

USAWC STRATEGY RESEARCH PROJECT

**IMPROVE DEFENSE ACQUISITION: FOCUS ON  
THE ACTIVITIES THAT SPAN KEY PROCESSES**

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## ABSTRACT

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The Defense Acquisition System must be improved to better enable transformation. Over the past two to three years many programs that are critical to the DoD and Army transformation efforts have experienced significant cost and schedule overruns, while simultaneously being plagued by serious performance shortfalls. The purpose of this strategic research project (SRP) is to provide insight into the nature of the problem and to suggest actions that can be taken within the existing framework to reverse negative cost, schedule, and performance trends of major programs across DoD and the Army.

The focus of the paper will be from a system of systems perspective as it relates to improving the Defense Acquisition System in relation to activities that span key processes in the Joint Capabilities Integration Development System, the Planning Programming and Budgeting System, DoD Experimentation and DoD Science and Technology Initiatives.

Over the past 5-10 years there has been a major effort with the DoD and Army to reform and now to transform the Defense Acquisition System. The aim is admirable and seemingly very clear and simple; get required capability to the nation's warfighters, faster, cheaper and better. To that end, a great deal has been done in the past three years alone, particularly in light of the SECDEF, DEPSECDEF, and CSA guidance to get equipment into warfighters hands sooner than later, even if it means sacrificing performance where necessary – the theme appears to be that new and improved technology will not help if it is not available to US Forces when needed.



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## IMPROVE DEFENSE ACQUISITION: FOCUS ON THE ACTIVITIES THAT SPAN KEY PROCESSES

The Defense Acquisition System must be improved to better enable transformation. Over the past two to three years many programs that are critical to the DoD and Army transformation efforts have experienced significant cost and schedule overruns, while simultaneously being plagued by serious performance shortfalls. In their March 2004 assessment of major weapons programs the GAO cited several programs in the Army, Navy, Air Force and Marine Corps that are experiencing difficulty. The list includes such programs as the Army's Future Combat System, the Navy's DD(X), the Air Force F/A-22 Raptor, and the Marine Corps V-22 Osprey.<sup>1</sup>

The purpose of this strategic research paper (SRP) is to provide insight into the nature of the problem and to suggest actions that can be taken within the existing framework to reverse this trend. The focus of the paper will be from a system of systems perspective as it relates to improving the Defense Acquisition System in relation to activities that span key processes in the Joint Capabilities Integration Development System, the Planning Programming and Budgeting System, DoD Experimentation and DoD Science and Technology Initiatives.

Over the past 5-10 years there has been a renewed effort within the DoD and Army to reform and now to transform the Defense Acquisition System. The aim is admirable and seemingly very clear and simple; get required capability to the nation's warfighters, faster, cheaper and better. To that end, a great deal has been done in the past three years alone, particularly in light of Secretary of Defense, Deputy Secretary of Defense, and Chief of Staff of the Army guidance to get equipment into warfighters hands sooner rather than later, sacrificing performance where necessary – the theme appears to be that the technology will not help if it is not available to the warfighter when needed and most importantly it no longer has to be the perfect solution.<sup>2</sup> Over the past several years in several forums the military deputy to the Army Acquisition Executive has stated that "we will never get to nirvana, don't try to do everything all at once. We have to look at what can be realistically acquired given available technology and time and work with the capabilities development community to spiral remaining capability as technology matures. Don't make the capability required be so difficult or complex that it is impossible to build."<sup>3</sup>

This SRP describes the current defense acquisition framework and its key stakeholders, their roles and responsibilities in the current process, the current state of affairs with regard to the ability to maintain cost, schedule and performance objectives, and critical acquisition reform initiatives designed to improve the process. This will be followed by an analysis of the key interdependent processes and associated activities within the defense acquisition system that

will show there are still many inefficiencies in the process, inefficiencies that if corrected or improved could dramatically improve the ability of acquisition professionals to acquire weapon systems more in line with cost, schedule and performance objectives desired by Army and DoD leaders. Finally, a few recommendations will be provided that can be used to reverse the negative cost, schedule, and performance trends of major programs across DoD and the Army.

#### **LINKAGE TO U.S. NATIONAL SECURITY STRATEGY**

The National Security Strategy (NSS) drives the Defense Acquisition System (DAS). The sole purpose of the DAS is to provide the warfighting capability that the DoD requires to effectively execute the military component of US national power as articulated in the NSS, National Defense Strategy (NDS), and National Military Strategy (NMS). The Defense Acquisition System is one of the three principal support processes for transforming the US Armed forces to support the NMS, NDS, and ultimately the NSS. The other two pillars are the Joint Capability Integration and Development System (JCIDS) and the Planning, Programming and Budgeting System (PPBS). Collectively they are the means that DoD uses to determine “what” needs to be bought, how the “what” will be bought, and the resources to buy the “what” enabling each Service and DoD as a whole to accomplish its Title 10 responsibilities.<sup>4</sup>

#### **CURRENT DEFENSE ACQUISITION SYSTEM (DAS)**

The DAS is the management process used by “the Department of Defense (DoD) to provide effective, affordable, and timely systems to users.”<sup>5</sup> An acquisition program is a “directed, funded effort that provides a new, improved, or continuing materiel, weapon or information system or service capability in response to an approved need.”<sup>6</sup> The defense acquisition management framework (DAMF) is depicted in figure 1. The milestones are associated with decision points and the phases are associated with activity that must be accomplished in order to proceed to the next phase with the goal of developing a weapon or information system in incremental steps, working with key stakeholders along the way.<sup>7</sup>

Figure 1 depicts a defense acquisition process driven by user needs and available technology. The defense acquisition professional does not decide what is procured nor for that matter when it is procured. What is procured is driven by user needs and when it is procured is driven by available resources and technology. The defense acquisition professional plays a very important part in how capability is procured in collaboration with professionals from the user community, industry and other department stakeholders.<sup>8</sup>

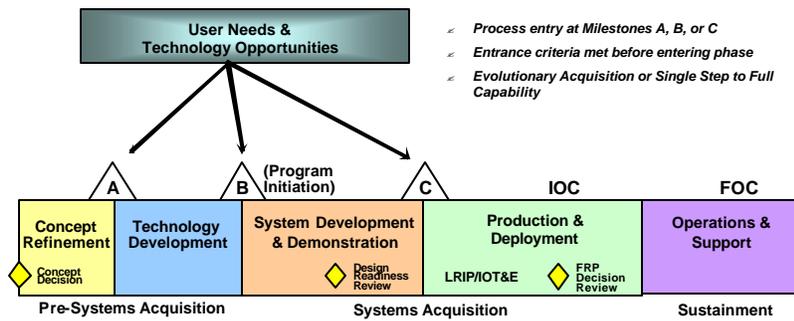


FIGURE 1. THE DEFENSE ACQUISITION MANAGEMENT FRAMEWORK

The framework consists of three major milestones (MS), A, B, and C and four major phases, concept refinement (CR), technology development (TD), system development and demonstration (SDD), production and deployment (PD) which includes operations and support (OS), in the DAMF. Milestones are entry points into the one of the four phases of the DAMF. The maturity of the technology associated with a particular weapon or information system determines where the program team will enter the process, generally at MS A or B.

#### CONCEPT REFINEMENT PHASE

The concept refinement (CR) phase is the start point for the development of weapon or information systems in the defense acquisition system (DAS). The objective of the CR phase is to refine the initial concept and develop a technology development strategy (TDS). Entrance into the CR phase is contingent upon an approved initial capabilities document (ICD) provided by the user community with a plan for conducting an analysis of alternatives (AoA).

The primary and most important activity in the CR phase is the conduct of the AoA. The focus of the AoA is to refine the selected concept identified in the ICD. The AoA assesses the critical technologies associated with the concept(s) including technology maturity and technical risk. Consideration is given to innovation and competition and it is at this point in the process where commercial-off-the-shelf (COTS) products are considered in satisfying system functionality.

The result of the analysis of alternatives (AoA) provides the basis for the development of a technology development strategy (TDS) for the concept. The TDS documents: the rationale for the acquisition approach; a program strategy that includes overall cost, schedule and performance goals; specific cost, schedule and performance goals for the first technology spiral if using an evolutionary approach; and a test plan. The concept refinement (CR) phase ends

when the milestone decision authority (MDA) approves the preferred concept informed by the AoA and the TDS. The MDA authority renders this decision at MS A, which authorizes entry into the technology development (TD) phase.<sup>9</sup>

#### TECHNOLOGY DEVELOPMENT PHASE

The objective to the TD phase is to reduce technology risk for the approved concept and determine the technologies that need to be integrated into the system. This phase is characterized by close collaboration between the science and technology (S&T) community, the User representative, and the program manager (PM). It is an iterative process designed to assess the viability of technologies and where necessary refine user capabilities. The TD phase is guided by the initial capabilities document (ICD) and technology development strategy (TDS). During this phase the user representative and program manager strive to reach agreement on the viability, affordability, and military utility and maturity of proposed technology solutions.

The TDS should be updated during this phase. If it is determined that all required capability in the ICD cannot be delivered in one increment, follow-on increments are planned and must show the path to addressing capability shortfalls. During the technology development phase the user prepares a capabilities development document (CDD) to support program initiation, refine the integrated architecture, and clarify how the program will lead to or support joint warfighting capability. The CDD builds upon the ICD and provides detailed operational performance parameters that the system must meet, the most important of which are the key performance parameters.

The program team may exit the technology development phase when an affordable increment of militarily useful capability has been identified, the technology for that increment has been demonstrated in a relevant environment, and a system can be development for production within a short time-frame; or when the milestone decision authority (MDA) determines that it is in the government's best interest to terminate the effort.

Entrance into the system development and demonstration (SDD) phase depends on technology maturity (including software), approved requirements, and funding. If it is determined that technology is not mature enough, then alternate technology will be used that can meet the user's needs. The user representative must approve a minimum number of key performance parameters (KPP), included in the CDD, which guides the SDD effort. Transition into the SDD phase requires that the program be fully funded. Finally, a milestone (MS) B is conducted and a successful Milestone B signals the initiation of a formal acquisition program and authorizes entry into the SDD phase.<sup>10</sup>

## SYSTEM DEVELOPMENT AND DEMONSTRATION PHASE

The primary objectives of the SDD phase are to develop a system or increment of capability; reduce integration and manufacturing risk; ensure affordability and protection of critical program information; and demonstrate system integration, interoperability, safety, military utility. System integration and demonstration are the two major efforts in the SDD phase.

System integration is intended to integrate subsystems, complete detailed design and reduce system level risk. The capability development document (CDD) guides the system integration effort. The intent of system demonstration is to demonstrate the ability of the system to meet the key performance parameters contained in the CDD.

The system development effort concludes and is positioned for entry into the production and deployment (PD) phase when the system is demonstrated in its intended environment, using a selected prototype, meets approved requirements, can be effectively and efficiently produced, and meets exit criteria and entrance criterion for milestone (MS) C. A successful MS C authorizes the program to proceed into the production and deployment phase which means the program is authorized to begin low rate initial production (LRIP); to go into production or procurement for programs that do not require LRIP; or to go into limited deployment for operational testing of software intensive programs that do not have production components.<sup>11</sup>

## PRODUCTION AND DEPLOYMENT PHASE

The objective of the PD phase is to achieve an operational capability that satisfies mission needs. An operational test is conducted to determine the operational effectiveness and suitability of the system. The PD phase includes four major activities: low rate initial production (LRIP), Full Rate Production decision, Full Rate Production and Deployment, and Operations and Support.

**Low-Rate Initial Production.** The objectives of LRIP are to complete manufacturing development; to produce the minimum quantity of production or production representative systems necessary for initial operational test and evaluation; 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 operational testing.

LRIP quantities are minimized and should not exceed 10% of the total production quantity documented in the acquisition strategy without approval from the milestone decision authority (MDA). The Director, Operational Test and Evaluation (DOT&E) approves the LRIP quantity for initial operational test and evaluation.

**Full-Rate Production Decision.** A major defense acquisition program cannot proceed beyond low rate initial production without a decision from the MDA. The full rate production decision follows initial operational test and evaluation. The demonstration of a controlled manufacturing process, acceptable reliability, and control of other critical processes is required to obtain a successful decision from the MDA. A successful decision authorizes the program to proceed into full rate production and deployment of the system.

**Full-Rate Production and Deployment.** Is a continuation of a successful full rate decision review and begins the process to deliver the fully funded quantity of systems and supporting materiel and services to the user. During this effort the user is expected to obtain initial operational capability.

**Operations and Support.** The objective of the operations and support activity is the execution of a support program that meets operational support performance requirements and sustains the system in the most cost effective manner over its life-cycle. Operations and support has two major efforts, sustainment and disposal.<sup>12</sup>

### **CRITICAL ACQUISITION INITIATIVES**

Over the past five to seven years several acquisition initiatives or best business practices have been adopted to improve the defense acquisition system, resulting in the system in place today. This paper will discuss eight of the most important initiatives that appear essential to realizing the Army and DoD transformation vision. They include Joint Capabilities Integration and Development, Cost As an Independent Variable (CAIV), Evolutionary Acquisition (EA), Collaboration and the use of Integrated Product Teams, Realistic Cost Estimating, Partnering with Industry, and the recent introduction of rapid acquisition concepts and techniques.

**Joint Capabilities Integration and Development.** Over the years there has been a significant change in the way DoD and consequently the Army thinks about requirements generation and management. The focus has shifted from requirements at the individual product or system level to a capability based approach at the joint warfighting level and is based on the identification of capability gaps and developing systems to fill those gaps. The lexicon has changed from mission needs statements (MNS) and operational requirements documents (ORDs) driving the defense acquisition process to capability-based documents like the initial capabilities document (ICD), capabilities development document (CDD), and capability production document (CPD).<sup>13</sup>

Capabilities documents are matured along with the acquisition development process and adjustments are made as they become knowable with respect to what is technically possible

over time and at a given cost. Capabilities development is the first step in the defense acquisition process and serves to energize both the capabilities and acquisition communities and other stakeholders that support the process, such as testers, systems engineers, logisticians, cost and financial management specialists, contracting officials, interested Services, and where applicable Joint Staff and OSD. The projected size of the program will determine how many organizations should be involved and at what level. Within the Army this process is driven by the Training and Doctrine Command with appropriate guidance from Army G3. Capabilities development is the process that effectively says this is what capability is needed, when it is needed and what the department is willing to pay for it. The outcome is a fully coordinated set of joint capabilities that serve to inform defense acquisition professionals as they work to determine the best way to acquire the documented capability.<sup>14</sup>

***Cost As an Independent Variable (CAIV).*** CAIV was implanted in acquisition programs in order to balance cost against performance and schedule objectives. It was done in recognition that there is a limit to what the department is able to or should pay for a particular capability. It requires that all participants in the acquisition system, beginning with capabilities development, recognize the reality of fiscal constraints. The objective is to view cost as an independent variable and in so doing plan programs based on a realistic projection of funds likely to be available in future years. The program manager is required to provide the milestone decision authority to the extent practical, total ownership costs associated with the program, at a minimum the major cost drivers and most importantly the user representative shall address affordability in establishing capability needs. The general idea is to know what it will cost to buy documented capability and adjust as necessary to what is deemed to be affordable.<sup>15</sup>

***Evolutionary Acquisition (EA).*** In an attempt to make the defense acquisition system more responsive to warfighter needs the concept of evolutionary acquisition was introduced. The objective is to integrate advanced technology into producible systems in the shortest time possible. In order to realize evolutionary acquisition, approved, time-phased capability needs must be matched with available technology and resources. Since as early as 1994, evolutionary acquisition approaches have been the preferred means for satisfying operational needs and spiral development has been the preferred process for executing evolutionary acquisition strategies.<sup>16</sup> An evolutionary approach delivers capability in increments recognizing up front the need for future capability increments and in order for evolutionary acquisition approaches to succeed the spirals and increments must be developed with full participation from all key stakeholders as early as practical in the life of the program.<sup>17</sup>

**Collaboration and the use of Integrated Product Teams.** Introduced in mid-1995, the use of integrated product teams is designed to get all of the key players involved in the process early. The acquisition, capability development, financial, and operational user communities shall maintain continuous and effective communication via the use of integrated product teams. The objective of integrated product teams is to foster early teaming among warfighters, users, developers, acquirers, technologists, testers, budgeters, and sustainers as early as capability needs definition to ensure that everyone understands how the capability will be acquired including restraints and constraints associated with satisfying documented capabilities.<sup>18</sup>

**Realistic Cost Estimating.** DoD 5000.1 and 5000.2 require program managers to prepare program office estimates for the program. If the milestone decision authority is the defense acquisition executive, the cost analysis improvement group (CAIG) at the Office of Secretary of Defense conducts an independent cost estimate. After reconciliation with the program office estimate the component service is required to fully fund the program in line with the CAIG estimate. These changes are an attempt to curtail historical cost overruns as a function of Services not putting enough money into programs.

Further improvements in the cost estimating area are associated with direction for program managers to encourage contractors to submit cost proposals that are realistic for the work to be performed.<sup>19</sup> In a 25 October 2003 article in Defense News, the Air Force Acquisition Executive made a statement that something has to be done about cost overruns, often running as high as 36%. The overruns appear to be associated with contractor underbidding. In the statement he made it very clear that contractor bids that are well below the government estimate will have to clearly show why the job can be done for so much less than the government believes will be required and if contractors cannot show where the efficiencies are coming from then they will be put out of competition for the contract.<sup>20</sup> The program manager's cost estimating and contracting teams are required to perform cost-realism assessments in accordance with the federal acquisition regulation (FAR) during the source selection process. The purpose of the cost-realism assessment is to uncover unrealistic contractor bids before a contract is awarded to a particular company, resulting in fewer cost overruns over the long-term, leading to more stable programs.<sup>21</sup>

**Partnering with Industry.** There have been several initiatives in this area to reduce the inherent friction between DoD and the contractors that provide goods and services to the DoD. The FAR requires a market survey prior to the releasing a request for proposals and encourages the release of draft request for proposals prior to issuing a formal request and awarding a contract. It also encourages a robust pre-solicitation period, used to dialogue with

industry and as much as practical get feedback from contractors regarding the feasibility of cost, schedule and performance objectives as early in the process as possible. There has also been a shift from oversight to “insight” when dealing with defense contractors designed to foster partnering versus past arms length relationships that created an “us vs. them” culture. Finally, DoD 5000.1 suggests that program managers and their teams should innovatively adopt or adapt business practices to reduce cycle time, cost and encourage teamwork.<sup>22</sup>

**Rapid Acquisition Concepts.** There are a number of avenues to rapidly acquire systems for warfighter needs, from commercial-off-the shelf to stream-lined acquisition of modified items during times of urgent need. The Army has at least two major initiatives in this area. The rapid fielding initiative and the rapid fielding force. Both were initiated in order to provide more responsive support to operations enduring and Iraqi freedom, in some cases reducing procurement times by 90 percent for such items as Humvee armor kits, bomb-sniffing robots, and tactical unmanned aerial vehicles. The Army vice chief of staff, General Richard Cody said “the institutional Army has to deal with the wartime reality. We can’t spend a year and a half studying operational needs statements. Today we turn those around in 14 days.”<sup>23</sup>

The Army is not alone in the quest to get equipment to warfighters faster. Deputy Defense Secretary, Paul Wolfowitz directed the Undersecretary of Defense (Acquisition, Technology, and Logistics) and the Comptroller to coordinate on the development of a “Joint Rapid Acquisition Cell” or JRAC to break through institutional barriers that prohibit timely and effective delivery of capabilities to field commanders. There is some fear that rapid acquisition may lend itself to abuse, however, Dan Goure, a defense analyst with the Lexington Institution, believes that the potential for abuse is the lesser evil when considered against the need to get equipment to the field in support of our warfighters, in a timely fashion, in a time of war.<sup>24</sup>

## **KEY STAKEHOLDER ROLES AND RESPONSIBILITIES IN THE DEFENSE ACQUISITION SYSTEM**

DoDD 5000.1 identifies 3 key stakeholders, the Defense Acquisition Executive (DAE), the Milestone Decision Authority (MDA), and the Program Manager (PM). DoDD 5000.1 is published and signed by the Deputy Secretary of Defense and applies to the Office of the Secretary of Defense (OSD), the Military Departments, the Chairman of the Joint Chiefs of Staff, the Combatant Commands, the Defense Agencies, the DoD field activities, and all organizational activities within the DoD.<sup>25</sup> Although DoD 5000.1 only references the DAE, MDA and Program Manager and discusses their role and responsibilities in the defense acquisition system in detail, public law, JCIDS, and Service implementing documents makes it very clear that many more important stakeholders are directly involved and necessary to the process.

In the next few pages this paper will list those stakeholders that are most prominent including Congress, DoD, the Joint Staff, with special emphasis on Army stakeholders, keeping in mind that every Service has equivalent stakeholders in its Service performing many of the same functions as the Army organizations that will be discussed below.

Figure 2 identifies the key stakeholders, dynamics and relationships that typically take place as a program manager attempts to plan and execute an acquisition category ID joint program. The top half of the figure 2 depicts the command and control structure or chain of command and shows how the program manager actually works through the process to the defense acquisition executive. The bottom half of figure 2 provides insight into the interaction between the program manager and various stake holders in a particular Service and across Services to include Service and other Service program managers and staff, Joint and OSD staff. Through the integrated product and development process the program manager forms working groups, integrating groups and an overarching integrated IPT to assist in the planning and coordination of the program.

## ACAT 1D Representative Organization/Execution

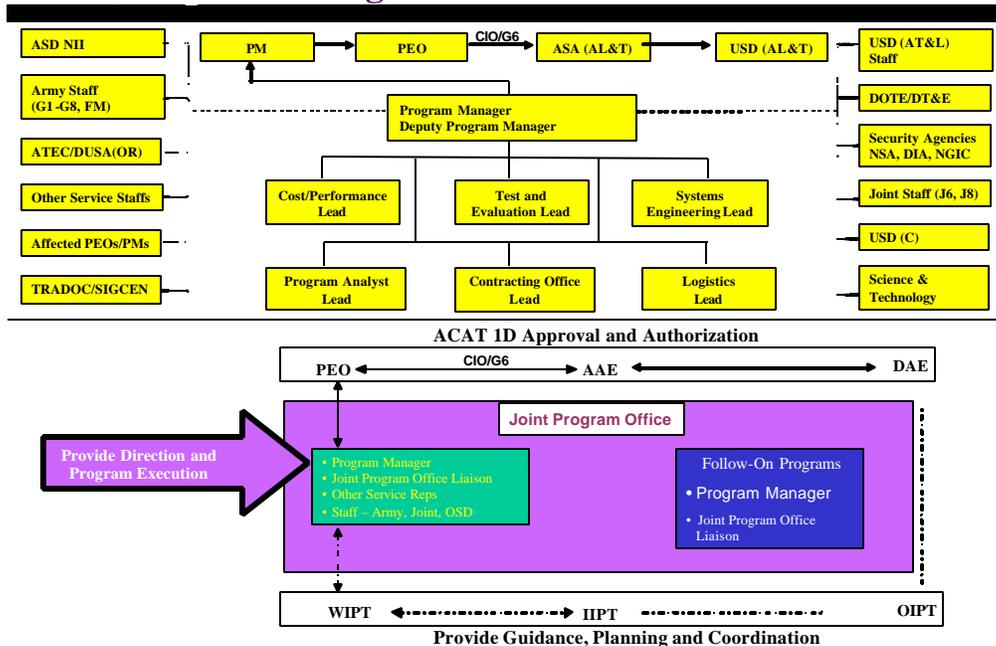


FIGURE 2. REPRESENTATIVE ACQUISITION CATEGORY LD JOINT PROGRAM ORGANIZATION

**Congress.** Congress role in the defense acquisition process is established and codified in the U.S. Constitution. Article I grants Congress the power to declare war, raise and support armies, to provide and maintain a navy and to make rules for the governance and regulation of land and naval forces. Congress authorizes and appropriates funds for DoD to acquire the systems and products necessary to accomplish its title 10 responsibilities. DoD cannot spend money without congressional authorization and appropriation. DoD authorizations and appropriations constitute approval by the Congress for DoD to spend money. Without Congressional approval DoD cannot initiate new programs or continue existing programs that Congress did not authorize for continued funding.<sup>26</sup>

**Defense Acquisition Executive (DAE).** The DAE is the Under Secretary of Defense (Acquisition, Technology, and Logistics) and has primary responsibility for management of the defense acquisition system. The DAE has the final say on all acquisition related investments and decisions after the Secretary and Deputy Secretary of Defense within the DoD.<sup>27</sup> Unless delegated the DAE is the milestone decision authority (MDA) for acquisition category ID programs. The milestone decision authority for acquisition category ID programs may be delegated to service acquisition executives, but is generally held at the defense level.<sup>28</sup>

**Army Acquisition Executive (AAE).** The AAE is the Assistant Secretary of the Army (Acquisition, Technology, and Logistics) and has primary responsibility for leading and managing the army acquisition workforce and system in accordance with DoD policies and guidelines. The Army Acquisition Executive develops and publishes acquisition policies and procedures and is the final authority on all matters affecting the Army acquisition system, unless limited by statute. The AAE co-chairs quarterly reviews of the overall Army recapitalization effort with the Vice Chief of Staff of the Army (VCSA); and in conjunction with the VCSA reviews and approves recapitalization system waivers, baselines updates, breach re-baselines.<sup>29</sup>

**Program Executive Officer (PEO).** The PEO is generally a one or two star general officer or Senior Executive Service (SES) civilian and has the primary responsibility for programs assigned to their respective program, project or product managers. The PEO is responsible for the planning, programming, budgeting, and execution necessary to guide assigned programs through each milestone “within approved baselines and exit criteria.”<sup>30</sup>

**Program, project, product manager (PM).** The PM is at the program or project level is generally a Colonel or equivalent level DA civilian (GS-15) and at the product level is a Lieutenant Colonel or civilian equivalent GS-14. The PM has the primary responsibility for planning and managing acquisition programs consistent with the policies and procedures issued by the AAE and appropriate regulations, policies, procedures and standards.<sup>31</sup> DoD 5000.1

makes the PM responsible and grants the PM the authority via the milestone decision authority to accomplish program objectives for development, production, and sustainment in order to meet user's operational needs. The PM's is responsible for cost, schedule, and performance reporting to the MDA.<sup>32</sup>

**Chairman of the Joint Chiefs of Staff (CJCS).** DoD 5000.1 states that "the CJCS shall provide advice and assessment of military capability needs in accordance with title 10 responsibilities." That advice and council is codified in validated and approved capabilities documents.<sup>33</sup> The CJCS may engage the components and services to obtain capability advice and assessments and establish procedures to carry out the responsibility.<sup>34</sup> The CJCS is responsible for the development and implementation of the Joint Capabilities Integration and Development System (JCIDS). The procedures established in the JCIDS support the CJCS and the Joint Requirements Oversight Council (JROC) in identifying, assessing, and prioritizing joint military capability needs. With the introduction of the JCIDS process and the emphasis on "jointness" the J8 as the gatekeeper of capabilities development will play a much more important role in the defense acquisition process.<sup>35</sup>

**Combatant Commanders (COCOM).** "Combatant commanders will be provided the opportunity to review and comment on all documents designated as joint requirements oversight council (JROC) interest before they are validated and approved." They will also have an opportunity to review and comment on documents designated as joint integration. When requested by the JROC, combatant commanders may submit capstone requirements documents (CRDs) for joint capability integration development system (JCIDS) staffing. They may also conduct JCIDS analysis and submit capabilities documents. COCOMs identify and provide initiatives to the Services who will then conduct appropriate analysis and documentation activities. Finally, "COCOMs will be afforded the opportunity to participate in functional capability board (FCB) deliberations." The introduction of the revised JCIDS process provides an opportunity for combatant commanders to play a much more important role in the defense acquisition system process.<sup>36</sup>

**Assistant Secretary of Defense (Networks and Information Integration) (ASD (NII)).** "Serves as the DoD Chief Information Officer (CIO) and leads the development and facilitates the implementation of the Global Information Grid Integrated Architecture," which is intended to provide the framework and foundational underpinning for all mission area and capability architectures. The ASD (NII) serves as the milestone decision authority for information technology related programs and plays a significant role in all programs that provide capabilities that would integrate into the global information grid, from tactical to strategic command and

control, communications, computers, information, surveillance and reconnaissance (C4ISR) systems.<sup>37</sup>

**Chief of Staff, Army (CSA).** The CSA approves all Army warfighting requirements and concepts designed to guide force modernization. The CSA also “serves as the milestone decision authority for clothing bag items, mess, dress, and optional uniform purchase items.”<sup>38</sup>

**Vice Chief of Staff, Army (VCSA).** The VCSA convenes the Army Requirements Oversight Council (AROC) and represents the Army on the joint requirements oversight council convened by the Vice Chairman of the Joint Chiefs of Staff. The VCSA provides oversight for the approval of requirements validation, prioritization, and fielding of Army recapitalization programs. The VCSA in conjunction with the Army Acquisition Executive co-chairs a quarterly review of the Army recapitalization effort, approves candidate systems for recapitalization, and approves recapitalization baselines, waivers, updates and breaches.<sup>39</sup>

**Deputy Chief of Staff, G-3 (DCS G-3).** The Army G3 develops policy and guidance for capabilities development and combat development programs to include implementation of the joint capability integration development system within the Army. The G3 defines and validates capability goals, materiel objectives and overall force structure design. The G3 establishes Army priorities for resourcing to include research, development, and acquisition programs. The G3 with assistance from DCS, G8 and the Deputy Undersecretary of the Army (Operations Research), coordinate force modernization activities, develop force modernization plans and monitor those plans for execution across the Army. In coordination with the Army Acquisition Executive, the G3 provides policy and guidance for the conduct of analysis of alternatives.<sup>40</sup>

**Deputy Chief of Staff, G-8 (DCS G-8).** The Army G8 is responsible for programming, materiel integration, department of the Army studies and analyses and externally directed reviews in support of Army force structure and Army G3 priorities. The G8 is “responsible for the development, independent assessment, integration, and synchronization of the Army Program in support of the Army vision.” The G8 is the “principal advisor to the CSA on joint capabilities development and doctrine, organizations, training, materiel, leadership, and education, personnel and facilities (DOTLMPF) integration.” The G8 is the Army’s principal interface with OSD, the Joint Staff, and Combatant Commanders, the Services, and external agencies. The G8 is responsible for the future Army through programming, materiel acquisition, DA studies and externally directed reviews. The G8 develops and defends the Army program objective memorandum (POM), the future years defense program (FYDP), and the Army Program Objective. The most important point to remember is that the G8 in consultation with the Army

Acquisition Executive's planning and programming director and the Army G3 determines how much funding will be allocated for a particular program to procure required capability.<sup>41</sup>

**Deputy Secretary of the Army, Operations Research (DUSA (OR)).** The most important function the DUSA (OR) has is the establishment, review, and enforcement DoD and Army test and evaluation (T&E) policies and procedures. The DUSA (OR) also approves test and evaluation master plans for major acquisition defense programs and information systems and those on the OSD oversight list, generally associated with ACAT ID programs.<sup>42</sup>

**Chief Information Officer/G-6 (CIO/G6).** "The CIO/G6 has the principal responsibility for the Army's information management functions and is responsible for setting the strategic direction, objectives and supervising department of the Army's command and control, communications, computer (C4) and information technology (IT) functions." The CIO/G6 serves a dual function as the Army CIO and G6. The CIO/G6 has two critical roles in the defense acquisition system: 1) provides advice and council to the Secretary of the Army and Army Chief of Staff on signal and information operations; network and communications security; force structure, equipping and employment of signal forces and 2) advise and assist the Army Acquisition Executive on all matters relating to the acquisition of C4 and IT related systems.<sup>43</sup>

**Commanding General, U.S. Army Test and Evaluation Command (ATEC).** The CG, ATEC supports the acquisition and force development processes through overall management and coordination of the Army's test and evaluation programs within the Army and across Services. ATEC plans, conducts, and reports the results of developmental and operational testing and provide independent assessments at all major program reviews.<sup>44</sup>

**Commanding General, U.S. Army Training and Doctrine Command (TRADOC).** The "CG, TRADOC serves as the Army's central combat and training developer." In that capacity, TRADOC formulates concepts, identifies capabilities required for future doctrine, organizational, training, logistics, materiel, maintenance, personnel and facilities (DOTLMPF); "recommends priorities for force modernization changes;" and is the soldier's voice in the defense acquisition process. TRADOC is the Army's principal agent for the development and updating of capabilities documents and the crosswalk of subsystem capability documents to capstone capabilities documents and other required supporting documents. TRADOC is responsible for ensuring that requirements documents are in compliance with Army system-of-systems interoperability requirements. TRADOC is also required to participate with the materiel developer (Army Acquisition Executive, Program Executive Officer, Program Manager) in conducting cost-performance trade-off studies, establishing cost targets, and updating capabilities documents with changes resulting from actual cost-performance trade-offs.<sup>45</sup>

## MAJOR DEFENSE ACQUISITION REVIEWS

As discussed earlier, the defense acquisition process is driven by a series of decisions made by key decisions-makers, generally but not always the milestone decision authority (MDA), as the development of a product or system progresses from desired capability to a fielded product that can be properly sustained in its intended environment. The process is designed to occur in logical phases separated by decision-points, previously identified as milestones. At each milestone and in-between milestones major reviews are held to apprise the leadership of a program's progress and readiness to proceed to subsequent phases or activities. The deliberative body responsible for conducting the review is very much a function of the acquisition category (ACAT) associated with the program. The reviews discussed in this paper apply to the larger, more visible acquisition category 1 programs where the MDA is the Defense Acquisition Executive (DAE) or Army Acquisition Executive or the equivalent in the Navy or Air Force. Programs of lesser significance generally have a series of interim progress reviews (IPR), chaired by the appropriate MDA for the program.<sup>46</sup>

Figure 3 provides a graphic depiction of the major reviews and their relationship to each other in the joint capabilities integration and development system and the defense acquisition system as a program progresses through milestones and phases.<sup>47</sup>

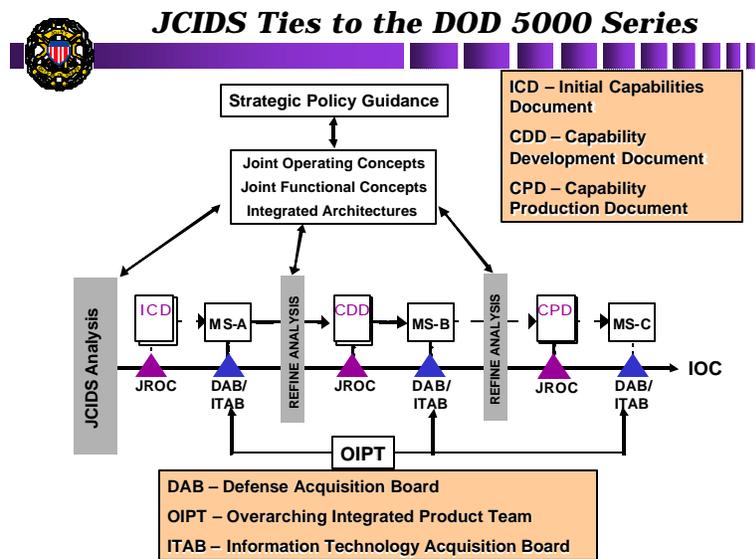


FIGURE 3. MAJOR DEFENSE ACQUISITION REVIEWS

**Joint Requirements Oversight Council (JROC).** The JROC is chaired by the Vice Chairman Joint Chiefs of Staff (VCJCS) with participation by the Under Secretary of Defense (Acquisition, Technology, and Logistics). The JROC has the authority to review any joint capabilities integration development systems (JCIDS) documents or issues that may have joint interest. The JROC also determines which functional configuration boards (FCB) will be established, disbanded or combined; the functional areas assigned to the FCB; and the lead organization for chairing the FCB. Finally the JROC validates and approves key performance parameters (KPP) and JCIDS documents for JROC interest proposals.<sup>48</sup>

**Functional Configuration Board (FCB).** “FCBs are responsible for all materiel and non-materiel aspects of its assigned functional area.” The reference to materiel and non-materiel aspects flows back to the analysis associated with doctrine, training, leadership, organization, materiel, personnel and facilities. “Each FCB is a lead coordinating body chartered to ensure that the joint force’s interests are properly preserved throughout the joint capabilities integration and development system and acquisition process.” Chief among its responsibilities is the requirement to coordinate the efforts of all DoD components within its assigned functional area and to ensure that all capabilities are conceived and developed in a joint warfighting context. The FCB has a multitude of other duties and responsibilities that can be found in CJCSI 3170.01D.<sup>49</sup>

**Army Systems Acquisition Review Council (ASARC).** “The ASARC is the Army’s senior-level review panel for all ACAT I and II weapon systems, C4, and information technology programs.” The ASARC is chaired by the Army Acquisition Executive who shares responsibility with the Vice Chief of Staff Army (VCSA). An ASARC may be convened at any time to review the status of a program. Army ACAT ID programs are reviewed by the ASARC prior to movement to the overarching integrated product team and defense acquisition board reviews. Within 72 hours after the ASARC the ASARC executive secretary will publish an acquisition decision memorandum signed by the Army Acquisition Executive that provides written guidance and direction to the program manager.<sup>50</sup>

**Overarching Integrated Product Team (OIPT).** The OIPT is comprised all of members that represent defense acquisition board (DAB) principals. All acquisition category ID programs will have an OIPT to provide assistance, oversight, and review throughout its lifecycle. Prior to a DAB, the OIPT leader provides the DAB chair, co-chair, principals, and advisors with an integrated assessment of the readiness of the program to be brought before the DAB for review. All ACAT ID programs are required to go through an OIPT prior to a DAB. The OIPT leader

works with DAB representatives and the program manager to resolve contentious issues as early as practical prior to the DAB.<sup>51, 52</sup>

**Defense Acquisition Board (DAB).** The DAB advises the Defense Acquisition Executive (DAE) on critical acquisition decisions. The DAE chairs the DAB and the VCJCS co-chairs. Similar to the ASARC the DAB secretariat prepares an acquisition decision memorandum for the DAE's signature that provides the program manager written guidance and direction via the Service Acquisition Executive (SAE) and the appropriate Program Executive Officer (PEO).<sup>53</sup>

#### **STATE OF THE CURRENT DEFENSE ACQUISITION SYSTEM**

Over the years the defense acquisition system has provided U.S. Armed forces with equipment whose technological superiority, capability, and quality is unmatched by any in the world. This statement is borne out by comments in the Army's 2004 posture statement to the Congress, where the acting Secretary of the Army and Chief of Staff stated that the "United States is the most powerful land force on earth."<sup>54</sup> In their 2004 assessment of major weapons systems the government accountability office (GAO) said "the DoD develops weaponry that is unmatched in levels of technological sophistication and lethality...these programs include such weapon systems as the Army's future combat system; the Air Force, Marine Corps, and Navy Joint Strike Fighter; and overarching systems such as advanced wideband and transformational satellite." The GAO report says that while the "defense acquisition system produces superior weaponry," it is done very inefficiently and could stand significant improvement with respect to the cost to produce and the time and schedule to deliver the systems to US Armed forces.<sup>55</sup>

The government accountability office (GAO), the Deputy Secretary of Defense, the Air Force and Army Acquisition Executives, several visitors to the Army War College, and practitioners in and out of government on several occasions and in several venues have asserted that the defense acquisition system needs significant improvement with respect to the speed that it provides weapon systems to warfighters and the cost of the weapon systems provided compared to what was expected. The impression among most of the system's detractors is that the current defense acquisition system has few redeeming qualities and requires a major overhaul.<sup>56</sup> For all its problems the United States defense acquisition system has propelled the United States, as stated in the U.S. National Security Strategy, into the enviable position of being the most dominant military in the world. This has been clearly demonstrated over the years in combat operations from World War II to the current conflict in Iraq.<sup>57</sup>

It is remarkable that even with all of the reforms that have taken place in the acquisition business before and after Gold-Water/Nichols that acquisition programs, large and small continue to be plagued by severe cost and schedule overruns and fall significantly short of performance expectations. One need only read defense related publications, selective acquisition reports (SARS), GAO reports, and the business press on any given day to find ample evidence of DoD programs that are experiencing cost, schedule and performance related problems, including but not limited to the Army's Comanche and FCS programs, the Navy's DD(X) program, the Air Force's Joint Strike Fighter and FA-22 Raptor programs; and the Marine Corps V-22 Osprey.<sup>58</sup>

So how does the defense acquisition system equip U.S. Armed Forces with the best equipment in the world on the one hand and on the other find itself in the unenviable position of explaining a history of cost and schedule overruns and significant shortfalls in performance expectations? I will attempt to identify the nature of the problem and potential solutions in the next section of this paper.

### **INTERDEPENDENCIES BETWEEN KEY PROCESSES IN DEFENSE ACQUISITION**

The defense acquisition system (DAS) does not stand alone. It is dependent on several other systems and activities. At a macro-level the DAS is tied to the joint capability integrated development system (JCIDS) and Planning Programming and Budgeting System (PPBS). Figure 4 depicts the major elements of the JCIDS process while showing the linkage to the PPBS and DAS.<sup>59</sup>

Figure 4 depicts four critical interdependencies that significantly affect if not define the defense acquisition system (DAS) or at least the effectiveness of the DAS to produce desirable outcomes. The Science and technology (S&T) linkage to the DAS serves to inform both the materiel development (program managers) and requirements community (user representatives) as to what is technically possible in a given time-frame. This knowledge provides the program manager with the means to properly craft an acquisition approach and the requirements community via the joint capability integration development system an opportunity to fine-tune capabilities documents.

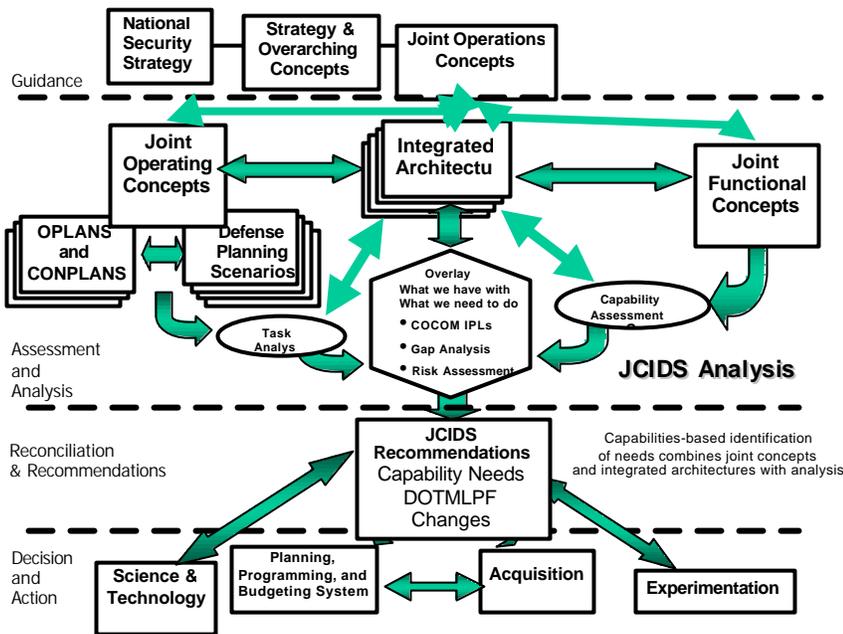


FIGURE 4. MACRO-LEVEL JCIDS, PPBS, DAS LINKAGE

The planning programming budgeting system (PPBS) linkage to the defense acquisition system (DAS) informs program managers and the capabilities development community what the Service is willing or able to pay for a given amount of capability. This linkage provides the program manager with the means to procure the capability that the joint capability integration development system (JCIDS) requires in a particular product or series of products. In the Army, the G-8 is responsible for providing resources to program managers to acquire needed capabilities. In those cases where it funding falls short of the amount needed to fully satisfy the capability, in the Army, a formal renegotiation takes place between the program management office, user representative, G-3 and G-8 regarding what will be procured and when.<sup>60</sup>

The JCIDS linkage to the defense acquisition system provides the program manager with the capability that must be provided to the warfighter at a given point in time. The information provide by the joint capability integration development system is used by a designated lead program management office to start early dialogue with industry and the science and technology community regarding what is technically feasible within a given time frame and a general idea of what it will cost to obtain the documented required capability. The documented capability drives

technology, funding, and the approach the program management office will develop, which will eventually be inherited by a board selected program manager.

Finally, although not directly tied to the defense acquisition system, the experimentation linkage, which consists of DoD and Army advanced concept technology demonstrations, advanced technology demonstrations, and warfighting experiments in the Army and across DoD and most recently Joint Forces Command, serve two important purposes for program management and capability development teams. The results of experimentation informs program managers, user representatives and capability developers as to the availability of current technology to address documented capability needs and most importantly, it provides warfighters a glimpse of new technologies and gives exercise participants an opportunity to provide feedback to the program manager, capability document developers and industry.<sup>61</sup>

Feedback is provided to interested parties in a number of ways, including but not limited to exercise directors allowing interested parties to observe soldiers, sailors, airmen and marines using the technology in its intended environment; lessons learned reports prepared by observer controllers; formal assessments of technology performance and maturity provided by Service test and evaluation commands; and in some cases direct feedback from interested commanders to acquisition leaders or capability development leaders.

Figure 5 shows a more detailed view of the relationship and interdependencies between the joint capability integration development system (JCIDS) and the defense acquisition system (DAS) processes.<sup>62</sup> The first point that should be made is that the graphic on the bottom of the figure shows how closely linked the two processes are to each other, where requirements dominate on the front end and acquisition dominates on the back end.

The JCIDS process produces a joint requirements oversight council (JROC) approved initial capabilities document (ICD) that informs and essentially kicks off the defense acquisition process. The ICD is impacted by the analysis of alternatives (AoA) which identifies capability shortfalls that will accrue as a function of potential technology shortfalls. The identified technology shortfalls form the basis of the program's technology development strategy and cost as an independent variable/evolutionary acquisition (CAIV/EA) approach. The technology development strategy informs the program manager and user community as to the amount of capability that can be realistically attained in the required timeframe. Most importantly, it provides the program manager and user community with a technical roadmap outlining when technology may be available to provide the remaining capability. The remaining capability is provided in the demonstrations and increments following the initial capability facilitating the evolution of the ICD into the capabilities development document (CDD) and the CDD into the

capabilities production document (CPD) through MSC and into production and deployment of the system. Each increment is preceded by a separate and distinct milestone (MS) B.

Finally, the paper will bring your attention to figure 3 where the critical reviews that support the defense acquisition process depicted. A joint requirements oversight council (JROC) review is conducted for major defense acquisition programs. The JROC is followed by a series of complementary reviews. Following the JROC, at each milestone, the defense acquisition executive (DAE) conducts and chairs a defense acquisition board (DAB). Prior to the DAB the DAE's staff conducts an overarching integrated product team (OIPT) review and prior to the OIPT review there is a Service level review. In the case of the Army the review would be an army systems acquisition review council (ASARC), chaired by the AAE and VCSA.

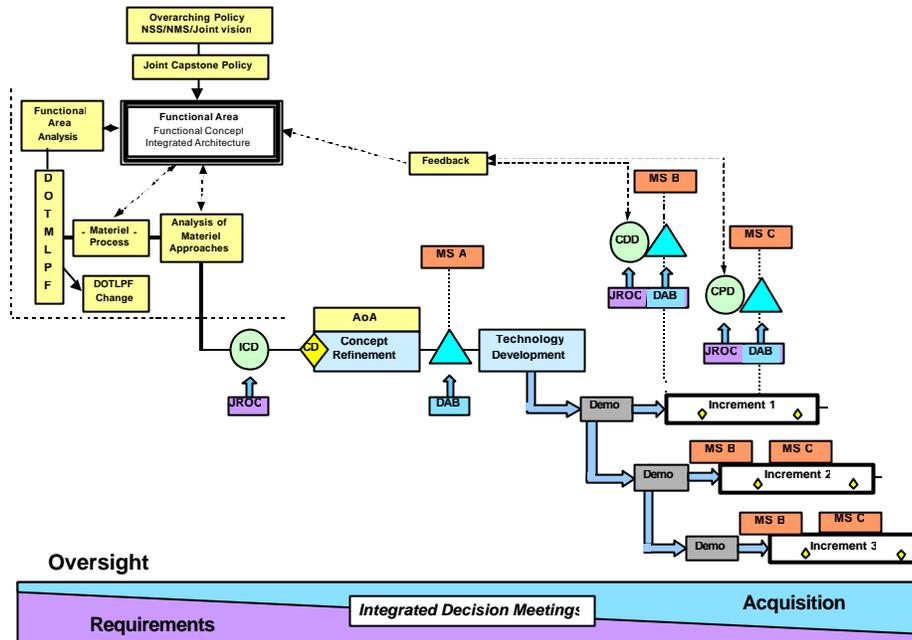


FIGURE 5. JCIDS AND DAS PROCESS RELATIONSHIPS

Figures 4 and 5 provide a look at key linkages and interdependencies between the defense acquisition system (DAS) and other key processes at a relatively high level. Figure 6 provides a closer look at processes used during the execution of a program. It depicts the major activities that a program manager must consider during the planning and execution of a

program.<sup>63</sup> In order to effectively execute a program the program manager must bring several processes together into a coherent whole. In this case the program manager is combining the effects of risk management, cost as an independent variable/evolutionary acquisition (CAIV/EA), earned value management (EVM), technology development and cost management as it applies to requirements or capabilities realization.<sup>64</sup>

Some translation will have to be necessary as the language used in the graphic does not directly refer to capabilities; however all of the activities captured in the graphic directly support the ideas behind approved capabilities via the CAIV/EA process as it relates to the tradeoff opportunities associated with performance. The program manager's technical team converts capability document parameters into performance specifications that are placed on a contract that a contractor is required to perform to. When a contractor experiences difficulty achieving a stated contract performance requirement the contractor eventually requests relief from the government which generally means warfighters desired capability will be adversely affected. The process used in figure 6 is iterative and occurs over the life of the contract.<sup>65</sup> The figure connects several independent processes into a framework that assists the program management team in making, recommending and supporting decisions with regard to cost, performance and schedule trade-offs.

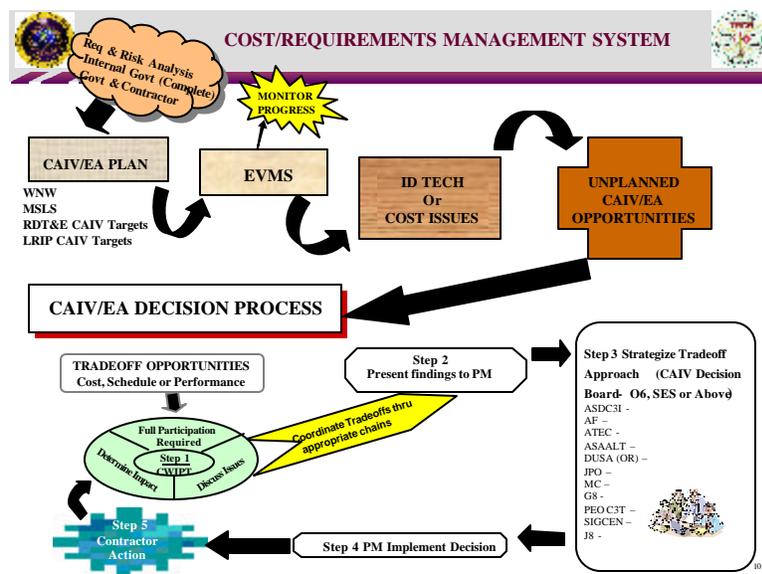


FIGURE 6. COST/CAPABILITIES MANAGEMENT SYSTEM

The linkage between risk management activities and cost as an independent variable/evolutionary acquisition (CAIV/EA) is the first step in the process. Both processes are tied to the initial capabilities document (ICD). The ICD articulates approved capabilities that must be acquired to satisfy a user need. The combined government/contractor risk management process evaluates all of the capabilities in the ICD to determine the degree to which the team believes that the capability is affordable and that technology will be available in the required timeframe to provide the desired performance. Affordability goals and technology that will have to be evolved are captured in the CAIV/EA plan and actively managed by the PM in consultation and coordination with the winning contractor's team. This step serves to inform all key stakeholders of potential program challenges well before a contract is entered into between the government and a particular contractor.

The next key linkage is between cost as an independent variable (CAIV) and the earned value management system (EVMS). Cost as an independent variable is the program manager's articulation of challenges in the initial capabilities document that will be closely monitored during the execution of the program. The EVMS is a series of reports from the contractor that allows the program management team to identify cost and contract performance related issues that in many cases trace to technology challenges that the contractor team is having as it executes the requirements of the contract. Once cost or technology issues are identified the program manager is in a position to determine how the problem may affect the attainment of cost or technology goals and objectives, which leads into the cost as an independent variable/evolutionary acquisition (CAIV/EA) decision process.

The CAIV/EA process has an inextricable link to the joint capability integration development system (JCIDS) process shown in figure 6, step 3 where key stakeholders are informed and/or requested to provide the program manager with guidance where cost, schedule, performances trade-offs need to be made. This is an iterative process that occurs several times over the life of a contract and its associated program. The sole purpose of the CAIV/EA process is to balance cost, schedule and performance with the intent to deliver a militarily useful product to the warfighter as soon as practical.

#### **IDENTIFICATION OF SYSTEM LEVEL INEFFICIENCIES IN THE DEFENSE ACQUISITION SYSTEM**

The last few sections of the paper served to orient the reader to the defense acquisition system (DAS), some of the initiatives undertaken over the past 10 years or so to improve the responsiveness of the process; a relatively short discussion about roles and responsibilities and key reviews, followed by a discussion regarding interdependencies among key processes in the

DAS, JCIDS and planning programming budgeting system (PPBS) at varying levels of execution.

This section will focus on the system level inefficiencies in the DAS – inefficiencies that occur as a function of ineffective execution of activities and exercise of responsibilities within the identified processes, particularly at the interfaces between the processes. This part of the paper will discuss the inefficiencies that are predominantly associated with the key processes discussed in the previous section. This section will address some of the more critical inefficiencies or lapses (translate that to read activities) in performance between the key processes identified in figures 3, 4, 5, and 6. It will essentially identify activities that could be performed better as the DoD goes about the business of managing and equipping the Armed Forces of the United States.

**JCIDS-DAS-S&T-PPBS-Experimentation linkage.** Earlier in the paper the importance of the joint capability integration development system, science and technology, planning programming budgeting system and experimentation processes to one another and the defense acquisition system (DAS) were described and illustrated in figure 4. In their March 2004 report on the assessment of major defense programs the GAO wrote that “reviews over the past twenty years have found consistent problems with weapon acquisitions – cost increases, schedule delays, and performance shortfalls – along with underlying causes such as pressures on managers to promise more than they can deliver.” The notion of promising more than can be delivered is directly tied to implementation of the joint capability integration and development system and is very much influenced by available technology.<sup>66</sup>

At the beginning of the process is desired or required capability – specifically, its effective articulation and management. In its 2004 assessment of DoD weapon systems the government accountability office stated that most programs do not gain the necessary knowledge at the outset to adequately determine if technology is available to effectively deliver required capability. The GAO advocates a knowledge based approach to improving the acquisition of weapon systems. The DoD conducts joint capability document system (JCIDS) analysis and analysis of alternatives (AoA) to attempt to gain the required knowledge. The GAO report makes it very clear that in their perception many major programs are preceding without gaining the requisite knowledge.<sup>67</sup> To exacerbate the problem a dedicated program manager is not assigned to most programs until after many of the major decisions are made leading up to MS A or B decision. What generally transpires is a serving program manager is assigned an additional duty to carry the new program until such time as a board select program manager is assigned, leading to a program that is generally not very well resourced, planned or focused until after

many major decisions are made. Predictably, the result is a program lacking: a set of capabilities with adequate quantitative underpinnings; adequate knowledge regarding technology availability; adequate industry involvement; and a dedicated program manager driving program cost, schedule and performance targets.<sup>68</sup>

**Major Defense Acquisition Reviews.** The process of reviews, depicted in figure 3, serve individual programs well, however a major gap exists between what the reviews do for individual programs and the defense acquisition system (DAS) as a whole. After each review, within 3 days the review body issues the program or product manager an acquisition decision memorandum (ADM) outlining in writing, guidance, constraints and restraints associated with the program as briefed by the program manager. The acquisition decision memorandum (ADM) serves a number of functions. It authorizes the program to proceed and it puts the world on notice regarding the conditions under which the program can proceed and lends legitimacy to the program manager's plan of execution.

What it does not do very well is provide follow-up direction and guidance to the program or to programs that are directly or indirectly affected by a particular program. In many cases the decisions made for one program may have profound affects on the acquisition strategy that another program may be attempting to craft or employ. There is generally very little feedback if any from the major review bodies to affected programs. The result is generally manifested by major disconnects in budgeting and cost, capabilities desired or required, fielding and worse inconsistencies in the message to OSD or Congress with respect to what is being done and why, leading to increased program scrutiny and potential budget cuts.<sup>69</sup>

**Risk Management-CAIV/EA planning-EVMS-CAIV/EA decision process.** Figure 6 provides insight into several key processes in direct support of program execution. At the risk of repeating items discussed above, this discussion will be limited to gaps that plague the program manager's team during the execution of the program strategy.

At the program execution level many of the program issues occur as a function of how policies and procedures are executed, which goes to interpretation and understanding by program managers, industry and their respective teams. At this stage in the process the initial capability document (ICD) has generally been completed with or without an analysis of alternatives (AoA) and a program manager has been selected or one is performing the duties of the program manager as an additional duty. There is a great deal of dialogue with industry at this point via pre-solicitation activities such as market surveys, industry days and the issuance of draft request for proposals. So what could go wrong?

There are two primary issues or gaps that should be brought to the reader's attention in this area. One is associated with the ineffective implementation of cost as an independent variable/evolutionary acquisition (CAIV/EA) by the government and industry team and the other is associated with Industry's willingness to say "yes we can." A significant amount of literature and policy guidance has been provided regarding CAIV/EA and their expected benefits.<sup>70</sup> The CAIV/EA concepts are captured in numerous DoD policies, the DoD desk book and most recently the March 2004 version of the DoD 5000 series regulations. Ideally CAIV/EA targets are developed early in the process, prior to contract award and actively managed by the government and industry team throughout contract execution. The failure to establish realistic cost as an independent variable/evolutionary acquisition (CAIV/EA) targets can result in situations where costs spiral out of control and product schedule/fielding delays are experienced as the government and industry team attempt to obtain the 100% solution versus the best that can be done with given technology at an affordable cost in a given time frame.

The ineffective implementation of CAIV/EA appears to be part cultural and part expert knowledge. CJSCI 3170.01D, joint capability integration development system (JCIDS), indicates that the goal of the defense acquisition system is to get capability to the warfighter as quickly as possible, taking technology constraints into account. The general concept is that if technology does not support a desired capability, make adjustments to the initial capability delivery and provide the remaining capability in increments when technology is available to support the required capability. A number of GAO reports and assessments of DoD weapon system procurements highlight the DoD penchant to go for the "big bang" often chasing after technology that is not yet mature enough to be produced, leading to cost growth and schedule overruns, and ultimately performance under-runs.<sup>71</sup>

During the 2001 Joint Tactical Radio System Cluster 1 army system acquisition review council (ASARC) the Vice Chief of Staff of the Army admonished the review panel to make sure that the leadership monitors and controls requirements creep. He said "we (the Army) have a problem delivering systems on-time. We allow requirements creep to occur. We must discipline ourselves. If we behave as we have for the past decade, this program will never make it."<sup>72</sup> He was in effect acknowledging and trying to change a user mentality that historically says "we want 100% of the desired capability in the first increment at initial delivery." Quite often attempts to make adjustments during contract award after finding that some technologies simply did not mature as quickly as the contractor anticipated are met with considerable resistance from the user community and often instead of evolving requirements, new requirements are added or at least attempted to be added, exacerbating an already tenuous situation.

It appears that many contractors are aware of what government documentation says regarding cost as an independent variable/evolutionary acquisition (CAIV/EA), however in practice industry appears to treat CAIV more like design to cost. Design to cost is an internal process that contractor teams utilize to make decisions regarding part types, number of parts, etc., It does not generally involve the government until after the fact, which means that if the design has more complex or expensive parts than expected and subsequently cause pressure on overall cost target costs the government team will not be made aware until it is too late to positively affect the outcome. This situation may lead to short-sighted design decisions that have to be worked out of the product down-stream when changes are more costly to the government and contractor.

None of the problems identified and discussed in this section of the paper are insurmountable. A great deal of work has been done by acquisition professionals in and out of the system (practicing professionals, consultants, congress and industry) to improve the defense acquisition process over the past twenty years, including Goldwater-Nichols and several GAO assessments. An excellent summary of the efforts to reform defense acquisition over the past ten years is provided by Rodgers and Birmingham.<sup>73</sup> As a result of the efforts of so many, the basic building blocks are available and part of the defense acquisition system. The next section of this paper will focus on refinement versus new ideas, it will focus on the execution of concepts that are already in place.

#### **RECOMMENDED SOLUTIONS TO IDENTIFIED SYSTEM LEVEL INEFFICIENCIES**

One could go on all day citing one problem after the other with respect to the defense acquisition system (DAS). At the beginning of this paper recall the assertion that although it could use significant improvement the DAS has served the US Armed Forces very well. The current Air Force Acquisition Executive (AFAE) Marvin Sambur said it best, “we need to get back to basics...”<sup>74</sup> The Government Accountability Office, has been studying the DAS and how it could potentially improve operations for years and years and has made several recommendations that have served to benefit DoD, its warfighters and the American public.<sup>75</sup>

This paper does not presume that the silver bullet to effective defense acquisition will be provided. What it will do is add to the body of knowledge and possibly help policy and decision makers further improve the DoD’s DAS and possibly help some program managers execute their programs more effectively and efficiently.

**JCIDS-DAS-S&T-PPBS-Experimentation.** The proper articulation of the capability desired is the first step in the defense acquisition process (DAS). The joint capability integration

development system (JCIDS) has a process and each Service has an enabling process for determining capabilities needed, formerly referred to as requirements. The articulation of the capability drives cost, schedule and program risk. A few refinements need to take place to dramatically improve this process across the JCIDS, DAS, science and technology (S&T), planning, programming, budgeting system (PPBS) and experimentation domains.

Cross process improvements can rapidly be incorporated into the overall defense acquisition system, the basic building blocks already exist, they simply have to be used more effectively. They begin with integrated product and process development (IPPD), a process that requires each key stakeholder to fully understand their role and ensure its proper execution in support of capabilities development. DoD 5000.1 lists three key stakeholders in the defense acquisition process. It should state the roles and responsibilities of other key players as well. This will serve to provide the appropriate focus among major stakeholders.

Program managers and user representatives must engage industry as early as possible in the process via pre-solicitation activities. Mechanisms are in place at the Joint level and Service level to quickly and efficiently include industry in early planning and capability development efforts. In order to do this effectively, decisions regarding the designation of a lead service and a program manager will have to be made earlier in the process. Assignment of a program manager should be made by the lead Service when the department is relatively certain that a materiel solution is required to satisfy a capability gap – in most cases well before milestone B.

The assignment of a program manager earlier in the process should facilitate the development of integrated product teams composed of industry, user representatives, testers, engineers and scientists, and cost estimators whose focus should be ensuring that an analysis of alternatives (AoA) is initiated and developed prior to finalization of the initial capability document (ICD) in order to understand what capability is really needed and in parallel engage determine what technology can reasonably be provided to address the desired/required capabilities. The team should be responsible for the development of a cost as an independent variable (CAIV) and evolutionary acquisition plan tied to the AoA and ICD, taking into account agreed upon constraints and restraints. With the appropriate stakeholders involved in the development of the CAIV/EA strategy the expectation is that at the outset more realistic goals and objectives for the system can and should be set resulting in fewer cost and schedule overruns and performance related problems.

To implement the above improvements may mean that several DoD and Service staff agencies will need to be augmented with formally trained acquisition professionals to guide them through the process, enabling more effective interaction with the acquisition and contractor

community. Or it could mean that more core personnel in affected agencies are formally trained in DoD 5000, federal acquisition regulation, and joint capability integration development system rules, regulation and procedures. The challenge affecting most staff agencies is that most personnel in staff agencies come from the field for one year, perhaps two and don't have time to really learn what they need to effectively participate in the process, consequently the preferred course of action would be to provide acquisition trained personnel to DoD and Service agencies/staffs that materially impact the defense acquisition system.

**Major Defense Acquisition Reviews.** The DoD has a series of reviews, described earlier in this paper, that are designed to provide senior leader oversight into the program under discussion and to ensure that the resources required to effectively execute the program are made available at the right time.

The review process for a major defense acquisition program can take upwards of 13 to 15 months to prepare for when considering the regulatory and statutory documentation that must be prepared and presented by the program manager at a major review. DoD 5000.2, enclosure 3 lists over 60 regulatory and statutory documents that the program manager must prepare for major reviews.<sup>76</sup> The Deputy Secretary of Defense is in the process of putting together a Joint Rapid Action Cell and one of the areas that appear to be receiving a significant amount of scrutiny is the length of the review process.<sup>77</sup> This SRP discusses three actions that can be taken to improve the review process.

First, it should not simply be a review by acquisition officials of the program manager's program. There are many stakeholders from other organizations that attend reviews and some even brief, but in most cases the general thought is that the review is for the program manager. Reviews of the magnitude associated with army system acquisition review councils (ASARCS), overarching integrated product team (OIPT) and defense acquisition board (DAB) should be for the program manager, user representative, and other key stakeholders to articulate what they are doing in the process and how it supports the expected program, to include their understanding of cost as an independent variable/evolutionary acquisition (CAIV/EA) and how CAIV/EA will be executed on the program. A combined review will ensure that everyone on the team understands what is being presented and the implications of agreements that have been made, which should make it easier to execute cost/performance trades when the time comes.

Second, the review team should be in a position to provide the program manager and team with constraints and restraints associated with other programs that the review team has recently reviewed. If decisions were made previously that impact multiple programs that information should be provided in advance of the review so that during the review the review

team can ensure that the presenting program acquisition strategy is consistent with previously provided guidance. Further, after the review of a particular program, the review team must document the decisions made and ensure direction and guidance is made available to affected programs so that necessary adjustments can be made, to the extent practical. The review team will need sufficient staff to ensure decisions that affect multiple programs are coordinated, consistent and funding considerations or impacts reviewed.

Finally, the review team should develop a system that periodically calls major programs back for semi-annual reviews. The reviews should track progress, execution to plan, and any changes that may be required to maintain schedule. The periodic review should look at all major programs and their linkages. The Army has started moving in the direction of more responsive review teams with the advent of the Future Combat System program via its Unit of Action Board of directors. It is a good start, but the Army needs to go further in its implementation, type of information requested, reviewed and decisions it is allowed to make and coordinate.

***Risk Management-CAIV/EA Planning-EVMS-CAIV/EA Decision Process.*** At the program execution level the program manager is principally concerned with the effective execution of the cost as an independent variable/evolutionary acquisition (CAIV/EA) plan over the life of the contract and in a larger sense the program. The effective implementation of risk management, CAIV/EA, and earned value management is an iterative process.

The first iteration of the process should be done as part of pre-solicitation activities associated with the joint capability integration development system as it interacts with the defense acquisition system; science and technology, planning programming budgeting system and DoD and Army warfighting and technology experiments.<sup>78</sup> The initial risk assessment must be done with industry and other stakeholders against the initial capability document (ICD) prior to determining desired increments of capability. The risk assessment and determination of feasible increments of capability will support evolutionary acquisition, which should result in a more realistic program baseline from the outset. It should put the program in a position where the government is not asking industry to do the impossible, reducing the probability that industry will be forced into a position where they tell the government that they can provide a certain capability within a specified time-frame at a specified cost because they believe that is what the government wants or needs to hear in order to award a contract.<sup>79</sup>

Once the contract is award the integrated product and development process becomes even more important as it relates to the iterative risk management-CAIV/EA-EVMS-CAIV/EA decision process. As the contractor executes the contract the government team must monitor progress and or lack thereof. When problems are identified by the earned value management

system (EVMS) during execution the government and contractor team must be prepared to expeditiously implement the cost as an independent variable/evolutionary acquisition (CAIV/EA) plan, which would have been developed and approved prior to contract award.

Implementation of the CAIV/EA plan means decisions will have to be made regarding what do if technology did not mature as quickly as the contractor predicted or the cost of achieving some level of performance is more complex than previously thought, which could lead to cost and schedule overruns if decisions are not made expeditiously by the government team. It also means that the contractor will have to have a system that properly assigns cost to each element of the system, tied to CAIV target costs and can quickly provide that information to a government decision-making body. Upon receipt of the information the government reviews the data and if the conclusion is that it will be necessary to evolve capability in order to maintain schedule then that decision must be made without reservation or hesitation – facilitated by key stakeholder involvement in the defense acquisition review process. The decisions must be made in accord with agreed upon planning as the program manager guided the program through the series of DoD reviews. In the latest issue of Defense Acquisition University review, Mr. Bolton, the Army Acquisition Executive said “we are at war. We want the very best that we have in the hands of our soldiers now – not six months from now, not six years from now, but NOW!”<sup>80</sup> From this interview it should be clear that scheduled delivery to warfighters is the priority and that the team should focus on performance or cost trades that support the ability to field products sooner rather than later. Rapid implementation of cost as an independent variable and evolutionary acquisition is essential to realizing the goal of providing military useful capability to warfighters more rapidly in line with reasonable cost goals.

**Rapid Acquisition Programs.** Rapid acquisition programs are a special case, but they are not new. They have received increased attention from DoD leaders as a result of failures of the traditional acquisition system to respond to wartime needs in a timely manner. There are several mechanisms for procuring products rapidly today, the most prominent being commercial-off-the shelf (COTS) or non-developmental (NDI) type transactions. COTS and NDI transactions allow the government to rapidly procure products for warfighters that require little if any modification prior to use. In addition to COTS and NDI type transactions the Army has instituted a rapid equipping process and the DoD is in the process of introducing the Joint Rapid Action Cell or JRAC. These processes effectively strip out much of the lengthy review and evaluation process associated with traditional acquisition procedures.<sup>81</sup>

In order to take advantage of rapid acquisition programs the milestone decision authority, Service Acquisition Executives, user representatives and other key stakeholders will have to

agree at the outset to accept the products “as is.” That means users will have to settle for the capability that is currently built into the product, with the understanding that any modifications to the existing product could drive cost and scheduled delivery. The program manager and or appropriate individual in the chain of command will have to have the ability to move funds from one program account to another to procure the item when an urgent need arises that had not been previously resourced. The amount of funding required to be moved between accounts could trigger congressional thresholds requiring congressional approval to implement.

## **CONCLUSION**

The U.S. defense acquisition system provides U.S. Armed Forces with the best equipment in the world, but it is not without its share of problems, exhibited by exorbitant cost and schedule overruns over the years of its existence and performance shortfalls as a function of warfighter expectations.

This SRP suggests that solutions to cost, schedule, and performance problems are not insurmountable. In fact, the potential solutions recommended for many of the cost, schedule, and performance problems plaguing the defense acquisition system are already part of the fabric of the defense acquisition process, unfortunately their implementation is spread among a multitude of stakeholders across the DoD leading to less than optimal implementation.

Implementation can be improved in several areas beginning with a clear understanding of the roles and responsibilities of all key stakeholders in the system. Stakeholders from the key functional areas associated with the process must come together earlier in the process and make sure that desired capabilities, available technology, and funding to support the desired capability are integrated in way that provides warfighters with the best capability that technology can provide as rapidly possible. More effective collaboration among key stakeholders can reduce false program starts by effectively implementing cost as an independent variable, evolutionary acquisition and rapid acquisition concepts. The series of reviews that DoD decision-makers use to provide guidance and council to acquisition professionals can expand their usefulness by doing a better job of coordinating cross program efforts and must include all key stakeholders, not just the program management team.

The major point the SRP is attempting to get across to decision-makers across the DoD is that the defense acquisition system does not need more new processes, the processes may require modification or revision, but in large part they are suitable to the task. The major shortfall is not in the concepts, it is in their implementation. The defense acquisition system is not simply for materiel developers, it is a shared system and is heavily dependent upon timely contributions

from other stakeholders, particularly capability developers, force developers, and user representatives in order to realize its full potential.

WORD COUNT= 12,569



## ENDNOTES

<sup>1</sup> U.S. General Accounting Office, U.S. Congress, Report to Congressional Committees, Defense Acquisitions: Assessments of Major Weapons Programs, March 2004, Available from <http://www.gao.gov/new.items/d04248.pdf>, Internet, accessed on 4 December 2004.

<sup>2</sup> Edwards W. Rodgers and Robert P Birmingham, "A Ten Year Review of The Vision for Transforming The Defense Acquisition System." Defense Acquisition Review Journal, January – April 2004, Available from <http://www.dau.mil/pubs/arq/2004arq/Rogers.pdf>, accessed on 4 December 2004. In addition to the comments attributed to Deputy Secretary of Defense, Paul Wolfowitz, in this study, there are several other sources that provide the same general concept. References to getting capability to our warfighters sooner than later, in some cases referring to the 80% solution can be found in CJCSI 3170.01D; A November 29, 2004, news story by Megan Scully "Rapid fielding may spread DoD-wide.

<sup>3</sup> LTG Joseph Yakovac is the current Army Military Deputy to the Army Acquisition Executive. Dating back as early as 2001 during a meeting between Army Aviation stakeholders and Joint Tactical Radio System stakeholders, in Orlando Florida, he made the comment that "we are never going to get to Nirvana" in reference to User groups wanting the 100% joint tactical radio solution even though the JTRS team provided information that clearly showed technology was not available in the time frame required to achieve some of the desired objectives. He discussed this concept a second time in my presence during a 2003 General Officer Steering Committee on Command and Control, Communications, Computers and Information, Surveillance and Reconnaissance systems in the Pentagon.

<sup>4</sup> Chairman of the Joint Chiefs of Staff Instruction, CJCSI 3170.01D, "Joint Capabilities Integration and Development System," March 12, 2004, Available from [http://www.dtic.mil/cjcs\\_directives/cdata/unlimit/3170\\_01.pdf](http://www.dtic.mil/cjcs_directives/cdata/unlimit/3170_01.pdf), Internet, accessed on 4 December 2004, A-1 – A-3.

<sup>5</sup> Department of Defense Directive, Number 5000.1, "The Defense Acquisition System," May 12, 2003, Available from [http://DoD5000.dau.mil/DOCS/DoD%20Directive%205000.1-signed%20\(May%2012,%202003\).doc](http://DoD5000.dau.mil/DOCS/DoD%20Directive%205000.1-signed%20(May%2012,%202003).doc), Internet, accessed on 9 October 2004, 2.

<sup>6</sup> Ibid

<sup>7</sup> Department of Defense Directive, Number 5000.2, "Operation of The Defense Acquisition System," May 12, 2003, Available from [http://DoD5000.dau.mil/DOCS/DoDI%205000.2-signed%20\(May%2012,%202003\).doc](http://DoD5000.dau.mil/DOCS/DoDI%205000.2-signed%20(May%2012,%202003).doc), Internet, accessed on 9 October 2004, 2.

<sup>8</sup> Ibid.

<sup>9</sup> Ibid., 4-5.

<sup>10</sup> Ibid., 5-6.

<sup>11</sup> Ibid., 6-9.

<sup>12</sup> Ibid., 9-11.

<sup>13</sup> Chairman Joint Chiefs of Staff Instruction 3170.01D, 2-5.

<sup>14</sup> Department of Defense Directive, Number 5000.1, 4.

<sup>15</sup> Ibid.

<sup>16</sup> Department of Defense Directive, Number 5000.1, 2.

<sup>17</sup> Department of Defense Directive, Number 5000.2, 3-4.

<sup>18</sup> Department of Defense Directive, Number 5000.1, 4.

<sup>19</sup> Ibid.

<sup>20</sup> Kelly Curran, <Kelly.Curran@c3smail.monmouth.army.mil>, "What a Novel Thought the AF has." Electronic mail message to David Lockhart david.lockhart@us.army.mil, 4 December 2004.

<sup>21</sup> Federal Acquisition Regulation, ARNET, July 19, 2004, Available from <http://www.arnet.gov/far/loadmainre.html>, Internet, accessed on 9 October 2004, 15.403-15.404.

<sup>22</sup> Department of Defense Directive, Number 5000.1, 2-3.

<sup>23</sup> Megan Scully, "Rapid fielding may spread DoD-wide: Action cell will form to aid field commanders." Army Times, November 29, 2004, 16.

<sup>24</sup> Megan Scully, "High Speed Procurement: New Pentagon Group Tackles Red Tape." Defense News, October 18, 2004.

<sup>25</sup> Department of Defense Directive, Number 5000.1, 2-3.

<sup>26</sup> Richard K. Sylvester and Joseph A. Ferrara, "Conflict and Ambiguity Implementing Evolutionary Acquisition – Lessons Learned." Acquisition Review Quarterly, Winter 2003, page 4, Available from [http://www.findarticles.com/p/articles/mi\\_m0JZX/is\\_1\\_10/ai\\_99753428/pg\\_4](http://www.findarticles.com/p/articles/mi_m0JZX/is_1_10/ai_99753428/pg_4), Internet, accessed on 7 November 2004.

<sup>27</sup> Department of Defense Directive, Number 5000.1, 2.

<sup>28</sup> Department of Defense Directive, Number 5000.2, 16-17. Enclosure 2 provides a detailed discussion on acquisition categories. Table E2.T1 describes the acquisition category, the reason for its categorization and the milestone decision authority.

<sup>29</sup> Headquarters Department of the Army, Army Regulation 70-1, Army Acquisition Policy, December 31, 2003, Available from [http://www.usapa.army.mil/pdffiles/r70\\_1.pdf](http://www.usapa.army.mil/pdffiles/r70_1.pdf), Internet, accessed on 16 September 2004, 1-8.

<sup>30</sup> Ibid., 9-10.

<sup>31</sup> Ibid., 10-11.

<sup>32</sup> Department of Defense Directive, Number 5000.1, 2.

<sup>33</sup> The CJCS is responsible for the development of the initial capability document (ICD), capability development document (CDD), and capability production document (CPD). The procedures for development of the capability documents can be found in CJCSI 3170.01D, Joint Capabilities Integration Development System.

<sup>34</sup> Department of Defense Directive, Number 5000.1, 3.

<sup>35</sup> Chairman Joint Chiefs of Staff Instruction 3170.01D, A-1 and B-5.

<sup>36</sup> Ibid., B1-B6.

<sup>37</sup> Department of Defense Directive, Number 5000.2, 2-3, 12-16.

<sup>38</sup> Army Regulation 70-1, 11.

<sup>39</sup> Ibid., 11-12. A program breach occurs when the program in discussion overruns a critical cost threshold by 15% or more and a schedule threshold by 6 months or more.

<sup>40</sup> Ibid., 20-21.

<sup>41</sup> Ibid., 22.

<sup>42</sup> Ibid., 16.

<sup>43</sup> Ibid., 16-17.

<sup>44</sup> Ibid., 26-27.

<sup>45</sup> Ibid., 25.

<sup>46</sup> Department of Defense Directive, Number 5000.2, 11-12.

<sup>47</sup> Joint Chiefs of Staff, "Introduction to the Joint Capabilities Integration and Development System (JCIDS). Briefing Slides, 20 July 2003, Available from <http://dod5000.dau.mil/DOCS/3170%20DAU%20Brief%2010%20Jul%2003.ppt>, accessed on 4 December 2004. The original slide did not include the OIPT review that precedes each DAB. Using DoD 5000.2 as a reference I modified the slide to depict the relationship of the OIPT review to the DAB and JROC reviews.

<sup>48</sup> Chairman Joint Chiefs of Staff Instruction 3170.01D, B1 – B3. Key Performance Parameters (KPP) are those minimum attributes or characteristics considered most essential for an effective military capability. KPPs are validated and approved by the JROC for JROC interest documents and by the DoD component for Joint Integration of Independent documents. CDD and CPD KPP should be included verbatim in the program manager's acquisition program baseline (APB) document. The JCIDS process talks to JROC interest and Joint Integration. For JROC interest proposals the JROC is the validation authority, for Joint Integration proposals the sponsor is the validation authority. The JCIDS process indicates that a JROC interest proposal is associated with ACAT I/IA programs and ACAT II and below programs when the capabilities

have a significant impact on joint warfighting. Documents associated with JROC interest proposals will be staffed through the JROC for validation and approval, page GL-9.

<sup>49</sup> Ibid.

<sup>50</sup> Army Regulation 70-1, 12, 50-51.

<sup>51</sup> Department of Defense Directive, Number 5000.2, 12.

<sup>52</sup> Defense Acquisition Guidebook, Available from <http://akss.dau.mil/dag/DoD5000.asp?view=document>, paragraph 10.3.1, Internet, accessed on 11 November 2004.

<sup>53</sup> Department of Defense Directive, Number 5000.2, 12.

<sup>54</sup> Honorable R.L. Brownlee, and General Peter J. Schoemaker, "A Statement on The Posture of the United States Army 2004," Presented to the Committees and Sub-Committees of the United States Senate and The House of Representatives, Second Session, 108<sup>th</sup> Congress, February 5, 2004, Available from <http://www.army.mil/thewayahead/acprefs.html>, Internet, accessed on 12 November 2004.

<sup>55</sup> U.S. General Accounting Office, U.S. Congress, Report to Congressional Committees, Defense Acquisitions: Assessments of Major Weapons Programs, March 2004, Available from <http://www.gao.gov/new.items/d04248.pdf>, Internet, accessed on 25 September 2004, 1.

<sup>56</sup> Ibid., 1. The DEPSECDEF recently indicated that the acquisition system is not responsive to warfighter's needs. Similar comments have been echoed by the Vice Chief of Staff of the Army, and the Army and Air Force Acquisition Executives. At least 3 speakers at the Army War College commented that the Defense Acquisition System was dysfunctional and finally, most students I have discussed this topic with at the War College believe that the Defense Acquisition System is "the problem" with regard to cost, schedule and performance issues associated with the acquisition of weapon systems.

<sup>57</sup> George W. Bush, The National Security Strategy of the United States of America, The White House, September 17, 2002, 1.

<sup>58</sup> U.S. General Accounting Office, U.S. Congress, Report to Congressional Committees, Defense Acquisitions: Assessments of Major Weapons Programs, 1.

<sup>59</sup> Joint Chiefs of Staff, "Introduction to the Joint Capabilities Integration and Development System (JCIDS), Briefing Slides, 20 July 2003, Available from <http://dod5000.dau.mil/DOCS/3170%20DAU%20Brief%2010%20Jul%202003.ppt>, , accessed on 20 November 2004.

<sup>60</sup> The formal renegotiation between the program manager and Army Staff, principally ASA(ALT), G3 and G8 is part of the normal annual budget review cycle and takes place during the planning of major program changes.

<sup>61</sup> The feedback spurs discussion among the program management team, user representatives, testers, systems engineers, cost estimators, industry and decision-makers regarding adjustments that should be made to capabilities documents, costs and associated

funding required, and schedules or timelines to provide the required capability in light of new information provided by experimentation results.

<sup>62</sup> US Army War College, "Life Cycle Milestones and Phases," Briefing Slides, slide 11 of 73.

<sup>63</sup> LTC David E. Lockhart, "Cluster 1, The Road Ahead." Briefing slides, update for the Army Acquisition Executive, Fort Monmouth, NJ: PM JTRS Cluster 1, August 8, 2002.

<sup>64</sup> Department of Defense Directive, Number 5000.2, 22. A more detailed discussion can be found at enclosure 3, table 3 under contract reporting requirements. The value of earned value management lies in the insight it provides to the Program management team regarding the contractor's performance to plan. It does not directly identify technical or technology related problems. It identifies the possibility of technical problems as a function of cost or schedule overruns.

<sup>65</sup> Ibid. Once the earned value management system identifies a cost or schedule overrun it is the responsibility of the contractor and government program teams to investigate the nature of the overrun. In most cases the overrun will result in some technical difficulty that the contractor is experiencing and at this point the program team must determine if the appropriate course of action is to stay the course or consider cost/performance trades in order to maintain schedule. This process is repeated each time the government reviews the cost performance reports provided by the contractor.

<sup>66</sup> U.S. General Accounting Office, U.S. Congress, Report to Congressional Committees, Defense Acquisitions: Assessments of Major Weapons Programs, Highlights page.

<sup>67</sup> Ibid., 2-6.

<sup>68</sup> Edwards W. Rodgers and Robert P Birmingham, "A Ten Year Review of The Vision for Transforming The Defense Acquisition System

<sup>69</sup> Discussions during the period 2001 to 2003 with members of the Army staff, ASARC secretariat, overarching integrated product team and defense acquisition board.

<sup>70</sup> Department of Defense Directive, Number 5000.1, 4. There are several references to CAIV and EA in the 5000.2 and DoD Desk book as well.

<sup>71</sup> U.S. General Accounting Office, U.S. Congress, Report to Congressional Committees, Defense Acquisitions: Assessments of Major Weapons Programs, 4-7.

<sup>72</sup> Susan F. Byrne, ASARC Executive Secretary, "Minutes of the Joint Tactical Radio System (JTRS) Army Systems Acquisition Review Council (ASARC)." Memorandum for Record, Thru Army Acquisition Executive. May 2002.

<sup>73</sup> Edwards W. Rodgers and Robert P. Birmingham, "A Ten Year Review of The Vision for Transforming The Defense Acquisition System.

<sup>74</sup> Marvin Sambur, "USAF Acquisition: Deliver What's Promised." Defense News, October 25 2004, 92.

<sup>75</sup> U.S. General Accounting Office, U.S. Congress, Report to Congressional Committees, Defense Acquisitions: Assessments of Major Weapons Programs, 128. See recommendations and list of prior studies and related GAO products.

<sup>76</sup> Department of Defense Directive, Number 5000.2, 18-22.

<sup>77</sup> It should be noted that the Deputy Secretary of Defense, Paul Wolfowitz, is in the process of developing a Joint Rapid Action Cell designed to bypass the inefficiencies associated with the review process. In an Army times article written by Megan Scully, dated November 29 2004, titled Rapid Fielding may spread DoD-wide, a graphic is shown comparing the traditional acquisition timeline and a rapid timeline and it shows delivery in the traditional timeline to be 5-7 years with the rapid timeline being only six months to deliver capability to the field. Expect changes in the review process as a result.

<sup>78</sup> Required by the Federal Acquisition Regulation or FAR, pre-solicitation activities are those activities that occur between the government and industry prior to the official release of a request for proposal. It is intended to provide the government with industry input and feedback on government planned solicitations prior.

<sup>79</sup> Feedback provided from Industry representatives to questions that LTC Lockhart prepared and presented in October 2004. Industry Executives chose to remain anonymous.

<sup>80</sup> Claude M. Bolton, "Talks to Defense AT&L." Interviewed by Paul McMahon and Christina Cavoli. Defense AT&L, November-December 2004, pages 2-9.

<sup>81</sup> Megan Scully, "Rapid fielding may spread DoD-wide: Action cell will form to aid field commanders." Army Times, November 29, 2004, page 16.

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