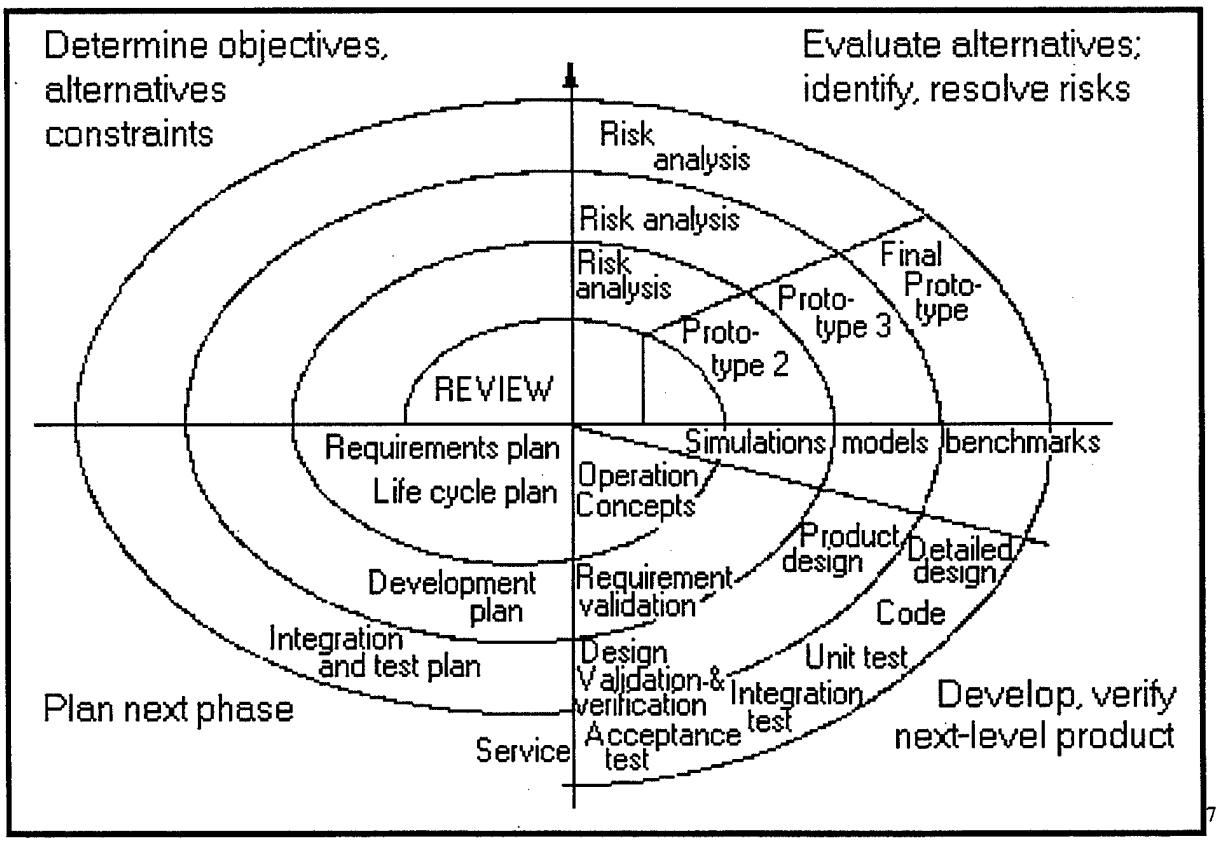


FIGURE 2 - THE SPIRAL DEVELOPMENT PROCESS

Spiral development is a cyclical process or series of iterations involving four main activities, equating to a spiral of requirement definition, system design, development, test and evaluation.

- Determine the system and subsystems product and process objectives, constraints and alternatives.
- Evaluate the alternatives with respect to the objectives and constraints. Identify and resolve major sources of product and process risk.
- Define the product and process.
- Plan the next cycle, and update the life cycle plan, including the subsystems.

Requirements are tailored to a package or series of packages representing capabilities, each package being a more advanced version of a system than the last. As each version is researched, fielded and evaluated by the appropriate community of interest, adjustments are made to the requirements of the current system and those of the subsequent versions. These are not preplanned product improvements because they may or may not have been identified earlier; and therefore, they are not "preplanned" into the system. The package of adjustments is based on the insights derived from the preceding iterations, advances in technology, changes in military requirements, or other factors, issues that were not identified earlier.

Advantages of the spiral development process are that it fosters the inclusion of system capabilities that may not have been initially defined to the material developer, but may be inserted as validated requirements when the spiral or product evolves. Spiral development incorporates prototyping as a risk management tool, accommodating rework of earlier stages of the development effort. It takes into consideration the entire life cycle of the system for evolution and changes of the product under revision. Members of the requirement generation community are necessarily included in defining the product or system objectives. This creates a risk driven approach to the project, rather than a document or calendar driven process common to the existing acquisition management environment. Each cycle of the spiral begins with the identification of the essential parameters of the product to be improved (performance, functionality, flexibility, cost); the varying methods envisioned to implement these modifications, and the constraints imposed on the application of the alternatives. Continuing steps evaluate the alternatives, identify and resolve risks, followed by the development and verification of the next iteration of product improvements necessary to begin planning for the next phases. Spiral development provides the material developer the opportunity to adjust the in-place linear acquisition process into a dynamic, results-based, risk-managed process, and when properly implemented, minimizes the system implementation time, placing hardware in the hands of the warfighter sooner. The spiral process shifts responsibilities from the stratified to one of a fluid nature, necessitating the comprehensive coordination of the user, the requirements, material development, and the test and evaluation communities.

While the Army did not meet the goal of fielding the First Digitized Division by 1997, a benefit of the transition from the standard development process to the spiral model was the improved communications between the user and the development and requirements communities. At Fort Hood,

the communities established structured, yet streamlined activities to facilitate and to provide discipline to the process. This forced adherence to entrance and exit criteria, resulting in improved system assessments used in support of formal evaluations. It has also brought a greater understanding of the basic and evolving requirements necessary to function on today's digitized battlefield. This has been accomplished largely through unit leadership, demanding capabilities, developing procedures, writing doctrine, conducting demonstrations, and training to determine if their expectations were valid.

In summary, spiral development seems best suited for managing the information technology intensive process that the Army has chosen to rapidly digitize its command and control systems. The process focuses on risk management; with the continuous involvement of all communities as requirements are refined and as the strategies are developed to achieve them.

PLANNING, PROGRAMMING, BUDGETING SYSTEM

A perceived obstacle to the rapid implementation of change within the material development community is PPBS. "A program manager expects to guide his program through a system where mistakes can lead to program instability or cancellation. What the PM does not expect is to have his healthy program hamstrung by multiple changes made possible by the machinations of PPBS – the system designed to solidify the planning, programming and budgeting cycle."[8] The success of a program manager is judged on his abilities to meet assigned cost, schedule and performance parameters. Under the current system, an invalid need or a nonrequired capability is an indication of neglect. Under spiral development, it is more important to assess the increased functionality for the user, considering the framework of cost, schedule and performance, counter balanced by the proper degree of risk control and management. The influence of spiral development and its capabilities to reduce development time cycles and quickly derive additional achievable and affordable functional requirements has not been taken into account until now. Until now the program manager believed that he was doing a great job when he delivered a product that met all the known operational requirements within time and budget. Today the paradigm has shifted to include what additional functionality may reasonably be provided to the warfighter taking into consideration a number of variables such as cost and schedule. What has just been overlooked is the fixed link between the structured and defined operational requirements of the program and PPBS: the cost estimate. This estimate is derived from detailed analysis of the Operational Requirements Document (ORD), and the evaluation of various system specifications necessary to meet the established program performance standards.

PPBS as designed and implemented within the Department of Defense constitutes the process of connecting military and national objectives to resources; a series of resourced programs which are then combined to achieve a coherent and comprehensive program of action for any organization. The need for a holistic approach derives from the necessary connection between the allocation of resources, programming and budgeting, and the formulation, execution and conduct of policy. As a primary decision support system, which translates force requirements developed by the military components of the

Department of Defense in accordance with the Joint Planning Document and other guidance, PPBS matches the complexities of public policy to the availability of resources. This process takes almost two years and involves four major groups of players at the Washington DC level, (OMB, OSD, JCS and the services) who through an iterative process move from broad planning considerations to more definitive program objectives, and finally to specific estimates, priced out programs. Using the existing program as a base and concentrating on incremental changes, PPBS maintains long term focus on established policies, objectives and purposes. The issue arises in the impact of the development cycle compression and continuing modifications caused by the Army employing the spiral development model as well as the continuing modification or updating of the validated capabilities required as the system under review matures through the model.

PPBS HISTORY

PPBS traces its' existence to the beginning of the Kennedy presidential administration and the stewardship of the Department of Defense by Secretary Robert McNamara. McNamara was recruited from private industry by President Kennedy in his quest to bring in the "best and brightest" from the academic and commercial worlds. On arrival, he installed this management innovation to take control of what he considered to be a decentralized military planning and budgeting process. Budgets were independently compiled by the individual services and then separately submitted to Congress. There was no process in place to impose the concept of centralized direction to insure consistency of policy and guidance, let alone to support any concept of joint warfighting. Through his own efforts and those of his protégés, he began to implement the management support processes within the Department that were based on reason and analytical results instead of emotion. The integrated PPBS provided relatively few innovations in the individual elements of planning, programming and budgeting; its true value was in the systematic coordination of all of the elements, with the complete centralization of authority within the Secretary's office. The system worked by forcing long term cost and effectiveness comparisons across the military service lines for weapon systems, force structure and strategies. The result of implementing PPBS was the establishment of clear objectives, development of a plan to achieve the objectives, and a means to evaluate the implementation of the plan. If progress was deficient, PPBS either forced adjustment of the plan or introduced positive or negative oriented corrective action to accelerate progress.

The most vital document within the PPBS environment is the Future Years Defense Program (FYDP), a multiyear plan and database summarizing all forces, resources and equipment associated with DoD's approved programs. The FYDP contains resources and force structure information for the prior year, the current year, the biennial budget years and the following four years. The FYDP is updated three times during the PPBS cycle: May to reflect the military services Program Objective Memorandum (POM) submission; September to reflect the services Budget Estimate Submission (BES); and January to reflect the President's Budget submission. The FYDP displays the total DoD resources programmed by fiscal year.

PPBS PLANNING AND PROGRAMMING PHASES

The planning phase is the first step in DoD resource allocation process. This phase ends with the issuance of the Defense Planning Guidance (DPG). The planning phase establishes the threat for programs to counter and defines the national defense policies, objectives, strategy and guidance for the upcoming programming phase regarding resources and force requirements to meet the threat and objectives. This phase begins two years in advance of the fiscal year for which the budget authority will be requested.

The initial activity is a review of previous guidance; the OSD staff, military services, and CINCs participate in the review to ensure that the evolution of the threat and changes in military strategy and policy are reflected as documented in the National Military Strategy and elsewhere. Information from the Joint Warfighting Capability Assessments (JWCA) process is used to provide the Chairman's Program Recommendations (CPR) as an input to the DPG. The DPG, as the principle DoD planning document reflects the President's prioritized National Security Objectives from the National Security Strategy (NSS) and establishes the policies that provide the services guidance for planning for peacetime, crisis and wartime strategies. The Office of Management and Budget (OMB) provides fiscal guidance that is to be used in the POM development. By April of each year, the guidance is disseminated to each service, CJCS and other DoD activities for final coordination and program development.

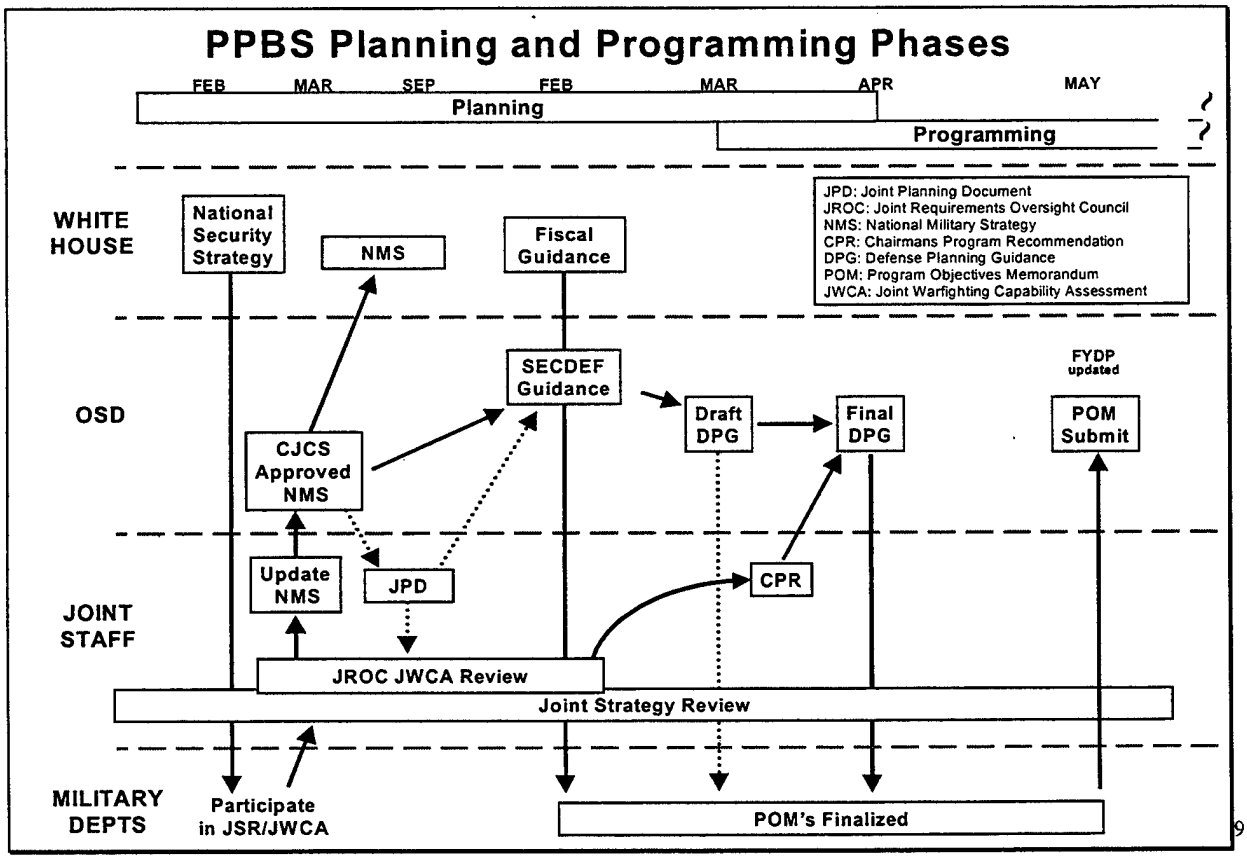


FIGURE 3 PPBS PLANNING AND PROGRAMMING PHASES

The purpose of the programming phase at the OSD and service level is to allocate the resources to the services in order to accomplish the given missions. Programming translates the planning decisions and OSD programming guidance into detailed allocations of resources, including forces, personnel and funds. Through a systematic review and approval process, objectives are costed for up to six years into the future. The POM in this phase includes data for the six years of the FYDP and presents the services proposal for an allocation of all available resources, within constraints, to satisfy the DPG. All new starts and requirements for personnel are also identified during this window, as well as any shortfalls in meeting CINC or DPG requirements.

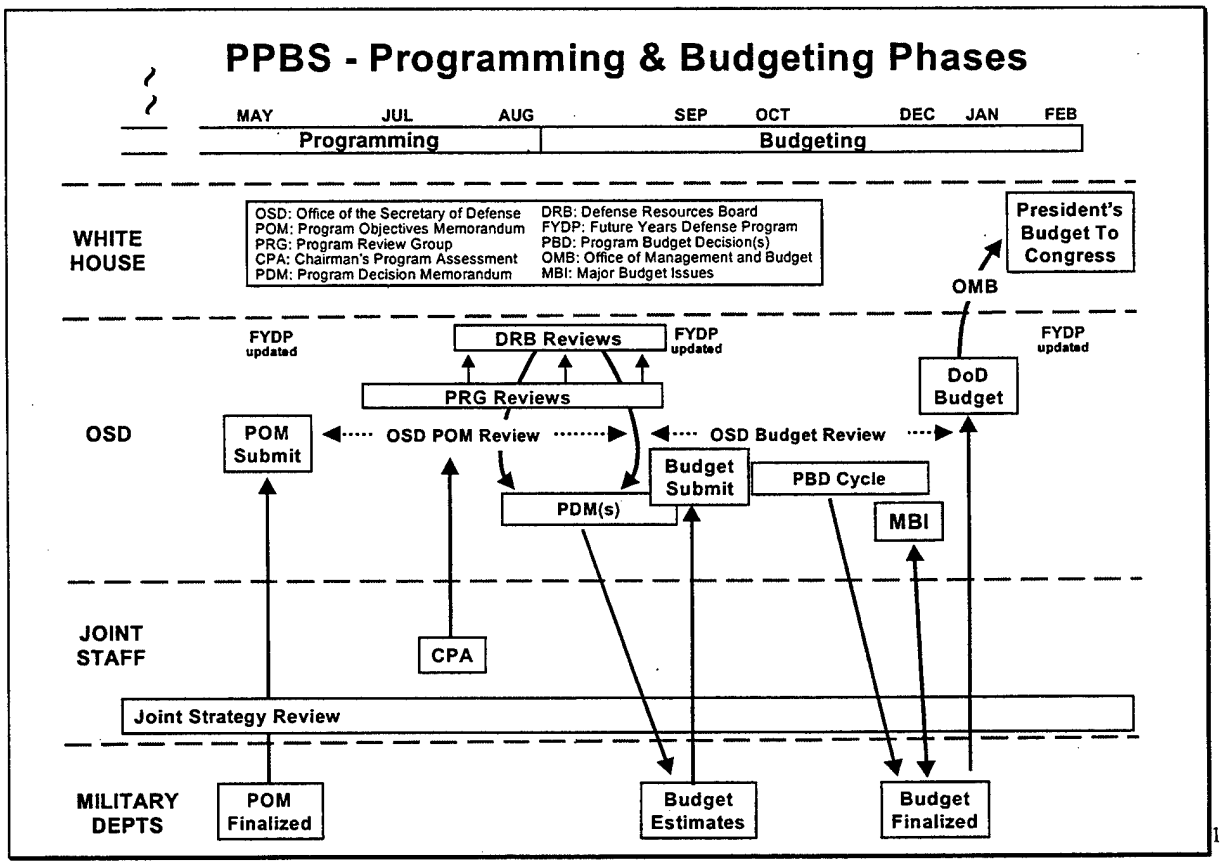
After the POM submission, the next step is a detailed review by the OSD staff of the service POMs, developing recommendations and alternatives resulting in an evaluation of alternatives providing an improved level of overall effectiveness within the available funds. The Joint Staff provides input to the review, as well as assessing the POMs to meet the guidance contained within the DPG and the NMS. This assessment results in the Chairman's Program Assessment (CPA). The Program Decision Memorandum (PDM) approves the service POMs after considering the balance of force structure, modernization, readiness and sustainability seeking to accomplish the established service goals within the available funds. A key point is that the specific issues that are addressed during the cycle will significantly vary from year to year depending upon the political and strategic circumstances. These reviews provide a baseline for the BES submitted in September. A second PDM will normally be issued in October after Congress has completed action on appropriations for the current year and will influence issues that may be potentially controversial and might derail passage of the pending Defense Appropriations Act by Congress.

PPBS BUDGETING PHASE

The final phase of the PPBS process is the budgeting phase; programmatic decisions made in the Major Force Program (MFP) format during the programming phase are now translated into resource requirements in the appropriations format. PDMs are reflected in the service BESs which are forwarded to OSD for review and approval. Emphasis in this phase for OSD is primarily on the proper budget justification and execution, but OSD may also revisit program alternatives from the programming phase. The product of this effort will become the Defense portion of the President's Budget.

Since the original implementation of PPBS, numerous recommendations for change have been issued. "As currently practiced in the Pentagon, PPBS does not: fully and shamelessly integrate planning, programming and budgeting."[10] Impetus for change has come from the "Bottom Up Review", the Commission on the Roles and Missions of the Armed Forces, and the Quadrennial Defense Review to name some of the most recent panels recommending change. Criticisms of PPBS are that the system is rigid and is an overly structured process with numerous high ranking manpower positions which exist only to support the process, it turns military operations into a series of budget drills, and is a detriment to strategic planning and sound management. It also "locks" the military services into programmatic and funding decisions years in advance, regardless of changing circumstances. These changing

circumstances then result in instability and execution uncertainty for programs that have a reasonable level of technical risk, which results in funding disturbances impacting on the entire life cycle of these programs. Additionally, major or important policy decisions and changing priorities may require new investments where none were previously planned. Examples of this range from the systems level architectural changes for additional components necessary to address acknowledged shortfalls to that of realigning the missions and responsibilities of the Army Space Command by designating that command as the executive agency for National Missile Defense. These decisions are made rapidly, and scant attention may be paid to the short-term or long-term financial impacts.



[11]

FIGURE 4 PPBS PROGRAMMING AND BUDGETING PHASES

"Although the current PPBS produces budgets on time, it often fails to facilitate the thoughtful debate on issues that affect roles, missions and functions and more importantly, defense priorities." [12] The Commission on Roles and Missions of 1995 report recommended that an overall restructuring of the system, aligning the Planning and Programming elements and the Budgeting and Review processes into two major components, planning and direction (what is needed); followed by developing and reviewing (how to meet the need) was necessary. There were several additional components of this overall recommendation: e.g.

- The need to conduct integrated assessments more frequently, the goal to provide detailed direction to the military services based on change of the current military situation.
- Conduct better evaluation of program progress and actual budgetary performance.
- Use of better integrated planning and review processes.

The Department of Defense reviewed the report for several months before issuing the formal response in late 1995. In that response, the Deputy Secretary of Defense "stated that the combination of the program review and budget review elements of PPBS would not take place. The rationale presented was that the leadership within the Pentagon did not believe that it was a good idea. Secondarily, the idea for the establishment of an integration element was also not supported."[13] The Deputy Secretary's rationale was based on the emergent Acquisition Reform process of employing Integrated Product Teams (IPT's) or Process Action Teams to address specific issues and to optimize the effort to meet performance objectives.

Another shortcoming identified was the lack of visibility and participation in programmatic issues at various levels within the services. "A persistent criticism was the lack of visibility of program choices at the various levels of the program hierarchy throughout the process. This criticism stemmed from the lack of knowledge of resource changes at the detailed level and an absence of discussion, review or debate in a formal process."[14] One report also mentioned other substantial issues, internal to the Army, that had a direct impact on the Army providing support to the CINCs in the field. The most apparent shortfall was that of not having a process in place that took into account the stated needs or requirements of the CINC as provided to the CJCS in the form of their Integrated Priority List (IPL). "It was apparent to many that the Army provided little specific guidance on supporting the combatant commands at the initiation of the programming phase, suggesting that joint warfighting needs were not objectively resourced."[15] As new development efforts are begun, the need to consider the warfighter in the requirements definition and capabilities to be delivered is essential. This appears to have been overlooked.

"As the system is currently structured, PPBS only conducts reviews after the programming and budgeting phases. It does not have the mechanism in place to conduct reviews after the planning and execution phases."[16] It is critical that metrics are developed and implemented to address the success or failure in meeting the original objectives.

RECOMMENDATION:

PPBS as an overall structure is sound and provides an excellent framework for handling the task of what and where DoD dollars should be placed. There are some actions that may be taken to tune the process to give PPBS finer direction and allow for the institution of military strategy within that system. The following are recommendations that may be followed to improve the system and answer the original thesis of this paper.

Action needs to be taken to address the resourcing of a program taking into account today's shortened cycle time of systems development. Spiral development as it is implemented within the Army is there to meet the warfighter's requirements in the fastest possible time. The goal at this time is to complete a full cycle in under 18 months. The allocation of resources within the existing PPBS environment is approximately two years. If the resourcing effort is provided to a program late, it will adversely impact the system under review. The program will have to be significantly revised to account for the inclusion. The Army has taken action to streamline the PPBES process through the modification of its internal management structures and its participation in the process. Functionally, the Army instituted a number of changes to track and manage resources. Program Evaluation Groups were established in line with the requirements of man, train, equip, organize, sustain and installation support. By aligning these groups against objectives, resources could be better and more efficiently assigned after prioritization and allocation was completed. "The new framework and process of redefining aligns the Army much closer to the joint operational needs and realities of the OSD and JCS resourcing processes and activities. These changes will give the Army the capability to assess resources within a joint operational context, evaluate their programs against new capabilities being demanded and fielded in the next five to ten years."[17] Similar action must be taken to address the same issues within the requirements generation and the acquisition management processes.

An area to consider for streamlining the PPBS structure at OSD, the Joint Staff and the Military Services would be to overlap elements of the Programming and Budgeting phases of the system. By effectively coordinating the activities of the Program Review Group with the Defense Resources Board deciding on formulated issues, the POM Review Process would be completed sooner, meeting the goal of generating Program Decision Memoranda in less time. The next increment in this process would allow for a limited time to staff the PDMs, immediately followed by the services submission of their Budget Estimates. The Services would document the coordination across the mission or program funding lines necessary to reduce the incidence of unresolved program issues or disconnects. It is critical that "services do not find themselves defending details of programs that took years to develop, to analysts who may or may not understand how the program weaves into the fabric of the FYDP. Changes in allocations often occur for no other reason than the OSD staffs having a different opinion than those that worked on the POM."[18] This type of detailed multi-echelon, concurrent review and decision process, showing a synchronization of the major budget issues within the submission, would result in more knowledgeable program resourcing, reducing the existing PPBS cycle time by as much as three months. A second order effect of this action could allow for the later and more comprehensive submission of the services budget estimates, ultimately creating PPBS cycles that support the original intent of providing an accountable and responsive resource management system.

Program planning guidance and the tools utilized must clearly establish priorities. Failure to provide those priorities during the period when resources are allocated impedes progress in developing systems and products that will satisfy the warfighters requirements. The Defense Planning Guidance, the

National Military Strategy, the Joint Planning Document and the outcome of the Joint Warfighting Capabilities Assessment input to the Chairman's Program Recommendation are crucial to this issue. Some will say that there are too many documents that contain guidance and direction to the CINCs and Services. The important documents to provide this detailed prioritization are the National Security Strategy, the National Military Strategy and the Defense Planning Guidance. The details within these documents contain the information that addresses this matter. Once these priorities are established, those serving at lower levels should follow the new guidance, taking into account the evolution of the programs under development, and allow for the emergence of new requirements and solutions through other means. The Army has initiated a process that will identify strategic and institutional goals and objectives for the short, mid and long term. This process, called the Army Strategic Planning Guidance (ASPG) provides the direction, transforming the Army to meet the needs of the changing operational environment. This strengthens the role of planning within the Army's PPBES process.

We must allow for the warfighters to proceed in their evaluation of the systems that are under development and to be delivered. The participation of the essential stakeholders is necessary and a required condition for project success. Within the structure of the spiral development model there are controls and mechanisms to ensure the program is on track to deliver reasonable levels of functionality and capabilities at an affordable price. By definition, spiral development forces the PM and the requirements community to justify the successes and failures based on what functionalities and capabilities are delivered as the program evolves around the spiral. Unfortunately, the structured approach of PPBS enforces the concept of program success by rewarding and resourcing programs that simply meet the timelines and stated capabilities as deemed important two years earlier. This time frame is unacceptable since the development window of Spiral Development is in the range of 18 months or less to meet the warfighters needs. The high risk in the battlefield digitization program described earlier was managed by the user assessing achieved capabilities through frequent and stressful demonstrations while the PM also assessed the implications of cost, schedule and performance. Until now, we have allowed for a single "go" or "no-go" decision to be made, based on the accomplishment of single, document centric assessment of a system in order to make the decision to resource or "kill" a weapons system. Today, in the community using spiral development, we have initiated a process including numerous, iterative tests and evaluations conducted to assess the readiness of the total system to be provided to the user. This paradigm shift has been accomplished through disciplined approaches on how to best satisfy the needs of the Army as well as meeting the statutorily assigned requirements of the test and evaluation community. With the voice of the warfighter influencing the establishment of priorities, continuing availability or access to resources should continue.

Another area of improving the process comes with the ongoing adaptation within DoD of the Government Performance and Results Act (GPRA). This act reinforces the practice of relating system performance expectations to spending results. The implementation of GPRA within DoD enables both Congress and the President to decide whether to cancel or continue programs based on the performance

information submitted in a performance report. The GPRA calls for a series of strategic plans, establishment of criteria for performance measurement, and the evaluation of the performance information acquired in support of the determination that are similar to the goals and processes followed within spiral development as implemented within the battlefield digitization effort.

They are:

- Involving stakeholders in the process.
- Performing an assessment of the internal and external environments.
- Aligning activities, processes and resources with the missions and requirements of the organization.
- Producing metrics at each level, limited to the essential elements, demonstrating results at each milestone.
- Collecting complete, accurate and consistent data.
- Using the performance information to support the mission of the organization.
- Identify performance gaps.

The use of GPRA required performance metrics can assist the DoD PPBS managers in assessing the attainment of Department goals in the programming phase. By synchronizing the common programmatic issues, during the budgeting phase of PPBS, the performance targets and plans may be assessed as either achievable or beyond reach based on the availability of resources. This would satisfy several of the issues associated with PPBS and the entire development community.

The Army is modernizing its command and control systems at an ever-increasing rate using the commercially provided model of Spiral Development. Due to the changed environment within the Acquisition and Requirements Generation communities, many more systems will be developed and modernized at the rate that the Chief of Staff of the Army set as a goal almost seven years ago. PPBS has not yet adapted to realize the gains of implementing those processes, supporting the reduction of development cycle time necessary to maximize the effectiveness of our forces. As currently implemented PPBS can not provide the timely flexible response time necessary to support the quicker turn processes. The PPBS process itself should be modified, and this paper has recommended changes to accomplish this shortening of time supporting the execution of the Spiral Development process. We must implement those changes in order to obtain and maintain our military superiority over any adversary, directly protecting our national interests.

Word Count = 6,402

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