Army Force Management School (AFMS)
February 2013 ***(version 18.0)***

CAPABILITIES DEVELOPMENT AND SYSTEM ACQUISITION MANAGEMENT

2013

- EXECUTIVE PRIMER -

"To prevent conflict, we must maintain credibility, which is partly based on modernization…"

General Raymond T. Odierno
Army Chief of Staff

AH-64D Longbow Apache Block III

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SECTION I
INTRODUCTION

1. Department of Defense (DOD) and U.S. Army Capabilities Development and System Acquisition Management.

This primer describes the DOD and U.S. Army management systems used for capabilities development and research, development, and acquisition (RDA) of materiel systems. These systems can be viewed simply as a combination of structure, process, and culture.

- Structure is the sum of the guidance provided by law, policy or regulation, and the organization provided to accomplish the capabilities development and system RDA management functions.
- Process is the interaction of the structure in producing the output.
- Culture is the cumulative sum of past practices and their impact on interpretation of guidance and attitude toward institutional changes to the system.

2. System Focus.

For the Army, the focus of the capabilities development and materiel system acquisition management systems is producing military units that are adequately trained, equipped, and sustained to execute the *National Security Strategy (NSS), National Defense Strategy (NDS), National Military Strategy (NMS), and Quadrennial Defense Review (QDR)* effectively by developing and acquiring warfighting systems that are affordable and support the national strategies. To facilitate an understanding of the process, this primer will begin by highlighting some of the critical aspects of capabilities development.

SECTION II
CAPABILITIES INTEGRATION AND DEVELOPMENT

3. Policy.

The Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01H mandates policy and the supporting *Joint Capabilities Integration and Development System (JCIDS) Manual* mandates procedural guidance for the JCIDS. The Army supports JCIDS through the Army's JCIDS process discussed in *Army Regulation 71-9* and *Training and Doctrine Command* (*TRADOC) Regulation 71-20*.

4. Joint Capabilities Integration and Development System (JCIDS).

a. The JCIDS, the Defense Acquisition Management System (DAS), and the Planning, Programming, Budgeting, and Execution (PPBE) process form the DOD's three primary decision support systems/processes for transforming the military forces

to support the *NDS*. The procedures established in JCIDS support the Chairman, Joint Chiefs of Staff (CJCS) and the Joint Requirements Oversight Council (JROC) in advising the Secretary of Defense (SECDEF) in identifying, assessing, and prioritizing joint military capabilities-based requirements (needs).

b. JCIDS is a *need driven* joint capabilities-based requirements generation process. The objective is to develop a balanced and synchronized doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) solution approach that is affordable, militarily useful, supportable by outside agencies, and based on mature technology that is demonstrated in a relevant operational or laboratory environment. JCIDS implements an integrated, collaborative process, based on top-level strategic direction, to guide development of new capabilities through changes in DOTMLPF-P. Change recommendations are developed and evaluated in consideration of how to optimize the joint force's ability to operate as an integrated force. This integrated, collaborative approach requires a process that uses joint/services concepts and integrated architectures to identify prioritized high risk capability gaps and integrated joint DOTMLPF-P approaches (materiel and non-materiel) to resolve those capability gaps. Recent changes to the JCIDS have consolidated and institutionalized the previous deliberate requirements generation process with the urgent operational requirements generation process into one standard JCIDS process with three requirement review and validation lanes-deliberate (standard), urgent (institutionalized), and emergent (new). See sections IV and V.

5. Army Implementation of Deliberate JCIDS.

a. Capabilities-based requirements generation begins the Army force development process. Army JCIDS develops an integrated set of Army DOTMLPF-P requirements that support national strategic guidance, *The Army Plan (TAP)* and operational needs of the combatant commands. This process assesses future joint and Army warfighting concepts in the context of the future joint operating environment (JOE) to identify functional needs and solutions. The JOE describes the physical, demographic, political, economic, technological and military conditions in which the Army will operate during the next two decades.

b. Transformation to the future force**.** Today, *TAP* provides the broad direction for the transformation of the Army to meet the exceptional challenges of changing our national security environment. The *TAP* states the way ahead for transforming the Army as an abstract description of a desired goal and it integrates the *NDS* and Army requirements to accomplish the Army role in that strategy. It is influenced by the *NDS* with science & technology (S&T) providing a frame of reference. It is a conceptualization that integrates and leverages information technology, redesigns the

operating forces, and re-engineers institutional forces while retaining current force warfighting capability, by divesting in the near term, while organizing and equipping to operate in the far term. At the same time, the *TAP* seeks to develop future capabilities to achieve an end state of an Army that operates across the full spectrum of military operations.

c. Unlike the joint implementation of JCIDS, the Army begins the JCIDS process with the development of an Army concept framework (ACF) - Army capstone concept (ACC), Army operating concept (AOC), 6 Army functional concepts (AFCs), and 3 concepts directed by CG, TRADOC. Doing so adds front-loaded analysis to capabilities development and refinement through the capabilities-based assessment (CBA) of the concepts to identify gaps in capability and propose solutions to resolve or mitigate those gaps. Properly applied, Army JCIDS produces an integrated set of DOTMLPF-P solution approaches that collectively provide the required capabilities (RCs). As it is grounded in joint/Army concepts, the Army JCIDS provides traceability of all Army system and non-system solutions back to overarching national strategic guidance.

d. The CBA identifies and documents capability gaps; determines the attributes of a capability or combination of capabilities that would resolve the gaps; and identifies non-materiel and/or materiel approaches for possible implementation. As a result, the concepts-centric Army JCIDS process is a robust analysis of warfighting capabilities compared and contrasted to the expected JOE. This process helps ensure the Army considers the most effective joint force capabilities and the integration of those capabilities early in the process. Appropriate component, cross-component, and interagency expertise; S&T community initiatives; wargaming and experimentation results must be considered in the development of DOTMLPF-P solutions. Due to the wide array of issues considered in the Army JCIDS process, the breadth and depth of the analysis must be tailored to suit the issue. Ultimately, the CBA will be based upon integrated architectures and analytic assets. In the interim, the CBA will utilize existing analytical resources.

e. Deliberate Joint/Army JCIDS documentation - initial capabilities document (ICD), capability development document (CDD), capability production document (CPD), and the DOTMLPF-P change recommendation (DCR) - provides the formal communication of DOTMLPF-P solutions between the user and the acquisition, test and evaluation, and resource management communities.

6. Standing Integrated Capabilities Development Teams (ICDTs).

a. Standing ICDTs are a gathering of multi-disciplined personnel, formally chartered by the Director, TRADOC Army Capabilities Integration Center (ARCIC), to

prioritize, integrate, and synchronize all DOTMLPF-P requirements within their assigned portfolio and those interdependent capabilities requiring integration across other TRADOC functional and/or organizational portfolios. A "portfolio" includes all solutions across the DOTMLPF-P within assigned Army warfighting functions (WFF) and organizations.

b. The Director, ARCIC, chartered six Center of Excellence (CoE) standing ICDTs to conduct a complete warfighting functional portfolio review on a biennial basis to support the Army Force Generation (ARFORGEN) process and products. Portfolio reviews include: conducting and/or updating the assigned WFF capabilities based assessment (CBA) that addresses the RCs delineated in the assigned Army functional concept (AFC) (and any other applicable concepts); identification, risk assessment, and prioritization of gaps in all DOTMLPF-P domains; and proposing mitigating solutions across DOTMLPF-P for those gaps considered to have unacceptable risk. These reviews are resource-informed, integration-focused, and outcome-based (RIO) and address the full scope of assigned warfighting functions and solutions to include an assessment of all approved programs of record (PORs) and fielded systems. The assigned CoE will also be responsible for conducting DOTMLPF-P assessments, integration and synchronization for their designated organizational structures (e.g., Fires Brigade).

c. The ICDT membership and participants vary, depending on the specific product; however, core membership always includes representation across the DOTMLPF-P domains. The ICDT charter identifies the membership, the participating organizations, and the expected deliverables. While industry and academia are not members of the ICDT, their input is a key to the process risks the Army may face and what it might cost.

d. The six WFF standing ICDTs are:
- Fires WFF - U. S. Army Fires CoE, Fort Sill, OK;
- Intelligence WFF - U. S. Army Intelligence CoE, Fort Huachuca, AZ;
- Mission Command WFF - U. S. Army Combined Arms Center, Mission Command CoE, Fort Leavenworth, KS;
- Movement and Maneuver WFF - U. S. Army Maneuver CoE, Fort Benning, GA;
- Protection WFF - U. S. Army Maneuver Support CoE, Fort Leonard Wood, MO;
- Sustainment WFF - U. S. Army Combined Arms Support Command CoE, Fort Lee, VA.

7. Concept Development and Experimentation (CD&E).
CD&E is a campaign of learning supporting current and future force development through a two-path approach - concept development and prototyping. Concepts,

developed and refined through wargames and experiments, are the basis for determining the capabilities required for the future force.

a. Concepts. Concepts are the centerpiece of the CD&E process. An operational concept is a generalized visualization of operations. It describes a problem to be solved, the components of the solution to that problem, and the interaction of those components in solving the problem.

(1) Concepts serve as the foundation for architecture development and for generating capabilities-based DOTMLPF-P solutions - doctrine (fundamental warfighting principles and tactics, techniques, procedures (TTPs)) development, organizational design changes, training initiatives, materiel solutions, leadership and education requirements, personnel solutions, facilities renovation/design, and policy - through an evolutionary development process that results in enhanced capabilities at the unit level.

(2) Components of an operational concept include a description of the joint operating environment (JOE) and its associated range of operational challenges, a set of concepts that address the "how to" of countering and overcoming the challenges posed, and a corresponding set of required capabilities (RCs) and initial force design principles needed to implement the concept.

b. Joint/Army concept development. Fundamental ideas about future concepts of military operations and their associated capabilities are documented in operational concepts. The translation of concepts into capabilities is an iterative process. To maximize their future utility, concepts are broadly based and encompass both the art and science of future warfighting, continually refined through wargaming, experimentation, assessment, and analysis.

(1) Joint concepts consists of a capstone concept for joint operations (CCJO), supporting joint concepts (JCs) and joint capability areas (JCAs). These concepts address the period from just beyond the Future Years Defense Program (FYDP) out to 20 years. The National Security Strategy (NSS), Defense Strategic Guidance (DSG), National Defense Strategy (NDS), Unified Command Plan (UCP), Defense Planning Guidance (DPG), and Quadrennial Defense Review (QDR) provide top-level strategic guidance for joint concept development and are the impetus for deriving capabilities needed to shape the joint force.

(a) Capstone concept for joint operations (CCJO). The CCJO is the vision of the Chairman of the Joint Chiefs of Staff (CJCS) and the overarching joint concept that guides joint force development, bridges strategy and operational concepts/doctrine, and defines a "new way of war." The CCJO articulates a high-order vision of how the future force will operate, describes the future operating environment, advances new concepts for joint operations, and suggests attributes that will define the future force. The CCJO aims to establish a bridge from strategic guidance to subordinate concepts, force development guidance, and follow-on doctrine. Service concepts and

subordinate JCs and JCAs expand on the CCJO solution. The CCJO concludes by presenting risks and implications associated with the concept. The CCJO is approved by the CJCS. The current CCJO is "globally integrated operations" with the following key elements: mission command; regional focus with global agility; leverage partners to maximize mutual advantage; flexible options in establishing joint forces—AC/RC mix; cross-domain synergy; use of flexible, low signature capabilities; and discrimination.

(b) Joint concepts (JCs). JCs link strategic guidance to the development and employment of future joint force capabilities and serve as "engines for transformation" that may ultimately lead to DOTMLPF-P changes.

(c) Joint capability areas (JCAs). JCAs are collections of like Department of Defense (DOD) capabilities functionally grouped to support capability analysis, strategy development, investment decision making, capability portfolio management, and capabilities-based force development and operational planning. There are currently nine JCAs: Force Support; Battlespace Awareness; Force Application; Logistics; Command & Control; Net-Centric; Protection; Building Partnerships; and Corporate Management and Support.

(2) Army concept framework (ACF). The Army documents its fundamental ideas about future joint operations in the ACF, promulgated in TRADOC 525-series pamphlets. The ACF family of concepts consists of a capstone concept, an Army operating concept (AOC), Army functional concepts (AFCs), and concepts directed by CG, TRADOC. Concepts facilitate the visualization and communication of the Army's key ideas on future operations.

(a) As the lead document of the Army Concept Framework, TRADOC Pam 525-3-0, The U.S. Army Capstone Concept (ACC) describes our vision of the future operational environment, the role of the Army in the joint force, and the broad capabilities required by future Army forces. The ACC provides a guide to how the Army will apply available resources to overcome unpredictable and complex challenges and prevent, shape and win in support of recent strategic guidance. The ACC also serves as the foundation for a campaign of learning that will evaluate and refine its major ideas and required capabilities. Finally, the ACC provides a roadmap for development of a comprehensive investment strategy that will rebalance the Army's force structure, readiness, and modernization efforts in support of national strategy. The ACC establishes that the Army must maintain a credible capacity to win decisively and support combatant commanders across a wide range of military operations at home and abroad. Further, the ACC retains the idea of operational adaptability as the fundamental characteristic of the Army required to execute a wide variety of missions for both the institutional Army as well as the operating force. Within the ACF, this concept is the baseline of a campaign of experimentation and analysis which will test these ideas. The ACC is the unifying framework for developing the AOC, AFCs, and integrated architectures.

(b) The Army operating concept (AOC), documented in TP 525-3-1, provides a generalized visualization of operations across the range of military operations. The AOC describes the Army's contribution to national security within the context of joint operations. It focuses on the operational and tactical levels of war and explains how the Army, 6-18 years in the future, employs combined arms maneuver and wide area security as part of full-spectrum operations to accomplish military missions on land. By addressing these operations in a way that illustrates how the Army integrates its warfighting functions, the AOC provides a conceptual framework for the development of subordinate Army functional concepts. The functional concepts, in turn, contain more specific explanations of how Army forces operate within each warfighting function and outline their mutual dependencies. The AOC does not include the details required to initiate the JCIDS CBA.

(c) The Army functional concepts (AFCs) describe how the Army force will perform a particular military function across the full range of military operations 6-18 years in the future. AFCs support the capstone concept and the AOC, as well as joint concepts, and draw operational context from those documents. Organized along the lines of the classic functions of a military force, the 6 AFCs are Fires, Intelligence, Mission Command, Movement and Maneuver, Protection, and Sustainment. As an integrated suite of concepts, they describe the full range of land combat functions across the range of military operations. AFCs may include the details required to initiate the JCIDS CBA.

(d) Three additional concepts devoted to learning, training, and the human dimension round out the ACF. The Army learning concept describes the learning model required by the future Army to develop adaptive, thinking Soldiers and leaders. The Army training concept outlines the requirements and capabilities of the future force to generate and sustain trained and capable units. TP 525-3-7 outlines how the Army will develop the cognitive, physical, and social components of every Soldier to operate within the Army in full-spectrum operations. Collectively, the ACF defines the Army's vision of how it will operate in the future and provides the conceptual framework needed to determine the capabilities required across the Army to ensure future force effectiveness.

c. Concept of operations (CONOPs). A CONOPS is a verbal or graphic statement, in broad outline, of a commander's assumptions or intent in regard to an operation or series of operations. It is designed to give an overall picture of the operation and provides a useful visualization of how a future operation would be conducted. It is frequently embodied in campaign and/or operational plans; in the latter case, particularly when the plans cover a series of connected operations to be carried out simultaneously or in succession. When used in concept development, it is a tool to help describe how a particular operation is conducted in the future.

(1) For joint concepts and ACF families of concepts, CONOPS provide the overall understanding of an operation and the broad flow of tasks assigned to

subordinate/supporting entities. It presents the joint force or land component commander's plan that maps capabilities to effects to accomplish the mission for a specific scenario 8 to 20 years into the future. CONOPS focus on describing the end-to-end streams of activities and how the commander might organize and employ forces to accomplish those activities.

(2) The following two types of CONOPS may be used in the joint concepts and ACF concept development process:

(a) Illustrative vignettes provide operational context to describe how a joint force commander might organize and employ forces 8 to 20 years into the future. These vignettes are used to clarify and increase understanding of the concepts.

(b) Defense planning scenarios (DPS) and Army scenarios (based on DPS) are written, 8 to 20 years into the future, in order to facilitate experimentation and CBA under JCIDS. These scenarios have classified CONOPS that provide a high level of specificity and defined parameters to aid in robust analysis of capabilities, and a comparison of alternate solutions.

(3) For near-term requirements, CONOPS have a different use. They are written to describe how a joint force and/or Army commander may organize and employ forces now through 7 years into the future in order to solve a current or emerging military problem. These CONOPS provide the operational context needed to examine and validate current capabilities and examine new and/or proposed capabilities required to solve a current or emerging problem. There is no strict format for a CONOPS used to support capabilities development, but it should cover the following areas at a minimum: the problem being addressed, the mission, the commander's intent, an operational overview, functions or effects to be carried out/achieved, and the roles and responsibilities of affected organizations.

d. Force operating capabilities (FOCs).

(1) The TRADOC ARCIC establishes required FOCs as the foundation upon which to base the JCIDS CBA process. These critical, force-level, measurable statements of operational RC frame how the Army will realize future force operations as stated in the approved capstone, operating and functional warfighting concepts. The FOCs help focus the Army's Science and Technology Master Plan (ASTMP) and warfighting concepts development and experimentation (CD&E) efforts. All warfighting capabilities-based requirements must have direct linkage through an FOC to an approved Army concept (capstone, operating, and functional) and the TAP. FOCs are listed biannually in TRADOC Pamphlet 525-66.

(2) TRADOC Pamphlet 525-66 also guides independent research & development (IR&D) efforts. By providing the private sector an unclassified, descriptive list of desired FOCs, the Army is able to tap into a wealth of information and new ideas on different means to achieve those capabilities. The Army encourages industry to share these ideas with the appropriate capability developer (CAPDEV) and training developer (TNGDEV) organizations.

e. Experimentation. Experimentation is the heart of joint/Army's capabilities integration and development system (JCIDS). Experimentation explores warfighting concepts to identify joint and Army DOTMLPF-P change recommendations and capabilities needs. It provides insight and understanding of the concepts and capabilities that are possible given the maturity of specific technologies and capabilities that need additional research and development emphasis. The results of joint/Army experimentation help define the art of the possible and support the identification of DOTMLPF-P solutions to provide new capabilities. Progressive and iterative mixes of high fidelity live, virtual, constructive (LVC) and simulations using real Soldiers and units in relevant, tactically competitive scenarios provide joint/Army leaders with FOC insights. Warfighting experiments are conducted to gain an understanding about some aspect of future warfighting. Capability insights from warfighting experiments are "way points" used to plot the future course to the future force.

(1) The FY13 Joint Development Execution Plan is the Joint Staff, J-7's, directed plan supporting futures development. The plan provides a brief highlight of each experimentation project that will be executed during FY13, to include purpose, scope, end state, expected deliverables, and dates of completion.

(2) The FY13 Army Experimentation Plan (AEP) is the Army's directed plan supporting futures development. It integrates Army concept development and experimentation (CD&E) in a coherent service/joint context to ensure the Army provides combatant commanders (CCDRs) with sustained land capabilities that are an indispensable, decisive component of the joint force. The objective of the AEP is to validate Army concepts with the operational force prior to implementation, assess integration of significant, complex changes across the DOTMLPF-P spectrum, support the AOC central ideas; and through Army experimentation, provide Network Integrated Evaluations (NIE) with technology solutions ready for evaluation. Ultimately, the goal of CD&E is to reduce risk through learning, innovation, and pushing the limits of the possible. The AEP is a holistic effort that inductively and deductively examines the future, supporting both current and future force development. Simply put, the AEP is about what the Army must learn, when, and how. Army experimentation is hypothesis based - the overarching hypothesis is that the future force capabilities will provide the joint force commander a means to rapid decision-making by providing a much broader range of decisive capabilities. The AEP is about validating that hypothesis.

(3) The Army CD&E strategy spans two mutually supporting, yet distinct paths-prototyping and concept development:

(a) The prototype path satisfies critical operational needs and tests compelling technology to shape the future and spirals forward feasible future force capabilities. Prototype experiments address current force annually defined Capability Needs Analysis (CNA) capability gap areas. At any point in time, the Army is a hybrid of

new and existing capabilities. Prototyping also informs the future force and supports the Army Brigade Combat Team Modernization Program (ABCTMP) by prototyping ABCTMP spinout capabilities. Spinout capabilities support development and validation of DOTMLPF-P products for ABCTMP spinout systems, and assist with system-of-systems (SoS) and current force integration. "Spinout" is a term developed by OSD to describe the unique method in which the ABCTMP program provides mature ABCTMP capabilities/technologies to the current force while simultaneously maintaining focus on achieving threshold and objective capabilities for the Army's future force.

(b) The concept development path develops a concepts-based, coherently joint future force using LVC experimentation to provide actionable recommendations to reduce future force development risk. The concept development path is focused by approved foundational operational themes which contain the key ideas of Army warfighting concepts.

f. In summary, a robust CD&E program can optimize return on investment while acknowledging that there are elements of the future that cannot be planned. Conducting a deliberate and coordinated CD&E program enables transformation by ensuring some resources are allocated to prototyping emerging concepts and capabilities which, in turn, enable robust and adaptive transformation.

8. DOD Science and Technology (S&T).

Since World War II, owning the technology advantage has been a cornerstone of our *NDS.* Technologies such as radar, jet engines, nuclear weapons, night vision, global positioning, smart weapons, stealth, situational awareness, precision munitions, protection, robotics, and biotechnology have changed warfare dramatically. Maintaining this technological edge has become even more important as high technology weapons have become readily available on the world market. In this environment, it is imperative that joint forces possess technological superiority to ensure success and minimize casualties across the broad spectrum of engagements. The technological advantages enjoyed by the United States in Afghanistan and Iraq, which are still employed today, are the legacy of decades of wise investments in S&T. Similarly, our warfighting capabilities 10 to 15 years from now will be substantially determined by today's investment in S&T.

9. Army Science and Technology (S&T).

The Army's S&T investments support the Army full spectrum operations focusing on the future force while, at the same time, seeking opportunities to provide advanced technology to the current force. This dual strategy requires a dynamic technology investment portfolio that is strategically aligned with the Army's future operational capability needs and that maintains an awareness of the lessons learned from current overseas contingency operations. Fundamentally, Army S&T programs are seeking to

provide solutions that enable faster, lighter and smarter systems.

a. The S&T program supports Army full spectrum operations in three ways. First, Soldiers benefit today from technologies that emerged from the Army's past investments. Second, S&T exploits transition opportunities by accelerating mature technologies derived from ongoing efforts. Finally, Army S&T leverages the expertise of our scientists and engineers to develop solutions to unforeseen problems encountered during current operations, such as the slat armor applied to Stryker combat vehicles for enhanced rocket-propelled grenade (RPG) protection.

b. The ultimate goal of the Army's S&T program is to provide the Soldier with a winning edge on the battlefield. The accelerating pace of technological change continues to offer significant opportunities to enhance the survivability, lethality, deployability, and versatility of Army forces. High technology research and development is, and will remain, a central feature of *The Army Plan (TAP).* The key to the *TAP* strategy is the planned transition of promising technology developments into tomorrow's operational capabilities. Technology demonstrations (TDs), discussed later, which evolve into systems and system upgrades incorporated in the *Army Modernization Plan (AMP)* accomplish this transition.

c. Army S&T programs are an integral part of capabilities development and system acquisition management. The S&T program consists of three stages - basic research (6.1), applied research (6.2), and advanced technology development (6.3). The identifiers--6.1, 6.2, etc.--are commonly used for identifying funds; but they are also used as a shorthand technique by members of the R&D community to identify levels of research development. For example, instead of referring to a project as being "in applied research," it is often referred to as being "6.2". The 6.1, 6.2, and 6.3 categories are known as the "tech base". Basic research (6.1) includes all efforts of scientific study and experimentation directed toward increasing knowledge and understanding in those fields related to long-term national security needs. Applied research (6.2) includes all efforts directed to the solution of specific military problems, short of major development projects. Advanced technology development (6.3) includes all efforts directed toward projects, which have moved into the development of hardware for testing of operational feasibility. Initiatives, such as the DOD joint capability technology demonstrations (JCTDs), discussed later in this primer, obscure the distinction between S&T and development -- pre- and post-acquisition milestone B activities.

(1) Army S&T has been at the forefront in adapting technology for urgent operational needs, as exemplified by the First Strike Ration, which reduces the weight of the daily combat food rations carried by Soldiers in initial periods of high intensity conflict by 40-50 percent. Likewise, DOD scientists and engineers continuously harvest materiel solutions from past investments, such as the development of mine

detection ground penetrating radar. They also provide extraordinary technical expertise resulting in the development and integration of technologies, such as lightweight armor. This armor has dramatically enhanced Mine Resistant Ambush Protected (MRAP) vehicle survivability in the face of constantly evolving threats. Also, Army S&T provides the technology for many of the upgrade and modernization programs for existing systems.

(2) The S&T program will continue to invest in a diverse portfolio of technologies and research. A significant S&T investment is made in basic research areas such as advanced materials, nanotechnology, biotechnology, network science, science of autonomy, immersive technology, and quantum information science. Other large investment areas focus on protection technologies, where we are seeking to develop technologies for active and passive protection of the Soldier, ground vehicles, and air platforms. Army S&T continues to invest heavily in command, control, communication, computer, information, surveillance and reconnaissance (C4ISR), medical/force health protection, lethality, Soldier systems, logistics, rotorcraft, unmanned systems, and advanced simulation.

d. A mainstay of the Army strategy for military technology is a viable in-house research capability. Research, Development, and Engineering Command (RDECOM), Research, Development, Engineering Centers (RDECs) and laboratories are the key organizations responsible for technical leadership, scientific advancements and support for the capabilities development and system acquisition management processes. Activities of these organizations range from basic research to the correction of deficiencies in field systems. Academia and industry, as well as hands-on bench work contribute to the S&T mission. Technology insertion into systems is accomplished via the flow of patents, data, design criteria, and other information into TDs, ATDs, JCTDs, new designs, and fielded systems.

e. Overall, the Army's S&T strategy and programs are committed to the maintenance of technological superiority, while preserving the flexibility to cope with a wide array of possible threat, technology, and budget environments. The Army's investment in S&T is paramount and is playing a greater role in acquisition than ever, particularly since the advent of DOD JCTDs.

f. A series of reviews of current and proposed S&T activities guide focused research. The first is an annual assessment of all proposed Army funded S&T projects. It is conducted based on an appreciation of current capabilities, ongoing S&T activities and their applicability to the force operating capability (FOC) described earlier in the primer in *TRADOC Pamphlet 525-66.* Building from the S&T project review, a list of the top Army technology objectives (ATOs) candidates--the Army's most important technology projects--are generated. There are 3 distinct types of ATOs. ATO-Research (ATO(R)) focuses on laboratory applications to determine feasibility and potentially

provide technology options in the mid- and far- terms. ATO-Demonstration (ATO(D)) focuses on products and transition into the acquisition Engineering and Manufacturing Development (EMD) phase for warfighting capability. ATO-Manufacturing Technology (ATO(M)) is focused on improving affordability and producibility of new technology and reducing operation and support (O&S) cost for fielded systems. Based on formal developmental milestones and achievement measures, the Army Science and Technology Working Group (ASTWG) approves each ATO. The *AMP* provides the basis for ATDs, which showcase a variety of advanced technologies and their potential military merit. In addition to advancing the technology, these S&T activities aid the TRADOC ARCIC chartered CoE standing ICDTs, previously discussed, to better understand the "art of the possible" and refine the many requirements associated with them.

g. As with some concepts, S&T research occasionally produces an item that is recognizable as a defined requirement that should be documented and resourced. Most S&T products must be evaluated in warfighting experiments (previously discussed) before a decision is made to document them as materiel requirements.

h. Oversight of the S&T program is provided by the Army Science and Technology Advisory Group (ASTAG), which is co-chaired by the Army Acquisition Executive (AAE) and the VCSA (figure 1). The ASTWG, is co-chaired by the Army S&T executive (the Deputy Assistant Secretary of the Army for Research and Technology), and the HQDA DCS, G-8 Director, Force Development. The ASTWG provides general officer level resolution of pressing S&T issues prior to meetings of the ASTAG; and recommends ASTAG revisions to the Army's S&T vision, strategy, principles, and priorities; and reviews and approves ATOs.

i. The Army S&T program is organized into investment portfolios that address challenges in 6 capability areas: 4 Army-wide areas (Air; Soldier; Ground and Command, Control, Communications and Intelligence (C3I)) and 2 areas unique to S&T (Basic Research and Enduring Technologies):

(1) The Air Portfolio includes technologies for manned and unmanned systems; air-delivered lethality; and air-platform safety, survivability and protection.

(2) The Soldier Portfolio includes technologies for Soldier and Squad Lethality, Survivability, Mobility; Leader Development; Training; Combat Casualty Care and Clinical and Rehabilitation Medicine capabilities.

(3) The Ground Portfolio includes technologies for weapons systems, active and passive protection systems for ground vehicles, manned and unmanned ground platforms and mobility systems, countermine/counter-IED efforts and deployable small base protection.

(4) The C3I Portfolio includes technologies for ground, air and Soldier communications devices and networks, air and space sensor and network payloads and Mission Command.

(5) The Basic Research Portfolio provides a fundamental S&T foundation to enable Army-relevant technology capabilities.

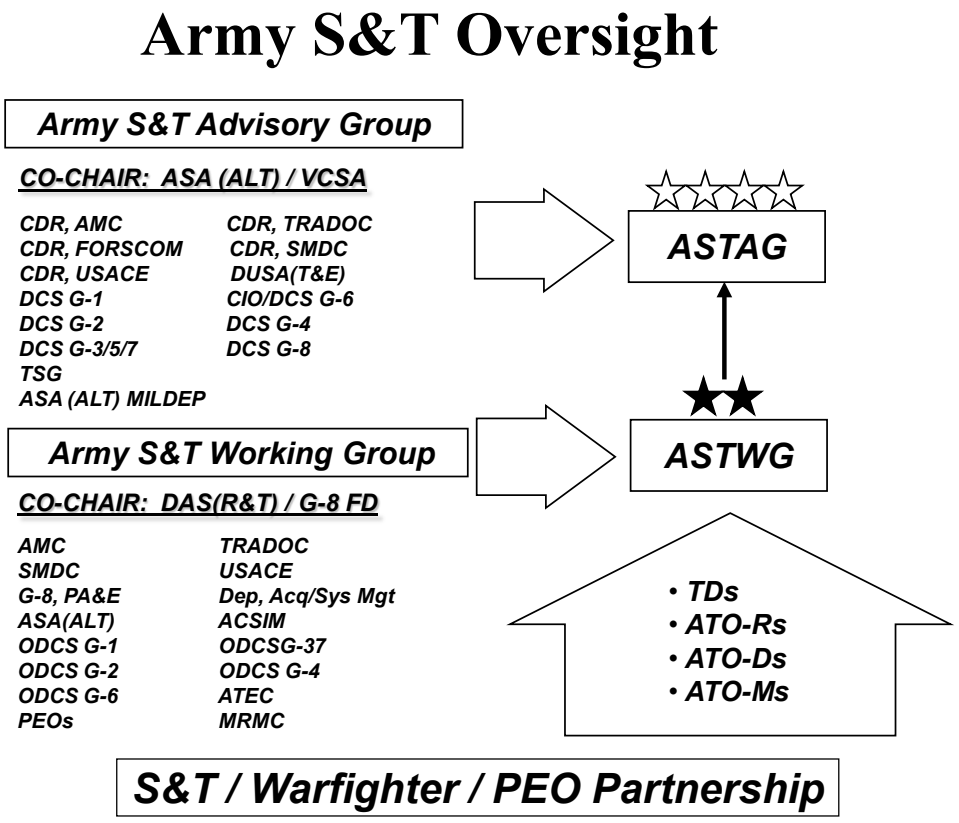


Figure 1

(6) The Enduring Technologies Portfolio includes technology development associated with environmental quality and installations, such as sustainable ranges and lands, pollution prevention, military materials in the environment and adaptive and efficient installations. It also includes the DOD High Performance Computing Modernization Program, which was devolved from OSD to the Army in FY12. This program supports all services and DOD agencies, enables incorporating advanced computational capabilities as a solution of first resort to explore and evaluate new theories; reduces time and cost of acquiring weapons systems; and provides real-time calculations in support of military operations.

10. Army Technology Transition Strategy.

The basic strategy of the S&T program is to transition mature technologies into

operational systems that satisfy validated warfighting capabilities-based materiel requirements. The key to this strategy is demonstrations. TDs, ATDs, and JCTDs exploit technologies derived from applied research (6.2), which in turn build on new knowledge derived from basic research (6.1) programs. These TDs, ATDs and JCTDs provide the basis for new systems, system upgrades, or advanced concepts which are further out in time. The critical challenge is to tie these programs together in an efficient and effective way. TDs are not new. What is new is the scope and depth of the TDs, the increased importance of their role in the capabilities development and system acquisition management processes, and the increased emphasis on user involvement to permit an early and meaningful evaluation of overall military capability. The following sections provide an explanation of technology maturity, TDs, ATDs, JCTDs as well as systems/system upgrades.

a. Technology maturity. Technology maturity measures the degree to which proposed critical technologies meet program objectives. Technology maturity is a principal element of program risk. A technology readiness assessment (TRA) examines program concepts, technology requirements, and demonstrated technology capabilities to determine technological maturity.

(1) TRAs for critical technologies occur prior to Defense Acquisition Management System (DAS) milestone decision review (MDR) for MS B and C to provide useful technology maturity information to the acquisition review process.

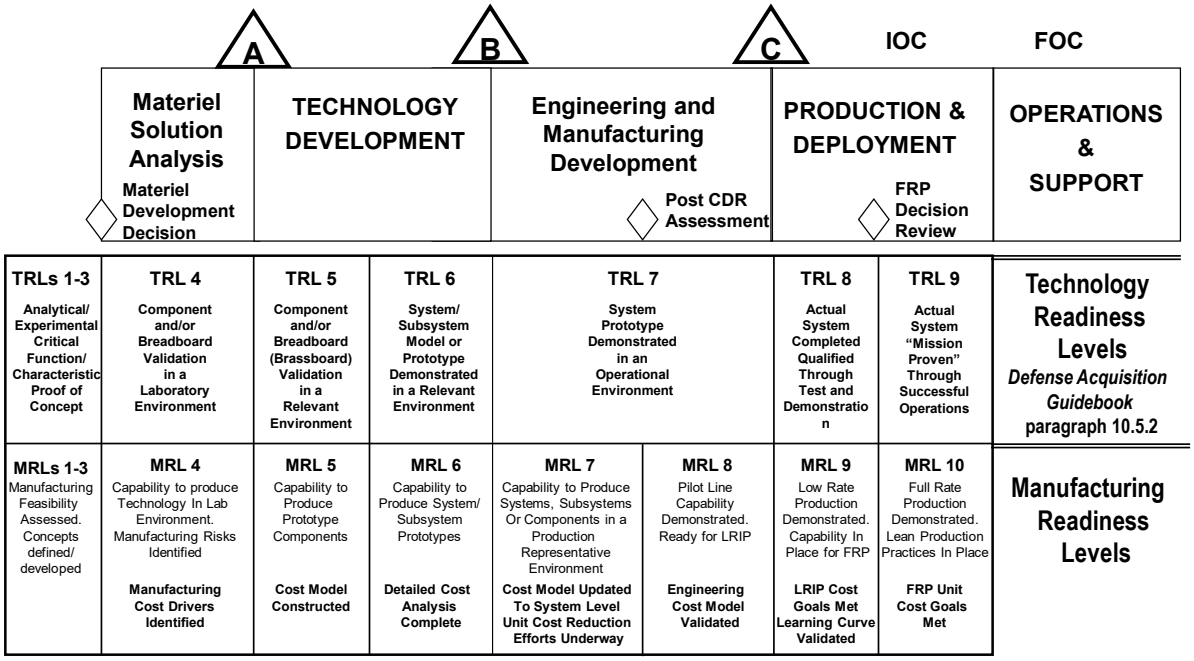
(2) The Deputy Assistant Secretary of the Army (Research and Technology) DASA(R&T), directs the TRAs and for major defense acquisition programs (MDAPs), submits the findings to the AAE, who submits the report to the Deputy Under Secretary of Defense for Science and Technology DUSD(S&T) with a recommended technology readiness level (TRL), figure 2, for each critical technology**.** In cooperation with the DASA(R&T), the DUSD(S&T) evaluates the TRAs and, after concurrence, forwards the findings to the DOD overarching integrated product team (OIPT) leader and Defense Acquisition Board (DAB) or the Information Technology Acquisition Board (ITAB). If the DUSD(S&T) does not concur with the TRA findings, an independent TRA, under the direction of the DUSD(S&T), will be required. DOD OIPTs and acquisition boards will be discussed later in this primer.

(3) TRLs are a measure of technical maturity that enables consistent, uniform, discussions of technical maturity, across different types of technologies. Decision authorities must consider the recommended TRLs when assessing program risk. TRL descriptions appear in the *Defense Acquisition Guidebook.*

b. Technology demonstrations (TDs). The primary focus of TDs is to demonstrate the feasibility and practicality of a technology for solving specific military requirements. They are incorporated during the various stages of the 6.2 and 6.3 development process and encourage technical competition. They are most often

conducted in a non-operational (laboratory or field) environment. These demonstrations provide information that reduces uncertainties and subsequent engineering cost, while simultaneously providing valuable development and requirements data.

Technology and Manufacturing Readiness Levels



Section 2366b of Title 10, United States Code, requires certification that: the technology in the program has been demonstrated in a relevant environment to enter Milestone B [TRL 6]

Figure 2

c. Advanced Technology Demonstrations (ATDs). ATDs are typically integrated demonstrations that are conducted to demonstrate the feasibility and maturity of an emerging technology. They provide a relatively low-cost approach for assessment of technical risks and uncertainties associated with critical technologies prior to the incorporation of these technologies into a system entering the formal acquisition process. They are conducted at the service and DOD agency level with internal funding. They focus on evolving a specific element of technology nominally at the 6.3 advanced technology development point (typically TRL 5-6) to reduce its risk of implementation by an acquisition program or to feed into a Joint Capability Technology Demonstration (JCTD).

d. Joint Capability Technology Demonstrations (JCTDs). DOD initiated the JCTD process to permit the early and relatively inexpensive evaluation of mature advanced

technologies. The Soldier evaluates JCTDs to determine military utility of the technologies and to develop the concept of operations (CONOPS) that will optimize effectiveness. JCTDs are structured and executed so that, when successful, DOD can proceed rapidly into formal acquisition systems.

(1) By introducing new technologies in the field prior to the initiation of formal systems acquisition, DOD allows operators, who have experience in combat, to evaluate and assess the military utility and develop the tactics to ensure that we can realize the full potential of the substantial technology base that is available—both DOD and commercial. JCTDs are not a means by which to circumvent the formal acquisition process, but rather a means to enter that process based on a user assessment of the value of the new capability that reduces the user acceptance risk. This process helps DOD make more informed acquisition decisions and improve its acquisition cycle time.

(2) The Deputy Under Secretary of Defense for Advanced Systems and Concepts (DUSD(AS&C)), designs JCTDs to transfer technology rapidly from the developers to the users. JCTDs are user oriented and represent an integrated effort to assemble and demonstrate a significant, new or improved military capability based on mature advanced technologies. Also, they are on a scale large enough to demonstrate operational utility and end-to-end system integrity. As key participants, the operational user and materiel development communities jointly develop and implement a demonstration. JCTDs allow the Soldier to:

- evaluate a technology's military utility before commitment to a major acquisition effort,
- develop CONOPS for employing the new technology,
- retain a low-cost, residual operational capability, if desired.

When an JCTD has been completed, DUSD(AS&C) elects one of the following alternative actions based on the results of the exercises:

- based on demonstrated military utility, execute the transition of the successfully demonstrated technology directly to the Soldier making only necessary minor, or perhaps no modifications to the existing hardware or software. This transition approach is particularly appropriate where Soldiers require only small quantities of the new equipment.
- based on demonstrated military utility, enter the formal DAS at the appropriate milestone (MS) B or C as per the appropriate Materiel Development Decision (MDD).
- terminate the efforts or restructure them based on the evolved CONOPS and lessons learned during the JCTD.

(3) Over the past 6 years, the Joint Staff, unified commanders, and military services have forwarded proposals for a number of JCTDs to DOD. Also, industry and many DOD research and development agencies have proposed candidate JCTDs. Some JCTDs are completed in less than 1 year and evaluate a very specific technology or address a particular mission area; others are several years long and

include coordination of multiple developing technology programs into a series of specific demonstrations. The goal is to complete a JCTD within a 1 to 3 year period.

(4) DUSD(AS&C) coordinates all JCTD proposals, including recommendations on potential participants, with the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L) and the VCJCS, based on prioritization from the JROC and reviews by JCTD senior members of OSD, service, agency, and the combatant command S&T community.

e. Systems and system upgrades.

(1) The development of the next set of materiel systems requires prior demonstration of the feasibility of employing new technologies. "New-start" systems are those next in line after the ones currently fielded or in production. For these systems, most technical barriers to the new capability have been overcome. Generally, these systems can enter the DAS EMD phase relatively quickly as a result of the successful demonstration of enabling technologies. Based on current funding guidance and support for overseas contingency operations (OCO), the number of "new-start" systems is in a sharp decline.

(2) The Army is pursuing incremental improvements to existing systems to maintain its technological edge. These improvements are designated as systems modifications. System modifications are brought about through technology insertion programs, service life extension programs (SLEPs), preplanned product improvements (P3I), and block improvement programs. These modifications are based primarily on the success of funded 6.3 TDs. The 6.3 TDs are the basis for the system modification or have a high probability of forming the basis for the system modification.

11. Capabilities-Based Assessment (CBA) Process.

The Army JCIDS CBA is a structured, three-phased JCIDS process that includes functional area, needs and solution analyses that are used to develop capability documents. The three major phases of the JCIDS directed CBA are the functional area analysis (FAA), the functional needs analysis (FNA), and the functional solution analysis (FSA) of non-materiel and materiel approaches. The product of CBA is a materiel or non-materiel approach, with DOTMLPF-P implications, that provides the identified required capability (RC) based on satisfying need, technical maturity, technical risk, supportability, affordability (best available data), timeliness of delivery, and potential for meeting full capability. In the Army, the materiel approach product is articulated in a functional area strategic framework delineating a modernization roadmap that satisfies the identified needs over the desired time-frame. These strategic frameworks produce timely input to the materiel acquisition and resourcing (PPBE) processes. The results of the CBA become the basis for the ICD and/or joint DCR. In this context, the CBA results are merely a tool. Currently, the Joint Staff (JS) has streamlined the CBA process and eliminated the terms FAA, FNA, and FSA,

while retaining the CBA methodology. The Army is retaining these terms.

a. Joint Operating Environment (JOE). The CBA process begins with an analysis of the JOE. This analysis describes the physical, demographic, political, economic, technological and military conditions in which the joint/Army force will operate during the next 25 years. The JOE results from an analysis of military and civilian documents, classified and unclassified, that describe future world conditions. Analyzed through the lens of professional military judgment (PMJ), the JOE serves as a basis for shaping future force operating capabilities (FOCs), previously discussed.

(1) The JOE is described in *The 2010 Joint Operating Environment (JOE).* This living document serves as the frame of reference for developing the concepts that provide a macro-level description of the future force's operational tasks and specific functional areas required in the JOE. Also, the JOE supports joint/service concept development and experimentation (CD&E) processes.

(2) The JOE reflects the analysis and assimilation of dozens of futures studies conducted by DOD, other government agencies, academia and industry, considered in relation to the *National Security Strategy (NSS),* the *National Defense Strategy (NDS)*, and *Defense Planning Guidance (DPG).* Joint experimentation and exercise wargames and the Army transformation process further supplement the development and definition of the JOE. Ultimately, these studies provide the basis for detailing the Army's future force, and for its subsequent preparation for combat.

b. Functional Area Analysis (FAA). The FAA is the first analytical phase of the JCIDS-directed CBA. Strictly a capabilities-based task analysis, the FAA provides the framework to assess RCs in the follow-on FNA.

(1) The input to the FAA is an approved joint concept (JC), Army functional concept (AFC) or CONOPS that describes how the force will operate, the timeframe and environment in which it must operate, its RCs (in terms of missions and effects), and its defining physical and operational characteristics. Any analysis begins with a problem statement, and the FAA must start with the military problem to be examined. From the examination of the problem statement, the FAA isolates the RCs documented in the concept, identifies those tasks that the force must perform, the conditions of task performance, and the required performance standards. The output is a list of RCs and associated tasks and attributes. Mapped to each RC, the tasks, conditions, and standards are developed to the level required for analysis against which current and programmed capabilities will be evaluated in the follow-on FNA. Not all warfighting concepts will necessarily generate an FAA.

(2) The FAA is based on professional military knowledge of established doctrine and standards that are modified to account for the projected concept for future operations and organizations. The FAA employs operational analysis that is primarily qualitative in nature. The analysis must identify the tasks that must be performed to accomplish the mission or achieve effects, and the specific conditions (e.g., weather, terrain, threat) in which the tasks must be performed. Many of these conditions are

described in the Universal Joint Task List (UJTL), but they must be adapted based upon PMJ of related operational experiences and the forecasted influence of the future environmental factors. The performance standards developed for required tasks are found in the Army Universal Task list (AUTL), UJTL, approved concepts, or may also be based on operational experience.

c. Functional Needs Analysis (FNA). The FNA is the second analytic phase in the CBA. It assesses the ability of current and programmed Army capabilities to accomplish the tasks identified in the FAA, in the manner prescribed by the concept, under the full range of operating conditions, and to the prescribed standards. The FNA will identify any gaps and overlaps in capabilities and the risk posed by those gaps. The FNA determines which tasks identified in the FAA cannot be performed, performed to standard, performed in some conditions, or performed in the manner that the concept requires using the current or programmed force; and which of these gaps in capability pose sufficient operational risk to constitute needs that require a solution. Capability needs are defined as those capability gaps determined to present unacceptable risk. Following the FNA, the Director, ARCIC will direct the CoE standing ICDT chair or proponent to proceed with an FSA for those needs considered critical to executing operations IAW the concept.

(1) The tasks, conditions, and standards identified in the FAA and a list of current and programmed capabilities are the inputs to the FNA. The initial output of the FNA is a list of all gaps in the capabilities required to execute a concept to standard. When these gaps are subjected to risk analysis, the final output is a list of prioritized gaps (needs) - capabilities for which solutions must be found or developed. Not all capability gaps will be identified as needs.

(2) In its simplest form, the FNA is a comparison of RCs to existing and programmed RCs and the identification of the corresponding gaps. It must accurately and fairly assess current and programmed solutions' ability to provide RCs when employed in the manner and conditions called for by the JC/AFC/CONOPS. The FNA includes supportability as an inherent part of defining the capability needs. Emphasis will be placed on defining capabilities by functional domain, describing common attributes desired of subordinate systems, family-of-systems (FoS), or system-of-systems (SoS) and non-materiel solutions. Required capabilities must address joint and coalition warfare applications. The issue of determining whether the risk posed by specific capability gaps rises to the level of need, and to decide the relative priority of competing needs, is a leadership decision. The FNA must provide the Army's leadership with an understanding of the operational effect of each identified capability gap at levels ranging from the simplest functional or tactical task to tasks of potentially operational or strategic impact.

d. Functional Solution Analysis (FSA). The FSA is the third analytic phase in the CBA. It is an operationally based assessment of potential non-materiel doctrine,

organization, training, leadership and education, personnel, facilities, and policy (DOTmLPF-P), and/or materiel approaches to solving (or mitigating) one or more of the capability needs determined from the FNA. The FSA describes the ability of each identified approach to satisfy the need. The FNA high-risk capability gaps are inputs to the FSA. The outputs of the FSA are the potential materiel and/or non-materiel approaches to resolve the capability needs. The FSA is composed of two substeps: ideas for non-materiel approaches (DOTmLPF-P analysis) and ideas for materiel approaches.

(1) Approaches proposed by an FSA must meet three criteria:

- they are strategically responsive and deliver approaches when and where they are needed;
- they are feasible with respect to policy, sustainment, personnel limitations, and technological risk; and
- they are ralizable -- DOD could actually resource and implement the approaches within the timeframe required.

(2) Ideas for non-materiel approaches. Potential non-materiel solution approach recommendations are sometimes called DOTMLPF-P or DOT_LPF-P. The first substep in the FSA identifies whether a non-materiel (DOTmLPF-P) or integrated DOTmLPF-P approach can address the capability gaps (needs) identified in the FNA. It first determines how the needed capability might be met by changes in DOTmLPF-P or existing materiel short of developing new systems. These include increasing the quantities of existing materiel, or improving existing materiel. If the analysis determines that the capability can be partially or completely addressed by a purely DOTmLPF-P approach, a DOTmLPF-P change recommendation (DCR) is prepared and appropriate action is taken IAW the *JCIDS Manual* and the *CDTM system*. If it is determined that DOTmLPF-P changes alone are inadequate and that product improvements to existing materiel, adoption of other service or interagency materiel, acquisition of foreign materiel, or a new materiel approach is required, the FSA process continues to substep 2 below. Some capability proposals will involve combinations of DOTMLPF-P changes and materiel changes. Also, these proposals continue through the FSA process at substep 2.

(3) Ideas for materiel approaches. In substep 2, materiel approaches (courses of action) are identified to provide the RCs. The collaborative nature of this effort is meant to develop potential solutions that are truly “born joint”. In other words, solutions that involve all services. The process brainstorms possible materiel approaches and always includes existing and future materiel programs that can be modified to meet the capability need. The DOTLPF-P implications of a materiel solution must always be considered throughout the process.

e. CBA recommendations. A CBA offers actionable recommendations for both non-materiel and materiel solution approaches.

(1) Potential non-materiel solution approach recommendations include the

following:
- change policy;
- change doctrine;
- reorganize;
- train and educate DOD personnel differently;
- acquire more quantities of existing commercial or non-developmental items or commodities to include increases in manpower, operational tempo, spare parts, and fuel supplies;
- add or reassign personnel to mission areas; and
- move or realign facilities to support new mission areas.

(2) Materiel initiatives tend to fall into three broad categories (listed in terms of fielding uncertainty from low to high):
- development and fielding of information systems (or similar technologies with high obsolescence rates) or evolution of the capabilities of existing information systems;
- evolution of existing systems with significant capability improvement (this may include replacing an existing system with a newer more capable system, or simple recapitalization); and
- breakout or transformational systems that differ significantly in form, function, operation, and capabilities from existing systems and offer significant improvement over current capabilities or transform how we accomplish the mission.

f. TRADOC ARCIC tasks a CoE standing ICDT or proponent to develop the initial DOTMLPF-P capabilities document(s) – initial capabilities document (ICD) and/or joint DOTmLPF-P change recommendation (DCR). When documented, TRADOC's ARCIC submits solution sets to HQDA G-3/5/7 for ARSTAF validation and VCSA validation via the Army Requirements Oversight Council (AROC) validation process (discussed later in the primer).

g. Processes that may substitute for the CBA. DOD has several processes in place that can be used in lieu of a formal CBA. They are listed below:

(1) Joint Capability Technology Demonstration (JCTD). The military utility assessment (MUA), which is completed at the end of the JCTD, may be a suitable replacement for the required analysis used as the basis for ICD preparation. MUAs that do not contain the critical elements of information presented in the ICD (description of the capability gap(s); associated tasks, conditions and operational performance standards/metrics; and how the materiel and non-materiel approaches and analyses from the JCTD addressed these factors), will be augmented with a final demonstration report to qualify the results as equivalent to an ICD. The MUA/final demonstration report will be used to support the development and subsequent AROC and/or JROC validation of the CDD or CPD. A CDD or CPD, as appropriate, will be developed for the JCTD to transition into a DAS program of record (POR).

(2) Prototypes. Results of prototype projects and operationally validated quick

reaction technology projects intended for direct transition to fielded capabilities may also be eligible for consideration as potential solution approaches. This consideration will be based on mission need validation and MUA processes as applied to JCTDs.

(3) Joint Improvised Explosive Device (IED) Defeat Organization (JIEDDO) Initiative Transition. The JIEDDO Transition Packet, which is completed after JIEDDO validates an initiative, may be the appropriate replacement for the required analysis used as the basis for ICD preparation. The Transition Packet will be used as the CDD/CPD equivalent document for subsequent AROC and/or JROC validation and transition to a DAS POR.

(4) Urgent Operational Need (UON) or service's urgent needs processes. Capabilities developed and fielded to support the resolution of an operational commander's urgent need can be transitioned into the JCIDS process. An urgent need validated by the Joint Staff J-8, or the service as appropriate, may be used to enter the JCIDS process without an ICD. The sponsor can enter the JCIDS and DAS processes at milestone B or C by initiating development of a CDD or CPD as appropriate. Capabilities fielded to resolve an urgent need which will continue to be required and sustained for the duration of an on-going operation do not require additional JCIDS documentation.

h. Overall, the capabilities-based Army JCIDS process (see figure 3) examines where we are, where we want to be, what risks we may face and what it might cost. The Army learned many lessons from the wars in Iraq and Afghanistan and accelerated processes used to develop the Stryker Brigade Combat Teams (SBCTs). These lessons have helped to shape the informed changes to how we generate current and future force structure requirements. Inserting an up-front and robust integrated analysis based on guidance from overarching joint and Army concepts, allows informed decisions earlier in the process, producing optimal DOTMLPF-P solution proposals and making it easier to synchronize development and fielding. In addition, this process allows requirements to be traced back to national strategies, concepts and policies, thus helping to eliminate redundant capabilities within the Army and DOD.

12. Trades in a Joint, Resource Constrained Environment.

a. The Army must operate in a joint environment containing both complementary and redundant required capabilities (RCs). In determining RCs and proposed solutions, capability developers (CAPDEVs) must consider leveraging joint capabilities. Also, CAPDEVs must make risk assessments and trades in capability at every step of the capabilities development and system acquisition management process, from the JCIDS CBA to production and/or implementation of a DOTMLPF-P solution.

(1) During the FNA phase of the CBA, the CAPDEV must assess and recommend trades on capability needs (gaps) based upon acceptable risk. High Risk criteria

include the likelihood and consequences of mission failure. Other joint and Army capabilities should be considered as a means to close the gaps outlined in the FNA.

(2) During the FSA phase, potential solutions should provide mission success within an acceptable risk range. These informed assessments of risk can reduce the range of the gap, eliminate the gap from further analysis, and/or lead to solutions with reduced cost. These risk assessments and trades should be outlined in the CBA results to support the validation of proposed capability documents such as joint DCRs and ICDs.

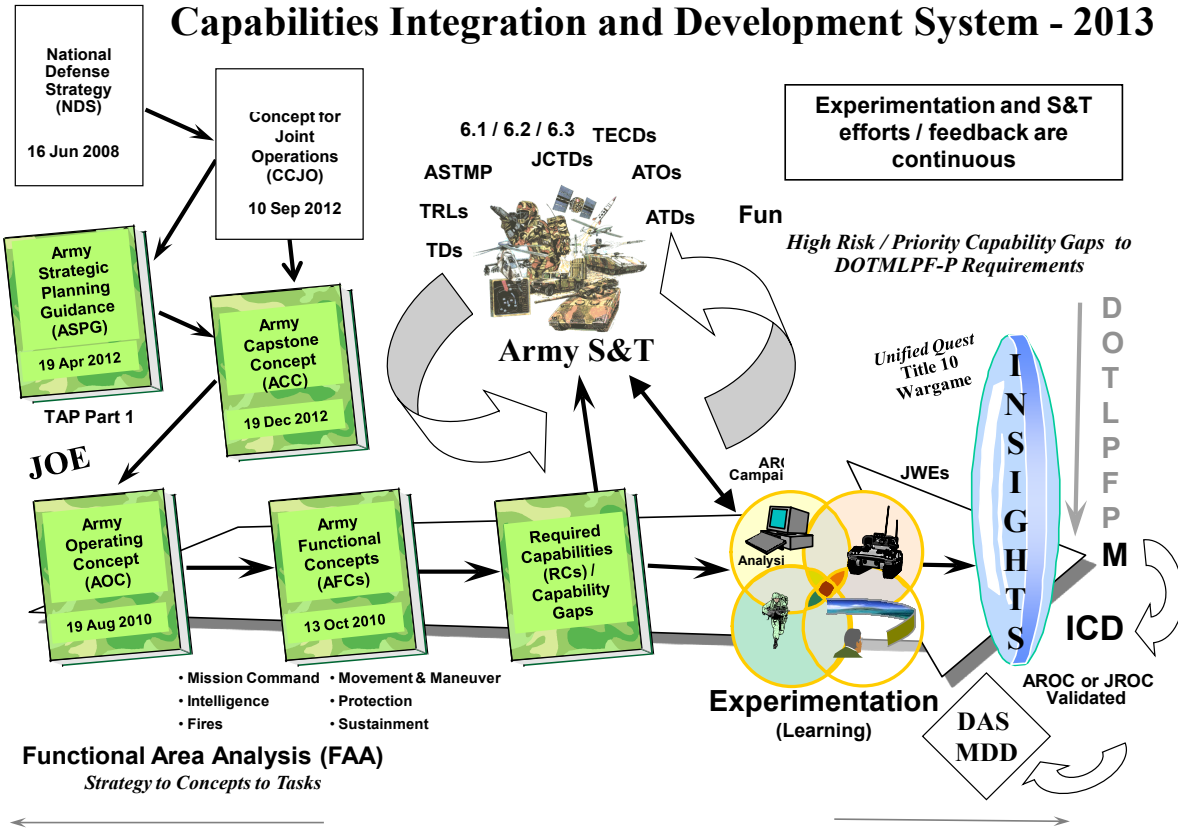


Figure 3

b. Trades. Trades outline supporting capabilities and/or system relationships that may be optimized to achieve a capability and/or a resource goal with acceptable risk. They capture alternatives to proposed developments, as well as other means and methods to close or mitigate capability gaps. For example, if the quantity of systems is decremented, then alternative methods for mitigating the impact of that decision will be captured. If aspects of a development effort have affordability issues, then propose less expensive alternatives. In any event, all trades must be evaluated across the DOTMLPF-P to determine the impacts in a holistic fashion and consider the second and third order effects within the capability area (if any).

13. TRADOC Capabilities Needs Analysis (CNA)/ArmyWarfighter (WFO) Outcomes Analysis

a. CNA is a living, evolving, interactive process, based on Army JCIDS CBA (previously discussed), among TRADOC's CoEs, proponents and HQDA staff. The CNA process is a TRADOC-led annual macro-level assessment of the Army's ability to perform future organizational and functional missions as defined by joint and Army concepts taking into account existing, programmed, and DOTMLPF-P solutions. Following guidance from the HQDA DCS, G-3/5/7, the CNA identifies, assesses, integrates and prioritizes the Army's RCs based on risk to mission accomplishment; DOTMLPF-P solutions, capability gaps and gap solution strategies associated with the RCs ; and developmental priorities and big ideas guiding future capabilities development work. The CNA products are used by HQDA to inform the Program Objective Memorandum (POM), support JCIDS by informing and shaping the CBA, and focusing developmental priorities and requirements determination guidance in the *TRADOC ARCIC Campaign Plan (ArCP).*

b. The WFO, led by the S&T Division of the ARCIC Concept Development and Learning Directorate (CDLD), is an annual assessment utilizing the residual capability gaps developed by the CNA process, as well as inputs from stakeholders across the Army, to determine where technology might enable a solution required by or delivered to our operational forces 10-20 years in the future, commonly referred to as the extended planning period (EPP); and prioritized based on contribution to residual gaps. This assessment is performed based upon a two-way dialog with the S&T community which is imperative for Army transformation. The current top 5 WFOs are Mission Command Network, C-IED and Mines, Power and Energy, Human Dimension, and Training. The WFOs are used to assist the S&T community to focus their investments to meet future Soldier needs.

SECTION III
MATERIEL CAPABILITIES DOCUMENTS (MCDs)

14. Generating and Documenting Capabilities-Based Materiel Requirements.

MCDs establish the need for a materiel acquisition program, how the materiel will be employed, and what the materiel must be capable of doing. As the acquisition program progresses, statements of required performance and design specifications become more and more specific. The functional area focused initial capabilities document (ICD) is the document that initiates the Defense Acquisition Management System (DAS). The capability development document (CDD) and the capability production document (CPD) are the documents that define the system capabilities needed to satisfy an approved materiel need (high risk capability gap).

a. Initial capabilities document (ICD). The ICD is a non-system specific statement of functional required materiel capability (need). It documents the need for non-materiel and/or materiel solution approaches to resolve a specific high risk capability gap derived from the JCIDS CBA process (previously discussed). It describes capability gaps that exist in warfighting functions as described in the applicable warfighting concepts and integrated architectures. The capability gap is defined in terms of the functional area, the relevant range of military operations, and timeframe under consideration.

(1) The ICD summarizes the results of the CBA analysis and identifies any changes in U.S. or Allied doctrine, operational concepts, tactics, organization, and training that were considered in satisfying the identified high risk capability gap. The ICD describes why such non-materiel changes have been judged to be inadequate in addressing the complete capability.

(2) The ICD documents the evaluation of balanced and synchronized DOTmLPF-P approaches that are proposed to provide the RC. The ICD further proposes a recommended materiel approach based on analysis of the different materiel approaches and describes how the recommended approach best satisfies the desired RC.

(3) Once validated, an ICD is not normally updated, but is archived to the Joint Staff, J-8 Knowledge Management/Decision Support (KM/DS) tool database, so that all validated MCDs are maintained in a single location. When validated, capability development documents (CDDs) (described below) bring the desired capability specified in the ICD into the DAS Engineering and Manufacturing Development (EMD) phase. The CDD then serves as the living document to carry the program and its increments through the acquisition process.

(4) The ICD page limit is 10 pages, and the format and detailed content instructions are provided in the *JCIDS Manual, B-9.*

b. Capability development document (CDD). The CDD is the warfighter's primary means of defining authoritative, measurable and/or testable capabilities for the EMD phase of an acquisition program. The CDD is guided by the ICD and captures the information necessary to deliver an affordable and supportable capability using mature technology within a specific increment of an acquisition strategy (AS) – the framework (roadmap) for planning, directing, and managing an acquisition program to satisfy a validated materiel requirement.

(1) A draft CDD is generated during the Materiel Solution Analysis (MSA) Phase and the final CDD is generated during the Technology Development (TD) phase of the acquisition process prior to milestone (MS) B (program initiation). The CDD describes a technically mature and affordable increment of militarily useful capability that was demonstrated in a relevant environment. The CDD supports entry into EMD phase.

(2) In an evolutionary acquisition program, the capabilities delivered by a specific

increment may provide only a partial solution of the ultimate desired capability therefore; the first increment's CDD must provide information regarding the strategy to achieve the full capability. Subsequent increments, leading to the full capability, are also described to give an overall understanding of the program strategy. This strategy is updated with each subsequent increment to reflect lessons learned from previous increments, changes in the warfighting concepts or changes in the integrated architecture.

(3) The CDD describes the operational capability; threat; integrated architectures; required capabilities; program support; supportability; force structure, DOTmLPF-P impact and constraints; schedule; and program affordability for the system.

(4) The CDD identifies the operational performance attributes (testable or measurable characteristics), in threshold-objective format, necessary for the acquisition community to design a proposed system and establish an acquisition program baseline (APB). The CDD states performance attributes, including key performance parameters (KPPs) that guide the development, demonstration, and testing of the current increment. The performance attributes and KPPs apply only to the current increment. Each increment must provide an operationally effective and useful capability in the intended mission environment that is commensurate with the investment and independent of any subsequent increment.

(5) The CDD articulates the attributes, KPPs, and key system attributes (KSAs) that are further refined in the capabilities production document (CPD). The CDD is updated or appended for each MS B decision.

(6) The CDD page limit is 45 pages, and the format and detailed content instructions are provided in the *JCIDS Manual, B-27.*

c. Capability production document (CPD). The CPD is the warfighter's primary means of providing authoritative and testable capabilities for the Production and Deployment (P&D) phase of an acquisition program. A CPD is finalized after the Post Critical Design Review (CDR) Assessment and is validated prior to the MS C (Low-Rate Initial Production (LRIP)) decision. The CPD development is guided by the ICD, CDD, developmental and operational testing results, and the Post CDR assessment. It captures the information necessary to support production, testing, and deployment of an affordable and supportable increment within an acquisition strategy (AS).

(1) The CPD provides the operational performance characteristics necessary for the acquisition community to produce and field a single increment of a specific system. The CPD presents performance characteristics, including KPPs and KSAs, to guide the production and deployment of the current increment. Since a CPD applies to only a single increment of a program's development, the performance attributes, KPPs, and KSAs apply only to the increment described in the CPD. Each increment must provide an operationally effective and useful capability in the intended environment, commensurate with the investment.

(2) The CPD refines the threshold and objective values for performance attributes and KPPs that were validated in the CDD for the production increment. Each production threshold listed in the CPD depicts the minimum performance that the PM is expected to deliver for the increment based on the Post CDR system design. The refinement of performance attributes and KPPs is the most significant difference between the CDD and the CPD.

(3) The CPD is an entrance criteria item that is necessary to proceed to each MS C (LRIP) decision. The CPD page limit is 40 pages, and the format and detailed content instructions are provided in the *JCIDS Manual, B-39*.

d. MCD performance characteristics, KPPs, and KSAs. The CDD and CPD state the operational and support-related performance attributes of a system that provides the capabilities required by the Soldier – attributes so significant, they must be verified by testing or analysis. The CDD and CPD identify, in threshold-objective format, the attributes that contribute most significantly to the desired operational capability. Whenever possible, attributes are stated in terms that reflect the operational capabilities necessary to operate in the full range of military operations and the environment intended for the system, family-of-systems (FoS), or system-of-systems (SoS). These statements guide the acquisition community in making trades decisions between the threshold and objective values of the stated attributes. Operational testing (OT) assesses the ability of the system to meet the production threshold and objective values.

(1) Each attribute is supported by an operationally oriented rationale. Below the threshold value, the military utility of the system becomes questionable. The objective value for an attribute is the desired operational goal.

(2) KPPs are those system attributes considered most essential for an effective military capability. The CDD and the CPD contain a minimum number of KPPs that capture the minimum operational effectiveness and suitability attributes (testable or measurable characteristics) needed to achieve the overall desired capabilities for the system during the applicable increment. Failure to meet a CDD or CPD KPP threshold can result in the reevaluation of the selected system, program reassessment or termination.

(3) KSAs are those system attributes considered most critical or essential for an effective military capability, but not selected as a KPP. KSAs provide decision-makers with an additional level of capability prioritization below the KPP, but with senior sponsor leadership control (generally 4-Star level, defense agency commander, or OSD principal staff assistant).

(4) Net-ready (interoperability compliance) is a required KPP. The NR-KPP assesses information needs, information timelines, information assurance, and net-ready attributes required for both the technical exchange of information and the end-to-end operational effectiveness of that exchange. The NR-KPP consists of measurable and testable characteristics and/or performance metrics required for the

timely, accurate, and complete exchange and use of information to satisfy information needs for a given capability.

(a) A NR-KPP is developed for all information technology (IT) and National Security Systems (NSS) used to enter, process, store, display, or transmit DOD information, regardless of classification or sensitivity. IT and NSS interoperability is defined as the ability of systems, units, or forces to provide data, information, materiel, and services to and accept the same from other systems, units, or forces and to use the data, information, materiel, and services exchanged to enable them to operate effectively together.

(b) The NR-KPP should reflect the information needs of the capability under consideration and the needs of appropriate supported systems. It should cover all communication, computing, and electromagnetic spectrum requirements involving the exchange of products and services between producer, sender, receiver, and consumer for the successful completion of the Soldier mission, business process, or transaction. The NR-KPP identified in CDDs and CPDs will be used in the information support plan (ISP) to identify support required from outside the program.

(5) Force protection and survivability are Congressionally required KPPs for all manned systems and systems designed to enhance personnel survivability in an asymmetric threat environment. The Joint Staff Protection Functional Capability Board (FCB), in coordination with the lead FCB, assess these KPPs and their applicability for Joint Capabilities Board (JCB) Interest and Joint Requirements Oversight Council (JROC) Interest CDDs and CPDs and make a recommendation to the JCB or JROC on validation. The sponsoring component validates the KPPs for non-JCB/JROC Interest CDDs and CPDs. A single KPP can be developed provided it complies with the congressional direction pertaining to protection and survivability.

(a) Protection KPP. Protection attributes are those that contribute to the protection of personnel by preventing or mitigating hostile actions against friendly personnel, military and civilian. This may include the same attributes as those that contribute to survivability, but the emphasis is on protecting the system operator or other personnel rather than protecting the system itself.

(b) Survivability KPP. Survivability attributes are those that contribute to the survivability of a manned system. This includes attributes such as speed, maneuverability, detectability, and countermeasures that reduce a system's likelihood of being engaged by hostile fire, as well as attributes such as armor and redundancy or critical components that reduce the system's vulnerability if it is hit by hostile fire.

(6) Sustainment KPP. A sustainment KPP (materiel availability) and two mandatory supporting KSAs (materiel reliability and operations & support (O&S) cost) are developed for all JROC Interest programs involving materiel solutions. For non-JCB/JROC Interest programs, the sponsor determines the applicability of this KPP.

(a) Materiel reliability KSA is a measure of the probability that the system will perform without failure over a specific interval. Reliability must be sufficient to

support the warfighting capability needed. Materiel reliability is generally expressed in terms of a mean time between failure (MTBF).

(b) Operations & support (O&S) cost KSA provides balance to the sustainment solution by ensuring that the operations and support (O&S) costs associated with materiel readiness are considered in making decisions.

(7) System training KPP ensures system training is addressed in the analysis of alternatives (AoA) and supporting analysis for subsequent acquisition phases and ensures projected training requirements and associated costs are appropriately addressed across the proposed acquisition program life cycle.

(8) Energy efficiency KPP includes fuel efficiency considerations for fleet purchases and operational plans consistent with mission accomplishment. Life-cycle cost analysis will include the fully burdened cost of fuel during the analysis of alternatives (AoA) and subsequent analyses and acquisition program design trades.

e. Joint DOTmLPF-P change recommendation (DCRs) document. A joint DCR is a recommendation for changes to existing joint resources when such changes are not associated with a new defense acquisition program. The DCR page limit is 30 pages, and the format and detailed content instructions are provided in *JCIDS Manual, B-21.*

15. Capability Development Tracking and Management (CDTM) System.

a. On June 6, 2011, the VCJCS signed a memorandum directing implementation of the CDTM for development of all JCIDS capability documents - ICDs, CDDs, CPDs, and DCRs. The purpose of CDTM is to move from a document-centric process to a data-centric process that enables data sharing and system interoperability. CDTM is a "turbo-tax" like web based application to assist CAPDEVs in writing capability documents. The system presents a series of "wizard" pages that guide the user through data entry and complete document creation. Once data is entered, the system handles workflow within customized workgroups. When a capability document is ready for vetting by the ARSTAF and Joint Staff (JS), CDTM automates transfer of a Microsoft Word version of the document to external systems like the Army's Capabilities and Army Requirements Oversight Council (AROC) Management System (CAMS) and the JS Knowledge Management/Decision Support (KM/DS) for further processing. After document transfer, the document data is exposed to all CDTM users through search functionality.

b. Using CDTM, capability documents are no longer just documents, but structured information that can be aggregated, tabulated, and searched. What was once a document is now information broken down into field-level data that is stored in the CDTM database. The data can be reassembled into a document at any time, but is workable in pieces, by any number of users. In the past, capability documents were created in a variety of formats and templates, the final result being multiple files that

were non-standard and difficult to search. With CDTM, capabilities documents are created by dynamically assembling all the data elements into a standard format. Effective June 30, 2011, the CDTM format was required for the creation, reading, and editing of all JCIDS capability documents across all DOD organizations. CDTM is located on https://cdtm.js.mil/Default.aspx (NIPRNET) and https://cdtm.js.smil.mil <https://cdtm.js.smil.mil/>(SIPRNET).

c. CDTM is not used for the drafting and submission of JUONs and JEONs. These documents are submitted via memorandum to the Joint Staff J-8 Gatekeeper. CDTM is not used for the drafting and submission of Service, COCOM, or Component UONs. These documents are submitted internally. These documents are only submitted to the KM/DS system for information purposes after validation.

SECTION IV
TRADITIONAL MATERIEL REQUIREMENTS VALIDATION

In 2007, the Army revised its warfighting requirements validation process to adjust for rapidly changing technology, constraints on the Army budget, increased sustainment costs, the need to provide a concrete linkage between requirements and resources, and increasing emphasis on joint interoperability. Within the Army, the VCSA approves and the CSA retains veto authority for all warfighting materiel requirements. Requirements meeting specific threshold criteria may be approved by the HQDA DCS, G-3/5/7, in order to facilitate timely processing, if delegated by VCSA.

16. Army Requirements Validation.

a. In order to provide more effective management of the total requirements process for all aspects of Army needs, the requirements process was modified to consolidate all DOTMLPF-P requirements at HQDA for staffing and validation. This process ensures that the Army pursues requirements that can compete for and retain resources that are tied to the future Army and joint visions and goals. The process places increased emphasis on analysis of the requirement, potential alternatives, affordability and joint interoperability. The goal is to evaluate all DOTMLPF-P requirements, regardless of origin, against the goals, vision and needs of the current and future force. The lead organization for the implementation of the JCIDS process, within the Army is the DCS, G-3/5/7.

b. Within the DCS, G3/5/7, the Capabilities Integration, Prioritization, and Analysis Directorate (DAMO-CI), Current and Future Warfighting Capabilities Division (DAMO-CIC), is the single entry point for all Army and joint DOTMLPF-P

requirements. DAMO-CIC is the proponent for policy development, Army JCIDS process oversight, and interface with the JCIDS process. Within DAMO-CIC, the requirements staff officer (RSO) is directly responsible for leading HQDA staff integration and coordination efforts for all Army and joint DOTMLPF-P requirements issues. The RSO coordinates with the HQDA DCS, G-8 counterpart, the staff synchronization officer (SSO), to facilitate the transition from capabilities-based requirements development and validation to requirements solutions (execution and resourcing).

17. Army Requirements Oversight Council (AROC).

a. The AROC was created in 2001 to provide a concrete linkage and synchronization between required capabilities and resources. The AROC, coordinated by DCS, G-3/5/7, Current and Future Warfighting Capabilities Division (DAMO-CIC), is responsible for advising the CSA/VCSA in the assessment and prioritization of capabilities integrated across DOTMLPF-P, to include the disposition of materiel capabilities documents (MCDs). DAMO-CIC schedules and executes the AROC forum. TRADOC's Army Capabilities Integration Center (ARCIC) continues to be responsible for the balanced development of concepts, capabilities (requirements), and products in DOTMLPF-P.

b. The AROC process is used to validate:

(1) proposals for rapid insertion of technologies to address current capability needs when the solution extends into the Program Objective Memorandum (POM); and

(2) strategies to resolve capability gaps and resultant changes to modernization programs and plans.

c. The AROC validates all JCIDS documents prior to submission to the Joint Staff, J-8 JCIDS "gatekeeper"- Deputy Director, Requirements. This encompasses all JCIDS efforts including Army annexes to joint and other service MCDs and those where an Army proponent has been designated as a joint CAPDEV.

d. The AROC reviews JCIDS documentation for:

(1) Military need and risk. The AROC reviews and provides decisions and guidance on the capability gaps identified in JCIDS proposals presented for validation. This ensures identified gaps are linked with modernization investment priorities essential for maintaining land force dominance.

(2) Synchronization with Army and joint modernization strategies. The AROC validates that the recommended strategies to resolve capability gaps, including associated DOTMLPF-P changes, are consistent with Army modernization strategies. Proposals must contribute to a balanced and synchronized modernization program. The AROC reviews how the recommended strategies fit into related joint concepts,

force modernization strategies and investment portfolios to ensure interoperability and synergy.

(3) Estimated program affordability. The AROC reviews the affordability, based on the DASA(CE) approved cost-benefit analysis (C-BA), of all proposed solutions to capability gaps and programs presented to ensure that, if pursued, they are within budgeting and programming limits for development, procurement and sustainment. The AROC considers "trades" of capability and/or performance versus cost to ensure only affordable solutions are pursued. Affordability includes potential long term supportability requirements for the concept or system.

(4) Capability definition and interoperability. The AROC ensures that the operational definition of the capability gap and the proposed solution is clear and consistent with Army and joint warfighting concepts. Key performance parameters (KPPs), and key system attributes (KSAs), serve as the pivot for AROC risk deliberations on operational improvements versus costs to field a capability at the appropriate time and in the appropriate quantities. Opportunities to integrate other service programs or alternate technologies to improve joint interoperability are also addressed in the AROC presentation.

e. The AROC consists of the following permanent principal members:

- Vice Chief of Staff, Army (Chair);
- Principal Military Deputy, Office of the Assistant Secretary of Army (Acquisition, Logistics, and Technology);
- Chief Information Officer (CIO)/Deputy Chief of Staff, G-6;
- Deputy Chief of Staff, G-1;
- Deputy Chief of Staff, G-2;
- Deputy Chief of Staff, G-3/5/7 (Secretary);
- Deputy Chief of Staff, G-4;
- Deputy Chief of Staff, G-8;
- Director, Army Capabilities Integration Center (ARCIC);
- Deputy Assistant Secretary of the Army, Cost & Economics (DASA(CE);
- CG, Army Test and Evaluation Command (ATEC).

The Director of the Army Staff (DAS); Assistant Deputy Under Secretary of the Army, Test and Evaluation; the Military Deputy (MILDEP) to the Assistant Secretary of Army (Financial Management & Comptroller); Chief, Army Reserve; Chief, Army National Guard; Director, Force Development (DCS, G-8); Director, Program Analysis and Evaluation (DCS, G-8); and Director, Capabilities Integration, Prioritization, and Analysis (DCS, G-3/5/7, G-37) are permanent advisors.

f. The AROC Process Review Board (APRB) serves as the AROC intermediate review body inserted prior to and immediately following the initial staffing of JCIDS proposals and as required, to review and comment on other documentation, analysis, or actions. The APRB ensures topics are suitable and mature, in accordance with

AROC objectives. Also, it determines the required method of presentation for validation of the submission (formal or paper AROC).

(1) The APRB meets weekly, or as required, to manage workload and ensure "value added" without unnecessarily slowing the Army JCIDS staffing process. The meeting date, time, and location supports an orchestrated staff battle rhythm and provides efficiency to the overall process by ensuring document readiness and identification of special coordination requirements prior to flag-level (1-Star) staffing, resolution of complex issues across the ARSTAF prior to moving the document into the AROC for review, and providing situational awareness to senior leaders for issues not resolved or jeopardizing successful staffing/review.

(2) The APRB is co-chaired by the Chief, Current and Future Warfighting Capabilities Division, DCS, G-3/5/7 (G-37); a Colonel/GS-15 representative from the DCS, G-8, Force Development Directorate, and a Colonel/GS-15 representative from TRADOC ARCIC. The APRB is composed of representatives of the AROC principals and permanent advisors. Other ARSTAF elements and external organizations provide subject matter expertise as required. The APRB makes recommendations to and executes the decisions of the AROC Secretary – DCS, G-3/5/7.

g. The AROC may not review all Army requirements. Validation of selected JCIDS proposals may be delegated to the DCS, G-3/5/7 by the VCSA. Disapproval authority remains at the VCSA level. In addition, a "paper or electronic AROC" may be used, at the discretion of the AROC chair, to staff non-contentious issues. The VCSA/CSA receive a copy of all approved issues by the DCS, G-3/5/7.

18. Army Requirements Validation Process.

a. The process of obtaining validation of JCIDS proposals begins with the submission of a proposal by the TRADOC ARCIC JCIDS Requirements Integration Directorate Gatekeeper, into the Capabilities and AROC Management System (CAMS) database. CAMS is the HQDA DCS, G-3/5/7 database driven knowledge management decision support information technology system. CAMS supports AROC document staffing and commenting from numerous users and organizations within the Army into a centralized database repository. The system allows users to view document information and monitor document progress through AROC validation until submission to the Joint Staff (JS) staffing and validation process. Staffing continues until the document is validated.

b. All JCIDS proposals are entered into CAMS by the ARCIC gatekeeper. The ARCIC gatekeeper acts as the entry and exit point for all JCIDS capability documents forwarded by TRADOC and non-TRADOC proponents for validation and other service capability documents sent to ARCIC for review. The gatekeeper manages the TRADOC staffing of the JCIDS capability documents and loads ARCIC validated

and CG, TRADOC endorsed capability documents into the CAMS database for AROC/JROC validation. Submission of the proposal will trigger the Army gatekeeper process. The JCIDS proposal will be submitted for HQDA staffing and coordination. All proposals undergoing the review process are considered draft until they are validated by the designated validation authority.

c. All Army sponsored JCIDS proposals are submitted for HQDA JCIDS gatekeeper review, to determine accuracy and completeness. Based on the content of the proposal, the gatekeeper will assign the proposal to the functional requirements staff officer (RSO) and initiate Army staffing utilizing CAMS as the staffing tool.

d. The HQDA JCIDS staffing process includes the APRB, flag-level (1-Star) initial staffing, and flag-level (3-Star) AROC principal/advisor review phases. The Army validation process optimally takes 95 to 110 business days. JCIDS document flow to the AROC for validation is depicted in figure 5.

e. At the conclusion of the AROC validation process, the Army JCIDS gatekeeper enters the document, using CDTM (previously discussed), into the Knowledge Management/Decision Support (KM/DS) web-based staffing tool for Joint Staff (JS) staffing.

f. The HQDA JCIDS gatekeeper signals completion of Army and joint staffing and validation by publishing the DCS, G-3/5/7 approval memorandum with a Catalog of Approved Requirement Documents (CARDS) reference number. The CARDS reference number signifies an approved Army materiel requirement.

19. Cost-Benefit Analysis (C-BA).

a. In a December 30, 2009 memorandum, the Army senior leadership directed that each unfunded requirement and new or expanded program proposal submitted to the Secretary of the Army (SA), Chief of Staff Army (CSA), Under Secretary of the Army (USA) or Vice Chief of Staff Army (VCSA), must be accompanied by a thorough C-BA. The C-BA must identify the total cost of the proposal, the benefits that will result, the bill-payers that would be used to pay for it, and the second and third order effects of the funding decision. A C-BA enables Army senior leaders and managers to make better resource-informed decisions.

b. C-BAs make the case for a project or proposal weighing the total expected costs against the total expected benefits over the near-term and life-cycle timeframes from an Army enterprise perspective, which means that initiatives should be evaluated based on the benefits they provide to the Army as a whole, not to any individual organization. Army elements are connected organizationally and what happens even at the lowest levels within the Army can impact/influence higher level organizations.

c. A C-BA is a structured methodology of forecasting and comparing the anticipated costs and benefits of alternative courses of action (COAs) in order to identify the most effective manner of achieving a stated goal or objective. A C-BA is weighing the consequences, both good and bad, of potential actions.

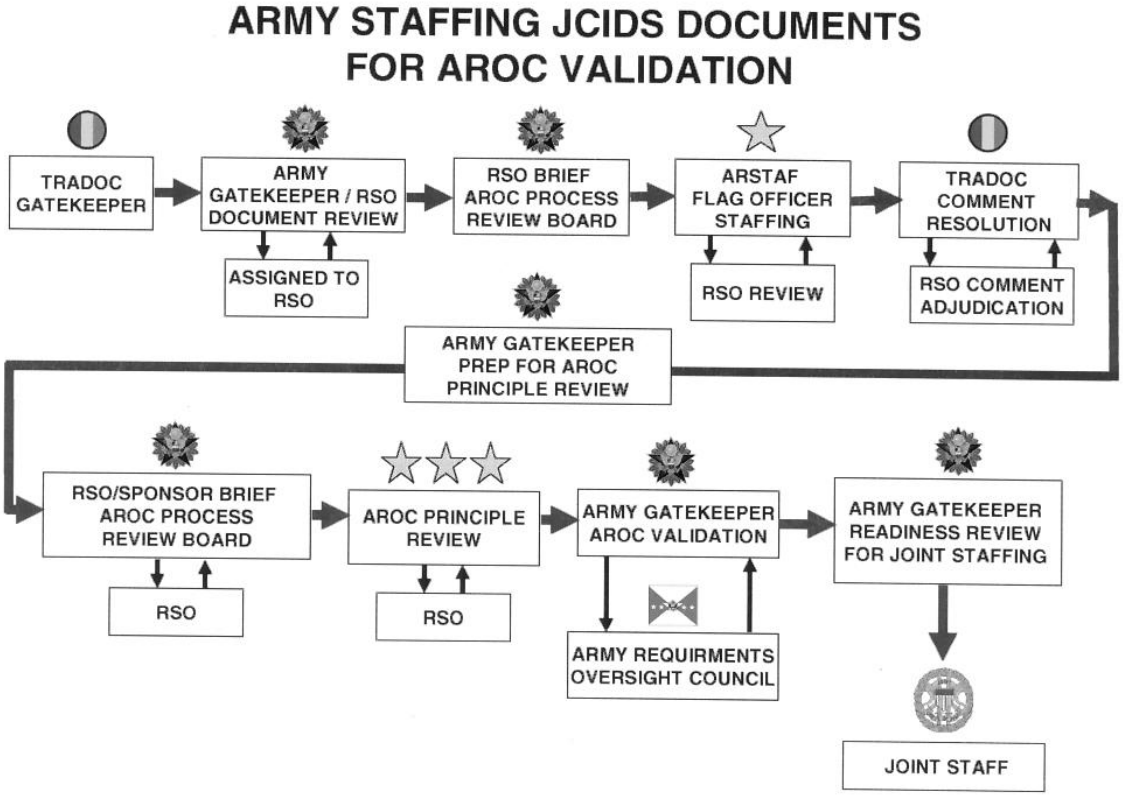


Figure 5

d. All C-BAs provide decision-makers with facts, data, and analysis required to make an informed decision. In its most basic form, the C-BA is a tool to support resource informed decision-making. There is no prescribed length to a C-BA. All that is required is that it fully supports the recommendation. C-BAs are reviewed by a Cost Benefit Analysis Review Board (CBARB) for suitability of use by a decision-maker or decision-making body. The CBARB provides its recommendation on suitability of use to the Deputy Assistant Secretary of the Army for Cost and Economics (DASA(CE)) who forwards the final recommendation on suitability of use to the decision-maker or decision-making body.

e. In today's resource-constrained environment, the Army must exercise wise stewardship of every dollar it manages. A key element in that stewardship is to develop and use sound C-BA practices throughout all requirement/resourcing processes. For every proposed requirement, program, initiative or decision point that

is presented to decision-makers, it is important to provide an accurate and complete picture of both the costs to be incurred and the benefits to be derived.

20. Joint Requirements Validation Process.

a. The process of obtaining validation of JCIDS documents begins with the submission of a materiel capability document (MCD) proposal to the JS, J-8 Knowledge Management/Decision Support (KM/DS) tool and continues until the document is validated by the appropriate authority.

b. Services, combatant commands, and other DOD organizations conducting a JCIDS CBA analyses, previously discussed, may generate ideas and concepts leading to draft ICDs, CDDs, CPDs, and joint DCRs. Also, JCIDS initiatives may be generated within a JS Functional Capabilities Board (FCB) as a result of analyses conducted by, or in support of the FCB. As the initiative develops into proposed DOTLmPF or materiel solutions to provide the desired capabilities, a FCB may task a lead service or component with sponsoring the initiative. Further development of the proposal then becomes the responsibility of the sponsor. The FCB is responsible for the organization, analysis, and prioritization of joint warfighting capability needs within assigned functional areas. The FCB is an advisory body to the JCB and the JROC for JCIDS initiatives assigned with joint staffing designators (JSDs) of JCB Interest or JROC Interest.

c. All JCIDS documents (ICDs, CDDs, CPDs, and DCRs) are submitted, using CDTM, to the JS, J-8 KM/DS tool by the sponsoring component. Submission of the document to the KM/DS tool triggers the JS and the gatekeeper process to determine whether the document has joint implications or is sponsor unique. Normally, the document has undergone an appropriate sponsor staffing process before submission to the JS J-8 KM/DS tool.

d. The Gatekeeper. The JS J-8 Deputy Director, Requirements, serves as the "gatekeeper" of the JCIDS process. The gatekeeper, with the assistance of the JS J-8 Requirements Management Division (RMD), and JS J-6 Requirements and Assessments Division (RAD), evaluate all JCIDS documents submitted through the J-8 KM/DS tool database.

(1) JCIDS documents are submitted for gatekeeper review to determine whether the proposal affects the joint force. The gatekeeper review is conducted for each document regardless of potential acquisition category (ACAT), previous delegation decisions, or previous JSD decisions.

(a) An ACAT is designated as ACAT I, II, or III when the materiel requirement and manner of acquisition have been identified. *Title 10, Section 2430,* identifies dollar criteria for determining the ACAT of a potential program. The ACAT

designation determines the level of review, and who will make the milestone decisions. The three acquisition categories are defined in figures 6a and 6b.

(2) Based on the content of the submission, the "gatekeeper" assigns a JSD of JROC Interest, JCB Interest, Joint Integration, Joint Information, or Independent to the ICD, CDD, CPD or DCR submitted via the KM/DS tool.

(a) JROC Interest - This designation applies to all potential ACAT I/information assurance programs where the capabilities have a significant impact on joint warfighting or have a potential impact across services or interoperability in allied and coalition operations. All joint DCRs will be designated as JROC Interest. A JSD of JROC Interest will be presumed for all capabilities documents within the following Joint Capability Area (JCA) portfolios: Battlespace Awareness; Command and Control; Logistics; and Net-Centric. Also, it may apply to intelligence capabilities that support DOD and national intelligence requirements. Capability documents designated as JROC Interest will be staffed through the JROC for validation. An exception may be made for ACAT IAM programs without significant impact on joint warfighting (such as business-oriented systems). These programs may be designated Joint Integration, Joint Information, or Independent.

(b) JCB Interest - This designation applies to all potential ACAT II and below programs where the capabilities and/or systems associated with the document affect the joint force and an expanded joint review is required. These documents will receive all applicable certifications, including a weapon safety endorsement when appropriate, and be staffed through the JCB for validation.

(c) Joint Integration - This designation applies to potential ACAT II and below programs where the capabilities and/or systems associated with the document do not significantly affect the joint force and an expanded review is not required. Staffing is required for applicable certifications (information technology and National Security Systems (NSS) interoperability and supportability and/or intelligence) and for a weapons safety endorsement when appropriate. All weapons and munitions will be designated Joint Integration as a minimum. Once the required certification(s)/weapons safety endorsement are completed, the document may be reviewed by the FCB. Joint Integration documents are validated by the sponsoring component.

(d) Joint Information - This designation applies to potential ACAT II and below programs that have interest or potential impact across the services or defense agencies, but do not have significant impact on the joint force and do not reach the threshold for JCB Interest or JROC Interest. No certifications or endorsements are required. Once designated Joint Information, staffing is required for informational purposes only and the FCB may review the document. Joint Information documents are validated by the sponsoring component.

(e) Independent - This designation applies to potential ACAT II and below programs, where the capabilities and/or systems associated with the document do not significantly affect the joint force, an expanded review is not required, and no certifications or endorsements are required. Once designated Independent, the FCB

may review the document. Independent documents are validated by the sponsoring component.

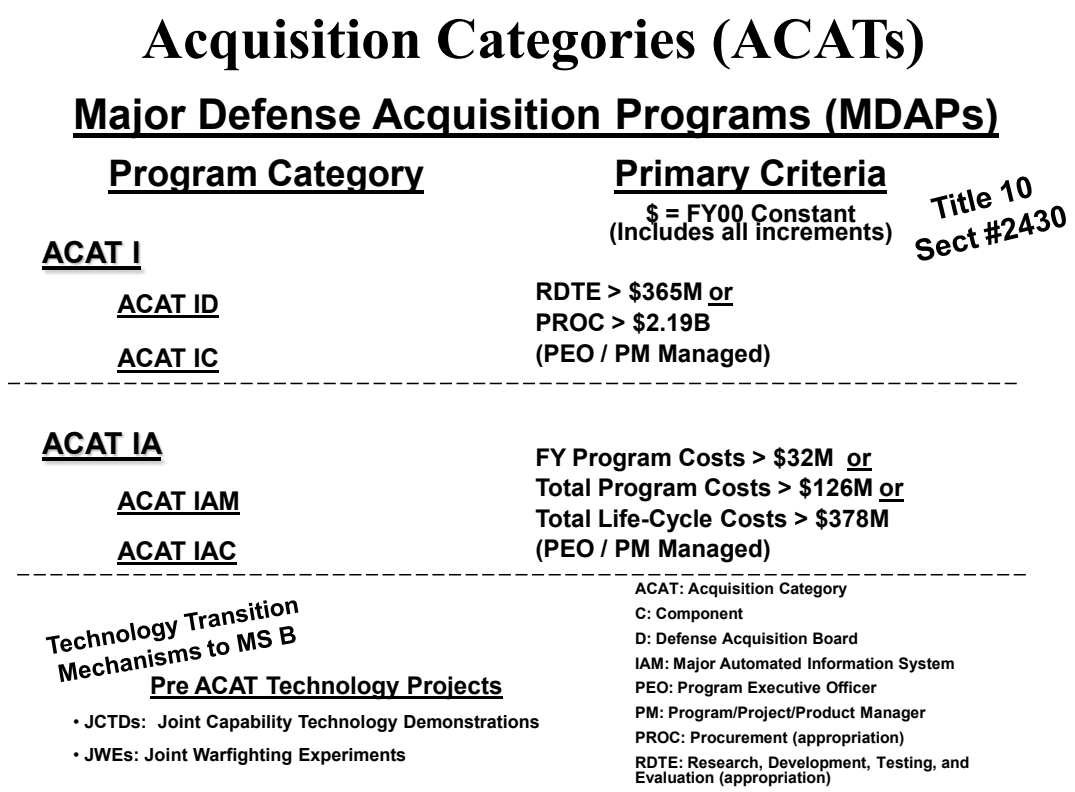


Figure 6a

(3) The JS J-8, using the KM/DS tool, maintains a database of JCIDS documents processed through the gatekeeper function. The database includes the JSD as defined above; which FCBs have equity in the proposal (if any); and the lead FCB for the proposal (if any). The database helps to ensure consistency of staffing as JCIDS proposals progress through the JCIDS process.

(4) Once the JSD has been assigned, the document moves into the staffing and validation process.

e. Staffing process. The JS J-8 RMD staffs all JCB Interest and JROC Interest proposals before FCB review. During the review process, the FCB evaluates how well the proposed solution documented in a ICD, CDD, CPD, or DCR addressed the capability needs identified in the JCIDS CBA analyses.

f. Certifications and Weapon Safety Endorsement. Applicable certifications and the weapon safety endorsement will be processed as part of the staffing process for each JCIDS document. If a certification/endorsement authority determines the content is insufficient to support a required certification/endorsement, it is the sponsor's

responsibility to resolve the issue with the certification/endorsement authority. If resolution cannot be achieved, the sponsor may request a review of the issue by a higher authority.

Acquisition Categories (ACATs)

Major Systems

Program Category	Primary Criteria $ = FY00 Constant
ACAT II	
ACAT II	RDTE > $140M or PROC > $660M

Non - Major Systems

ACAT III	
ACAT III	All acquisition programs that are not classified as an MDAP or Major System (ACAT I or II) (Includes less than major AISs)

Note: ACAT IV has been retained as a designation for internal use by Department of the Navy (includes Marine Corps)

Figure 6b

(1) Threat Validation and Intelligence Certification – JS, J-2.

(a) Threat Validation. For all Joint Integration, JCB Interest, and JROC Interest ICDs, CDDs, and CPDs, the Defense Intelligence Agency (DIA) provides validation of threat information appropriate to the proposal through the intelligence certification process. DOD components may validate intelligence information for programs designated as Joint Information or Independent proposals using DIA-validated threat data and/or data contained in DOD Service Intelligence Production Program products and data.

(b) Intelligence Certification. JS J-2 provides intelligence certification as a part of the JCIDS staffing of ICDs, CDDs, and CPDs, regardless of ACAT level, unless a waiver has been granted by the JS J-2. J-2 will assess intelligence support needs for completeness, supportability, and impact on joint intelligence strategy, policy, and architectural planning. The JS J-2 certification will evaluate intelligence-related information systems with respect to security and intelligence interoperability standards.

(2) Information Technology (IT) and National Security System (NSS)

Interoperability and Supportability Requirements Certification – JS, J-6. The J-6 certifies all CDDs and CPDs designated as JROC Interest, JCB Interest or Joint Integration for conformance with joint IT and NSS policy.

(3) Weapon Safety Endorsement. The JS J-8 Deputy Director, Force Protection (DDFP), provides a weapon safety endorsement coordinated through the Force Protection Functional Capabilities Board (FCB) as part of the JCIDS staffing of ICDs, CDDs, CPDs, and DCRs regardless of ACAT. A weapon safety endorsement is the means for documenting the extent to which weapon capabilities documents provide for safe integration into joint warfighting environments. Endorsement recommendations are prepared by the Joint Weapon Safety Technical Advisory Panel (JWSTAP) and submitted to the JS J-8 DDFP for appropriate staffing and coordination with the FP FCB. The endorsement will indicate that required joint warfighting environment attributes and performance parameters, from a weapon safety perspective, are judged to be adequately prescribed in the ICD, CDD, CPD, or DCR. Also, the endorsement may convey identified limitations in the prescribed attributes or performance parameters that are deemed acceptable from a weapon safety perspective, yet foreseen as potential military utility hindrances or joint operation limitations. If the weapon safety endorsement identifies restrictions/limitations, the sponsor will coordinate with the FP FCB for resolution or acceptance of the restrictions/limitations.

SECTION V
URGENT OPERATIONAL NEED (UON) VALIDATION

DOD and the Army continue to improve and adapt their capabilities and materiel developments processes in response to overseas contingency operations (OCO). The deliberate JCIDS and DAS acquire weapons systems using traditional DOD processes, usually taking five to seven years even when the system uses maximum streamlining. Sometimes, the warfighters need a new capability as soon as possible. When operational commanders, from a conflict or crisis, report situations that put life at risk or risk mission failure, every military service has responded with its own rapid response process. When the situation is a joint, theater-wide problem, the joint urgent operational needs (UON) process applies.

21. Joint Urgent Operational Needs (JUONs)/Joint Emergent Operational Needs (JEONs).

a. JUONs are urgent operational needs identified by a combatant commander (CCDR) affecting two or more DOD components involved in an ongoing overseas contingency operation. The JUON purpose is to identify and subsequently gain Joint Staff validation and resourcing solution, usually within days or weeks, to meet a

specific high priority CCDR need. Rapid validation and resourcing of a JUON is a time-sensitive process in support of a CCDR involved in a combat-related ongoing operation. The JUON rapidly validates resources, and fields urgent operational solutions that fall outside of the established Service processes. This process is not intended to compete with any of the current Service processes, but rather to complement them. Also, it is not intended to replace any other Joint Staff process.

b. JEONs are UONs that are identified by a CCDR as inherently joint and impacting an anticipated or pending contingency operation.

c. The scope of a JUON/JEON will be limited to addressing urgent operational needs that fall outside of the established service processes; and most importantly, if not addressed immediately, will seriously endanger personnel or pose a major threat to ongoing operations. They should not involve the development of a new technology or capability; however, the acceleration of a science and technology joint capability technology demonstration (JCTD) or minor modification of an existing system to adapt to a new or similar mission is within the scope of the JUON/JEON validation and resourcing process.

22. Joint Urgent Operational Need (JUON)/Joint Emergent Operational Need (JEON) Process.
The JUON/JEON process consists of four phases**:**

a. Generation Phase: The Operational Force Commander identifies the urgent/emergent need and the COCOM staff determines the most suitable solution process. New JUONs and JEONs, and modifications to the capability requirements in previously validated JUONs and JEONs, must be endorsed by the CCDR, Deputy Commander, or Chief of Staff. The COCOM endorsed JUON/JEON is then submitted to the Joint Staff, via the Knowledge Management/Decision Support Tool (KM/DS), to the Joint Staff J-8 Requirements Management Division (RMD).

b. Vetting Phase: JUON and JEON staffing begins when the Joint Staff J-8 Requirements Management Division receives the JUON/JEON from the COCOM and verifies the document meets submission criteria. Following confirmation that the JUON/JEON meets the appropriate entry criteria, both are assigned directly to a Lead FCB for review. JEONs, however, are first confirmed by the VCJCS, via the Joint Staff J-8 JCIDS Gatekeeper and DJ-8. The VCJCS will identify the validation authority as the JCB or JROC. Once the VCJCS provides confirmation that the JEON may use the emergent process, JEONs are assigned to a Lead FCB and JRAC for collaborative review. The Lead FCB, in collaboration with the JRAC, assesses the validity of the JUON or JEON and identifies potential solution approaches which could satisfy the capability requirement in the requested timeframe. The Lead FCB

updates the FCB Joint prioritization to reflect the placement of the new capability requirement(s) within their priority list. At the end of their assessment, the Chair of the lead FCB, with a JRAC representative makes a recommendation to the validation authority either for or against validation. The validation authority will make one of the following decisions:

(1) Validate the JUON/JEON. The validation authority validates that the urgency of satisfying the identified capability requirements to support ongoing or anticipated contingency operations precludes the use of the deliberate requirements validation process. Validation of the JUON/JEON allows the JRAC to proceed with assigning a solution Sponsor to rapidly fund, develop, and field a capability solution.

(2) Validate part of the JUON/JEON. If it is clear that the Sponsor's capability requirement is best validated through a mix of urgent and deliberate requirements validation processes, the validation authority will validate part of the capability requirement as a JUON/JEON, and recommend the Sponsor resubmit the remainder of the capability requirement for validation in the deliberate requirements validation process.

(3) Reject the JUON/JEON. If the JRAC, FCBs, and/or validation authority anticipate technology challenges or other issues which would prohibit the fielding of a militarily useful solution in an appropriate timeline, or if the validation authority determines that the criteria for being a JUON/JEON are not met, the validation authority will reject the capability requirement with recommendation that the Sponsor accept risk, adopt a non-materiel approach, or pursue the capability requirement through the deliberate requirements validation process.

After the Joint Staff J-8 receives the JUON/JEON, the Functional Capabilities Board (FCB) triages the JUON/JEON. After the triage analysis confirms the need is urgent and compelling, the Joint Staff J-8 validates the JUON/JEON and forwards it to the Joint Rapid Acquisition Cell (JRAC) to determine the resourcing strategy, and then to the appropriate Service or Agency for action. Improvised Explosive Device (IED) challenges go directly to the Joint IED Defeat Office (JIEDDO). SIG is to be the single authority for prioritizing and directing action to fulfill DOD urgent needs.

c. Equipping Phase: This phase is the delivery of a JUON/JEON solution to the Warfighter. The Sponsor submits an abbreviated acquisition plan to JRAC and to the Joint Staff for approval. The Sponsor then procures and delivers a solution and support package to the warfighter.

d. Operations and Support Phase: The Sponsor sustains the JUON/JEON solution in the field and monitors performance, cost, and schedule for up to 24 months. The Sponsor and supported COCOM must provide an operational utility assessment to the Joint Staff within 90 days of initial fielding. The FCB, Interim sponsor, and COCOM prepare and conduct a capability review. This review informs the final disposition of the materiel solution.

23. Joint Rapid Acquisition Cell (JRAC)/Senior Integration Group (SIG).

a. In 2004, DOD initiated the Joint Rapid Acquisition Cell (JRAC) emulating the success of the Army's Rapid Equipping Force (REF) program. The JRAC is chartered to break through the institutional barriers of providing timely, effective support to operational commanders. The cell is not attempting to introduce a new acquisition/procurement process; however, it is attempting to push critical JUONs/JEONs through the existing DOD process. The USD(ATL) and the USD (Comptroller) established the JRAC based on DEPSECDEF guidance. Membership consists of 1-Star level or senior executive representatives from the Joint Staff, COCOMs, and each of the services, empowered to go back to their organizations and carry out the JRAC's decisions.

b. The cell works directly with the COCOMs to meet certified operational critical DOTMLPF-P (primarily materiel and logistics) requirements. The cell selects and focuses on high priority JUONs. The goal is to act on requests within forty-eight hours, so that a contract is awarded and goods and services are delivered within four months to two years. All incoming requests for an urgent operational need must be validated and prioritized by the COCOM before forwarding to the Joint Staff via SIPRNET. The cell tracks how quickly the military responds and reports directly to the SECDEF through the DEPSECDEF and the Warfighter Senior Integration Group (SIG).

c. Building on the previous establishment and success of the JRAC to resolve requests from operational forces for urgently needed capabilities, OSD, in August 2012, formally established the Warfighter SIG. The Warfighter SIG is responsible for leading the response to CCDR urgent operational needs (UONs), and must recognize, respond to and mitigate the risk of operational surprise associated with ongoing or anticipated near-term contingency operations. The SIG is expected to help speed up the process of developing ways to fill JUONs/JEONs, focusing on solutions that are capable of being fielded within two years. The DEPSECDEF serves as the chair of the Warfighter SIG, with the director of the JRAC serving as executive secretary.

d. DOD's highest priority is to provide warfighters involved in conflict or preparing for imminent contingency operations with the capabilities urgently needed to overcome unforeseen threats, achieve mission success, and reduce risk of casualties. Responding to an urgent operational need occurs in three steps. The Warfighter SIG oversees, prioritizes, and facilitates these steps:

(1) First, the need or requirement is validated.

(2) Second, a valid solution, consisting of a combination of materiel solution and tactics, techniques, and procedures (TTPs), is identified.

(3) Third, the solution must be rapidly executed, including completing any development (necessarily minimal, given the timeline), acquisition, identification and prioritization of funding, training, and fielding.

e. The Co-Chairs of the Warfighter SIG will prioritize and direct actions to meet urgent requirements and to integrate DOD wide efforts to manage the institutional response to operational surprise. The Warfighter SIG is the overarching entity through which OSD's previously established urgent needs organizations and task forces and any future OSD level urgent needs task forces will report to the Secretary of Defense regarding the status of JUONs/JEONs related actions.

f. Combatant commanders will use the JUONs/JEONs processes to identify operational vulnerabilities that require resources and/or capabilities beyond those available through the global force management process and more rapidly than the traditional Planning, Programming, Budgeting and Execution System (PPBES) and Defense Acquisition Management System (DAS) allow.

24. Component UON: Army Operational Needs Statement (ONS)/Army Requirements and Resourcing Board (AR2B) Process.

Services use various methods to shorten the acquisition timelines to meet urgent and compelling needs during crisis and conflict i.e., Air Force's combat capability document (CCD), Marine's urgent universal need statement (UUN), Navy's rapid deployment capability (RDC), and USSOCOM's combat-mission need statement (C-MNS). The operational need statement (ONS) is the Army's UON process/approach.

a. An Army capability request to HQDA constitutes a request for a materiel and/or non-materiel solution to correct a deficiency or to improve a capability that impacts upon mission accomplishment. These capability requests come to HQDA via the SIPRNET-based Army "start to finish" equipment common operating picture (ECOP) database and fall into two general categories; authorized/pre-validated equipment sourcing documents (ESDs) and operational needs statements (ONSs). The final validation, prioritization, and resourcing decision for these capability requests are made by the AR2B.

b. The AR2B is the mechanism (forum) for validating, prioritizing, and resourcing critical operational needs (ONSs and ESDs) for rapid senior leadership decision-making (accelerated fielding solutions) in support of an OCO named operation. The AR2B identifies solutions in the year of execution and/or budget year that require possible resource realignment. Established in December 2004, the AR2B replaced the Army Strategic Planning Board (ASPB) and Setting the Force Task Force. AR2B membership is shown in figure 7.

c. Authorized/pre-validated equipment sourcing requests (equipment and quantities already validated by HQDA, ODCS G-3/5/7):

(1) Deployed and deploying units or other HQDA designated high priority units, may submit ESDs for authorized/pre-validated equipment (e.g., modified table of organization and equipment (MTOE) shortages, table of distribution and allowances (TDA) shortages, brigade combat team (BCT) basis-of-issue plan (BOIP) shortages, or other equipment shortages already validated by HQDA). The unit (05 level command) submits an ESD, via the ECOP database, through the chain of command to HQDA G-8/G-4 for resourcing.

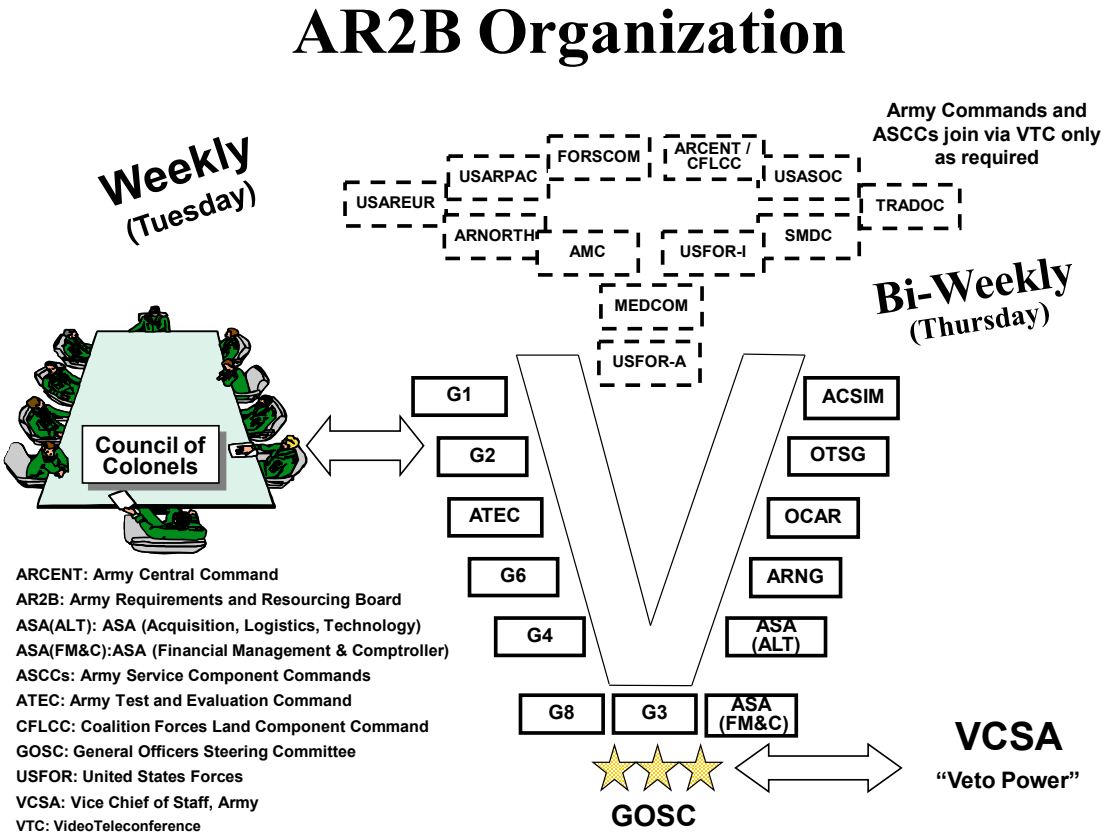


Figure 7

(2) Other means are still available for units to request equipment resourcing of authorized/pre-validated equipment such as MTOE shortages. For example, units can and should continue to use the unit status report (USR) process (IAW *AR 220-1*) to identify critical shortages affecting unit readiness.

d. Operational needs statements (ONSs). Operational field commanders use an ONS to document the urgent need for a materiel and/or non-materiel solution to correct a deficiency or to improve a capability that impacts upon mission accomplishment in

overseas contingency operations.

(1) The ONS provides an opportunity for the operational field commander (06 level) to initiate the HQDA AR2B process via the Army ECOP database.

(2) The ONS is not a materiel capabilities document (MCD). The CAPDEV, TNGDEV or MATDEV communities do not initiate or develop an ONS.

(3) Response to an ONS varies depending on the criticality of the need for the proposed item. Response can range from a HQDA directed requirement and fielding of a materiel system to the forwarding of the action to TRADOC ARCIC for review and appropriate action. HQDA may decline to favorably consider an ONS for a variety of reasons, including conflicting needs, higher priorities for funding, existence of a similar system, or non-concurrence of the criticality of the need. The response to an ONS is based on an ARSTAF validation supported by TRADOC, AMC, and MATDEV reviews. HQDA AR2B determines validity of the need, availability of technology, and sourcing of resources to fill the requirement. If the need is determined to be critical, and can be resourced (at least for the present situation), a directed requirement may result.

(4) All ONS are reviewed by the CAPDEVs/TNGDEVs to determine applicability to future requirements or continuing need for which a standard requirement and acquisition is needed. If validation of the ONS indicates that the concept has potential for Army-wide application and development of a new system is appropriate, TRADOC ARCIC will initiate a functional area ICD and/or CDD/CPD as appropriate through the capability development for rapid transition (CDRT) program, discussed later in the primer.

25. Directed Requirement.

a. If operational analysis and assessment of an ONS or joint urgent operational need (JUON) solution or results of an advanced technology demonstration (ATD) or joint capability technology demonstration (JCTD), indicates a specific limited, but necessary urgent need exists, HQDA, DCS G-3/5/7, Director, DAMO-CI may prepare and issue a directed requirement for a capability having application within the Army. Directed requirements must be approved in writing by the VCSA or HQDA, DCS G-3/5/7. While JCIDS capabilities compete in the Army prioritization process for program funding, the DCS G-3/5/7 will specify the funding source and priority for a directed requirement. Requests for directed requirements will be presented through the AROC Process Review Board (APRB), Army Requirements and Resourcing Board (AR2B) or Army Requirements Oversight Council (AROC) for decision.

b. The scope of a directed requirement will be limited to addressing urgent operational needs that, fall outside of the established JCIDS process, and if not addressed immediately, will seriously endanger personnel or pose a major threat to the success of ongoing operations. A directed requirement should not involve the

development of a new technology or capability; however, the acceleration of an ATD or JCTD (previously discussed), is within the scope of the directed requirements process. The directed requirement format is provided in *AR 71-9, Appendix D*.

26. Rapid Acquisition Authority.

a. Congressional legislation uses the term Rapid Acquisition Authority to describe measures with respect to procurement that the SECDEF can take to eliminate a combat capability deficiency that has resulted in combat fatalities. The legislation permits the SECDEF to waive statutes and regulations for testing and procurements (contracting) short of criminal statutes; and to move up to $100 million in authority, per fiscal year, regardless of the "color" (procurement, RDT&E, OMA) of money. The $100 million is not appropriated funding by Congress for this purpose; it is the authority to expend up to $100 million of existing DOD funding, using this waiver authority.

b. The legislation granting the SECDEF this special authority is contained in *section 806(c) of the Bob Stump National Defense Authorization Act for FY 2003, as amended by section 811 of the Ronald W. Reagan National Defense Authorization Act for FY 2005*.

c. This Rapid Acquisition Authority, as well as OCO funding, are the primary sources of funding for the accelerated capabilities and materiel development initiatives, discussed in this primer, responding to unforeseen urgent operational needs of the military and coalition forces engaged in overseas contingency operations.

SECTION VI
TRADITIONAL MATERIEL SYSTEMS ACQUISITION

The Defense Acquisition Management System (DAS) establishes a management process to translate user needs (broadly stated functional high risk capability gaps developed in the JCIDS or business needs responding to new ways of doing business), and technological opportunities (developed or identified in the S&T program based on user needs), into reliable and sustainable systems that provide capability to the user.

27. DOD System Acquisition Policy.

a. The basic policy is to ensure that acquisition of Defense systems is conducted efficiently and effectively in order to achieve operational objectives of the U.S. Armed Forces in their support of national policies and objectives within the guidelines of the *Office of Management and Budget (OMB) Circular A-11, part 3*: *Major System*

Acquisitions. DOD Directive 5000.01: The Defense Acquisition Management System, *DOD Instruction 5000.02: Operation of the Defense Acquisition Management System*, and a guidebook containing additional supporting discretionary, best practices, lessons learned, and expectations posted to the Defense Acquisition Portal at http://dag.dau.mil, are the documents that provide the DOD guidance for system acquisition policy and procedures. *AR 70-1* provides Army acquisition policy for materiel and information systems. These documents establish an integrated management framework for a single, standardized DOD-wide acquisition system that applies to all programs including highly sensitive, classified programs. "Tailoring" is encouraged in the process to reflect specific program needs. In accordance with *DODD 5000.01,* "There is no *one* best way to structure an acquisition program to accomplish the objective of the Defense Acquisition System." The essential features of the DOD materiel acquisition system are:

- a clear acquisition strategy (AS),
- a thorough program plan,
- risk management techniques, and
- systematic program tracking against the plan.

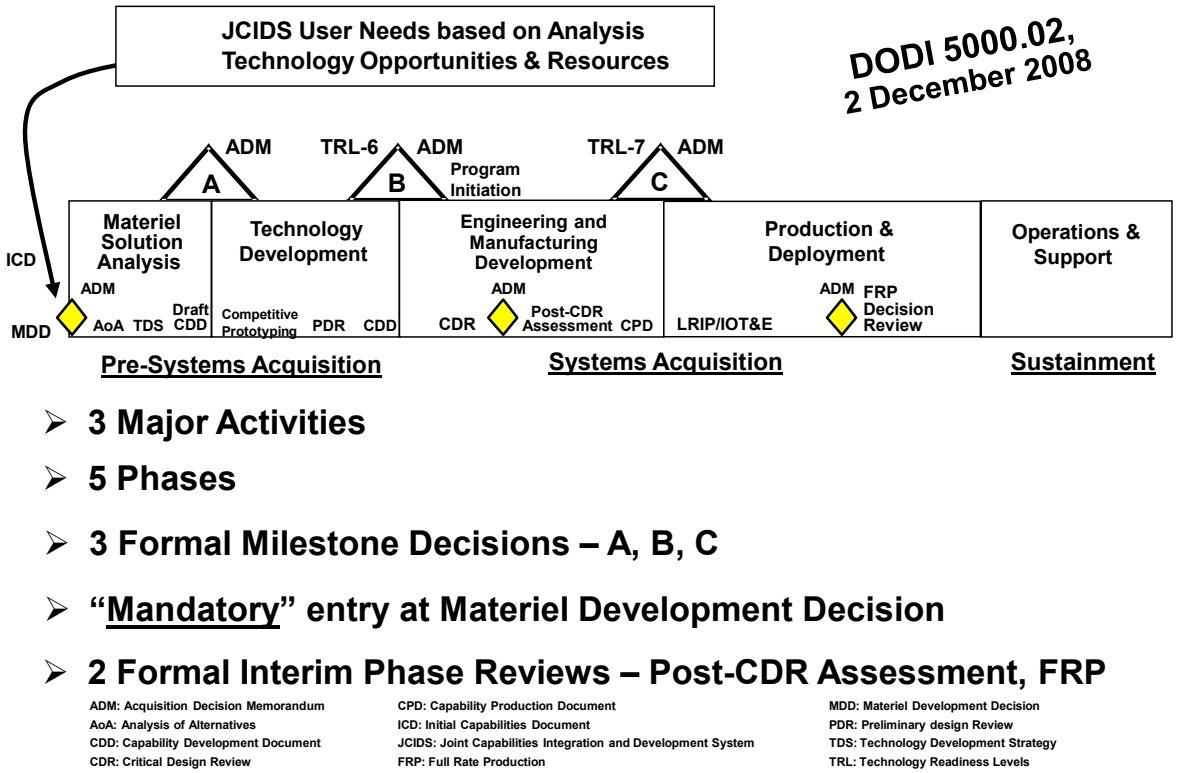
b. An acquisition program is defined as a directed, funded effort designed to provide a new, improved or continuing weapon system or information technology (IT) system capability in response to a validated operational need. Acquisition programs are divided into three acquisition categories (ACATs), which are established to facilitate decentralized decision-making, execution, and compliance with statutory and regulatory requirements. Acquisition phases provide a logical means of progressively translating broadly stated mission needs into well-defined system-specific requirements and ultimately into operationally effective, suitable, and survivable systems. All the tasks and activities needed to bring the program to the next milestone (MS) occur during acquisition phases. A MS is the major decision point that initiates the next phase of an acquisition program. Major defense acquisition program (MDAP) milestones may include, for example, the decisions to begin technology development, or to begin low-rate initial production (LRIP).

28. Materiel Systems Acquisition Management.

a. In the broad sense, the event driven materiel DAS consists of a series of management decisions made within DOD or the services as the development of a materiel system progresses from a stated materiel requirement to a fielded system. Product improvements (PIs) to existing systems or acquisition of nondevelopmental items (NDI) usually occur through acquisition streamlining. The system that is used is shown in figure 9. A key aspect of the process is that it is divided into three distinct activities (pre-systems acquisition, systems acquisition, sustainment); five phases (materiel solution analysis, technology development, engineering and manufacturing

development, production and deployment, and operations and support); and six work efforts (integrated system design, system capability and manufacturing process demonstration, low-rate initial production (LRIP), full-rate production (FRP) and deployment, sustainment, and disposal). Entry into the DAS is at one of the formal milestones (MS) decision points dependent on the appropriate Materiel Development Decision (MDD).

Defense Acquisition Management System - 2013



- **3 Major Activities**
- **5 Phases**
- **3 Formal Milestone Decisions – A, B, C**
- **"<u>Mandatory</u>" entry at Materiel Development Decision**
- **2 Formal Interim Phase Reviews – Post-CDR Assessment, FRP**

ADM: Acquisition Decision Memorandum
AoA: Analysis of Alternatives
CDD: Capability Development Document
CDR: Critical Design Review
CPD: Capability Production Document
ICD: Initial Capabilities Document
JCIDS: Joint Capabilities Integration and Development System
FRP: Full Rate Production
MDD: Materiel Development Decision
PDR: Preliminary design Review
TDS: Technology Development Strategy
TRL: Technology Readiness Levels

Figure 9

b. Key policies and principles governing the operation of the DAS are *(DODD 5000.01):*

(1) Flexibility. There is no *<u>one</u>* best way to structure an acquisition program to accomplish the objective of the DAS. Milestone decision authorities (MDAs) and PMs tailor program strategies and oversight, including documentation of program information, acquisition phases, the timing and scope of decision reviews, and decision levels, to fit the particular conditions of that program, consistent with applicable laws and regulations and the time-sensitivity of the capability need.

(2) Responsiveness. Advanced technology is integrated into producible systems and deployed in the shortest time. Validated, time-phased capability needs matched with available technology and resources, enable evolutionary acquisition strategies.

Evolutionary acquisition is the DOD approach to satisfying operational needs.

(3) Innovation. Throughout DOD, acquisition professionals continuously develop and implement initiatives to streamline and improve the DAS. MDAs and PMs examine and, as appropriate, adopt innovative practices (including best commercial practices), that reduce life-cycle time and cost, and encourage teamwork.

(4) Discipline. PMs manage programs consistent with statutory and regulatory requirements. Every PM establishes program goals for the minimum number of cost, schedule, and performance parameters that describe the program over its life-cycle. Approved acquisition program baseline (APB) parameters serve as program control objectives. PMs identify deviations from approved APB parameters and exit criteria.

(5) Streamlined and effective management. Responsibility for the acquisition of systems is decentralized to the maximum extent. The MDA provides a single individual with sufficient authority to accomplish MDA approved program objectives for development, production, and sustainment. The MDA ensures accountability and maximizes credibility in cost, schedule, and performance reporting.

c. Technology projects (e.g., JCTDs, JWEs, concepts development, and capabilities development), are efforts that occur prior to acquisition program initiation. These are referred to as pre-ACAT technology projects. The MDA for projects which will likely result in a major defense acquisition program (MDAP), if successful, will be the Under Secretary of Defense, Acquisition, Technology, and Logistics (USD(AT&L)).

d. The DAS is initiated as a result of output--validated warfighting materiel capabilities-based requirements--from the JCIDS process. Identified warfighting requirements are first assessed to determine if they can be satisfied by non-materiel solutions. Non-materiel solutions include changes in doctrine, organization, training, leadership and education, personnel, facilities, and policy (DOTLPF-P). If these non-materiel solutions do not satisfy the deficiency, a new materiel development program is initiated.

29. Acquisition Strategies and Program Plans.

a. The acquisition strategy (AS) is the framework (roadmap) for planning, directing, and managing an acquisition program to satisfy a validated materiel requirement. Acquisition strategies and their supporting program plans are tailored to accomplish established program objectives and to control risk. Also, they must provide the information essential for milestone decisions. In this regard, ASs are event-driven and explicitly link major contractual commitments and milestone decisions to demonstrated accomplishments in development and testing.

b. Evolutionary acquisition. Evolutionary acquisition is DOD's preferred strategy for rapid acquisition of a mature technology for the user. An evolutionary approach

delivers capability in increments recognizing, up front, the need for future capability improvements. The success of the strategy depends on the consistent and continuous definition of capabilities-based requirements and the maturation of technologies that lead to disciplined development and production of systems that provide increasing capability towards a materiel concept.

c. Program plans provide for a systems engineering approach to the simultaneous design of the product and its associated manufacturing, test, and support processes. This concurrent engineering approach is essential to achieving a careful balance among system design requirements (for example, operational performance, producibility, reliability, maintainability, logistics and human factors engineering, safety, survivability, interoperability, and standardization). Maximum practicable use is made of commercial and other NDI. The Army's first preference is to use performance specifications; the next is to use non-government standards (NGS); and as a last resort, military specifications and standards (MILSPECs/STDs) may be used. Use of MILSPECs/STDs requires a waiver from the MDA. Additionally, changes to *DODI 5000.02,* state that the AS should be tailored to the extent feasible to employ commercial practices when purchasing commercial products or other NDI.

d. Cost as an independent variable (CAIV). CAIV is the DOD cost reduction methodology utilized throughout the entire life-cycle of a programs acquisition process, to ensure operational capability of the total force is maximized for the given modernization investment. In other words, cost is treated as an independent variable along with others used to define a system. CAIV directly impacts the preparation of a program's materiel capabilities documents (ICDs/CDDs/CPDs), as well as acquisition documents (AS and APB).

30. Environmental Considerations.

Environmental impact is always considered in Defense acquisitions. *The National Environmental Policy Act (NEPA) of 1969,* mandates analysis of potential environmental effects of proposed federal actions. For materiel acquisitions, *NEPA* applies to all "new starts", SLEP, P3I, and block modifications in all ACATs. *NEPA* analysis begins during the DAS Technology Development (TD) phase and continues through the Engineering and Manufacturing Demonstration (EMD) and Production and Deployment (P&D) phases, accounting for all direct, indirect, and cumulative environmental impacts. *NEPA* compliance is key to support production, testing, and fielding of the system, as well as ensuring the system can be operated, maintained and sustained throughout the remainder of its life-cycle. The *NEPA* documentation process can be lengthy and costly, but environmental issues and concerns represent a risk to the program that must be managed. Inadequate environmental analyses can lead to dramatic increases to overall program costs, and can delay testing and fielding schedules, and may produce a system that cannot be operated or maintained at the

location where Soldiers need it most. Early consideration of environmental impacts and *NEPA* requirements help protect not only the environment, but helps ensure a well-trained, protected Soldier.

31. Risk Assessments and Management.
Program risks and risk management plans are explicitly assessed at each milestone decision point prior to granting approval to proceed into the next acquisition phase. Risks must be well understood, and risk management approaches developed, before MDAs can authorize a program to proceed into the next phase of the acquisition process. To assess and manage risk, MATDEVs use a variety of techniques. They include TDs, prototyping, and T&E. Risk management encompasses identification, mitigation, and continuous tracking and control procedures that provide feedback through the program assessment process to decision authorities. PMs develop a contracting approach appropriate to the type system being developed and acquired.

SECTION VII
DOD ACQUISITION ORGANIZATION AND MANAGEMENT

32. DOD System Acquisition Management.

a. The Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)), is the senior procurement executive and the principal staff assistant and adviser to the Secretary of Defense (SECDEF) and takes precedence in DOD for all matters relating to the DAS - research and development; test and evaluation; production; logistics; command, control, and communications, and intelligence activities related to acquisition; military construction; and procurement.

b. The USD(AT&L) serves as the Defense Acquisition Executive (DAE) with responsibility for supervising the performance of the entire DAS in accordance with the laws, Congressional guidance and direction, and *OMB Circular No. A-11, part 3*. The DAE establishes policy for all elements of DOD for acquisition. The basic policies of the DAE are established and implemented by *DODD 5000.01 and DODI 5000.02.* The DAE serves as the chairman of the Defense Acquisition Board (DAB) and Information Technology Acquisition Board (ITAB), assisted by the overarching integrated product teams (OIPTs) that relate to the acquisition process. As the DAB chairman, the DAE recommends to the SECDEF acquisition resource matters and other acquisition management matters required to implement acquisition milestone decisions. A clear distinction exists between responsibility for weapon systems acquisition and budgetary authority. While the DAE, as DAB/ITAB chairman, makes recommendations whether to proceed with plans to acquire major materiel systems, the Senior Leader Review Group (SLRG), chaired by the Deputy Secretary of

Defense (DEPSECDEF), makes budgetary recommendations on the same programs. Acquisition programs must operate within the parameters established by the SLRG and the SECDEF through the Planning, Programming, Budgeting, Execution (PPBE) process.

33. Defense Advanced Research Projects Agency (DARPA).
DARPA is a unique organization and management tool of the SECDEF. It consists of a mix of military and civilian scientists and engineers, and has a broad charter to conduct advanced research that fills research and development (R&D) gaps between service lines of responsibility or handles high priority problems that cross service lines. DARPA's purpose is to review ongoing R&D, determine whether or not the concept is feasible, determine its usefulness, and transfer it to the appropriate service. DARPA does not have its own in-house research facilities and relies on the services and other government agencies for technical and administrative support. Once a decision to support a research proposal is made, responsibility for contracting is generally assigned to one of the services. Examples of past DARPA contributions include the M-16 Rifle, Air Force F-117 Tactical Fighter (Stealth Fighter), Unmanned Aerial Vehicle (UAV), and the Advanced Research Projects Agency (ARPA) Net (current Internet).

34. Defense Acquisition University (DAU).
The DAU is a corporate university that includes the Defense Systems Management College (DSMC). Its operation and structure is designed to be similar to a state university with many campuses each specializing in certain acquisition disciplines. *The Defense Acquisition Workforce Improvement Act* (*DAWIA)* required the formation of the DAU with operation commencing in 1992.

35. Defense Systems Management College (DSMC).

a. The DSMC is the USD(AT&L) institution for ensuring the up-to-date training of military and civilian professionals in the management of materiel acquisition programs in DOD. The *DAWIA* required the establishment of a senior course for personnel serving in critical acquisition positions (CAPs), which is equivalent to existing senior professional military education programs. The USD(AT&L) has oversight authority for the acquisition curriculum of the course.

b. The DSMC, founded 1971, is a joint military professional institution, operating under the direction of the DAU Executive Board, to support acquisition management as described in *DOD Directive 5000.01*, and to assist in fulfilling education and training requirements set out in appropriate DOD directives and public laws. The mission of the DSMC is to:

- conduct advanced courses of study in defense acquisition management as the primary function of the college;
- conduct research and special studies in defense acquisition management;
- assemble and disseminate information concerning new policies, methods, and practices in defense acquisition management; and
- provide consulting services in defense acquisition management.

SECTION VIII
ARMY ACQUISITION ORGANIZATION AND MANAGEMENT

36. Army Research, Development, and Acquisition (RDA) Goals.

a. The Secretary of the Army (SA) is responsible for functions necessary for the research, development, logistical support and maintenance, preparedness, operation, and effectiveness of the Army. The SA supervises all matters relating to Army procurement. The SA executes his acquisition management responsibilities through the Army Acquisition Executive (AAE).

b. Special emphasis is placed on medium and long-range materiel planning, product modification, and life extension programs. Major state-of-the-art advancements are sought only in carefully selected areas. Stability of materiel acquisition programs is a matter of utmost interest, especially after the system passes the DAS MS B program initiation decision. Reliability, availability, and maintainability (RAM) goals; manpower and personnel integration (MANPRINT); integrated logistics support (ILS); survivability; effectiveness; safety; and product quality are incorporated into system performance objectives. Contractual incentives for the improvement of RAM and ILS are encouraged.

37. Army Acquisition Executive (AAE).

The Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)) is the AAE. The AAE is designated by the SA as the Component Acquisition Executive (CAE) and the senior procurement executive within HQDA. The AAE is the principal HQDA staff official for the execution of the AAE responsibilities. When serving as the AAE, the ASA(ALT) is assisted by a Principal Military Deputy (MILDEP).

a. The MILDEP is assigned to the Office of the ASA(ALT) and provides staff support to the AAE in managing the R&D, developmental test (DT), and the acquisition of materiel for all Army major weapon and support systems. The MILDEP, delegated down from the AAE, is also the Army Director, Acquisition Career Management (DACM). The DACM is responsible for directing the Army

Acquisition Corps (AAC), as well as implementation of the acquisition career management requirements set forth in the *DAWIA* legislation. The day-to-day management of Army acquisition programs is shown in figure 10.

b. Similar to the DAE, the AAE develops Army acquisition policies and procedures and manages the Army's production base support and industrial mobilization programs. The AAE, acting with the full authority of the SA, is responsible for administering acquisition programs according to DOD policies and guidelines, and

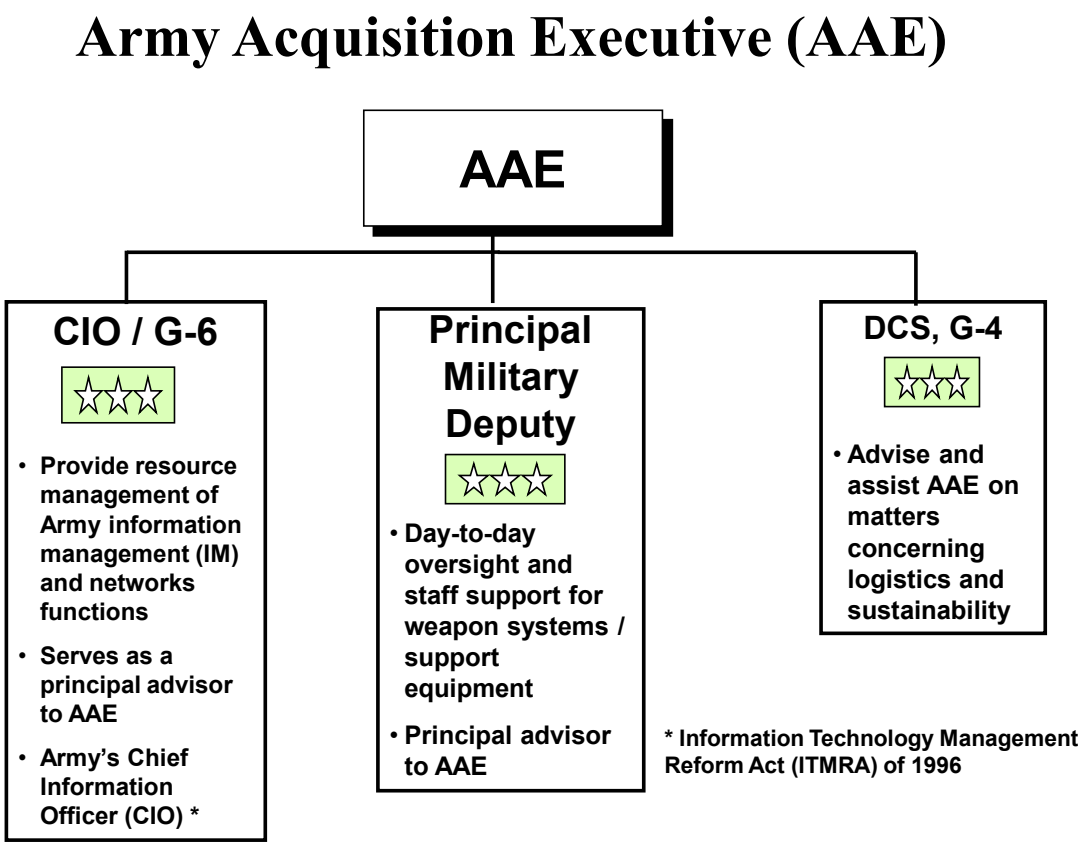


Figure 10

exercises the powers and discharges the responsibilities as set forth in *DODD 5000.01* for CAEs. In addition, the AAE:

- appoints, manages, and evaluates program executive officers (PEOs) and direct-reporting program, project, or product managers (PMs).
- coordinates with Office of the DCS, G-3/5/7, to establish policy and guidance for the analysis of alternatives (AoAs); for acquisition category (ACAT) I and II programs; designates the organization responsible for performing system engineering trades analyses for the AoA; and provides issues and alternatives to the DCS, G-3/5/7 for inclusion in the AoA tasking document.

• carries out all powers, functions, and duties of the SA with respect to the acquisition work force within the Army, subject to the authority, direction, and control of the SA.
• develops guidance, in coordination with the HQDA DCS, G-3/5/7, and serves as co-proponent, with the HQDA DCS, G-8, for the Army's Research, Development, and Acquisition (RDA) Plan.
• formulates Army-wide S&T base strategy, policy, guidance, and planning.
• establishes and validates Army technology base priorities throughout the planning, programming, budgeting, execution system (PPBE).
• acts as the final authority of all matters affecting the Army's acquisition system, except as limited by statute or higher-level regulation. Develops and promulgates acquisition, procurement, and contracting policies and procedures.
• chairs all Army System Acquisition Review Council (ASARC) meetings.
• directs the Army Science Board (ASB).
• appoints the source selection authority (SSA) for specified programs. The *Federal Acquisition Regulation (FAR)* is the primary contracting regulation. It is the first regulatory source to which DA acquisition personnel refer. The ASA(ALT) issues the *Army Federal Acquisition Regulation Supplement (AFARS)* to implement and supplement the *FAR* and the *Defense Federal Acquisition Regulation Supplement (DFARS)* and to establish uniform policies and procedures for use in the Army.
• reviews and approves, for ACAT ID programs, the Army position at each decision milestone before the Defense Acquisition Board (DAB) review. This includes the review and approval of acquisition program baselines (APBs). The AAE serves as the milestone decision authority (MDA) for ACATs IC, IAC, selected ACAT II, and assigns the MDA for ACAT III programs to the PEOs. The MDA is the individual designated to approve entry into the next acquisition phase. ACATs are defined in figures 6a and 6b.
• approves the establishment and termination of all program management offices (PMOs) and PEOs. The AAE has authority to designate a system for intensive, centralized management and prescribe the appropriate level of management at any point in the program management process.

c. HQDA system coordinator (DASC). The DASC is the primary acquisition staff officer at HQDA. The DASC is responsible for the day-to-day support of assigned programs and serves as the PM's representative and primary point of contact (POC) within the Pentagon. The DASC reports to the ASA(ALT), Deputy for Acquisition and Systems Management. The DASC is responsible for keeping the acquisition chain of command informed of the status of assigned acquisition programs. In addition, the DASC assists the PM with issue resolution at HQDA and OSD levels. The DASC is the "eyes and ears" of the PM at the Pentagon and ensures that the PM is advised of any actions or circumstances that might negatively impact their program.

d. HQDA logistics support officer (DALSO) is the HQDA representative of the logistics community, providing logistics coordination. The DALSO monitors the progress of the assigned system and ensures that all elements of ILS, as outlined in *AR 700-127,* are satisfactorily completed. Because of the interrelationships of assigned responsibilities in materiel acquisition, close and continuous coordination and cooperation is essential between the DALSO and his counterparts at TRADOC, AMC, and the ARSTAF. In addition to new items of equipment, DALSOs also have responsibility for existing weapons and materiel systems in the Army force structure. This responsibility covers all phases of logistics support to include readiness, redistribution, and disposal.

(1) The DALSO's primary mission is to provide HQDA general staff supervision over the ILS management of assigned commodity materiel/weapons systems from concept to disposal. Other responsibilities include:

- ARSTAF responsibility for logistical acceptability, deployability, and supportability of materiel systems, interoperability, ILS, materiel release, and logistics R&D programs for the Army;
- serving as the logistician in the DAS for other than medical equipment, and conduct surveillance over logistics aspects of materiel acquisition and modification programs to ensure supportable systems; and
- providing policy guidance for logistics, medical, and engineer materiel acquisition.

38. Program Executive Officer (PEO).

a. The PEO system structure was implemented by the Army in 1987, in response to requirements established by the *Goldwater-Nichols Reorganization Act of 1986;* and the recommendation of the Packard Commission, under President Reagan, that was approved and then ordered by the *National Security Decision Directive (NSDD) 219* (figure 11).

b. The PEO, administering a defined number of AAE assigned MDAPs, major and/or non-major programs, is responsible for programmatics (materiel acquisition cost, schedule, and total system performance) and for the planning, programming, budgeting, and execution (PPBE) necessary to guide assigned programs through each DAS milestone. In addition, the PEO provides program information to the AAE, HQDA, DOD, and Congress; defends assigned programs to Congress through the Army Office Chief of Legislative Liaison (OCLL); and participates in the development of data to support AAE programmatic decisions in the PPBE. Other PEO and direct-reporting PM responsibilities include assisting the CAPDEV and training developer (TNGDEV) in developing materiel capabilities documents (MCDs), by providing technical, availability, performance, anticipated materiel acquisition cost, and schedule type information as needed.

c. The AAE has 11 PEOs—Missiles and Space; Aviation; Command, Control, Communications –Tactical/Joint Tactical Radio System (JTRS); Intelligence, Electronic Warfare (EW) and Sensors; Ground Combat Systems; Combat Support/Combat Service Support Systems; Simulation, Training, and Instrumentation; Ammunition; Soldier; Enterprise Information Systems, and JPEO Chemical and Biological Defense —responsible for the intensive management of RDA weapon and information systems. Unless a waiver is granted by the DAE or AAE, a PEO must be certified in acquisition management.

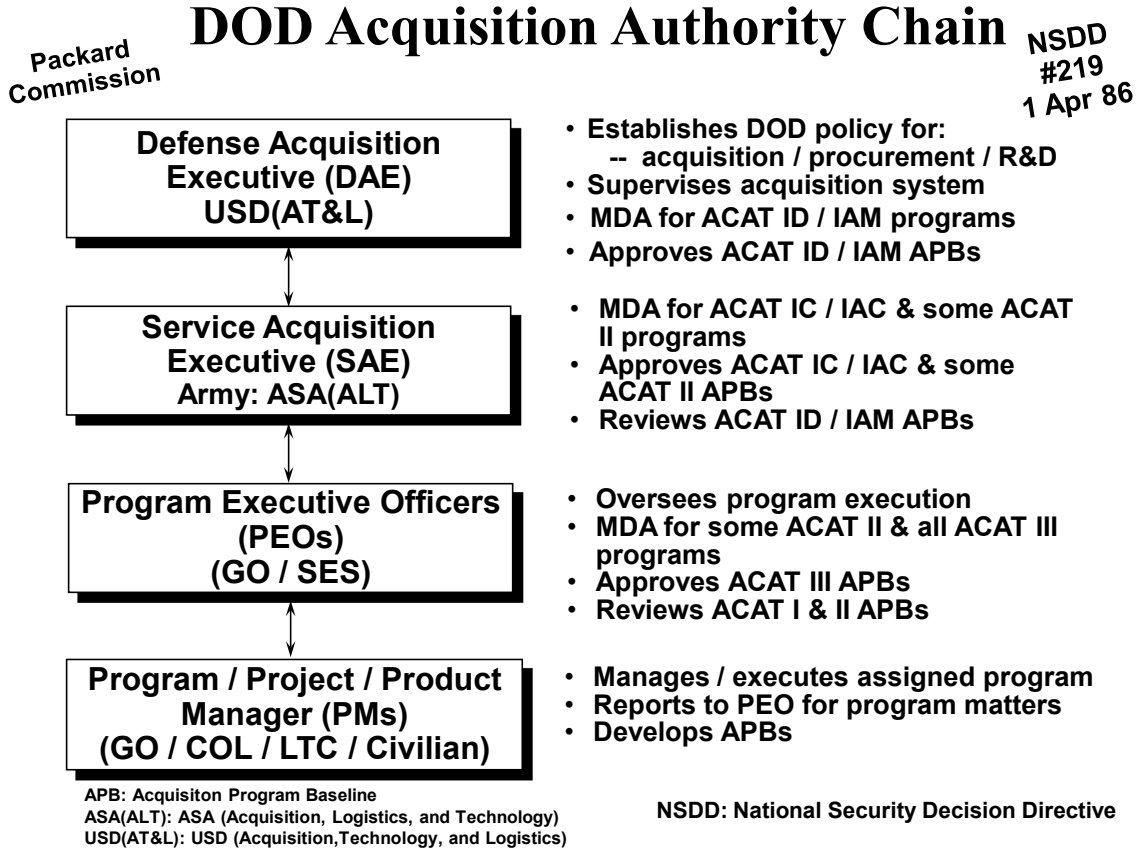


Figure 11

d. The Army's primary CAPDEV, referred to above, is the U.S. Army Training and Doctrine Command (TRADOC). TRADOC formulates and documents operational concepts, doctrine, organizations, and/or materiel requirements for assigned Army functions. TRADOC serves as the user representative during acquisitions for their validated materiel requirements, as well as doctrine and organization developments.

e. A materiel developer (MATDEV) is located within the RDA command, agency, or office, assigned responsibility for the system under development or being acquired.

The term may be used generically to refer to the RDA community in the materiel acquisition process (counterpart to the generic use of CAPDEV).

f. A training developer (TNGDEV) is located within a command or agency that formulates, develops, and documents or produces training concepts, strategies, requirements (materiel and other), and programs for assigned mission areas and functions. The TNGDEV serves as user (trainer and trainee) representative during acquisitions of their validated training materiel requirements and training program developments. TNGDEVs perform the following functions solely in support of training systems:

- fund and conduct concept formulations for all system training aids, devices, simulations and simulators (TADSS) in support of assigned systems;
- program and budget resources for TADSS, as specified in the training support requirements (TSR) annex of the capability development document (CDD);
- integrate system training capabilities into assigned materiel systems in accordance with the validated system MCD and in coordination with the CAPDEV;
- develop, acquire, and field the subsystem training package with the materiel system;
- plan and program resources for the execution of new equipment training (NET) using distance learning (DL) technology and/or contract NET as the desired training strategy in support of TRADOC developed/approved system training plans (STRAPs); and
- provide TNGDEV perspective through input to the *Army RDA plan* and the *Army Modernization Plan (AMP).*

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39. Program/Project/Product Manager (PM).

a. The program management approach to system acquisition management is a distinct departure from the services' traditional practice of establishing functionally oriented organizations to carry out well-defined, repetitive, and continuous long-term tasks. Organization for program management is a tailored, task-oriented process. This approach requires the PM to establish management arrangements among the PM office (PMO), other military organizations, and various contractors to coordinate their efforts and to accomplish program objectives effectively, efficiently, and economically. A variety of PMO organizations have been established. They operate on the matrix management principle and must draw all functional support from a host command or installation. In addition to the formal PM organization, the PM directs the informal MATDEV/CAPDEV team to execute the assigned materiel acquisition program. MATDEV/CAPDEV team is the terminology used to describe the informal, but essential close working relationship among the MATDEV, CAPDEV, and other players in the RDA management process.

b. The PM has authority and responsibility for all programmatic (cost, schedule, performance, and life-cycle sustainment) decisions to execute the assigned program within the approved acquisition program baseline (APB) and subject to functional standards established by regulation, secretarial direction, or law. Generically, all PMs are program managers, but they are chartered as a program manager, a project manager, or product manager based on the value and importance (visibility) of the program they manage. The criteria established for designation of a program manager are generally the same as those which cause a system acquisition to be designated as a MDAP, major, or non-major program—high defense priority, high dollar value, or major Congressional or OSD interest. Since 2001, all Army acquisition programs, regardless of acquisition category (ACAT), are managed by a program/project/product manager (PM) overseen by a program executive officer (PEO) or directly reporting to the Army Acquisition Executive (AAE). All PEOs report directly to the Defense Acquisition Executive (ACAT ID programs) or to the SAE (for ACAT IC and below). Project managers report to a PEO or the AAE. All product managers report to a project manager. As a general rule, a program manager is a general officer or Senior Executive Service (SES); a project manager is a Colonel or GS-15; a product manager is a Lieutenant Colonel or GS-14. This distinction between PMs is unique to the Army, and does not apply to the other services or within industry.

c. Normally project managers are assigned for 4 years, with product managers staying 3 years in position. Unless a waiver is granted by the DAE or AAE, a PM must be certified in acquisition management.

40. Program Executive Officer (PEO) Resource Control.

The Army has revised its resource support system structure for the PEOs to improve their control over the funding and manpower resources they need to carry out their responsibilities. PEOs and subordinate PMs receive dollars and personnel authorization resources directly from HQDA rather than through the Life-Cycle Management Commands (LCMCs). The LCMCs continue to provide a variety of support services without duplicating any of the PEOs or PMs management functions. This enhanced resource control system ensures PEO and PM managed programs are managed with modern efficient techniques, without administrative burdens or materiel command layers being inserted into the chain of command.

41. Headquarters, Department of the Army.

a. Chief of Staff of the Army (CSA). The CSA is responsible by law to the SA for the efficiency of the Army and its preparedness for military operations. The CSA acts as the agent of the SA in carrying out the plans or recommendations submitted by the ARSTAF and approved by the SA. The Vice Chief of Staff, Army (VCSA*),* supports the CSA by managing the day-to-day operations of the Army. The VCSA chairs the

Army Requirements Oversight Council (AROC) and in the area of RDA, the VCSA co-chairs the Army Systems Acquisition Review Council (ASARC).

b. Assistant Secretary of the Army (Financial Management and Comptroller) (ASA(FM&C)). The ASA(FM&C) has secretariat responsibility for all financial management activities and operations for appropriated funds. While the budget is in preparation, the ASA(FM&C) receives and consolidates procurement and research, development, test and evaluation (RDTE) budget forms from Army commands and PEOs. The ASA(FM&C) also:

- works with the AAE on all cost and economic analysis (EA) matters related to the acquisition process.
- carries out all financial management responsibilities assigned under *Title 10*.
- tasks the appropriate MATDEV to conduct program office estimates (POE) and/or economic analyses (EA) to milestone decision review (MDR) and PPBE requirements.
- manages all budgeting activities in support of the Army materiel requirements processes and RDA modernization program, with the framework of PPBE.
- develops statutory independent life-cycle cost estimates (ICEs) and component cost estimates (CCEs) for weapon and information systems. Chairs and oversees the Army Cost Review Board (CRB) and approves the Army cost position (ACP) for all major acquisition programs. The ASA(FM&C) Deputy for Cost & Economics, ensures that the ACP reflects the costs and risks associated with the program, in concurrence with the cost as independent variable (CAIV) process.
- the Military Deputy (MILDEP), ASA(FM&C) is a regular member of the Army Requirements and Resourcing Board (AR2B) in support of overseas contingency operations (OCO).

c. Assistant Chief of Staff for Installation Management (ACSIM). The ACSIM is responsible for developing criteria for the mitigation of environmental impacts, and reviewing emerging Army RDA systems for environmental effects. The ACSIM is a regular member of the AR2B.

d. Deputy Chief of Staff, G-1 (DCS, G-1). The DCS, G-1 has ARSTAF responsibility for personnel management. DCS, G-1 monitors planning for the manpower and personnel aspects of new systems. Also, the DCS, G-1 is the proponent and has primary ARSTAF responsibility for the DOD human systems integration (HSI) program (MANPRINT program in the Army). The emphasis of the MANPRINT program is to enhance total system performance (Soldier in the loop) and to conserve the Army's manpower, personnel and training (MPT) resources. The DCS, G-1 is a regular member of the AROC, ASARC and AR2B.

(1) The HQDA personnel system staff officer (PERSSO), is the ARSTAF representative of the personnel community. The PERSSO provides for the continuous

coordination necessary to ensure the smooth integration of new equipment, materiel systems, and new organizations. The PERSSO responsibilities include, but are not limited to: preparing and justifying force structure requests in conjunction with the DCS, G-3/5/7 organization integrator (OI) and DCS, G-8 staff synchronization officer (SSO); reviewing and coordinating the development of force structure changes; personnel supportability architecture; officer and enlisted issues related to new organizational concepts and doctrine; and ensuring programming and budgeting of manpower spaces. The PERSSO participates in all HQDA actions to develop the staff position on CAPDEV proposals for potential MDAPs, the designation of a proposed system, the recommendations on the elements of system fielding, including the proposed basis of issue plan (BOIP), the initial issue quantity (IIQ), and the Army acquisition objective (AAO). The PERSSO represents the DCS, G-1 at force modernization-related, HQDA-sponsored conferences, forums, and meetings on issues of supportability concerning the introduction of new and/or reorganized existing table of organization and equipment (TOE)/ table of distribution and allowances (TDA) units.

e. Deputy Chief of Staff, G-2 (DCS, G-2). The DCS, G-2 provides scientific and technical intelligence and threat projections in support of all aspects of the Army RDA programs. The DCS, G-2 is a regular member of the ASARC, AROC, and AR2B.

(1) In addition, a HQDA threat integration staff officer (TISO*)* is designated by the DCS, G-2 to function as the HQDA threat integration coordinator for designated mission areas, programs, and systems. The TISO represents the DCS, G-2 on all aspects of threat support throughout the system life-cycle or study process. The TISO complements the DCS, G-3/5/7 requirements staff officer (RSO) and DCS, G-8 SSO and is designed to foster closer coordination among the intelligence community, Army commands, and ARSTAF agencies to ensure the timely integration of the threat into the materiel acquisition process.

f. Deputy Chief of Staff, G-3/5/7 (DCS, G-3/5/7). As the Army's force manager, the DCS, G-3/5/7 serves as the HQDA proponent for all Army force structure related policies, processes, and actions. The DCS, G-3/5/7 is a regular member of the ASARC, AROC, and chairs the AR2B. The DCS, G-3/5/7:

(1) integrates Army doctrine, organization, training, materiel, leadership and education, personnel, facility, and policy (DOTMLPF-P) capability-based requirements into structure;

(2) develops and maintains force planning guidance and active and reserve component force structure through the total army analysis (TAA) force accounting, force documentation and other force management forums; and

(3) oversees the force management, training, mission command simulations and experimentation, prioritization, and requirements validation processes for the Army.

The DCS, G-3/5/7 is assisted by the Director, G-37 Capabilities Integration, Prioritization, and Analysis (DAMO-CI), who has supervisory responsibility for:

(a) Analysis, Experimentation, Testing and Technology Division (DAMO-CIA):

- ensures key Army and DOD decisions regarding materiel requirements and materiel acquisition solutions are supported by sound analysis;
- serves as HQDA proponent for experimentation oversight and policy;
- serves as G-3/5/7 lead for test and evaluation (T&E) and science and technology (S&T) matters.

(b) Army Requirements and Resource Division (DAMO-CIB):

- accelerates urgent requirements to solutions for the Soldier through the Army Requirements and Resourcing Board (AR2B);
- synchronizes accelerated materiel solution efforts through the War Production Board (WPB);

(c) Current and Future Warfighting Capabilities Division (DAMO-CIC):

- validates current and future Army warfighting capability requirements;
- serves as the Army lead for validation and prioritization of Operational Needs Statements (ONS);
- serves as Army lead for implementation of policy and procedures for the JCIDS process.

(d) Portfolio Review and Integration Division (DAMO-CIP):

- leads conduct of VCSA directed capability portfolio reviews in order to identify trade-offs and to establish and revalidate priorities among programs.

(e) Resource Analysis & Integration Division (DAMO-CIR):

- represent DCS, G-3/5/7 in all phases of the PPBE process (e.g., Program, Budget, Year of Execution, and Overseas Contingency Operations (OCO) funds.

(4) DCS, G-3/5/7, Current and Future Warfighting Capabilities Division (DAMO-CIC). Within the DCS, G-3/5/7, DAMO-CIC is the single entry point, as the Army's JCIDS "gatekeeper", for all Army and joint DOTMLPF-P requirements. DAMO-CIC is the proponent for policy development and joint/Army JCIDS process oversight. Within DAMO-CIC, the requirements staff officer (RSO) is directly responsible for leading HQDA staff integration and coordination efforts for all Army and joint DOTMLPF-P requirements issues within Army JCIDS. The RSO coordinates with the HQDA DCS, G-8 counterpart, the SSO, to facilitate the transition from requirements development and validation to requirements solutions (execution and resourcing). DAMO-CIC functions and responsibilities include:

(a) proponent for Army's warfighting capabilities (requirements) determination policy (AR 71-9):

- Army implementation of JCIDS.
- Army policies and procedures for execution of the JCIDS Urgent Operational Need (UON) process.

(b) provides support to ODCS, G-3/5/7 for equipment/system capability and

employment issues:
- DAS process (ASARC/OIPT/DAB);
- PPBE (POM/investment reviews with HQDA DCS, G-8);
- Congressional inquires and testimony.

(c) serves as the HQDA Gatekeeper for JCIDS documents to support:
- HQDA validation of TRADOC-generated documents by AROC;
- development of the official Army position on other service/COCOM documents during joint staffing;
- configuration management of Army documents during joint staffing and JROC review for validation;
- Army Requirements Oversight Council (AROC) secretariat support to the HQDA DCS, G-3/5/7 and VCSA.

(d) conduct staff integration of modernization proposals to support force development planning:
- execute JCIDS document staffing within ARSTAF/lead comment resolution process;
- organize presentation of Army modernization proposals to AROC for validation;
- assemble Army position/input on other service JCIDS documents during joint staffing;
- support joint review of Army proposals/input during Functional Capability Board (FCB) consideration.

(e) conduct staff integration of ONSs for urgently required warfighting capabilities:
- serves as the HQDA Gatekeeper for ONS requests submitted by operational commanders;
- develops validation recommendations/conduct execution planning for HQDA DCS, G-3/5/7 in support of overseas contingency operations missions.

(5) Requirements staff officers (RSOs). Within G-37 (DAMO-CI), RSOs, as the functional integrator for specific focus areas (e.g., Focus Logistics, Battlespace Awareness, Force Application, etc.), to facilitate the staffing, validation, and prioritization of all Army DOTMLPF-P requirements. Primary functions and responsibilities are:
- represents HQDA DCS, G-3/5/7 equities in TRADOC CoE integrated capabilities development teams (ICDTs) for JCIDS analysis and documentation;
- responsible for integrated validation recommendations to the HQDA DCS, G-3/5/7 on urgent warfighting requirements (ONSs);
- participates in Army/OSD DAS IPTs representing the validated operational requirement;
- prepares congressional correspondence and testimony addressing operational requirements and future warfighting capabilities;
- provides PPBE support to the Budget, Requirements and Programs (BRP) Board regarding operational requirements and integration considerations for Army

Programs;
- participates in FCB forums in support of the JROC review of JCIDS analysis and documentation
- responsible for HQDA staffing of other service capability documents;
- produces official Army Position on Army and other service capability documents during joint staffing; and
- responsible for HQDA staffing of Army capability documents, including comment resolution, in support of AROC validation decisions.

g. Deputy Chief of Staff, G-4 (DCS, G-4). The DCS, G-4 assesses the logistical supportability of materiel systems during the DAS process. The DCS, G-4 participates in all phases of the RDA management process to ensure equipment is logistically reliable, supportable, and maintainable. DCS, G-4 is responsible for secondary item requirements, such as war reserve requirements. The DCS, G-4 is a regular member of the ASARC, AROC and AR2B.

(1) The DCS, G-4 has been designated the Principal Military Advisor to the AAE for logistics and sustainment. As the principal military advisor to the AAE for logistics , the DCS, G-4 is assisted by the Deputy ASA(ALT) for Integrated Logistics Support (ILS), who is the HQDA focal point for a system's ILS program.

h. Army Chief Information Officer (CIO)/Deputy Chief of Staff, G-6. The CIO/G-6 has ARSTAF responsibility for Army automated information systems (AIS) and information technology (IT) activities. These include establishing and approving policies, procedures, and standards for the planning, programming, life-cycle management, use of Army IT resources, and responding to and validating all warfighting requirements. The G-6 serves as the Army CIO as directed by the *Clinger-Cohen Act (originally known as the Information Technology Management Reform Act (ITMRA) of 1996)*. The CIO's primary responsibility, under the *Clinger-Cohen Act*, is the management of resources for all Army information programs. The DCS, G-6 is a regular member of the ASARC, AROC, and the AR2B.

i. Deputy Chief of Staff, G-8 (DCS, G-8). The DCS, G-8 is the principal military advisor to the ASA (FM&C). The DCS, G-8 prepares the Army Program Objective Memorandum (POM); integrates and synchronizes the POM process; and provides analysis and evaluation of Army programs to the senior Army leadership. The DCS, G-8 is a regular member of the ASARC, AROC, Army Marine Corps Board (AMCB), and the AR2B. The DCS, G-8 responsibilities include:
- Army program advocate to OSD, the JS, other military departments, government agencies and organizations;
- overseeing materiel fielding across the Army and ensuring integration of DOTMLPF-P into materiel solutions in accordance with (IAW) validated Army requirements;

• serving as principal advisor to the CSA on joint materiel requirements, representing the Army in the JS Functional Capabilities Board (FCB), Joint Capabilities Board (JCB), and Joint Requirements Oversight Council (JROC) process;
• serving as the Army lead for all Quadrennial Defense Review (QDR) activities; and
• overseeing the Army Studies Program.

(1) G-8, Director, Program Analysis and Evaluation (DPAE). Within DCS, G-8, the DPAE is responsible for reviewing and analyzing requirements and programs in force structure development; providing analytical support to the Army Resources Board (ARB) and subordinate committees; developing resource guidance; developing and compiling the POM; maintaining the Army portion of the DOD Future Years Defense Program (FYDP); and presenting an affordability analysis to the ASARC. Other responsibilities include conducting and presenting affordability assessments to support DOD and HQDA ACAT I programs, and managing the programming phase of the PPBE process.

(2) G-8, Director, Force Development (Director, FD). Within DCS G-8, the Director, FD translates validated Army DOTMLPF-P requirements into programs, within allocated resources, to accomplish Army missions and functions. In addition, the Director, FD exercises life-cycle management of materiel programs.

(a) The FD Directorate is organized into a Directorate of Materiel (DOM), Directorate of Joint and Integration (DJI), and a Directorate of Resources (DOR).

(b) Staff synchronization officers (SSOs). Within the FD Directorate, the SSOs focus on systems and fielding to deliver capabilities and functions to the warfighting force structure of the Army. SSOs are the single ARSTAF POCs for integration and synchronization of all Army materiel programs to achieve the *TAP* priorities, and the *Army Modernization Plan (AMP)*. Generally, the SSO is responsible for the integration, synchronization, and coordination of hardware, software and associated equipment in support of the *TAP*. All equipment is fielded using the total package fielding (TPF) methodology, discussed later in the primer, managed by DCS, G-8 Director, FD DJI (DAPR-FDH). SSOs responsibilities include:
• Coordinates with TRADOC capability managers (TCMs) and HQDA G-37 (requirements staff officers (RSOs)/organization integrators (OIs)) during the requirements phase on affordability and total army analysis (TAA)/force feasibility reviews (FFR) resourcing.
• Programs money to support materiel programs and insertion into the Army in the POM years in the Force Development Investment Information System (FDIIS). FDIIS is the primary planning, programming, and budgeting decision support tool for SSOs to insert data into the POM. In addition, FDIIS produces charts to explain and defend Army programs to POM CoCs and GOSCs.
• Works with ASA(ALT) DA system coordinator (DASC) and ASA(FM&C) budget liaison (SAFM-BUL), to influence current year and budget year of execution. SAFM-BUL defends programs and the details of the President's Budget (PRESBUD) to the Congressional appropriations committees.

- Submits requests for overseas contingency operations funding.
- Works with HQDA G-37, ACOMS, and PMs to determine fielding plans IAW Army priorities.
- Analyzes production and equipment on hand against requirements/authorizations.
- Develops solutions to problems incurred due to changes in funding requirement/authorization, schedule or performance.
- Prepares justifications for defending current programmed money and funding unfunded requirements (UFRs) to POM boards and other forums for resourcing and prioritization.
- Coordinates with HQDA G-4 and AMC on life-cycle sustainment and disposition of materiel.

j. The Surgeon General (TSG). TSG has ARSTAF responsibility for medical research, development, test and evaluation, and is the Army medical MATDEV. The TSG is responsible for the medical aspects of all other development and acquisition programs ensuring functional area interface with CAPDEVs. The TSG serves as a member of the ASARC and AR2B for medical issues, including health hazard assessment, personnel safety, and hazards remediation. Other responsibilities include:
- developing policy, responsibilities, and procedures to ensure implementation of systems acquisition policy as it applies to combat medical systems, medical readiness and health care programs, and other assigned Army and joint requirements;
- assigning support responsibilities for medical materiel development and acquisition to agencies and activities under TSG for command and control;
- recommending to TRADOC Army Capabilities Integration Center (ARCIC) capabilities-based materiel and non-materiel requirements and associated priorities for medical readiness and health care programs; and
- establishing functional area interface with TRADOC ARCIC for all medical programs, ensuring that requirements and interests of each participating service are provided full consideration in medical programs for which the Army has lead agency or executive agency responsibility.

k. Chief of Engineers (COE). The COE monitors requirements, research and development necessary to provide construction design criteria, construction techniques, and construction material for the Army, Air Force, and other government agencies. The COE provides fixed-facility concealment, camouflage, and deception; real estate management techniques; and engineering support for maintenance of installation and facilities. It is the COE's mission to preserve and improve environmental quality associated with construction and facilities; Army environmental quality; and R&D activities covering atmospheric, terrestrial, and topographical sciences. The COE is responsible, under the general direction of the AAE, for the RDTE of fixed and floating power systems, and high voltage generation applications (to include nuclear applications). The COE reviews all emerging Army systems for

digital terrain data requirements and environmental effects such as climate, terrain, or weather. The review includes minimization of toxic and hazardous wastes and those hazardous wastes associated with normal system test, operation, use, and maintenance. The COE serves as a member of the AR2B.

l. The General Counsel (GC). The GC advises the AAE and the ASARC on any legal issue, which arises during the acquisition of a weapon or materiel system. The GC reviews all Army acquisition policy and supervises all attorneys providing legal advice relating to programs within the Army RDA management system. The GC is responsible for all legal advice in the negotiation, oversight, and review of international cooperative RDA programs.

42. Army Commands (Major).

a. U.S. Army Materiel Command (AMC). AMC performs assigned materiel and related functions for logistics support of materiel systems, and other system acquisition management functions required by HQDA. AMC is a regular member of the ASARC and AR2B. The AMC mission, in support of RDA, is to:
- equip and sustain a trained, ready Army;
- provide development and acquisition support to MATDEVs (PEOs and PMs);
- provide equipment and services to other nations through the Security Assistance Program;
- define, develop, and acquire superior technologies;
- maintain the mobilization capabilities necessary to support the Army in emergencies;
- verify system safety; support developmental and operational tests; and participate in the continuous evaluation process;
- exercise delegated authority, under ASA(ALT) oversight, in the following areas: metrication; design to cost; production readiness reviews; manufacturing technology, standardization; reliability, availability, and maintainability; quality; risk management; value engineering; parts control; and industrial modernization improvement;
- provide survivability, vulnerability, or lethality assessments and survivability enhancement expertise for all Army materiel programs;
- evaluate and recommend improvements to the industrial base;
- responsible for the logistics support of assigned materiel in response to validated capabilities-based materiel requirements;
- plan, coordinate, and provide functional support to PEOs and PMs. Support includes, but is not limited to, procurement and contracting, legal, managerial accounting, cost estimating, systems engineering, conducting system TADSS and embedded training concept formulation, developmental test, logistics support analyses, MANPRINT, environmental, intelligence and threat support, configuration management, and conducting various independent assessments and analyses;

• provides overall management of the Army's technology base (less Class VIII), including identification of maturing technologies necessary to support acquisition of warfighting materiel systems;
• provides RDA science and infrastructure information to HQDA for the Army *RDA Plan*; and
• provides initial and updated cost and system performance estimates for battlefield and peacetime operations as inputs to supporting analysis and program decisions.

b. U.S. Army Training and Doctrine Command (TRADOC). TRADOC is the Army's primary "user representative" in the capabilities development and system acquisition management processes. As the Army's principal CAPDEV, TRADOC guides, coordinates, and integrates the total capabilities development effort of the Army. Capabilities developments are a major component of force development and encompass the formulation of concepts, doctrine, organization, materiel objectives, capabilities-based requirements, and operational tests (OT) of products of the Army's capabilities integration and development system (JCIDS). TRADOC is a regular member of the ASARC and the AR2B.

(1) As the Army's primary CAPDEV/TNGDEV, TRADOC is the Army's "*Architect for the Future'* and is charged to chart the future course for the Army. In doing so, CG, TRADOC:

(a) Guides and disciplines the Army JCIDS by:
• providing capabilities-based requirements generation and documentation procedures and process guidance;
• generating all Army warfighting DOTMLPF-P requirements prior to their submission to HQDA for validation and resourcing;
• approving integrated capabilities development team (ICDT) minutes or reports containing proposed solution sets for force level force operating capabilities (FOCs);
• coordinating materiel capabilities documents (MCDs) produced by the Army community and forwarded to HQDA DCS, G-3/5/7 Current and Future Warfighting Capabilities Division (DAMO-CIC) for staffing, validation, and prioritization.

(b) Assists HQDA to prioritize and justify warfighting requirements by:
• determining applicability of current force operational needs statements (ONSs) to future Army-wide requirements and assign to a Center of Excellence (CoE)/proponent for requirement documentation;
• providing insights and descriptive information for materiel programs; and
• supporting HQDA ODCS,G-37 (DAMO-CIC), by presenting documents and information to the JCIDS capabilities-based assessment (CBA) process and assisting in issue resolution.

(c) Coordinates and integrates the total capabilities/training developments efforts of the Army by:

• providing, with appropriate support from other Army commands, the capstone and subordinate operating and functional warfighting concepts and FOCs (the start point for the Army JCIDS);
• developing and maintaining the C4I operational architecture (OA);
• being the primary source for determining the need for and preparing capabilities-based requirements and MCDs for TADSS and embedded training; and
• determining need for and obtain CSA approval for conduct of advanced warfighting experiments (AWEs).

(d) Conducts analysis of alternatives (AoA) for ACAT I, IA, and most ACAT II programs when required by HQDA. When required by the MDA, conduct AoA for all other ACAT programs.

(e) Serves as member of the Army S&T Advisory Group (ASTAG).

(f) Provides representative to Army S&T reviews and management teams.

(2) TRADOC is organized into integrating centers and functional area CoEs and schools. The principal integrating centers are the Army Capabilities Integration Center (ARCIC), Fort Eustis, VA ; the Combined Arms Center (CAC), Fort Leavenworth, KS; and the Combined Arms Support Command (CASCOM), Fort Lee, VA. The functional area CoEs are Mission Command CoE, Signal CoE, Intelligence CoE, Fires CoE, Aviation CoE, Sustainment CoE, Maneuver Support CoE, and Initial Military Training CoE. The CoE Capabilities Development & Integration Directorates (CDIDs) work very closely with the PEO community in the RDA management process.

(3) Director, Army Capabilities Integration Center (ARCIC):

(a) Determines and integrates force requirements and synchronizes the development of DOTMLPF-P solutions across the Army.

(b) Leads joint and Army CD&E efforts through TRADOC and non-TRADOC proponents.

(c) Leads the execution of the JCIDS process by TRADOC and/or non-TRADOC proponents to determine capability requirements for the force. Identifies joint and Army gaps and redundancies in capability; proposes DOTMLPF-P solutions to resolve or mitigate gaps; and recommends divestitures to help fund new requirements.

(d) Leads asymmetric warfare (AW) efforts within TRADOC. Integrates and synchronizes proponent activities within the AW areas of electronic warfare, protection, and improvised explosive device – defeat.

(e) Validates research and development priorities for Army S&T needs (to include special access programs (SAP)), for the required capabilities outlined in Army concepts ICW the ASA(ALT). Conducts a review of SAP and new S&T initiatives, as required, to ensure technology is aligned with future needs.

(f) Provides guidance for the execution of TRADOC force design goals and objectives and recommends approval to release organizational changes and adjustments for Army-wide staffing.

(g) Supports the CG, TRADOC in his role as the operational architect of the Army.

(h) Manages, coordinates, develops and maintains the battle lab collaborative simulation environment (BLCSE) federation of models and simulations (M&S), and distributed simulation network in support of joint and Army capabilities development and experimentation.

(i) Serves as the advanced concepts and requirements (ACR) domain agent for review and validation of ACR domain M&S capabilities. Manages the M&S requirements for concept development and experimentation.

(j) Leads the Army Brigade Combat Team Modernization Program (ABCTMP) strategic communications ICDT; ABCTMP Board of Directors (BoD); and ABCTMP General Officer Steering Committee (GOSC) efforts to integrate ABCTMP into the Army.

(4) Army Capabilities Integration Center (ARCIC). In 2006, the SA directed the formation of the ARCIC from the resources and organization of the TRADOC Futures Center. The Director, ARCIC, through the CG TRADOC, is directly responsible to the SA and CSA to ensure that the ABCTMP technologies are transitioned into the current force as soon as they are ready, and the ABCTMP is integrated and coordinated with co-evolution of joint warfighting doctrine.

(a) The ARCIC has four primary responsibilities:

- using wargaming, experimentation, and concepts, develop and integrate force capability requirements for the Army from a comprehensive perspective of DOTMLPF-P;
- identifies and integrates Army current and future force DOTMLPF-P requirements and synchronize the development of DOTMLPF-P solutions across the Army;
- provide the management structure for identifying capability gaps and directing analytical support for DOTMLPF-P developments, including validating research and development R&D priorities for key Army S&T needs, and the development and validation of integrated operational architectures depicting warfighting capabilities;
- serves as the lead Army agency for coordination with joint agencies and other services for identification and integration of joint RCs, including joint wargaming, concept development, and experimentation.

(b) In support of these responsibilities, ARCIC is organized in 4 major directorates and 1 direct reporting command:

- Concept Development and Learning Directorate (CDLD) prioritizes, manages and synchronizes TRADOC's efforts in joint and Army concept development and experimentation.
- Requirements Integration Directorate (RID) analyzes concepts and identifies tasks, capability gaps, and DOTMLPF-P solutions to achieve the concept driven RCs. RID works on long-term and near term needs.
- Analysis and Integration Directorate (A&ID) ensures all DOTMLPF-P capabilities are integrated for both the current and future forces. The A&ID helps the Army

develop its resourcing strategies, leads the development, integration, and validation of operational architectures that provide the underpinnings for land warfare concepts and capabilities and support experimentation, analysis, and DOTMLPF-P solutions. Within the A&ID the Force Design Division (FDD) is the TRADOC lead in developing operational force design and force structure solutions. FDD leads the organizational design efforts for TRADOC.

- The Brigade Modernization Command (BMC), stationed at FT Bliss Texas, is ARCIC's MTOE unit which is used to test equipment and concepts in a live training environment. The Army has assigned the 2/1 AD, a Heavy Brigade, to the BMC as the unit to conduct the exercises. Currently the BMC is involved in a semi-annual, multi-year test and evaluation of equipment, called Agile Network Integration Evaluation (NIE), which support the Tactical Network, a vision which will connect all soldiers, leaders, and equipment on the battlefield in an environment which provides greater situational awareness and lethality. The network testing (NIE phase of the Agile process) is being supported by all TRADOC CoEs, ATEC, HQDA LandWarNet (LWN), and HQDA ASA (ALT).
- International Army Programs Directorate coordinates TRADOC activities with multinational partners across TRADOC CoEs.

(c) The ARCIC-Forward element stationed in Arlington, Virginia acts as the liaison between the Director ARCIC and the ARSTAF, JS, OSD, and others in the Washington DC area.

(5) Combined Arms Center (CAC). CAC provides leadership and supervision for leader development and professional military and civilian education; institutional and collective training; functional training; training support; mission command; doctrine; lessons learned; and specified areas the CG, TRADOC designates in order to serve as a catalyst for change and to support developing relevant and ready expeditionary land formations with campaign qualities in support of the joint force commander.

(6) Combined Arms Support Command (CASCOM). CASCOM, the Logistics Center of Excellence (CoE), has the mission to develop logistics leaders, doctrine, organizations, training, and materiel solutions. There are three major functions performed by CASCOM:

(a) Develops and evaluates sustainment warfighting function concepts, doctrine, organizations, systems, materiel concepts and requirements, and planning factors for the Army and in concert with joint logistics doctrine. CASCOM ensures the personnel service support, supply, maintenance, transportation, services, and facilities systems designed for the Army in the field and the CONUS-based theater logistics systems, are compatible with the sustaining base system.

(b) CASCOM acts as the TRADOC proponent for CSS training and monitors and evaluates CSS training at TRADOC schools. CASCOM ensures CSS course content is consistent with approved doctrine and assesses the training evaluation process at associated schools.

(c) CASCOM serves as a principal adviser to HQDA, TRADOC, and AMC on all CSS matters. CASCOM provides direction, guidance, and tasks to assigned capabilities development activities, associated CoEs, other Army Commands, and HQDA staff agencies for their contribution to CSS development and training.

(7) CoE Capabilities Development and Integration Directorate (CDID). CDID represents the CoE in the execution of its responsibilities for concept development, experimentation, and requirements determination. CDID's purpose is to facilitate the development, assessment, management, validation, and synchronization of DOTMLPF-P-integrated combined arms capabilities that complement joint, interagency, and multinational capabilities. The CDID serves as the primary activity to develop proponent, Army and joint concepts; reviews Army and joint doctrine, support experimentation efforts, reviews requirements documentation, and reviews training material; assists in the development of training materials; and develops proponent equipment operational mode summary/mission profiles (OMS/MP). The OMS/MP describes the anticipated missions; units (active, reserve, and institutional training base); or mix of units that will use the system overtime to include peacetime, crisis situations, national conflict, and war; in what environments and under what conditions (climate, terrain, battlefield environment, etc.), as well as how it will be supported and maintained.

(8) TRADOC capability manager (TCM). The TRADOC counterpart to the PM, the TCM, is a central figure in the RDA process and a key member of the MATDEV/CAPDEV team. The TCM is TRADOC's focal point for coordination of the CAPDEV/TNGDEV efforts in the development and acquisition of a materiel and/or automated information systems (AIS) capability. The TCM is responsible for synchronizing all doctrine, organization, training, leadership and education, personnel, and facilities (DOTLPF) domains that are impacted by the fielding of major materiel capability. A TCM is appointed early in the development cycle, normally at the same time as the PM. The TCM is located in the CDID at the CoE proponent center or school.

43. Other DA Agencies.

a. U. S. Army Test and Evaluation Command (ATEC). The CG, ATEC is responsible for management of the Army's operational testing (OT), developmental testing (DT), and system evaluation (SE) processes. Their evaluations of materiel and IT systems' operational effectiveness, suitability and survivability are independent of the CAPDEV/MATDEV and are reported directly to the MDA. CG, ATEC is a member of the ASARC, AROC, and chairman of the Test Schedule and Review Committee (TSARC). The TSARC is the HQDA centralized management forum for user (operational) testing resources. ATEC provides advice and assistance to the CSA, the VCSA, other members of the ARSTAF, and other elements of HQDA in regard to Army T&E. Other responsibilities include:

• reviewing all draft materiel capabilities documents (MCDs) for T&E implications.
• assisting TRADOC ARCIC in developing evaluatable, operationally relevant, and totally system focused critical operational issues and criteria (COIC). Provide advice concerning methods and measures to evaluate the system against the COIC and advise on the resources and ability to test and evaluate the system.
• reviewing and approving all ATEC Capabilities & Limitations (C&L) Reports in support of OCO rapid fielding.
• supporting the TRADOC advance warfighting experiment (AWE) program and concept experimentation program (CEP).

b. U.S. Army Intelligence and Security Command (INSCOM). INSCOM is the CAPDEV for strategic signals intelligence (SIGINT) systems and INSCOM sole-user intelligence, electronic warfare (EW) systems used for formulating doctrine, concepts, organization, materiel requirements, and objectives. INSCOM responsibilities include:
• preparing MCDs and serving as the Army CAPDEV during development and fielding of new SIGINT and information security (INFOSEC) systems under the purview of the National Security Agency (NSA) and having sole application to U.S. SIGINT and INFOSEC systems. INSCOM forwards warfighting concepts and MCDs to TRADOC ARCIC for review and appropriate action.
• coordinating with the PEO/PM on matters pertaining to acquisition of INSCOM sole-user SIGINT and intelligence, security and electronic warfare (ISEW) systems.
• coordinating with the TRADOC ARCIC, on capabilities-based requirements generation for other INSCOM sole user ISEW systems and conduct capabilities and training developments for these Army systems when directed by HQDA, and/or Director, Central Intelligence (DCI), or at the request of TRADOC's ARCIC.
• ensuring documentation of requirements for training support products, system TADSS, and/or embedded training for INSCOM systems.
• providing threat documentation to HQ, TRADOC as validated by HQDA DCS, G-2.
• recommending to TRADOC ARCIC capabilities-based materiel requirements and associated priorities for strategic intelligence and security readiness.

c. U.S. Army Special Operations Command (USASOC). In support of systems acquisition management, USASOC establishes functional area interface with TRADOC ARCIC for all programs, ensuring that requirements and interests of each participating agency are provided full consideration in programs for which the Army has lead agency or executive responsibility, and serves as the special operations trainer and user representative. The USASOC is a regular member of the Army AR2B. In addition, USASOC:
• forwards all SOC unique and non-SOC unique warfighting capability requirements and documents to TRADOC ARCIC for appropriate action,

• monitors TRADOC projects and identifies needs that affect the USASOC mission and responsibility,
• supports TRADOC field activities, conducts and supports testing, and monitors RDA projects to include potential force standardization and interoperability,
• participates in warfighting experiments, as appropriate.

d. U.S. Army Space and Missile Defense Command (USASMDC). USASMDC is the principal assistant and advisor to the SA and the CSA for all matters pertaining to space and strategic defense. The USASMDC is responsible for technology development programs related to strategic and tactical missile defense, space defense, and satellite technology. The command conducts missile defense technology base research and development activities in support of the Missile Defense Agency (MDA); assures transfer of technology between MDA and Army systems; and provides matrix support to PEO Air and Missile Defense. USASMDC is also chartered by CSA to be the operational advocate and focal point for theater missile defense (TMD) at Army level. The CG, USASMDC, assists in the development of Army TMD positions, reflective of work being done in TRADOC, and represents those positions at HQDA, OSD, MDA, JS, Congressional, and other high-level forums.

e. U.S. Army Medical Command (MEDCOM). MEDCOM is the medical CAPDEV, TNGDEV, trainer, and user representative. MEDCOM conducts medical capabilities and training development activities as assigned by CG, TRADOC and TSG; reviews and evaluates materiel and TADSS requirements documents to identify and assure that adequate consideration is given to the prevention of health hazards from operating or maintaining materiel systems, and conduct the health hazard assessment (HHA) program, as required; conducts and supports assigned operational tests (OTs); and forwards all medical warfighting concepts and requirements documents to TRADOC for review and appropriate action.

f. U.S. Army Surface Deployment and Distribution Command (SDDC). SDDC provides transportability engineering advice and analyses to the MATDEV, CAPDEV and TNGDEV; provides item, unit, and system transportability assessments for milestone decision review (MDR); provides transportability approval and identifies corrective actions required to obtain approval for all transportability problem items; and reviews all materiel capabilities documents (MCDs) to assess adequacy of transportability.

g. U.S. Army Medical Research and Materiel Command (USAMRMC). USAMRMC is the medical MATDEV, logistician, and developmental tester and is responsible for RDA and logistics support of assigned materiel in response to validated materiel capabilities-based requirements. In addition, USAMRMC:

• plans, programs, budgets, and executes medical RDTE tasks that support system RDA, to include required system training support products, TADSS, and/or embedded training;
• plans, coordinates, and provides functional support to USAMRMC organizations. Support includes, but is not limited to, procurement and contracting, legal, managerial accounting, cost estimating, systems engineering, conducting system TADSS and embedded training concept formulation, developmental testing, ILS, MANPRINT, environmental management, configuration management, and conducting various independent assessments and analyses;
• assists the medical CAPDEV/TNGDEV in the Army JCIDS process;
• reviews MCDs to determine their adequacy and feasibility and for logistical support aspects of materiel systems to include ILS;
• develops and maintains the physiological, psychological, and medical database to support the health hazard assessment (HHA), system safety assessments (SSA), and human factors engineering analysis (HFEA);
• evaluates and manages the materiel readiness functions in the medical materiel acquisition process; and
• functions as TSG agency for the materiel acquisition of medical non-developmental items (NDI), commercial off-the-shelf (COTS) items, and sets, kits, and outfits.

h. U.S. Army Medical Department Center and School (AMEDDC&S). AMEDDC&S is the medical CAPDEV, TNGDEV, doctrine developer, and operational tester. In addition, AMEDDC&S develops doctrine, organizations, and systems requirements within the guidelines established by the TRADOC ARCIC and in accordance with Army health care standards established by TSG.

SECTION IX
TRADITIONAL ACQUISITION PHASES AND MILESTONES

44. Pre-Systems Acquisition Activity.
Pre-system acquisition is composed of on-going activities in development of user needs, in S&T, and in materiel solution analysis (MSA) and technology development (TD) work specific to the development of a materiel solution to an identified, validated capabilities-based materiel requirement.

a. The capability needs and acquisition management systems use joint/service concepts, integrated architectures, and an analysis of doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) in an integrated, collaborative process to define needed capabilities to guide the development of affordable systems. The Chairman of the Joint Chiefs of Staff (CJCS), with the assistance of the Joint Requirements Oversight Council (JROC), assesses and

provides advice regarding military capability needs for defense acquisition programs. This JCIDS process, previously discussed, is described in *CJCSI 3170.01H*.

b. Representatives from the services and multiple DOD communities assist the CJCS in formulating broad, time-phased, operational goals, and describing requisite capabilities in the initial capabilities document (ICD). When the ICD demonstrates the need for a materiel solution, the JROC or AROC recommends that the MDA convene a formal DAS Materiel Development Decision (MDD) Review.

45. Materiel Development Decision (MDD) Review.

a. At the MDD review, the validated ICD is presented to the milestone decision authority (MDA). The ICD documents the need for non-materiel and/or materiel solution approaches to resolve a specific high risk capability gap derived from the JCIDS CBA process. The ICD includes: the preliminary concept of operations (CONOPS), a description of the needed capability, the operational risk, and the basis for determining that non-materiel approaches will not sufficiently mitigate the capability gap. The OSD Director, Assessment & Program Evaluation (D, CAPE), (or service equivalent), proposes study guidance for the milestone (MS) A analysis of alternatives (AoA). The purpose of the AoA is to assess the potential system-level materiel solutions to satisfy the selected materiel concept (approach) documented in the validated ICD.

b. The MDA designates the lead agency to refine the initial materiel concept selected, approves the AoA study guidance, and establishes a date for a MS A review. The MDA decisions are documented in an acquisition decision memorandum (ADM). This effort normally is funded only for the MSA work. The MDA decision to begin the MSA phase **does not** mean that a new acquisition program has been initiated.

c. Following approval of the study guidance, the organization conducting the AoA immediately prepares an AoA study plan to assess preliminary materiel solutions, identify key technologies, and estimate life-cycle costs. Following the MDD, the MDA may authorize entry into the DAS at any point consistent with phase-specific entrance criteria and statutory requirements. Progress through the DAS depends on obtaining sufficient knowledge to continue to the next phase of development. The MDD review is the formal entry point into the DAS and is mandatory for all potential acquisition programs. The Materiel Solution Analysis (MSA) phase begins with the MDD review.

46. Materiel Solution Analysis (MSA) Phase.

a. The purpose of this phase is to assess potential materiel solutions, to satisfy the phase-specific entrance criteria for the next program MS, designated by the MDA and develop a technology development strategy (TDS). Entrance into this phase depends upon an validated ICD resulting from the analysis of potential materiel concepts (approaches) across the services, international systems from Allies, and cooperative opportunities; and MDA guidance for conducting an AoA for the selected materiel concept, documented in the validated ICD.

b. The ICD and the AoA study guidance guide the AoA and MSA phase activities. The AoA assesses the critical technology elements (CTEs) associated with each proposed system-level materiel solution, including technology maturity, integration, risk, manufacturing feasibility, and, where necessary, technology maturation and demonstration needs. A CTE is a technology element which is critical, if the system being acquired depends on this technology element to meet capability thresholds.

c. The results of the AoA provide the basis for the TDS, to be approved by the MDA at MS A. The TDS documents the following:

- The rationale for adopting either an evolutionary strategy (the preferred approach) or using a single-step-to-full-capability strategy (e.g., for common supply items or commercial-off-the-shelf (COTS) items). For an evolutionary acquisition, the TDS includes a preliminary description of how the program will be divided into technology development increments; an appropriate limitation on the number of prototype units that may be produced and deployed during technology development; how these units will be supported; and specific performance goals and exit criteria that must be met before exceeding the number of prototypes that may be produced under the research and development (R&D) program.
- A program strategy, including overall cost, schedule, and performance goals for the total R&D program.
- Specific cost, schedule, and performance goals, including exit criteria, for the first technology demonstration (TD).
- A test plan to ensure that the goals and exit criteria for the first TD have been met.

d. MSA ends when the AoA has been completed, materiel solution options for the capability need identified in the validated ICD have been recommended and the phase-specific entrance criteria for the initial review milestone has been satisfied.

47. Milestone (MS) A.

At MS A, the MDA designates a lead agency, approves Technology Development (TD) phase exit criteria, develops and issues the ADM. The leader of the CAPDEV–led integrated capabilities development team (ICDT), working with the Army Test and Evaluation Command (ATEC) system team (AST), develops an integrated evaluation strategy that describes how the capabilities in the MCD will be evaluated

once the system is developed. For potential acquisition category (ACAT) I programs, the integrated evaluation strategy is approved by the DOD Director, Operational Test and Evaluation (D,OT&E) and the cognizant overarching integrated product team (OIPT). The MDA complies with the Congressionally directed certification requirements at MS A. This effort normally is funded only for the advanced technology development work. TD for a MDAP cannot proceed without MS A approval. A favorable MS A decision, **does not** mean that a new acquisition program has been initiated.

48. Technology Development (TD) Phase.
The purpose of this phase is to reduce technology risk, determine a mature appropriate set of mature technologies to be integrated into a full system, and to demonstrate CTEs on prototypes. TD is a continuous technology discovery and development process reflecting close collaboration between the S&T community, the CAPDEV, and the system MATDEV. It is an iterative process designed to assess the viability of technologies, while simultaneously refining user requirements.

a. Entrance into this phase depends on the completion of the AoA, a proposed materiel solution, and full funding for planned TD phase activity. Full funding is for the dollars and manpower needed for all current and future efforts to carry out the acquisition strategy (AS).

b. The TDS and associated funding approved at MS A provides for competitive prototyping (two or more competing teams (contractors), producing prototypes of the system and/or key system elements prior to, or through MS B). Prototypes are employed to reduce technical risk, validate designs and cost estimates, evaluate manufacturing processes, and refine requirements.

c. The ICD and the TDS guide, and systems engineering (SE) planning support this effort. Multiple technology development demonstrations may be necessary before the CAPDEV and MATDEV agree that a proposed technology solution is affordable, militarily-useful, and based on mature, demonstrated technology. Initial life-cycle sustainment of proposed technologies are planned during this phase. Technology obtained within the S&T community or procured from industry or other sources are demonstrated in a relevant environment, preferably in an operational environment considered to be very mature.

d. A Preliminary Design Review (PDR) is conducted for each candidate design or capability to ensure that the system can proceed into a detailed design and meets performance requirements. All system elements (hardware and software), must be at a level of maturity commensurate with the PDR entrance and exit criteria. A successful PDR informs requirements trades; improves cost estimation; and identifies remaining

design, integration, and manufacturing risks. The PDR is conducted at the system level and includes CAPDEV representatives and associated certification authorities. The PM provides a PDR report to the MDA at MS B and includes recommended requirements trades based upon an assessment of cost, schedule, and performance risk.

e. The proposed system-level solution exits the TD phase when an affordable program or increment of militarily-useful capability has been identified; the technology for that program or increment have been assessed and demonstrated in a relevant environment; manufacturing risks have been identified and assessed; and a system or increment can be developed for production within a relatively short timeframe (normally less than 5 years for weapon systems); or, when the MDA decides to terminate the effort. During TD, the CAPDEV prepares the capability development document (CDD) to support initiation of the acquisition program, refines the integrated architecture, and clarifies how the program will lead to warfighting capability. The CDD builds on the ICD and provides the detailed operational performance and support parameters necessary to complete the design of the proposed system. A MS B decision follows the completion of TD.

49. Systems Acquisition Activity.

Systems acquisition is the process of developing system-level materiel solutions into producible and deployable products that provide capability to the user. The proposed system-level materiel solution to exploit in systems acquisition is based on the AoA conducted in the MS A phase to meet the military need, including commercial and non-developmental technologies and products and services determined through market research (a process for gathering data on product characteristics, suppliers' capabilities, and the business practices that surround them, plus the analysis of that data to make acquisition decisions). The responsible CAPDEV for the functional area in which a capability gap or opportunity has been identified, but not the MATDEV, normally prepares the AoA. The goal is to develop the best overall value solution over the system's life-cycle that meets the user's operational requirements. If existing systems cannot be economically used or modified to meet the operational capabilities-based requirement, an acquisition program may be justified.

50. Milestone (MS) B.

MS B is the initiation of an acquisition program. The purpose of MS B is to authorize entry into the Engineering and Manufacturing Development (EMD) phase.

a. MS B approval can lead to integrated system design or system capability and manufacturing process demonstration. Regardless of the approach recommended, PMs and other acquisition managers continually assess program risks. Risks must be well understood before MDAs can authorize a program to proceed into the next phase

of the acquisition process. The types of risk include, but are not limited to, schedule, cost, technical feasibility, risk of technical obsolescence, software management, dependencies between a new program and other programs, and the risk of creating a monopoly for future procurements.

b. There is only one MS B per program or evolutionary increment. Each increment of an evolutionary acquisition has its own MS B, unless the MDA determines that the increment will be initiated at MS C. At MS B, the MDA approves the acquisition strategy (AS) and the acquisition program baseline (APB). The MDA decision is documented in an ADM.

c. At MS B, the MDA determines the low-rate initial production (LRIP) quantity for MDAPs and major systems. The LRIP quantity for an MDAP cannot exceed 10 percent of the total production quantity. Any increase in quantity must be approved by the MDA. The OSD Director, Operational Test & Evaluation, (D,OT&E), following consultation with the PM, determines the number of production or production-representative test articles required for live-fire testing (LFT) and initial operational testing and evaluation (IOT&E) of programs on the OSD T&E Oversight List. For a system that is not on the OSD Oversight List, the Army Test and Evaluation Command (ATEC), following consultation with the PM, determines the number of test articles required for IOT&E.

d. In general, MS B is planned when a system-level materiel solution and design have been selected, a PM has been assigned, requirements have been validated, and system-level integration is ready to begin. In no case will MS B be approved without full funding (e.g., inclusion of the dollars and manpower needed for all current and future efforts to carry out the AS in the budget and out-year program), which are programmed in anticipation of the MS B decision.

51. Engineering and Manufacturing Development (EMD) Phase.
The purpose of the EMD phase is to develop a system or an increment of capability; complete full system integration (technology risk reduction occurs during TD); develop an affordable and executable manufacturing process; ensure operational supportability with particular attention to minimizing the logistics footprint; implement manpower and personnel integration (MANPRINT); design for producibility; ensure affordability; and demonstrate system integration, interoperability, safety, and utility. The CDD, AS, systems engineering plan (SEP), and test and evaluation master plan (TEMP) guide this phase.

52. Entrance Criteria.

a. Entrance into the EMD phase depends on demonstrated technology maturity (including software), validated capabilities-based requirements, and full funding. Unless some other factor is overriding in its impact, the maturity of the technology determines the path to be followed. Programs that enter the acquisition process at MS B must have an validated ICD that provides the context in which the capability was determined and validated.

b. The management and mitigation of technology risk, which allows less costly and less time-consuming systems development, is a crucial part of overall program management and is especially relevant to meeting cost and schedule goals. Objective assessment of technology maturity and risk is a continuous aspect of system acquisition. Technology developed within the S&T community or procured from industry or other sources must be demonstrated in a relevant environment or, preferably, in an operational environment to be considered mature enough to use for product development in systems integration. Technology readiness assessments (TRAs), previously discussed, and where necessary, independent assessments, are also conducted. If technology is not mature, the MATDEV uses alternative technology that is mature and that can meet the user's needs.

c. Prior to beginning EMD, CAPDEVs identify and the requirements authority validates a minimum set of key performance parameters (KPPs), included in the CDD, that guide the efforts of this phase. These KPPs may be refined, with the approval of the requirements authority, as conditions warrant. Each set of KPPs only apply to the current increment of capability in EMD (or to the entire system in a single step to full capability). To maximize program trade space, the MATDEV, CAPDEV, and T&E communities work closely with the requirements authority to minimize KPPs and limit total identified program requirements. Performance requirements that do not support the achievement of KPP thresholds, are limited and considered a part of the engineering trade space during development. During operational testing (OT), a clear distinction is made between performance values that do not meet threshold requirements in the user capabilities document and performance values that should be improved to provide enhanced operational capability in future upgrades. At MS B, the PM prepares and the MDA approves an acquisition strategy (AS) that guides activity during EMD. In an evolutionary acquisition program, each increment begins with MS B, and production resulting from that increment begins with MS C.

d. Each program must have an acquisition program baseline (APB) establishing program goals--thresholds and objectives--for the minimum number of cost, schedule, and performance parameters that describe the program over its life-cycle.

e. The affordability determination is made in the process of addressing cost in the JCIDS process and included in each CDD, using life-cycle cost or, if available, total ownership cost. Transition into EMD requires full funding – e.g., inclusion of the dollars and manpower needed for all current and future efforts to carry out the AS in the budget and out-year program. Full funding (at least 5 years) should be done no later than MS B, unless a program first enters the acquisition process at MS C.

f. EMD effectively integrates the acquisition, engineering, and manufacturing development processes with T&E. T&E is conducted in a continuum of live, virtual, and constructive (LVC) system and operational environments. Developmental and operational test activities are integrated and seamless throughout the phase. Evaluations take into account all available relevant data and information from contractor and government sources. The independent planning of dedicated IOT&E and follow-on OT&E (FOT&E), if required, is the responsibility of ATEC. The PM prepares and the MDA approves an AS to guide activity during EMD. The AS describes how the PM plans to employ contract incentives to achieve required cost, schedule, and performance outcomes.

g. The MDA selects the contract type for a development program at MS B. The contract type must be consistent with the level of program risk and normally is a fixed price contract.

h. EMD has two major work efforts: integrated system design, and a system capability and manufacturing process demonstration. Additionally, the MDA conducts a Post-Critical Design Review (CDR) Assessment to end integrated system design.

53. Integrated System Design Work Effort.
This work effort is intended to integrate subsystems and reduce system-level risk. The program enters integrated system design when the PM has a technical solution for the system, but has not yet integrated the subsystems into a complete system. The CDD guides this effort. This effort typically includes the demonstration of prototype articles or engineering development models (EDMs).

54. Post-Critical Design Review (CDR) Assessment.

a. The MDA conducts a formal program assessment following system-level CDR. The system-level CDR provides an opportunity to assess design maturity as evidenced by measures such as: successful completion of subsystem CDRs; the percentage of hardware and software product build-to specifications and drawings completed and under configuration management; planned corrective actions to hardware/software deficiencies; adequate DT; the identification of key system characteristics; the

maturity of critical manufacturing processes; and an estimate of system reliability based on demonstrated reliability rates; etc.

b. The PM provides a post-CDR report to the MDA that provides an overall assessment of design maturity and a summary of the system-level CDR results. The MDA reviews the post-CDR report and the PM's resolution/mitigation plans and determines whether additional action is necessary to satisfy EMD phase exit criteria. The results of the MDA's post-CDR assessment are documented in the ADM. Successful completion of the post-CDR assessment ends the integrated system design work effort and continues the EMD phase into system capability and manufacturing process demonstration work effort.

55. System Capability and Manufacturing Process Demonstration Work Effort.

a. This work effort is intended to demonstrate the ability of the system to operate in a useful way consistent with the approved KPPs, and that system production can be supported by demonstrated manufacturing processes. The program enters system capability and manufacturing process demonstration upon completion of the post-CDR assessment and establishment of an initial product baseline. This work effort ends when the system meets validated requirements and is demonstrated in its intended operational environment, using the selected production-representative article; manufacturing processes have been effectively demonstrated; industrial capabilities are reasonably available; and the system meets or exceeds exit criteria and MS C entrance requirements.

b. Successful DT to assess technical progress against critical technical parameters, early operational assessments, and, where proven capabilities exist, the use of modeling and simulation (M&S) to demonstrate system/system-of-systems integration are critical during this effort. T&E assesses improvements to mission capability and operational support based on user needs and is reported in terms of operational significance to the user. The completion of the EMD phase is dependent on a decision by the MDA to commit to the program at MS C or a decision to end this effort.

56. Production and Deployment (P&D) Phase.
The purpose of the P&D phase is to achieve an operational capability that satisfies functional needs. OT determines the operational effectiveness, suitability, and survivability of the system. The MDA makes the decision to commit to production at MS C, and documents the decision in the ADM.

a. MS C authorizes entry into low-rate initial production (LRIP) for MDAPs and major systems; into production or procurement (for non-major systems that do not require LRIP); or into limited deployment in support of OT for major automated

information systems (MAIS) programs or software-intensive systems with no production components.

b. This phase has two major work efforts - LRIP and full-rate production and deployment, and includes a full-rate production decision review. MS C can be reached directly from pre-systems acquisition (e.g., a commercial product) or from the EMD phase.

57. Entrance Criteria.
Regardless of the entry point, approval at MS C is dependent on the following criteria being met (or a decision by the MDA to proceed):
- acceptable performance in DT;
- an operational assessment;
- mature software capability;
- no significant manufacturing risks;
- manufacturing processes under control (if MS C is full-rate production);
- an validated ICD, if MS C is program initiation;
- validated CPD. The CPD reflects the operational requirements resulting from EMD and details the performance expected of the production system;
- acceptable interoperability;
- acceptable operational supportability;
- demonstration that the system is affordable throughout the life-cycle, optimally funded, and properly phased for rapid acquisition.

58. Milestone (MS) C.

a. Prior to making the milestone decision, the MDA considers the component cost estimate (CCE); and for MAISs, the CCE and economic analysis; the manpower estimate; the program protection for critical program information including anti-tamper recommendations; and an established completion schedule for the *National Environmental Policy Act (NEPA)* compliance covering testing, training, basing, and operational support.

b. At MS C, the MDA approves an updated AS prior to the release of the final RFP and approves an updated development APB, exit criteria for LRIP (if needed) or limited deployment, and the ADM.

c. The DOD D,OT&E and cognizant OIPT leader approve the TEMP for all OSD T&E oversight programs. IT acquisition programs (regardless of ACAT) that entered system acquisition at MS C are registered with the DOD Chief Information Officer (CIO) before MS C approval.

d. A favorable MS C decision authorizes the PM to commence LRIP or limited deployment for MDAPs and major systems. The PM is only authorized to commence full-rate production with further approval of the MDA.

59. Low-Rate Initial Production (LRIP) Work Effort.

a. This work effort is intended to result in completion of manufacturing development in order to ensure adequate and efficient manufacturing capability and to produce the minimum quantity necessary to provide production configured or representative articles for IOT&E; establish an initial production base for the system; and permit an orderly increase in the production rate for the system, sufficient to lead to full-rate production upon successful completion of operational (and live-fire, where applicable) testing.

b. Deficiencies encountered in testing prior to MS C are resolved prior to proceeding beyond LRIP (at the full-rate production (FRP) decision review) and any fixes verified in IOT&E. Test resource plans (TRPs) are provided to the D,OT&E for oversight programs in advance of the start of OT.

c. LRIP may be funded by RDTE appropriation or by procurement appropriation, depending on the intended usage of the LRIP systems.

d. LRIP quantities are minimized. The D,OT&E determines the LRIP quantity for MDAPs and major systems at MS B, and provides rationale for quantities exceeding 10 percent of the total production quantity documented in the AS. Any increase in quantity after the initial determination, must be approved by the D,OT&E. When approved LRIP quantities are expected to be exceeded because the program has not yet demonstrated readiness to proceed to full-rate production, the MDA, in coordination with the D,OT&E, assesses the cost and benefits of a break in production versus continuing annual buys.

60. Full-Rate Production (FRP) Decision Review.

a. An acquisition program may not proceed beyond LRIP without approval of the MDA at the FRP decision review. Before making the full-rate production and deployment decision, the MDA considers:

- the CCE, and for MAISs, the CCE and economic analysis;
- the manpower estimate (if applicable);
- the results of operational and live fire test (if applicable);
- CCE compliance certification and certification for MAISs;
- C4I supportability certification; and
- interoperability certification.

b. The MDA approves the AS prior to the release of the final RFP, the production APB, and the ADM. The decision to continue beyond low-rate to full-rate production, or beyond limited deployment of AISs or software-intensive systems with no developmental hardware, requires completion of IOT&E, submission of the Beyond LRIP Report for D,OT&E oversight programs, and submission of the LFT&E Report (where applicable) to the USD(AT&L), to the SECDEF, and to Congress.

61. Full-Rate Production and Deployment Work Effort.
This work effort delivers the fully funded quantity of systems and supporting materiel and services to the users. During this work effort, units attain initial operational capability (IOC). The IOC is the first attainment of the capability by a modified table of organization and equipment (MTOE) unit and supporting elements to operate and maintain effectively a production item or system provided the following:
- the item or system has been type classified as standard or approved for limited production;
- the unit and support personnel have been trained to operate and maintain the item or system in an operational environment; and
- the unit can be supported in an operational environment in such areas as special tools, test equipment, repair parts, documentation, and training devices.

62. Sustainment Activity/Operations and Support (O&S) Phase.
The objective of this activity/phase is the execution of a support program that meets materiel readiness and operational support performance requirements; and sustains the system in the most cost-effective manner over its total life-cycle. When the system has reached the end of its useful life, it must be disposed of in an appropriate manner. Planning for this phase begins prior to program initiation and is documented in the life-cycle sustainment plan (LCSP). The O&S phase has two major work efforts: life-cycle sustainment and disposal.

63. Life-Cycle Sustainment Work Effort.

a. The life-cycle sustainment program includes all elements necessary to maintain the readiness and operational capability of deployed systems. The scope of support varies among programs, but generally includes supply, maintenance, transportation, sustaining engineering, data management, configuration management, manpower, personnel, training, habitability, survivability, safety (including explosives safety), occupational health, protection of critical program information (CPI), anti-tamper provisions, IT (including national security system (NSS)) supportability and interoperability, and environmental management functions. This activity includes the execution of operational support plans in peacetime, crises, and wartime. Programs with software components must be capable of responding to emerging requirements

that will require software modification or periodic enhancements after a system is deployed. A follow-on operational test and evaluation (FOT&E) program that evaluates operational effectiveness, survivability, suitability, supportability, interoperability, and that identifies and ensures deficiencies are later corrected, is conducted, as appropriate.

b. Evolutionary sustainment. Supporting the tenets of evolutionary acquisition, sustainment strategies must evolve and be refined throughout the life-cycle, particularly during development of subsequent blocks of an evolutionary strategy, modifications, upgrades, and re-procurement. The PM ensures that a flexible, performance-oriented strategy to sustain systems is developed and executed. This strategy includes consideration of the full scope of operational support, such as maintenance, supply, transportation, sustaining engineering, spectrum supportability, configuration and data management, manpower, training, environmental, health, safety, disposal and security factors. The use of performance requirements or conversion to performance requirements are emphasized during re-procurement of systems, subsystems, components, spares, and services after the initial production contract.

c. The PM works with the CAPDEV to document performance and sustainment requirements in performance agreements specifying objective outcomes, measures, resource commitments, and stakeholder responsibilities. The PM employs effective performance-based life-cycle product support (PBL) planning, development, implementation, and management. Performance-based life-cycle product support represents the latest evolution of performance based logistics. Both can be referred to as PBL. PBL offers the best strategic approach for delivering required life-cycle readiness, reliability, and ownership costs. Sources of support may be organic, commercial, or a combination, with the primary focus optimizing customer support, weapon system availability, and reduced ownership costs.

64. Disposal Work Effort.
At the end of its useful life, a system must be demilitarized and disposed of in accordance with all legal and regulatory requirements and policy relating to safety (including explosives safety), security, and the environment. During the design process, PMs document hazardous materials contained in the system, and estimate and plan for demilitarization and safe disposal. The demilitarization of conventional munitions (including any item containing propellants, explosives, or pyrotechnics) shall be considered during systems design.

65. Additional Considerations.
The above discussion examined the activities performed in each phase of the nominal life-cycle of an acquisition system according to the current *DODD 5000.01, DODI*

5000.02, and AR 70-1. This is not to imply that all system developments must follow this exact sequencing of life-cycle phases and activities. On the contrary, *DODI 5000.02* specifically authorizes and encourages a PEO/PM to devise program structures and acquisition strategies to fit that specific program - an approach called "tailoring." Other aspects of acquisition planning and strategy (e.g., pre-planned product improvement (P3I) and technology insertion) can also be accommodated under the broad guidance and direction contained in *DODD 5000.01* and *DODI 5000.02.* What remains constant is the task to develop and deliver combat-capable, cost-effective, and supportable systems to our Soldiers.

SECTION X
TRADITIONAL ACQUISITION OVERSIGHT AND REVIEW (O&R)

The Defense Acquisition Management System (DAS), is controlled by decisions made as the result of various acquisition programs milestone decision reviews (MDRs) conducted by appropriate management levels at program milestones (MSs). The reviews are the mechanism for checking program progress against approved plans and for developing revised acquisition program baselines (APBs). Approval of APBs and plans in these reviews do not constitute program funding approval; and allocation of funds in the PPBE process is required.

66. Defense Acquisition Board (DAB).

a. The function of the DAB is to review DOD ACAT ID programs to ensure that they are ready for transition from one DAS program phase to the next. The DAB is the DOD senior level acquisition forum for advising the USD(AT&L), as the Defense Acquisition Executive (DAE), on critical decisions concerning ACAT ID programs. DAB reviews focus on key principles to include interoperability, time-phased requirements related to an evolutionary strategy, and demonstrated technical maturity. The DAB is composed of DOD senior acquisition officials. The board is chaired by the USD(AT&L). Other principal members include: the Vice Chairman of the Joint Chiefs of Staff (VCJCS); Under Secretary of Defense (Comptroller); Under Secretary of Defense (Policy); Under Secretary of Defense (Personnel & Readiness); DOD Chief Information Officer; Director, Cost Assessment and Program Evaluation; Director, Operational Test and Evaluation; and the Secretaries of the Army, Navy, and the Air Force. The Director, Acquisition Resources and Analysis serves as the DAB Secretary.

b. Approximately one week prior to the DAB review, the OIPT meets to pre-brief the OIPT leader. The purpose of the meeting is to update the OIPT leader on the latest

status of the program and to inform the senior acquisition officials of any outstanding issues and to insure the program is ready for a formal DAB review.

c. The JROC reviews all deficiencies that may necessitate development of ACAT I and ACAT IA systems prior to any consideration by the DAB or, as appropriate, the information technology acquisition board (ITAB) at MS B. The JROC validates an identified materiel need and forwards the MCD with JROC recommendations to the USD(AT&L). In addition, the JROC continues a role in validation of KPPs in program baselines prior to scheduled reviews for ACAT I and ACAT IA programs prior to all successive MDRs.

d. The OSD Director, Cost Assessment and Program Evaluation (D,CAPE), reviews the component (Army) cost position (ACP), prior to the scheduled MDR and determines, if additional analysis is required. The product is an independent cost position assessment and recommendations based on its independent review of the life-cycle cost estimate(s), validation of the methodology used to make the cost estimate(s), and determination if additional analysis or studies are required.

e. A formal DAB review is the last step of the DAB review process. The PM briefs the acquisition program to the DAB and specifically emphasizes technology maturity, risk management, affordability, critical program information, technology protection, and rapid delivery to the user. The PM addresses any interoperability and supportability requirements linked to other systems, and indicates whether those requirements will be satisfied by the acquisition strategy (AS) under review. If the program is part of a system-of-systems architecture, the PM briefs the DAB in that context.

f. Following presentations by the PM and a full discussion, the USD(AT&L), as DAE, decides to continue, alter, or terminate the program. This decision is published in an acquisition decision memorandum (ADM). With the approval of the DAE, other committee reviews may be held for special purposes, such as to develop recommendations for the DAE on decisions other than milestone or program reviews (e.g., release of "withhold funds," baseline changes, AS changes).

67. DOD Information Technology Acquisition Board (ITAB).

a. The DOD ITAB provides the forum for ACAT IAM milestones, for deciding critical ACAT IAM issues when they cannot be resolved at the OIPT level, and for enabling the execution of the DOD ITAB's acquisition-related responsibilities for IT, including National Security Systems (NSS), under the *Clinger-Cohen Act* and *Title 10*. Wherever possible, these reviews take place in the context of the existing IPT and

acquisition milestone decision review (MDR) process. Where appropriate, an ADM documents the decision(s) resulting from the review.

b. The ITAB is chaired by the USD(AT&L). Principal participants at DOD ITAB reviews include the Joint Staff (JS) J-8; the Deputy DOD CIO; IT OIPT leader; ACAT ID OIPT leaders; cognizant PEO(s) and PM(s); CAEs and CIOs of the Army, Navy, and Air Force. Also, participants include (as appropriate to the issue being examined), executive-level representatives from the following organizations: Office of USD(AT&L); Office of the Under Secretary of Defense (Comptroller); Office of the Joint Chiefs of Staff; Office of D,OT&E; Office of the Director, Cost Assessment and Program Evaluation (D,CAPE); and the Defense Information Systems Agency (DISA).

68. Army Systems Acquisitions Review Council (ASARC).

a. The ASARC is the Army's senior-level acquisition advisory body for ACAT IC, IAC, and selected ACAT II programs, ACAT ID programs (DAB managed) prior to a DAB, and ACAT IAM programs prior to an ITAB. The ASARC convenes at formal milestones to determine a program or system's readiness to enter the next phase of the materiel acquisition cycle, and makes recommendations to the AAE on those programs for which the AAE is the MDA. An ASARC may be convened at any time to review the status of a program. The ASARC is chaired by the AAE.

b. ASARC membership includes the Assistant Secretary of the Army (Acquisition, Logistics and Technology) - AAE; Vice Chief of Staff of the Army; Deputy Under Secretary of the Army - Test and Evaluation Executive; Assistant Secretary of the Army (Financial Management and Comptroller); Assistant Secretary of the Army (Installations, Energy, and Environment); Assistant Secretary of the Army (Manpower and Reserve Affairs); CG, Army Materiel Command; CG, Training and Doctrine Command; Office of the General Counsel; DCS, G–1; DCS, G–2; DCS, G–3/5/7; DCS, G–4; DCS, CIO/G–6; and the DCS, G–8. Other organizations are invited to attend, if a significant issue is identified within their area of responsibility. The AAE makes the final decision as to the attendance at the ASARC.

c. The effectiveness of the ASARC review process results from presentation of a thorough analysis of all relevant issues and face-to-face discussion among the principals from the Army Secretariat, ARSTAF, AMC and TRADOC.

69. In-Process Review (IPR).

a. The IPR is a formal acquisition review forum for ACAT III programs. General policies for reviews for IPR programs are the same as for ACAT I and II programs.

Reviews are conducted at milestones and at other times deemed necessary by the MDA. The MDA, usually the assigned program executive officer (PEO), chairs the IPR.

b. The IPR brings together representatives of the MATDEV, the CAPDEV, the trainer, the logistician, and the independent evaluators for a joint review and decision on proceeding to the next phase of development. Their purpose is to provide recommendations, with supporting rationale, as a basis for system concept, system development, type classification, and production decisions by the appropriate level of authority. They are the forums where agencies responsible for participating in the materiel acquisition process can present their views and ensure that those views are considered during development, test, evaluation, and production. Participation is extended to the appropriate testing agencies, HQDA representatives, and to others as designated by the IPR chairman.

70. Configuration Steering Board (CSB).

a. *Section 814 of the 2009 National Defense Authorization Act (NDAA)* requires the Secretary of each military department to establish a CSB for DAS post Milestone B ACAT I and IA programs. Meeting annually, the CSB is responsible for reviewing all requirements changes and any significant technical configuration changes for ACAT I and IA programs in development that have the potential to result in cost and schedule impacts to the program. Changes are not approved unless funds are identified and schedule impacts are mitigated. CSBs were designed to monitor programs and avoid requirements creep. The law does not limit the CSB process to ACAT I and IA only; it may be used for other ACAT programs.

b. The *2009 NDAA* explicitly provides PMs with the authority to challenge new program requirements. The PM, in consultation with the PEO, identifies and proposes a set of de-scoping options, with supporting rationale addressing operational implications that reduce program cost or moderate requirements. The CSB recommends to the MDA which of these options should be implemented. The *NDAA 2009* does not give the materiel development community the authority to unilaterally modify or delete requirements. Final decisions on de-scoping option implementation are coordinated with the appropriate Joint Staff and military department requirements officials. These checks and balances provide a framework for the acquisition executive to challenge requirements without sacrificing the Services' accountabilities to ensure user requirements are met.

c. In the Army, the CSB consists of the following principal members:
- Army Acquisition Executive (Chair);
- Vice Chief of Staff, Army (Vice-Chair);

• Principal Military Deputy, Office of the Assistant Secretary of Army (Acquisition, Logistics, and Technology);
• Program Executive Officer (PEO);
• Senior executive representatives from the office of the Under Secretary of Defense (Acquisition, Technology, and Logistics), Joint Staff and the TRADOC Army Capabilities Integration Center (ARCIC).

71. Integrated Product Teams (IPTs).
DODD 5000.01 directs the DOD acquisition community to utilize IPTs to facilitate the management and exchange of program information. IPTs integrate all acquisition activities starting with capabilities development through production, fielding/deployment and operational support in order to optimize the design, manufacturing, business, and supportability processes. The IPT is composed of representatives from all appropriate functional disciplines working together with a team leader to build successful and balanced programs, identify and resolve issues, and make sound and timely recommendations to facilitate decision-making. There are two levels of IPTs: overarching integrated product teams (OIPTs) focus on strategic guidance, program executability (cost, schedule, risk), and issue resolution; and the working-level integrated product teams (WIPTs), that identify and resolve program issues, determine program status, and seek opportunities for acquisition reform.

a. Overarching integrated product teams (OIPTs). In support of all ACAT ID and IAM programs, an OIPT is formed to provide assistance, oversight, and review as that program proceeds through its acquisition life-cycle. The OIPT for ACAT ID programs is led by the appropriate OSD principal staff assistant (PSA) or Technical Director. The DASD(C3ISR, Space, IT Programs) is the OIPT leader for ACAT IAM programs. Program OIPTs are composed of the PM, PEO, component staff, Joint Staff, USD(AT&L) staff, and the OSD staff principals or their representatives, involved in oversight and review of a particular ACAT ID or IAM program.

(1) In the Army, an Army Systems Acquisition Review Council (ASARC) OIPT is established at the direction of the MDA for ACAT IC, IAC, and most ACAT II programs. The ASARC OIPT is a team of HQDA staff action officers and the PEO/PM/TCM responsible for integration of oversight issues to be raised to the MDR forums.

(2) The secretary/facilitator of the ASARC OIPT for Army ACAT I and II programs is the HQDA system coordinator (DASC), in ASA(ALT), for that specific program. OIPT membership consists of empowered individuals appointed by ASARC members (ACAT IC, IAC, or selected ACAT II programs), and the MDA for ACAT III programs. Team membership is tailored based on the needs and level of oversight for the individual program. Typical ASARC OIPT responsibilities include:
• meeting with the PEO/PM throughout program development to raise and resolve issues early, providing recommendations for tailoring and streamlining the program,

- linking vertically with the PM's WIPTs,
- helping the PM successfully achieve a MS decision,
- providing an independent assessment for the MDA in preparation for the MDR,
- developing a memorandum documenting the issues/risks to be raised to the MDA with a recommendation to the MDA.

(3) The OIPT, at all levels, follow the general procedures that are described below for a typical ACAT ID and IAM program. Initially the OIPT meets to determine the extent of WIPT support needed for the potential program, who shall be members of the WIPTs, the appropriate MS for program initiation, and the minimum information needed for the program initiation review. The OIPT leader is responsible for taking action to resolve issues when requested by any member of the OIPT or when directed by MDA. The goal is to resolve as many issues and concerns at the lowest level possible, and to expeditiously escalate issues that need resolution at a higher level, bringing only the highest-level issues to the MDA for decision. The OIPT meets as necessary over the life of a program.

(4) The OSD OIPT leader provides an integrated program assessment (IPA) at MDRs, using data gathered through the IPT process. The OIPT leader's assessment focuses on core acquisition management issues and takes into account independent assessments that are normally prepared by OIPT members.

b. Working-level integrated product teams (WIPTs). WIPTs are established for all acquisition programs. The number and membership of the WIPTs are tailored to each acquisition phase based on the level of oversight and the program needs. They are comprised of HQDA and/or service/functional action officers and normally chaired by the PM or designee. WIPTs provide advice to the PM and help prepare program strategies and plans. Each WIPT focuses on a particular topic(s), such as T&E, cost/performance, risk management (both programmatic and safety), etc.

SECTION XI
TRADITIONAL ACQUISITION DOCUMENTATION

Acquisition management documentation is designed to support the management process as the life-cycle development of a materiel system progresses.

72. Materiel Capabilities Documents (MCDs).

MCDs establish the need for a materiel acquisition program, how the materiel will be employed, and what the materiel must be capable of doing. As the acquisition program progresses, statements of required performance and design specifications become more and more specific. The initial capabilities document (ICD) is the document that initiates the Defense Acquisition Management System (DAS). MCDs were discussed in section III.

73. Other Service Requirements.
The CAPDEV/TNGDEV reviews other service warfighting capability requirements documents for potential Army interest. When the Army chooses to participate in the RDA of another service program, HQDA initiates action to validate the documentation. When another service's MCD, to include an approved production request for proposal (RFP), adequately describes an Army requirement, the document may be validated as the Army requirement. The Army may acquire other services' equipment with a national stock number (NSN) that has been identified through the MATDEV market investigation and meets an approved Army need. For joint programs, capabilities documents are prepared and processed in accordance with the lead services' procedures. Service peculiar requirements may be documented in the other service's capabilities documents.

74. Catalog of Approved Requirements Documents (CARDS).
Army CARDS is an unclassified HQDA DCS, G-3/5/7 publication that provides information on the status of all validated MCDs. It includes both active and inactive requirement documents. An active document or assignment of a CARDS reference number does not automatically authorize the expenditure of funds. Each program must compete for funds in the Army prioritization and programming process. The HQDA DCS, G-37 Current and Futures Warfighting Capabilities Division (DAMO-CIC), assigns a CARDS reference number to each MCD after approval and prior to publication and distribution.

75. Program Review Documentation and Program Plans.
The milestone decision authority (MDA) is responsible for identifying the minimum amount of documentation necessary for milestone review purposes. Only those mandatory formats called for by statute or *DODI 5000.02* are required. All other formats are used as guidance only. Program plans are a description of the detailed activities necessary for executing the AS. Program plans belong to the PM and are used by the PM to manage program execution throughout the life-cycle of the program. The PM, in coordination with the PEO, determines the type and number of program plans, except those required by statute or DOD policy. Some of the typical program plans used to support the execution of a program are:

a. System threat assessment report (STAR). The STAR is the basic authoritative threat assessment that supports the development and acquisition of a particular ACAT I, IA, or II system. The STAR contains an integrated assessment of projected enemy capabilities (doctrine, tactics, hardware, organization and forces) at initial operational capability (IOC) and IOC plus 10 years, to limit, neutralize or destroy the system. It explicitly identifies critical intelligence categories (CICs), which are a series of threat capabilities that could critically impact the effectiveness and survivability of the

program. The STAR is a dynamic document that is continually updated and refined as a program develops. It is approved and validated in support of milestone decision reviews (MDRs). This report is the primary threat reference for the CDD, the modified integrated program summary (MIPS), the AoA, and the TEMP developed in support of a MDR. The STAR is approved by HQDA DCS, G-2 and validated by the Defense Intelligence Agency (DIA) for all ACAT I, IA, and DOTE Oversight List programs at MS B and updated at MS C.

b. Modified integrated program summary (MIPS). The MIPS, with its annexes, is the primary Army decision document used to facilitate top-level acquisition milestone decision-making. The MIPS provides a comprehensive summary of program structure, status, assessment, plans, and recommendations by the PM and the PEO. The primary functions of the MIPS include a summary of where the program is versus where it should be; a description of where the program is going and how it will get there; an identification of program risk areas and plans for closing risks; and a basis for establishing explicit program cost, schedule, and performance objectives. Also, the MIPS include thresholds in the stand-alone APB and program-specific exit criteria for the next acquisition phase. The MIPS provides answers to the following five key MDR core issues:

- Is the system still needed?
- Does the system work (from the viewpoints of the user, functional staffs, and the PM)?
- Are major risks identified and manageable?
- Is the program affordable (is adequate programming in the POM)?
- Has the system been subjected to cost as an independent variable (CAIV)?

c. Acquisition strategy (AS). The AS is the framework (roadmap) for planning, directing, and managing a materiel acquisition program. It states the concepts and objectives that direct and control overall program execution from program initiation through post-production support. An AS is required for all Army acquisition programs regardless of ACAT. The AS documents how the acquisition program will be tailored and identifies risks and plans to reduce or eliminate risks. The AS, prepared by the PM-led working-level integrated product team (WIPT), is a living document that matures throughout the program. It provides fundamental guidance to the functional elements of the MATDEV/CAPDEV organizations. Individual functional strategies leading to the preparation of detailed program plans required to implement the AS are depicted in figure 12.

d. Environmental analysis. This is a Congressionally mandated analysis of the potential environmental impacts of weapons systems. It identifies land, sea or air space requirements of the most promising alternatives and describes the potential effects on the land, sea, and air environment. It also describes the potential impacts on

public health and safety by the development, test manufacturing, basing operation, and support of the proposed system. The environmental impact data is weighed against system cost, schedule, and performance (programmatics) in deciding how to best minimize environmental harm.

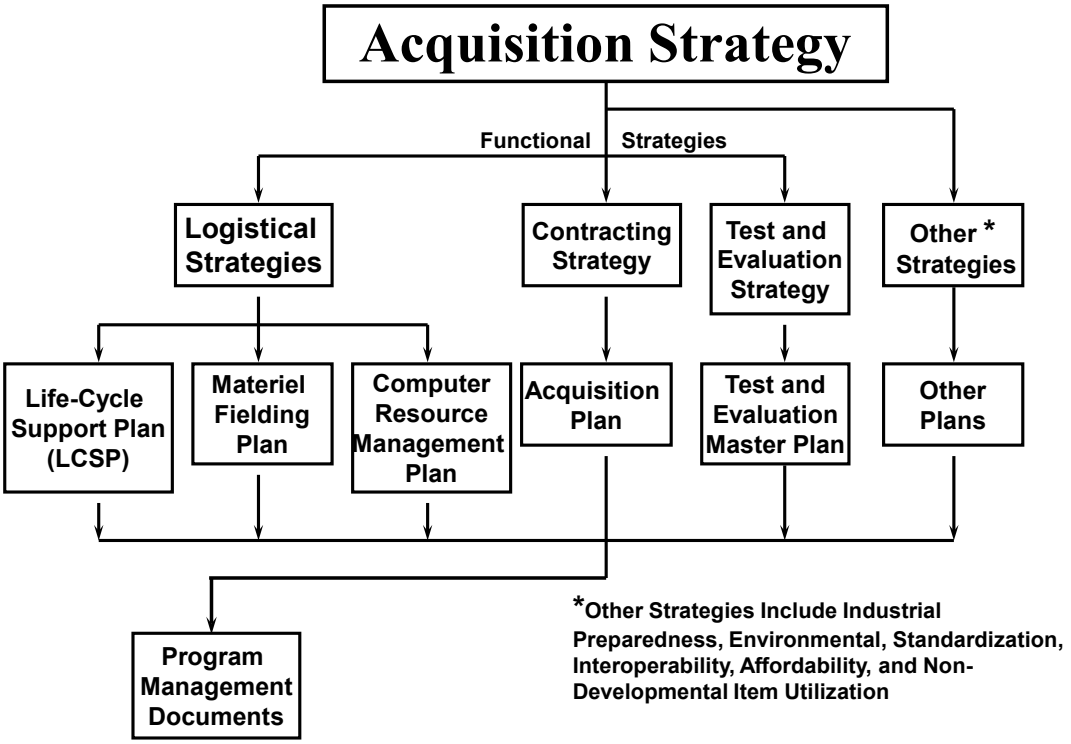

Figure 12

e. Program office (life-cycle cost) estimate (POE) and component cost estimate (CCE). These documents are prepared in support of MS B and all subsequent MS reviews. The cost estimates are explicitly based on the program objectives, operational requirements, and contract specifications for the system, including plans for such matters as peacetime utilization rates and the maintenance concept. The estimates identify all elements of additional cost that would be entailed by a decision to proceed with development, production, and operation of the system. They are based on a careful assessment of risks and reflect a realistic appraisal of the level of cost most likely to be realized. Two cost estimates are prepared. The program office in support of MS A and all subsequent decision reviews prepare the POE. The other estimate is prepared by an organization that does not report through the acquisition chain. In the Army, this independent cost estimate, entitled CCE, is prepared by the Deputy Assistant Secretary of the Army, Cost and Economics (DASA(CE)) for MDAP systems. Both estimates are based on the Cost Analysis Requirements Description (CARD). The CARD is the document that provides estimators a complete

description of the system whose costs are to be estimated. It is intended to define the program to a sufficient level of detail such that no confusion exists between the many parties who may be concerned with estimating the program's cost.

f. Army cost position (ACP). The ACP is the Army's approved life-cycle cost estimate for the materiel system. It is used for DOD milestone reviews and is the basis for Army planning, programming and budgeting. For all MDAP programs, the Army's Cost Review Board (CRB) develops the proposed ACP after an intensive review of both the POE and CCE. This proposal becomes the ACP when it is approved by the ASA(FM&C) and then is provided to the AAE. *DODI 5000.02* requires the component's cost position.

g. Analysis of alternatives (AoA).

(1) The independent AoA provides information to the decision authority at the MS A review to assist in determining whether any of proposed alternatives to an existing system offer sufficient military and/or economic benefit. AoA findings provide the analytical underpinning to support the recommendation to initiate, modify, or terminate a program. An AoA is required for potential ACAT I and most ACAT II programs and is typically conducted by the TRADOC Analysis Center (TRAC) during the acquisition Materiel Solution Analysis (MSA) phase (previously discussed).

(2) The AoA focuses on broad operational capabilities, potential technology concepts, and materiel solutions that could satisfy the MCD. It examines the full range of materiel alternatives (including those identified in the Materiel Development Decision review ADM). AoAs illuminate the relative advantages and disadvantages of alternatives being considered by identifying sensitivities of each alternative to possible changes in key assumptions (e.g., threat) or variables (e.g., selected performance capabilities). The AoA provides insights regarding KPPs for preferred alternatives and indicates how these parameters contribute to increases in operational capability. It identifies opportunities for trades among performance, cost, and schedule; and determines operational effectiveness and costs (including estimates of training and logistics impacts) for all alternatives.

(3) If a new program is approved (MS B), the AoA may be useful for identifying alternatives that will be refined by cost-performance trades during the EMD phase. The MDA may direct updates to the AoA for subsequent decision points, if conditions warrant (e.g., AoA may be useful for examining cost-performance trades at MS C).

h. Acquisition program baseline (APB). APBs consist of the concept baseline, the development baseline, and the production baseline approved at MS B, C, and full rate production (FRP), respectively. The purpose of the baselines is to enhance program stability and to provide a critical reference point for measuring and reporting the status of program implementation. Each baseline contains objectives for key cost, schedule, and performance parameters. Key parameters must meet minimum

acceptable requirements, known as thresholds, at each milestone decision point. The thresholds establish deviation limits from which a PM may not trade-off cost or performance without authorization from the MDA. The APB must cross-walk to the program CDD or CPD for performance parameters. Failure to meet the threshold requires a reevaluation of alternative concepts or design approaches. APBs and deviation reporting are required for all ACAT programs.

i. Test and evaluation master plan (TEMP). The TEMP is the executive level planning document required for a system that focuses on the overall structure, major elements, and objectives of the T&E program. The TEMP is consistent with the AS as well as the validated CDD, CPD and information support plan (ISP). It is a reference document used by the T&E community to generate detailed T&E plans and to ascertain schedule and resource requirements associated with a given system. The TEMP provides a roadmap for integrated simulation, test, and evaluation plans, schedules, and resource requirements necessary to accomplish the T&E program. The TEMP describes what testing (e.g., developmental test and operational test) is required, who will perform the testing, what resources will be needed, and what are the requirements for evaluation. It relates program schedule, test management strategy and structure, and required resources to critical operational issues; critical technical parameters; measures of effectiveness (MOEs) and suitability; and milestone decisions points. While the PM has the overall responsibility, each T&E WIPT member contributes to the TEMP development and maintenance. The TEMP is initially developed at a system's first milestone review and is updated before each subsequent MS, when the CDD/CPD/ISP has changed significantly, or when the acquisition program baseline (APB) has been breached. Upon approval, the TEMP serves as a contract between the CAPDEV, MATDEV and T&E community for executing the system's T&E program. The TEMP provides key management controls for T&E in support of the acquisition process. Detailed TEMP procedures and format are in *DA Pamphlet 73-1.*

j. Life-cycle sustainment plan (LCSP). LCSP spans a system's entire life-cycle, from DAS Materiel Solution Analysis (MSA) phase to disposal. It translates force provider capability and performance requirements into tailored product support to achieve specified and evolving life-cycle product support availability, reliability, and affordability parameters. Life-cycle sustainment planning is considered during MSA, and matures throughout the DAS Technology Development (TD) phase. A LCSP is prepared for MS B. The planning is flexible and performance-oriented, reflecting an evolutionary approach, and accommodates modifications, upgrades, and reprocurement. The LCSP is part of the programs AS and is integrated with other key program planning documents. The LCSP is updated and executed during DAS Production and Deployment (P&D) and Operations and Support (O&S) phases. Life-cycle sustainment considerations include supply; maintenance; transportation;

sustaining engineering; data management; configuration management; human systems integration (HSI); manpower, personnel, training, habitability, survivability, environment, safety (including explosives safety), and occupational health; protection of critical program information and anti-tamper provisions; supportability; and interoperability.

k. Manpower estimate report (MER). This Congressionally directed report documents the total number of personnel (military, civilian, and contractor) that are or will be needed to operate, maintain, support, and train for a ACAT I program upon full operational deployment. The validity of the MER is dependent upon force structure, personnel management, and readiness requirements, as well as the acquisition decision on the size of the buy (procurement).

76. Typical Waivers and Reports.

a. Live-fire test and evaluation (LFT&E) report. Independent OSD report to Congress that provides test results and assessment of realistic survivability testing on a covered major system, and realistic lethality testing on a major munition or missile program. Congress mandates this report.

b. Live-fire test and evaluation waiver. This certifies to Congress when live-fire survivability testing of a covered major system would be unreasonably expensive and impractical. However, some testing must still be accomplished at the subsystem level as described in the alternate LFT&E plan.

c. Developmental test report. This provides the results of developmental tests to include live-fire test results and reports.

d. Beyond low-rate initial production report. This provides Congress with an assessment of the adequacy of initial operational testing and evaluation (IOT&E) and whether the test results confirm the items are effective, suitable, and survivable for combat prior to the full-rate production (FRP) decision to proceed beyond low-rate initial production (LRIP). Congress mandates this report.

e. Defense acquisition executive summary (DAES). The DAES is a early-warning report to DOD's USD(AT&L). The DAES describes actual or potential program problems, and describes mitigating actions taken. The DAES is a multi-part document, reporting program information and assessments; PM, PEO, AAE comments; and cost and funding data. The PM may obtain permission from USD(AT&L) to tailor DAES content. At a minimum, the DAES reports program assessments (including interoperability), unit costs, current estimates, exit criteria status and vulnerability assessments.

f. Selected acquisition report (SAR). The SAR reports the status of total program cost, schedule, and performance; as well as program unit cost and unit cost breach information. For joint programs, the SAR reports the information by participant. Each SAR includes a full, life-cycle cost analysis for the reporting program. The SAR is provided to Congress.

g. Nunn-McCurdy unit cost breach report. A Nunn-McCurdy unit cost breach occurs when a MDAP experiences an increase of at least 15% in program acquisition unit cost (PAUC) or average procurement unit cost (APUC) above the unit costs in the acquisition program baseline (APB). For programs with unit cost increases of at least 25%, a Secretary of Defense (SECDEF) certification is required. Certification responsibility has been delegated to the USD(AT&L). Unit cost reporting is required by *10 USC 2433*.

77. Other Documentation.

a. Acquisition decision memorandum (ADM). The ADM documents the MDA's decision on the program AS goals, thresholds, and the exit criteria for the next phase of the program. The ADM is used to document the decision for all ACAT I, II, and III programs.

b. Integrated program assessment (IPA). Information derived from the PM's modified integrated program summary (MIPS) allows the DOD overarching integrated product team (OIPT) to develop the IPA for program MDR. The IPA summarizes the DOD independent assessment of the PM's program. It identifies critical areas, issues, and recommendations for the MDA. For ACAT ID and IAM programs, the IPA is prepared by the OIPT, approved by the OIPT leader, and submitted to the USD (AT&L).

SECTION XII
TESTING AND EVALUATION (T&E)

There are four major sub-processes that support the Defense Acquisition Management System (DAS). The first major sub-process is T&E.

78. T&E Process/Products.

a. All Army acquisition programs must be supported by a TEMP, previously discussed, that reflects an adequate and efficient T&E program. T&E is the principal tool with which progress in system development and acquisition is measured. T&E is structured to support the DAS and user by providing essential information to decision-

makers, assessing attainment of technical performance parameters, and determining whether systems are operationally effective, suitable, and survivable for intended use. The primary reasons for conducting T&E are to facilitate learning, assess technical maturity and interoperability, facilitate integration into fielded forces, and confirm performance. Also, T&E can assess and reduce program risk (e.g., cost, schedule, technical feasibility, technical obsolescence, and software management). The primary product of the T&E sub-process is information (hard facts), plus an independent evaluation of all the credible data on a system, so that the MDA can make informed decisions.

b. The planning, programming, and budgeting for T&E begins early in the acquisition process, concurrent with coordination of the validated initial capabilities document (ICD). Early T&E integration is accomplished through the independent evaluator's involvement in the ICDT and the planning of the acquisition team within the T&E WIPT. The primary purpose of the T&E WIPT is to optimize the use of the appropriate T&E expertise, instrumentation, targets, facilities, simulations, and models to implement test integration, thereby reducing costs and decision risk to the Army. The primary product of the T&E WIPT is the TEMP. The Army Test and Evaluation Executive, within the office of the DUSA, is the TEMP approval authority for all ACAT I/IA, ACAT II, and any programs on the OSD T&E Oversight List prior to final OSD approval. The MDA approves TEMPs for ACAT II and III programs not on the OSD T&E Oversight List.

c. Continuous evaluation (CE) is used to provide a continuous flow of information and data to decision-makers, MATDEV, and CAPDEVs. The data generated in early development phases is visible and maintained as the system moves into formal testing, thereby avoiding duplication of testing. Continuous evaluation continues through a system's post-deployment, to verify whether the fielded system meets or exceeds demonstrated performance and support parameters.

79. Developmental Testing (DT) and Operational Testing (OT).

a. DT encompasses models, simulation, and engineering type tests that are used to verify that design risks are minimized, system safety is certified, achievement of system technical performance is substantiated, and to certify readiness for OT. DT generally requires instrumentation and measurements, is accomplished by engineers and technicians, is repeatable, may be environmentally controlled, and covers the complete spectrum of system capabilities. The PM designs DT objectives applicable to each phase and milestone. Examples of key DTs are the live fire test (LFT) that is mandated for covered systems, and the production qualification test (PQT), the system-level test that ensures design integrity over the specified operational and environmental range.

b. OT is a field test of a system (or item) under realistic operational conditions with users who represent those expected to operate and maintain the system (or item) when fielded or deployed. Examples of key OTs are:

(1) Initial operational test and evaluation (IOT&E). It is conducted before the full-rate production (FRP) decision and is structured to provide data to determine the operational effectiveness, suitability, and survivability of a system operated by typical users under realistic conditions (e.g., combat and representative threat). Before an IOT&E commences for all programs on the OSD T&E Oversight List, OSD D,OT&E must approve the operational test agency (OTA) test plan (OTA TP).

(2) Follow-on operational test and evaluation (FOT&E). FOT&E may be necessary during (or after) production to refine the estimates made during the IOT&E, provide data to examine changes, and verify that deficiencies in materiel, training, or concepts have been corrected. A FOT&E provides data to ensure that the system continues to meet operational needs and that it retains its effectiveness in a new environment or against a new threat.

c. The Army's Test Schedule and Review Committee (TSARC) is a high-level centralized management forum that reviews and coordinates the resource commitment (e.g., personnel, instrumentation, and equipment), required to support the tests included in the Army's Five-Year Test Program (FYTP). The TSARC is chaired by CG, ATEC and operates under *AR 73-1*. When approved for inclusion in the FYTP, a program's test resources plan (TRP) becomes the authority for tasking in the current and budget years. The TRP is the acquisition system's formal T&E resource planning and tasking document.

SECTION XIII
INTEGRATED LOGISTICS SUPPORT (ILS)

The second major sub-process in support of DAS is integrated logistics support (ILS). Total Package Fielding (TPF) and the Life-Cycle Management Commands (LCMC) are also discussed in this section of the primer.

80. ILS Process.

a. ILS is a disciplined, unified, and interactive approach to the management and technical activities necessary to integrate logistics support into system and equipment design. ILS is the process used by the Army to implement the mandatory life-cycle logistics policies and procedures and includes all elements of planning, developing, acquiring, and supporting Army materiel throughout its life-cycle.

b. Supportability integrated product team (SIPT).

(1) The SIPT is a working-level IPT to support both the capabilities development and system acquisition management processes. The CAPDEV proponent CoE establishes an SIPT at the DAS Materiel Solution Analysis (MSA) phase for all potential ACAT I/II and selected ACAT III acquisition programs to coordinate overall ILS planning and execution. At MS B, or when the PM is assigned, the designated MATDEV integrated logistic support manager (ILSM) assumes responsibility to chair the SIPT.

(2) SIPT members develop performance-based logistics (PBL) concepts and ILS program documentation and conduct supportability/tradeoff analyses to determine the optimum PBL strategy or ILS concepts. The SIPT make recommended ILS-related planning, programming, and execution decisions to the PM. The SIPT is a working body, and the roles and responsibilities of members are prescribed in the life cycle sustainment plan (LCSP), formerly supportability strategy (SS). The SIPT must work with other functional groups, such as the T&E WIPT and the training support work group (TSWG) to ensure an integrated effort.

(3) The SIPT considers numerous alternatives and trades. The supportability analysis (SA) is required to identify the optimum support system requirements. Both the MATDEV and CAPDEV perform SA tasks (either in-house or through contractors) applicable to their respective mission responsibilities as defined in *AR 700-127*.

c. ILS manager (ILSM). The ILSM is established by the MATDEV prior to MS B or when a PM is assigned to serve as the focal point for all life-cycle management supportability actions related to the acquisition program. The ILSM assumes the responsibility to chair the SIPT from the CAPDEV.

d. Performance-based logistics (PBL). PBL is the preferred product support strategy (PSS) for weapon systems that employs the purchase of support as an integrated performance package designed to optimize system readiness. PBL objectives include optimizing total system availability while minimizing cost and logistics footprint. PBL is implemented on all Army ACAT programs where it is operationally and economically feasible. PBL is implemented on Army ACAT III programs at the discretion of the PM/PEO. A basic tenet of PBL is the use of high-level metrics that measures support outcomes both operationally and economically. Current overarching life-cycle metrics include: operational availability, mission reliability, cost per unit usage, logistics footprint, logistics response time, and total life-cycle cost per unit usage. PBL may be implemented on systems, subsystems, secondary items, components, assemblies, or subassemblies as well as processes that lead to business process improvements (for example, Lean or Six Sigma improvements on a depot line). PBL will meet performance goals for the system through a support structure based on performance agreements with clear lines of authority and responsibility, delineate outcome performance goals of weapon systems,

ensure that responsibilities are assigned, provide incentives for attaining these goals, and facilitate the overall life-cycle management of system reliability, supportability, and total ownership costs. The PBL strategy must be addressed at each MDR and is tailored for each individual acquisition system with specific performance goals, roles, responsibilities that will be detailed in performance-based agreements (PBAs) prior to system fielding.

e. Supportability analysis (SA) and logistics management information (LMI). Supportability is a design characteristic. The early focus of SA should result in establishment of support-related parameters in performance terms. As system design progresses, SA will address supportability requirements and provide a means to perform trades among these requirements and the system design. In order to be effective, SA will be conducted within the framework of the systems engineering process. Examples of these analyses are analysis use studies, repair-level analysis, task analysis, reliability predictions, condition-based maintenance (CBM) analysis, reliability-centered maintenance, and life-cycle cost analysis. LMI is the support and support-related engineering and logistics data acquired from contractors and a product of SA. MIL-PRF-49506 is the specification that provides DOD with a contractual method for acquiring these data. DOD uses these data in existing DOD materiel management processes such as those for initial provisioning, cataloging, and item management. If there is a requirement for the contractor to provide data for loading into a government database, then it will be necessary to specify the required data file format and data relationships as performance requirements for electronic data interchange.

f. Life cycle sustainment plan (LCSP (formerly supportability strategy)). LCSP documents the PM's plan for the sustainment strategy of an acquisition program. The LCSP is based upon the ILS framework (ILS elements) and defines how supportability analyses will be used throughout the systems engineering process to design and support the system. The LCSP is a standalone document which is submitted for milestone decision authority (MDA) approval as an appendix to the AS beginning with milestone B. The PM will also include a summary of the LCSP in the main body of the AS. The initial LCSP is prepared by the CAPDEV ILS lead for the system during the Materiel Solution Analysis Phase and is provided to the PM's ILSM or PSM upon establishment of the PM SIPT.

(1) The purpose of the LCSP is to methodically gather and review relevant logistics data (SA), assess alternative system design and support concepts using the SA, document decisions, coordinate plans, and execute the selected logistics support concept. The LCSP will serve as the official record to document the actions taken during the development and implementation of the ILS management process.

(2) Use the LCSP to maintain an audit trail of changes that affect:

a. support planning;

b. support budgets, including the LCC estimate and reduction in total ownership costs initiatives;

c. support concepts, support-related goals, and thresholds (including changes in definition);

d. impacts or changes on system readiness objective (SRO), support costs, and ILS objectives and

e. strategy to achieve type classification-standard and full materiel release (FMR) by FRP decision.

(3) The LCSP for all ACAT levels is managed by the PM SIPT and approved by the MDA. The SIPT utilizes the acquisition strategy for its foundation to ensure supportability is integrated into the acquisition.

(4) The LCSP is updated by the PM; coordinated with CAPDEV, supporting AMC LCMC, Army Acquisition Logistician, the technical and operational testers/evaluators, and other program participants; and will be available 60 days prior to milestone B.

a. When no PM exists prior to milestone B, the PEO, who is assigned system responsibility, will lead the effort to develop the LCSP.

b. In cases where there was not a CAPDEV ILS lead, the PEO (or PM if assigned) will develop the initial LCSP.

c. Programs past milestone B that do not have a LCSP will require one prior to milestone C to address the ILS planning during development, production, fielding, and sustainment.

(5) The LCSP will be updated:

a. before milestone decision reviews;

b. when new program direction is received;

c. when programmatic or funding changes occur;

d. prior to development of solicitation documents;

e. prior to requesting a materiel release position from any agency;

f. not more than 3 years from the previous update if there have been any changes to the program that may have logistical impacts;

g. for substantial changes not easily handled by administrative notification; and

h. when manpower, personnel, training, or logistics support plans change.

(6) The minutes of the SIPT meetings will serve as interim updates to the LCSP. The approved LCSP, together with the SIPT minutes, will be the action guide for all ILS program participants.

(7) For joint service acquisition programs for which the Army has lead responsibility, the ILSM or PSM will develop a LCSP in coordination with all participating Services. For other programs, the Army representative on the SIPT will coordinate Army input to the LCSP.

(8) A LCSP is not required for:

a. reprocurement of systems for which a LCSP has been previously developed and is still current, except when there is a new make, model, or manufacturer;

b. engineering change proposals (ECPs) resulting in modification work orders that do not change system configuration; and

c. components having minor logistics impact.

(9) The LCSP will include the details of the plan, exit criteria, and the timeline to achieve all program decision points, key events, and milestones to include type classification (TC) and full materiel release (FMR). (see *AR 700-142*).

(10) The LCSP will include an explanation why organic support cannot be provided for any system requiring contractor support personnel in the forward maneuver area (see *AR 715-9*).

(11) The format for the LCSP is provided in *DA Pam 700-56*.

(12) The LCSP will be utilized to develop the input to the PM's probability of success model.

81. Total Package Fielding (TPF).

a. TPF is currently the Army's standard fielding process. In 1984, the Army began using TPF on a test basis and made it the standard fielding process in 1987. It is designed to ensure a thorough planning and coordination between CAPDEVs, TNGDEVs, MATDEVs, fielding commands, gaining Army commands and using units involved in the fielding of new materiel systems. At the same time, it is designed to ease the logistics burden of the using and supporting Army troop units. Regulatory and instructional guidance for materiel release, fielding, and transfer are contained in *AR 700-142*, and *DA Pamphlet 700-142* respectively. The TPF process is shown in figure 13.

b. Identification of the TPF package contents for a particular fielding is known as establishment of the materiel requirements list (MRL). It is the responsibility of the MATDEV/fielding command to identify everything that is needed to use and support the new system and coordinate these requirements with the CAPDEVs/TNGDEVs and the gaining Army commands. The total fielding requirements are documented, coordinated, and agreed on through the materiel fielding plan (MFP), the mission support plan (MSP) and the materiel fielding agreement (MFA).

c. The Defense Logistics Agency (DLA) operates unit materiel fielding points (UMFPs) in Pennsylvania, Texas, and California that support the Army. These 3 DLA UMFPs are sites where initial issue items are consolidated at unit identification code (UIC) level to support TPF worldwide. The staging site is the facility or location where the total package comes together. It is usually here that all end items, support equipment, initial issue spare and repair parts are prepared for handoff to the gaining units. To support TPF outside the Continental United States (OCONUS), the AMC operates a number of central staging sites in Europe, and 2 sites in Korea.

d. A joint supportability assessment takes place about 90 days before the projected first unit equipped date (FUED) and 60 days before fielding to a unit in CONUS. The MATDEV/fielding command assures that those items requiring deprocessing are inspected and made fully operational-ready before handoff to the gaining units. A joint inventory is conducted by the fielding and gaining commands to ensure all needed items are received, or placed on a shortage list for later delivery.

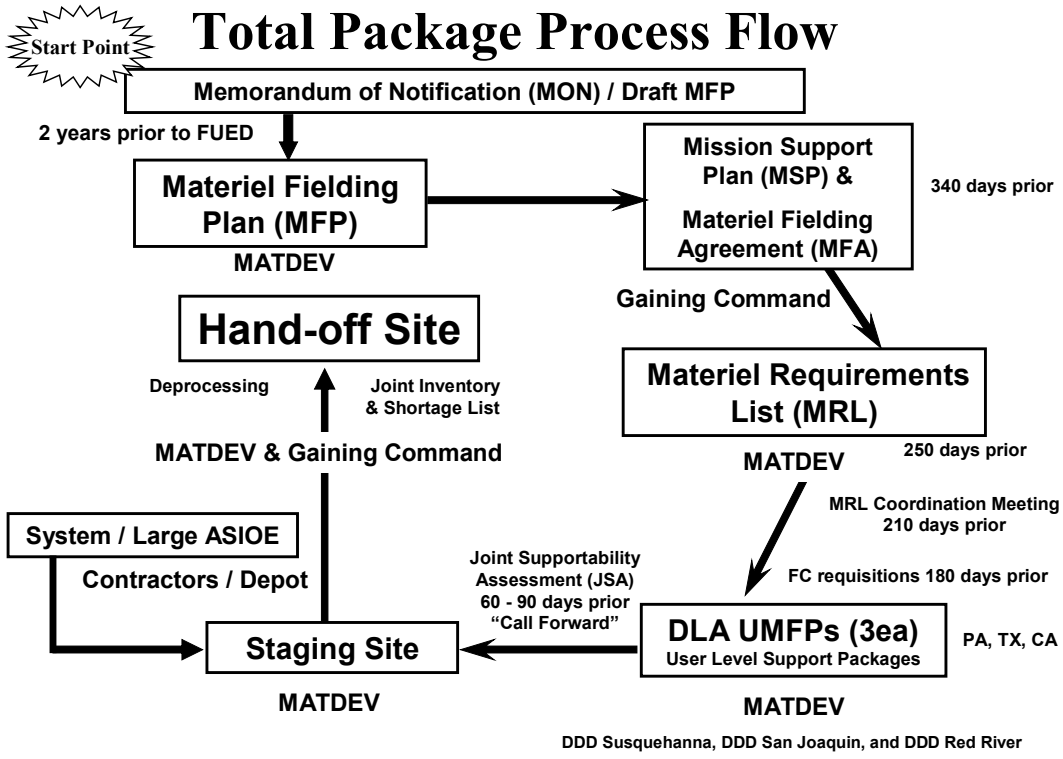

Figure 13

e. The MATDEV/fielding command provides, at the time of handoff, a tailored customer documentation package for each gaining unit that allows the unit to establish property accountability and post a receipt for TPF materiel. Logistics changes are helping the Army transform to the future force. Many of these changes apply directly to TPF.

82. Life-Cycle Management Commands (LCMCs).

a. Since the passage of the *Defense Acquisition Improvement Act (DAWI) Act* in November 1990, the Army has continually attempted to reduce total life-cycle costs for warfighting systems, specifically sustainment costs which account for approximately 80% of system life-cycle costs. Under acquisition reform efforts, the PM is responsible and accountable for all system life-cycle phases, including sustainment; but the planning, programming, budgeting, and execution of sustainment

funding resided in the Army Materiel Command (AMC).

b. In an effort to improve system life-cycle management, a memorandum of agreement (MOA) was signed by the ASA(ALT) and the CG, AMC, to establish the LCMCs and bring the acquisition, logistics, and technology communities together to support the PM as the single total life-cycle manager or " the trail boss" for assigned warfighting systems. The LCMC MOA was signed on August 2, 2004 and the LCMC initiative was approved by the CSA on August 16, 2004. The LCMC MOA aligned AMC system "commodity" commands with their related program executive officers (PEOs) into four product focused LCMCs. The four LCMCs are:

(1) Aviation and Missiles and Space (AMCOM) LCMC, Huntsville, Alabama – aligned the Aviation and Missile Command with PEO Tactical Missiles and PEO Aviation,

(2) Tank-Automotive and Armaments (TACOM) LCMC, Warren, Michigan – aligned Tank and Automotive Command with the PEOs Combat Support, Combat Service Support, Ground Combat Systems, Soldier, and Chemical Biological Defense,

(3) Communications and Electronics (CECOM) LCMC, Aberdeen Proving Ground, MD– aligned the Communications and Electronics Command with PEO Command, Control, Communications-Tactical/JTRS and PEO Intelligence, Electronic Warfare and Sensors,

(4) Joint Munitions and Lethality (JM&L) LCMC, Picatinny Arsenal, New Jersey – aligned Joint Munitions Command with PEO Ammunition.

c. Numerous other PEOs were not affected under the initial construct regarding the LCMS initiative.

SECTION XIV
MANPOWER AND PERSONNEL INTEGRATION (MANPRINT) PROGRAM

The third major sub-process in support of the DAS is the MANPRINT program. MANPRINT is the Army's application of the DOD Human Systems Integration (HSI) requirements in systems acquisition *(DODD 5000.01 and DODI 5000.02),* in compliance with *Title 10*. MANPRINT, described in detail in *AR 602-2*, is the Army's program to ensure that Soldier performance is the central consideration in system design, development, and acquisition.

83. Seven MANPRINT Domains.

MANPRINT is the technical process of integrating the 7 interdependent elements of manpower availability, personnel capabilities, training human factors engineering, system safety, health hazards, and Soldier survivability.

a. Manpower**.** Manpower is the personnel strength (military and civilian) available to the Army. It refers to the consideration of the net effect of Army systems on overall human resource requirements and authorizations (spaces), to ensure that each system is affordable from the standpoint of manpower. It includes the analysis of the number of people (including contractors) needed to operate, maintain, and support each new system being acquired, including maintenance and supply personnel, and personnel to support and conduct training. It requires a determination of the Army manpower requirements generated by the system, comparing the new manpower needs with those of the old system(s) being replaced. If an increase in personnel is required to support a new (or modified) system, "bill payers" must be identified from existing personnel accounts.

b. Personnel capabilities. Personnel capabilities are military and civilians (including contractors) possessing the aptitudes, characteristics and grades required to operate, maintain, and support a system in peacetime and war. Personnel refers to the ability of the Army to provide qualified people in terms of specific aptitudes, experiences, and other human characteristics needed to operate, maintain, and support Army systems. It requires a detailed assessment of the aptitudes that personnel must possess in order to complete training successfully, as well as operate, maintain, and support the system to the required standard. Iterative analyses must be accomplished for the system being acquired, comparing projected quantities of qualified personnel with the requirements of the new system, or any system(s) being replaced, and overall Army needs for similarly qualified people. Personnel analyses and projections are needed in time to allow orderly recruitment, training, and assignment of personnel in conjunction with system fielding.

c. Training. Considerations of the necessary time and resources required to impact the requisite knowledge, skills, and abilities to qualify Army personnel for operation, maintenance, and support of Army systems. It involves:

- formulating and selecting engineering design alternatives that are supportable from a training perspective;
- documenting training strategies; and
- determining resource requirements to enable the Army training system to support system fielding.

It includes analyses of the tasks that must be performed by the operator, maintainer, and supporter; the conditions under which the tasks must be performed; and the performance standards that must be met. Training is linked with personnel analyses and actions, because availability of qualified personnel is a direct function of the training process.

d. Human factors engineering. Human factors engineering is the technical effort to integrate design criteria, psychological principles, and human capabilities as they

relate to the design, development, test, and evaluation of systems. The human factors engineering goals are:
• to maximize the ability of the Soldier to perform at required levels by eliminating design-induced error; and
• to ensure materiel maintenance, support, and transport are compatible with the capabilities and limitations of the range of fully equipped Soldiers who would be using such materiel. Human factors engineering provides an interface between the MANPRINT domains and system engineers. Human factors engineering supports the MANPRINT goal of developing equipment that will permit effective Soldier-machine interaction within the allowable, established limits of training time, Soldier aptitudes and skill, physical endurance, physiological tolerance limits, and Soldier physical standards. Human factors engineering provides this support by determining the Soldier's role in the materiel system, and by defining and developing Soldier-materiel interface characteristics, workplace layout, and work environment.

e. System safety. System Safety involves the design features and operating characteristics of a system that serve to minimize the potential for human or machine errors or failure that cause injury and/or accidents.

f. Health hazards. Health hazards are the inherent conditions in the use, operation, maintenance, support and disposal of a system (e.g., acoustical energy, biological substances, chemical substances, oxygen deficiency, radiation energy, shock, temperature extremes, trauma, and vibration), that can cause death, injury, illness, disability, or reduce job performance of personnel.

g. Soldier survivability. Soldier survivability within the context of MANPRINT may refer to a military or a civilian.
• System. The characteristics of a system that can reduce fratricide, reduce detectability of the Soldier, prevent attack, if detected; prevent damage, if attacked; minimize medical injury, if wounded or otherwise injured; and reduce physical and mental fatigue.
• Soldier. Those characteristics of Soldiers that enable them to withstand (or avoid) adverse military action or the effects of natural phenomena that would result in the loss of capability to continue effective performance of the prescribed mission.

84. MANPRINT Objectives and Concept.

a. The MANPRINT program has three primary objectives:
• optimize both the quantity and quality of the personnel needed for systems;
• design systems that are easily useable by Soldiers, safe to operate, cause no unnecessary health problems, and maximize Soldier survivability; and
• ensure acceptable trade-offs are made among performance, design, and Soldier

capabilities and limits.
This ensures that Soldier readiness is not compromised by equipment that is difficult to use or maintain. The implementation of MANPRINT impacts total system performance (both effectiveness and availability), by making explicit the role that Soldier performance plays and is shaped by design factors. MANPRINT addresses the manpower, personnel, and training (MPT) resources needed to achieve the required performance, and where possible, indicates more affordable configuration of MPT resources.

b. The engineering design philosophy of MANPRINT is focused on optimum system performance on the battlefield, which includes consideration of both Soldier and equipment capabilities and survivability. MANPRINT is an option-oriented process as opposed to an objective-oriented process. The MANPRINT process provides decision-makers information upon which to make trades in areas such as quality and numbers of people, training times, technology, conditions, standards, costs, survivability, safety, health hazard risks, design and interface features, and personnel assignment policy.

c. The body of MANPRINT expertise, formerly known as the MANPRINT joint working group, continues to function through the ICDT and IPT process, previously discussed. The MANPRINT members of the ICDT transition to the MANPRINT WIPT, when applicable. The purpose of this body is to:
- assist the CAPDEV (or functional proponent) and PM to ensure MANPRINT principles are applied to the system;
- provide MANPRINT input to the MCDs; and
- provide a tracking system and historical database of MANPRINT issues.

d. In FY 2010, the Army responded to OSD USD(AT&L) "to conduct and provide comprehensive reviews and assessments of MANPRINT efforts within the department." The Army has the most successful program of all the services. For example, there are currently 48 ACAT I and II (complex, high dollar value) systems in the Army inventory, of which 80 percent are fully covered by MANPRINT analytic efforts. Current accomplishments include:
- Warfighter Information Network – Tactical (WIN-T): Current effort includes engagement with the PMs and engineers to make the user and maintainer task demands less complex, thereby increasing user-friendliness and significantly reducing training requirements.
- Blackhawk: Changes to air crew seating including dual-axis seat adjustment, which now accommodates 40 percent more Soldiers.
- Fox Combat Vehicle: Crew reduced from four to three, amounting to cost savings of $2-4 million.

• Ground Tactical Vehicles Maintenance Concept: Streamlined the number of tasks to be performed barehanded as much as possible, which has resulted in fewer tools (10 tools) to track, and less time to perform maintenance.
• Apache Longbow: Eighty MANPRINT problems, issues, and concerns were identified and resolved, so that a $2.7 million MANPRINT investment resulted in a $286 million cost avoidance to operations and support.
• Handheld GPS Receiver Operator Performance: An evaluation with dismounted soldiers using the Defense Advanced GPS Receiver (DAGR) in the field, revealed the presence of a fratricide issue: 38 percent of the Soldiers (6 out of 16) incorrectly reported their present position rather than the target's during a simulated call for fire scenario; MANPRINT recommended the use of a pop-up warning message, which was incorporated; and in the retest, none of the Soldiers incorrectly reported their present position.
• Stryker: An added platform for the loader on the Mortar Carrier "B" enables the loader to "drop" mortar rounds more safely and reduce physical stress; increased room in the commander's station allows a larger portion of the Soldier population to fit into the crew station; redesigned gunner position now accommodates the body configuration of approximately 95 percent of Soldiers.
These and many other significant contributions to aviation, maneuver, weapons, and logistics programs have resulted in enhanced system performance, significant cost savings, cost avoidance, and increased personnel survivability.

e. The Army's combat effectiveness and readiness depend on equipping our Soldiers with equipment that meets their needs and allows them to accomplish their assigned missions rapidly, accurately, and efficiently.

f. The Army Research Laboratory's Human Research & Engineering Directorate, serves as the MANPRINT focal point for coordinating domain support for CoE ICDTs and IPTs. Additional MANPRINT information and references are available online at http://www.manprint.army.mil.

SECTION XV
TRAINING DEVELOPMENT

The fourth major sub-process in support of the DAS is training development.

85. Training Development (TD) Overview.

a. Training development is a vital component of TRADOC's mission to prepare the Army for war. TRADOC is responsible for developing training and providing support for individual and unit training. This responsibility includes determining

requirements for range, ammunition and training devices and facilities, as well as education/training courses, products, and programs.

b. The Army's TD process, the Army Training and Education Development Process (TEDP), is a systematic approach to making training/education decisions. TEDP is a systematic, spiral approach to making decisions about collective, individual, and self-development training for the Army. The TEDP involves 5 training related phases: evaluation, analysis, design, development, and implementation. Evaluation is continuous throughout the TEDP process and the entire process must operate within a given set of resources. Doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P), drive training and TD capabilities-based requirements.

c. The Army's implementation of DAS is a complex, lengthy process and training development is embedded throughout the process. The capabilities development and system acquisition management process provide a structure for system management. Training impacts and costs are vital to system performance. Coordination between the CAPDEV, MATDEV, and TNGDEV must be close and continuous to develop and field a complete material system that meets the capabilities development document (CDD) requirements (previously discussed).

86. System Training Plan (STRAP).

a. The STRAP is the master training plan for a new, improved, or displaced materiel system. It establishes a basis for determining resources (manpower, equipment, facilities) to ensure training can be adequately conducted and supported. It outlines the development of the total training strategy for integrating a new system into the training base and gaining units; plans for all necessary training support, training products, and courses; and sets milestones to ensure the accomplishment of the training strategy. In addition, the STRAP supports development and validation of the system materiel requirements documents (MRDs) and establishes milestones for managing training development.

b. The STRAP is developed by the proponent TNGDEV, and is approved by the commanding general of the proponent TRADOC or non-TRADOC CoE.

87. Army Modernization Training (AMT).
AR 350-1 provides policy and procedures and assigns responsibilities for the planning and execution of new systems training. The regulation provides a process for the expeditious integration of equipment into the force structure through new equipment training (NET), displaced equipment training (DET), doctrine and tactics training (DTT), and sustainment training (ST).

a. New equipment training (NET). NET is designed to support force integration and modernization through identification of personnel, training, and training devices required to support new or improved equipment; by planning for the orderly transfer of knowledge from the MATDEV to the trainer, user, and supporter by documenting requirements in NET plans (NETP); and the deployment of NET teams (NETT) to train Soldiers to operate, maintain, and provide instruction on modernized equipment.

b. Displaced equipment training (DET). DET applies to systems that are being replaced by new equipment, but remain in the inventory. Planning for and executing DET is similar to the process used in NET.

c. Doctrine and tactics training (DTT). DTT is conducted in conjunction with NET or DET. DTT provides commanders, staffs, operators, and trainers with a doctrinal basis for employment of new or displaced materiel.

d. Sustainment training (ST). ST is a command responsibility. The training base shares the responsibility for ST by assuring that a pool of trained replacements is established to support the sustainment effort. The ultimate responsibility for ST, however, remains with the commander.

88. Training Requirements Analysis System (TRAS).

TRAS is a long and short-range planning and management process for the timely development of peacetime and mobilization individual training. It integrates the training developments (TD) process with the Planning, Programming, Budgeting, and Execution System (PPBE), by documenting training strategies, courses, and related resource requirements. The TRAS ties together related acquisition systems for students, instructors, equipment and devices, ammunition, dollars and facilities.

89. Training Aids, Devices, Simulators, and Simulations (TADSS).

a. TADSS are developed and acquired to support training at the unit and/or combat training centers (CTCs) and within the institutional training base.

(1) Training aids are instructional aids to enable trainers to conduct and sustain task-based training in lieu of using extensive printed material or equipment. Examples are graphic training aids, models, and displays.

(2) Training devices are three-dimensional objects and associated computer software developed, fabricated, stand-alone, embedded, or appended and procured specifically for improving the learning process and to usually support the live fire training environment. Examples are emplaced mines; opposing forces (OPFOR) weapons; pyrotechnics for training; and inert training rounds.

(3) Simulators are devices, computer programs, or systems that allow simulation of an essential training task and allow for skill development in that task by providing

repeatable drills in a controlled assessed training situation. They include physical models, mock ups, and simulations of weapon systems that replicate major training requirements. Examples include flight simulators; HMMWV Egress Trainer (HEAT); Conduct of Fire Trainers (COFTs) with upgrades for canister munitions; and Virtual Combat Convoy Trainer (VCCT).

(4) Simulations are the representation of salient features, operations, or environment of a system, subsystem, or scenario that usually supports the constructive environment. Examples are Brigade-Battalion Battle Simulation (BBS), Corps Battle Simulation (CBS), and Joint Simulation Training.

b. TADSS are categorized as either system or non-system.

(1) System TADSS are designed for use with a system, family-of-systems or item of equipment, including sub-assemblies and components. They may be stand-alone, embedded, or appended. They are funded (HQDA DCS, G-8, Equipping PEG) and documented as part of the weapon system they support. The weapon system PM is responsible to procure the system TADSS.

(2) Non-system TADSS (NSTDs) are designed to support general military training and non-system specific training requirements. They are funded (HQDA DCS, G-3/5/7, Training PEG) and documented as a separate program under the training mission area (TMA). The PEO Simulation, Training, and Instrumentation is normally responsible to procure and develop non-system TADSS. Stand-alone CDDs and CPDs, with supporting STRAPs, are developed by the TNGDEV.

SECTION XVI
AGILE ACQUISITION.

90. Network Integration Agile Acquisition Process.

a. Acquisition, testing, assessment/evaluation, and fielding processes typically have taken several years to complete, which can take longer than several technology maturation cycles. Funding and timelines for Network-related programs were rarely aligned. Capabilities were fielded piecemeal and integration with existing technology was sometimes left to the user. Therefore, many recently fielded systems did not benefit from the latest mature technologies nor did they respond to the latest Army capabilities needs. This approach greatly challenged interoperability and training. The Army, however, had implemented improved business practices, namely Software Blocking (SB) and Unit Set Fielding (USF), to address specific problems, but did not holistically focus on the Army Enterprise Network.

b. To achieve its network objectives, the Army is radically changing the way it delivers capability to its operating forces from start (need or gap identification) to

finish (fielding and sustainment). Consistent with *Public Law 111-84 (National Defense Authorization Act (NDAA) FY2010), Section 804,* and the OSD Report to Congress, the VCSA directed the ARSTAF to implement agile business solutions that would address current network acquisition shortcomings and bring efficiency, effectiveness, and affordability to these otherwise burdensome processes. Successful implementation of this process will result in early and continuous delivery of needed capabilities to leaders and Soldiers throughout the force with particular focus on the Brigade Combat Team (BCT). In order to ensure that new capability solutions are integrated with the network, constant adaptability and frequent changes are essential due to the swift maturation cycle of information technology and the rapid reaction required by the Army.

c. Two ongoing initiatives, one DOD and one Army, are being leveraged to improve acquisition efficiency and support rapidly evolving warfighter requirements. First, the Army is actively pursuing *NDAA §804* initiatives to reform its cumbersome requirements, resourcing and acquisition processes. Under *NDAA §804*, the Army intends to integrate its governance and management structure to accelerate decision making and to transition from a program-centric approach to a capability-centric approach – all in order to speed delivery of needed capabilities to the user. Second, concurrent with *NDAA §804* reforms, the Army is instituting the Agile Process to enable rapid technology insertion. The Agile Process focuses primarily on meeting identified and prioritized capability gaps by integrating emerging technological (materiel) solutions through iterative, pre-defined, predictable windows for testing and insertion that are aligned with ARFORGEN.

d. The Agile Process, depicted in figure 14**,** consists of 7 phases that start with the continuous evaluation and identification of potential capability gaps and capability solutions; includes an Network Integration Evaluation (NIE) by the Brigade Modernization Command (BMC) leaders/soldiers within a field environment at Fort Bliss, Texas, and White Sands Missile Range (WSMR), New Mexico; and concludes with an acquisition/fielding decision. The 7 phases of the Agile Process are:

- Phase 0: Define Gaps and Requirements
- Phase I: Solicit Potential Solutions
- Phase II: Candidate Assessment
- Phase III: Evaluation Preparation
- Phase IV: Integration Rehearsal (IR)
- Phase V: Integration Evaluation (NIE)
- Phase VI: Implementation Plan.

e. In Phase 0, which will occur 2 times per year, the Training and Doctrine Command (TRADOC) will define near-term requirements, using existing Operational Needs Statements (ONS), Joint Emergent Operational Needs (JEONs), Joint Urgent

Operational Needs (JUONs), COCOM integrated priority lists (IPLs), existing requirements documents, and relevant assessments from ongoing and past analyses. In coordination with HQDA CIO/G-6 Cyber Directorate, TRADOC will then prioritize the requirements, taking into account technology maturity and cost. In Phase I, the Army will solicit potential solutions, followed by validating their maturity and recommending a way forward for each in Phase II. The Army will then prepare to and conduct assessments of systems and concepts through a Network Integration Rehearsal (NIR) (Phases III and IV). Subsequently, the Army will use a full NIE, executed by BMC, to generate user recommendations regarding system/concept continuance and DOTMLPF-P changes necessary to integrate systems/concepts into units and operations (Phase V). In Phase VI, the Army will finalize acquisition, resourcing, and fielding strategies for the selected solutions.

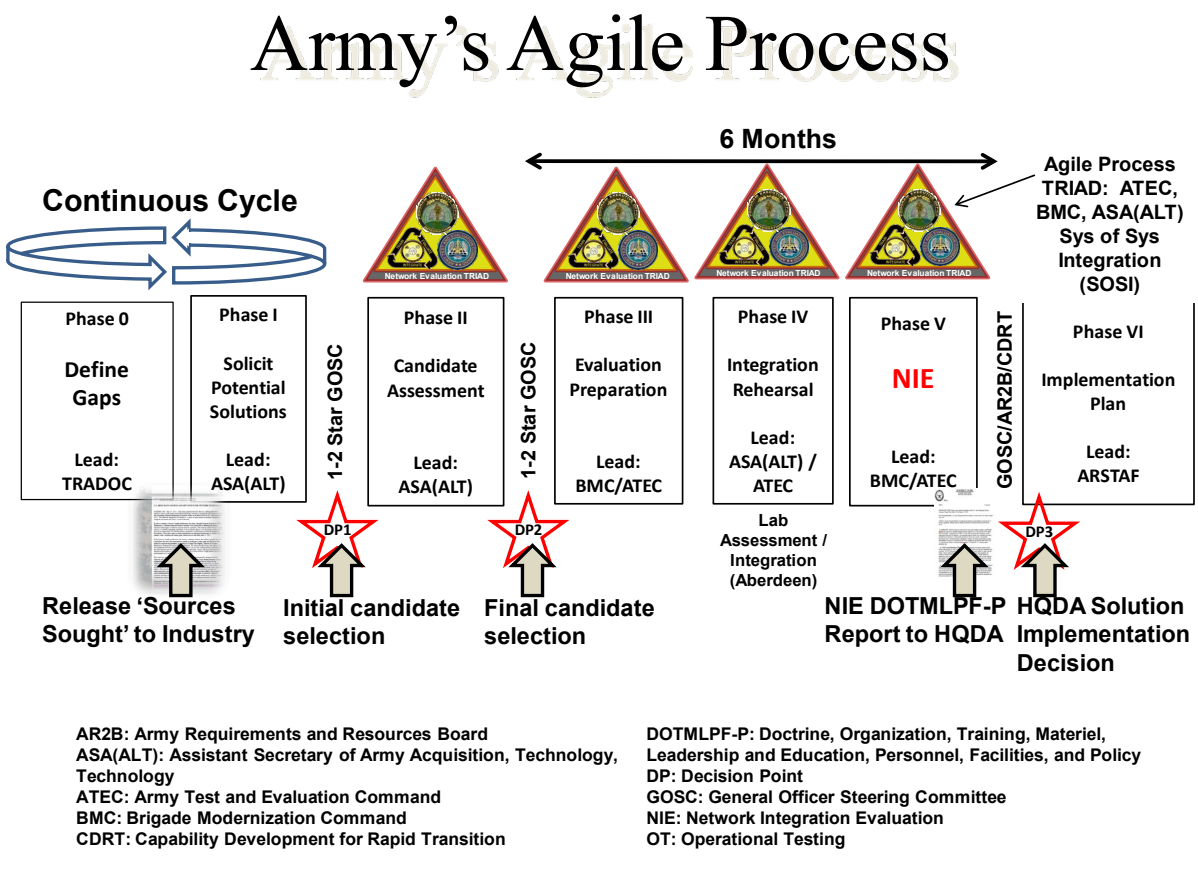

Figure 14

f. There are three network capability solution types to be assessed/evaluated during NIE; these include: Type I – Acquisition Programs [Systems Under Testing (SUTs)]: capabilities ready for formal technical field tests (TFTs), force development tests and experimentation (FDTEs), and operational tests (OTs) to inform an acquisition decision; Type II –developing capabilities [Systems Under Evaluation (SUEs)]:

theater provided equipment (TPE), rapid equipping initiatives to satisfy Operational Need Statements/Joint Urgent Operational Needs (ONS/JUONs), or existing acquisition programs with sufficient maturity levels (technology, integration, and manufacturing) to accelerate; and Type III –emerging capabilities [SUEs]: next generation war-fighting technologies that have the potential for enhancement and could fill a known gap or improve current capabilities.

g. There are 3 core stakeholder organizations supporting the NIE. These include HQDA ASA(ALT), TRADOC, and ATEC. The core stakeholders, in coordination with the ARSTAF, are the core team tasked by the VCSA with leading and executing the Agile Process lifecycle through Phase V. The core stakeholders plan and execute semi-annual integrated network test and evaluation events with resulting acquisition and DOTMLPF recommendations provided to Army leadership for networked and non-networked capability gap solutions.

91. Capability Set Management (CSM).

a. To achieve its Network objectives, the Army is radically changing the way it delivers capability to its operating forces, from start to finish. Until now, the Army has developed and fielded Network technologies asynchronously. Funding and timelines for Network-related programs were rarely, if ever, aligned. Capabilities were fielded piecemeal and integration with existing technology was largely the responsibility of the user. In addition, over the past few years, the Army pursued two Network modernization tracks: one tied to the Future Combat Systems (FCS) program and its follow-on Early Infantry Brigade Combat Team effort, which included only a small slice of the Army's BCTs; and another non-integrated strategy for the rest of the force.

b. In a rapidly changing operating environment, the Army must have the means to quickly evaluate and deliver resourced DOTMLPF-P solutions into the hands of Soldiers. The Army has created the adaptive capabilities process, which involves "buying less, more often." By doing this, the Army avoids equipping the entire force with equipment that often becomes obsolete in 2 or 3 years and can quickly get solutions in the hands of Soldiers of those units with the greatest need: deploying and global response force brigades. The Army meets Soldiers' requirements for adaptive capabilities by buying fewer quantities (only for ARFORGEN -designated priority units), and seeking incremental improvements within regular defined periods (usually in 2 year increments).

c. The Army is shelving this inadequate, disjointed process in favor of Capability Set Management (CSM). Treating tactical network capability as a cohesive portfolio, CSM evaluates the current operational environment, and then designs a suite of

systems and equipment to answer the projected requirements for a 2 year period. Any elements of the set not already in the Army inventory are then procured, and everything is distributed together throughout a combat formation, from the brigade command post to the commander on the move to the dismounted Soldier -- a significant departure from the previous practice of fielding systems individually and often to only one element of the operational force at a time (e.g., companies, battalions or brigades). Within CSM, the Army will continue to upgrade, improve, and recapitalize existing capabilities and divest those capabilities deemed redundant or no longer required.

d. Especially significant, CSM is aligned with ARFORGEN requirements. CSs will go only to those units in the queue for deployment or in the available pool -- the Army will no longer commit to acquisition objectives that cover the entire force -- and will be fielded during the reset phase so that forces are properly prepared for any possible deployment. The Army will buy less at any given instance, but buy more often in order to ensure that the force has the right capability at the right time.

e. CSM allows the Army to synchronize network development and fielding with the Program Objective Memorandum (POM) cycle, as well, thereby ensuring that the right amount of funding is in place at the right time for all components of the CS. By fully aligning fiscal resources, development and fielding, the Army ultimately will field a greater depth of capability to more formations than was possible before. For Capability Set 13/14, the increase will be fivefold: in that 2 year period, the Army expects to fulfill the Network requirements of at least 20 brigades instead of just 4, exponentially multiplying operational effectiveness.

f. CSM is a key element of the Army's transition to a BCT modernization strategy to build a versatile mix of mobile, networked and combat effective brigades. These activities will support the accelerated delivery of select capabilities to the current force, reducing operational risk prior to delivery.

92. Capability Development for Rapid Transition (CDRT).

a. The CDRT is the Army’s mechanism designed to transition rapid acquisition systems/technologies proven in combat to the Army’s deliberate Defense Acquisition Management System (DAS). During recent combat operations the Army developed new materiel systems and non-materiel capabilities to meet emerging requirements. Many of those that worked well in the operational theaters have value to the Army in the long term. To identify those valuable capabilities, the HQDA DCS, G-3/5/7 Current and Future Warfighting Capabilities Division (DAMO-CIC) and TRADOC ARCIC Analysis and Integration Directorate (A&ID), Accelerated Capabilities Division (ACD), developed the CDRT process, formerly known as “Spiral to the

Army at Large". CDRT is a quarterly assessment that identifies the very best non-standard materiel and non-materiel insertion the Army should incorporate into the future force. The goal is to significantly reduce the time needed to field selected systems or capabilities to the operational Army. The process recommends disposition for those capabilities not selected as enduring, either for retention (i.e., sustain) within the operational theaters or for termination of all Army support, saving critical resources. Operational Army unit input, through survey responses, is the basis for the recommendations.

(1) The CDRT eligibility for nomination criteria requires a capability to be operationally mature, in country for a minimum of 120 days, and have a complete forward operational assessment (FOA). The intent of the selection criteria is to qualify each materiel system for entry into the formal JCIDS process at a later stage, either beginning with a capability development document (CDD) at DAS milestone (MS) B or a capability production document (CPD) at MS C, bypassing the DAS pre-system acquisition activity. The CDRT process does not obviate the JCIDS process for materiel systems, but leverages a provision in JCIDS that provides for a military utility assessment (MUA) to enable entry into the process at a later stage if a system has performed successfully in an operational environment. Once the HQDA AROC approves the CDRT recommendations, DAMO-CIC (through TRADOC headquarters) tasks a TRADOC CoE or other CAPDEV to produce the required JCIDS documentation. The Army incorporates non-materiel capabilities identified as enduring through standard DOTLPF-P development processes and procedures. For example, an organizational capability change would require consideration by the force design update (FDU) process.

(2) HQDA DCS, G-3/5/7 and DCS, G-8 are critical in processing JCIDS documentation and ensuring funding is aligned across the Program Objective Memorandum (POM). A system is considered an acquisition program once it has a validated JCIDS document (CDD or CPD), a DAS MS decision, and funding in the base budget.

b. The TRADOC ACD and HQDA DCS, G-3/5/7 have concluded 14 iterations of the CDRT process to date, with iteration 15 in the final validation/approval phase, iteration 16 in the unit survey step, and iteration 17 gathering nominations. The process has evolved since 2004, from an annual consideration of only materiel systems to a semi-annual process considering both materiel systems and non-materiel capabilities, and now a quarterly overlapping cycle. Through iteration 14, the CDRT process has considered 657 capabilities (materiel and non-materiel); 44 (plus 16 merged into other programs) selected as enduring; 167 terminated; and 430 sustained in theater. Examples of acquisition programs include the Improvised Explosive Device (IED) Route Clearance Package, the Armored Security Vehicle (ASV), and the Common Remote Operated Weapons System (CROWS). Examples of non-materiel capabilities approved include the Weapons Intelligence Team (WIT), the

Joint Trauma Analysis and Prevention of Injury in Combat Program (JTAPIC), and the most recent, the Company Intelligence Support Team (CoIST) Training.

(1) The Army continues to conduct CDRT iterations, beginning a new iteration every three months. Iterations require six months to complete – resulting in overlapping iterations. The Army institutionalized the process in *AR 750-1, AR 71-9*, and *TR 71-20*.

c. The CDRT process is an example of generating force responsiveness to operational Army requirements by reducing the time to meet Army requirements for materiel and non-materiel capabilities. The process identifies, through operational Army unit input, those systems working well in operational theaters and speeds the process to get them into the hands of Soldiers throughout the Army for the long term.

SECTION XVII
ACQUISITION RESOURCE MANAGEMENT

93. Appropriations.

The "color of money," or kind of appropriation, is an important factor in system acquisition management. An appropriation provides limited amounts of budget authority that agencies may obligate during a specific time period for the purposes specified in the legislation that provides the appropriation. Budget Authority provides the power to obligate the U.S. government to pay a bill. In general, a particular appropriation can be expended only for specified activities, and budget authority cannot be moved from one appropriation to another without transfer authority. Acquisition management involves at least 2 to 4 appropriations. The 2-year research, development, test and evaluation (RDTE) appropriation provides funds for research, design engineering, prototype production, low-rate initial production (LRIP) for operational testing (OT), and T&E activities in the course of developing a materiel system. The 3-year procurement appropriation provides funds for procuring materiel that has been fully tested and type classified. Procurement funds are used to procure LRIP for initial spares, support and training equipment. The 1-year Operations and Maintenance, Army (OMA) appropriation, provides funds for retiring and retrograding the old equipment being replaced; for repairing systems after fielding; for fuel and ammunition for training and operations; for periodic system rebuild; for training both system operators and maintainers, except new equipment training; and, in general, anything else to keep a system in the field and operating. Some systems may require 5-year Military Construction (MILCON) appropriated funds for the construction of special facilities required for fielding that system. The period of years identified for each appropriation refers to the time period that the appropriation is available to be obligated.

94. Program and Budget Process.
Funds of the correct amount and appropriation must be planned and programmed into the Army budget, in general, 2 years before they are needed. In the program and budget process, funding requests are initiated and reviewed annually. Congress appropriates funds for RDTE (Title IV, DOD Appropriations Act) and Procurement (Title III, DOD Appropriations Act), as part of the annual Defense Appropriation Act. The RDTE and procurement budget requests must first be approved by DOD, submitted to Congress by the President, and then be authorized and appropriated in 2 separate Congressional actions before any money can be spent. In the year of budget execution, the Army may reprogram funds, except for Congressional interest items, within an appropriation subject to budget authority dollar limits, or in excess of dollar limits with prior Congressional approval. Below $10 million of RDTE and below $20 million of procurement may be reprogrammed from a lower priority program to a higher priority program without prior Congressional approval (see figure 15). The PM is responsible for planning and programming the RDTE and procurement funds to cover a program, and the MILCON funds, when required. The PM is responsible for programming all life-cycle system costs for the system, while the system remains under his management control. This includes programming for out-year sustaining resources, as well as RDTE and procurement. Once the management responsibility transitions to the AMC Life-Cycle Management Commands (LCMCs), it becomes that command's responsibility to continue the depot-level sustaining program. The field user Army command is responsible to program day-to-day system below-depot operational support. The field user Army command is responsible for planning and programming of OMA funds needed to ensure continued readiness of the fielded system. Responsibility for planning and programming funds for product improvements and sustaining supply spare parts is complex and divided between the LCMCs and the field Army command.

95. RDTE Appropriation Activities.
To assist in the overall planning, programming, budgeting, and managing of the various R&D activities, the RDTE appropriation is divided into 7 R&D budget activities. These categories are used throughout DOD. The current RDTE budget activities are as follows:

a. Budget Activity 1– Basic Research. Basic research includes all efforts and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long term national security needs.

b. Budget Activity 2–Applied Research. This activity translates promising basic research into solutions for broadly defined military needs, short of development projects. This type of effort may vary from systematic mission-directed research,

which is beyond that in Budget Activity 1, to sophisticated breadboard hardware, study, programming, and planning efforts that establish the initial feasibility and practicality of proposed solutions to technological challenges. These funds are normally applied during the Materiel Solution Analysis (MSA) phase of the DAS life-cycle.

Prior Approval Threshold Reprogramming Levels

APPN	CUM INC	CUM DEC	LEVEL OF CONTROL	OBL AVAIL
MILPERS	$10M or more	No Congressional Restriction	BUDGET ACTIVITY	1 Year
RDT&E	$10M or more or 20% of the program base amt whichever is less	$10M or more or 20% of the program base amt whichever is less	PROGRAM ELEMENT	2 Years
PROC	$20M or more or 20% of the program base amt whichever is less	$20M or more or 20% of the program base amt whichever is less	BUDGET LINE ITEM	3 Years
OMA	$15M or more	$15M or more	BUDGET ACTIVITY	1 Year
MILCON	Any increase exceeding 25% of the Reprogramming base or $2M whichever is less	No Congressional Restriction	PROJECT	5 Years

Note: Reference Source: DoD Financial Management Regulation (FMR) 7000.14-R Vol. 3 Ch 6&7

Figure 15

c. Budget Activity 3–Advanced Technology Development. This activity includes all efforts that have moved into the development and integration of hardware for field experiments and tests. The results of this type of effort are proof of technological feasibility and assessment of operability and production rather than the development of hardware for service use. These funds are normally applied during the Technology Development (TD) phase of the DAS life-cycle.

d. Budget Activity 4–Advanced Component Development and Prototypes. This budget activity includes all efforts necessary to evaluate integrated technologies in as realistic an operating environment as possible, to assess the performance or cost reduction potential of advanced technology. These funds are normally applied during TD, but could be applied throughout the acquisition life-cycle.

e. Budget Activity 5–System Development and Demonstration. This budget activity

includes those projects in system development and demonstration, but not yet approved for low-rate initial production (LRIP) at MS C. These funds are normally applied during the Engineering and Manufacturing Development (EMD) phase of the DAS life-cycle.

f. Budget Activity 6–RDTE Management Support. Includes efforts directed toward support of RDTE installations or operations required for use in general R&D and not allocable to specific R&D missions. Included are technical integration efforts, technical information activities, space programs, major test ranges, test facilities and general test instrumentation, target development, support of operational tests, international cooperative R&D, and R&D support.

g. Budget Activity 7–Operational System Development. This activity includes R&D efforts directed toward development, engineering, and test of changes to fielded systems or systems already in procurement which alter the performance envelopes. Operational system development may include operational testing (OT) costs.

96. Procurement Appropriations.
Procurement is used to finance investment items, and covers all costs integral and necessary to deliver a useful end item intended for operational use or inventory. The Army budget includes 5 separate procurement appropriations:

a. Aircraft Appropriation. Aircraft procurement includes the procurement of aircraft, aircraft modifications, spares, repair parts, and related support equipment and facilities.

b. Missile Appropriation. Missile procurement includes the procurement of missiles, missiles modifications, spares, repair parts, and related support equipment and facilities.

c. Weapons and Tracked Combat Vehicles (WTCV) Appropriation. WTCV procurement includes tracked and combat vehicles, weapons, other combat vehicles, and repair parts.

d. Ammunition Appropriation. Ammunition procurement includes procurement of ammunition end items, ammunition production base support, and ammunition demilitarization.

e. Other Procurement, Army (OPA) Appropriation. OPA covers 4 major categories:
- tactical and support vehicles,
- communications and electronic equipment,
- other support equipment, and

• initial spares.

97. Military Construction (MILCON) Appropriation.
MILCON funds the cost of major and minor construction projects such as facilities. Major or specified military construction projects exceed $2.0M and require congressional line-item authorization. Unspecified military construction projects are $2.0M or less, but can be increased to $3M, if the project is intended to correct a life, health, or safety deficiency. Each military department receives an appropriation for minor military construction. The military department Secretary controls expenditure of minor military construction funds and is required to notify Congress of minor military construction projects that exceed $750K. A 21 day waiting period is required after notification before work begins. Project costs include architecture and engineering services, construction design, real property acquisition costs, and land acquisition costs necessary to complete the construction project. The OMA appropriation can be used to fund unspecified minor military construction projects up to $750K or up to $1.5M, if the project is intended to correct a life, health, or safety deficiency.

98. Operations and Maintenance Appropriation (OMA).
OMA finances those things that derive benefits for a limited period of time, such as expenses, rather than investments. Examples are Headquarters operations, civilian salaries, travel, fuel, minor construction projects of $750K or less, expenses of operational military forces, training and education, recruiting, depot maintenance, purchases from Defense Working Capital Funds, and base operations support.

99. Capability Portfolio Reviews (CPRs).

a. On February 22, 2010, the SA directed the USA and the VCSA to implement a CPR pilot process to conduct an Army-wide, all components revalidation of the operational value of Army requirements within and across capability portfolios to existing joint and Army warfighting concepts. The intent of this revalidation is to eliminate redundancies and to ensure that funds are properly programmed, budgeted, and executed against the programs that yield the most value to the Army.

b. CPRs focused on 2 categories - materiel CPRs and non-materiel CPRs. Materiel CPRs include Tactical Wheeled Vehicles; Precision Fires; Air and Missile Defense; Combat Vehicle Modernization; Radios; The Network; Engineer; Soldier Systems; Intelligence, Surveillance, and Reconnaissance (ISR); Aviation (Rotary, Fixed, UAS); Information Technology; and Training Ammunition. Non-materiel CPRs include Installation Management; Work Force Composition; Army Training Strategy; Sustainment Accounts; and organizational Structure.

c. The review process revalidates the requirement in each portfolio using a wide-range of criteria, including: combatant commander requests; wartime lessons learned; the ability to support the ARFORGEN model; the potential for leveraging emerging technologies and affordability.

d. The output of the 2 phased (session) CPR process is actionable recommendations to the SA to make decisions that established the current Army FY Program Objective Memorandum (POM) priorities for investment in research and development, acquisition, and life-cycle sustainment, to include force structure and training across each Army capability portfolio. HQDA, DCS G-3/5/7 is the lead agency for CPR coordination and synchronization.

(1) Phase #1: The VCSA chairs session #1. The purpose is revalidation of the operational value of Army requirements to include cost, schedule, performance, life-cycle sustainability and the Army's plan to manage the totality of the requirement. The product is actionable recommendations that can be addressed by Army senior leadership during phase 2.

(2) Phase #2: The USA, as the Army Chief Management Officer, chairs session #2. The purpose is to address follow-on analysis from phase #1 and the programmatics (cost, schedule, performance, life-cycle sustainment) implications of the recommendations presented. The product is actionable recommendations to the SA to validate, modify, or terminate research and development (R&D) investment, procurement, and/or life-cycle sustainment requirements within capability portfolio accounts for the current POM, in development, based on the results of the CPRs.

e. The analysis that has resulted from the CPRs conducted under the program has clearly highlighted the utility of this process in building an effective and affordable modernization strategy. The resulting recommendations will continue to assist the SA in establishing future priorities for investment, research, development, acquisition, and life-cycle sustainment. The SA will continue to rely on this process to help him make informed decisions on behalf of the Army.

f. CPR's operate concurrently with, but do not supplant the authority of the Army Requirements Oversight Council (AROC), Army System Acquisition Review Council (ASARC), or Configuration Steering Board (CSB) forums, previously discussed.

100. Research, Development, and Acquisition Plan (RDA Plan).

a. **Overview.** The Army RDA Plan is a 14-year plan for the development and production of technologies and materiel to advance Army modernization. Modernization is "the continuous process of integrating new doctrine, training, organization and equipment to develop and field warfighting capabilities for the total force." Under ideal circumstances, Army modernization would be fully supported by

an unconstrained RDA Plan. However, the realities of limited resources restrict modernization to those efforts that are both technically and fiscally achievable. The RDA Plan, therefore, is the result of a process that converts the Army's unconstrained planning environment into a constrained RDA Plan that maximizes warfighting capabilities and supporting infrastructure requirements within limited resources.

b. The RDA Plan assumes the form of a 1-N priority list of RDTE and procurement program packages called management decision packages (MDEPs), with funding streams for the entire 14-year planning period. An MDEP represents a particular program, function or organization and displays the resources (dollars, civilian and military manpower) needed to achieve an intended goal. An MDEP may receive its resources (funding streams) from any number of appropriations; the RDA Plan, however, includes only the RDTE and procurement funding streams of its MDEPs. There is no limitation to the number of commands to which the resources of an MDEP may be assigned. The RDA Plan is recorded in and represented by the HQDA DCS, G-8 RDA database.

c. RDA database. The HQDA DCS, G-8 RDA database represents the RDA plan. The principal elements of the RDA database, MDEPs, are grouped by joint capability area (JCA). A JCA is a set of MDEPs that represent a common function on the battlefield or a common activity of the supporting Army infrastructure (e.g., aviation, ammunition). JCAs were formerly called budget operating systems (BOS). In fact, JCA data is still named BOS in Army databases. Most JCAs are managed by a HQDA DCS, G-8 division. The division chief (known as the JCA manager), assisted by his staff and his ASA(ALT) counterpart, determines required capabilities for each of the MDEPs within his or her JCA. The Equipping (EE) Program Evaluation Group (PEG) co-chairs, determine EE PEG priority ranking of MDEPs. The EE PEG prioritization is forwarded to HQDA DCS, G-3/5/7 for Army-wide prioritization.

d. The RDA Plan is a continual process comprising periodic revisions to the 14-year planning period of the RDA database. The revisions occur during the fiscal year POM/BES cycle. During the POM/BES cycle, the Army adjusts the first 5 years (called the future years defense program (FYDP)) of the 14-year planning period. These 5 years are referred to as the Program Objective Memorandum (POM) years. After each cycle, the Army's RDA community adjusts the final 9 years, called the extended planning period (EPP), to ensure a smooth and reasonable progression from the POM to EPP. The 14-year planning period of the RDA database moves forward by 1 year in January annually. For example, the FY15-28 RDA plan began in January 2013.

101. Program Stability.
Achieving early program objective consensus and following a good investment

strategy will yield a stable program, clearly showing where we are today and where we want to be when we bring on the new system. To be successful, new systems acquisition programs must be developed and acquired in a timely and economical manner. Life-cycle cost estimates and changes to programs and schedules must be controlled. Changes to programs affecting established goals will be fully documented in the program management documentation, providing the justification for change (e.g., budget cut, design change). After entering the DAS Engineering and Manufacturing Development (EMD) phase, design changes in system components that are meeting the validated requirement are discouraged and must be individually justified. The design should be frozen in sufficient time prior to developmental testing (DT) and operational testing (OT) to provide an adequate system support package for testing. Changes to programs as a result of DT/OT must be of the "objective" nature to satisfy the requirement and not a "threshold" type of change, unless it can be demonstrated that the change will not have a significantly negative impact on the cost, schedule, producibility, and integrated logistics support (ILS) aspects of the program.

SECTION XVIII
SUMMARY AND REFERENCES

102. Summary.

a. This primer provided a basic introduction to the management process, organization, and structure of the Joint (Army) Capabilities Integration and Development System (JCIDS) and system acquisition management process. Through the primer description, the reader should have gained an appreciation of the logic of the process, its organization and management, including recent changes. This primer highlights the current basic DOD and Army policies for capabilities development, materiel systems acquisition, and descriptions of capabilities development and system acquisition managers.

b. Difficult decisions, overseas contingency operations, a scarcity of dollar resources, and honest differences of opinion cause disruptions and delays. It is unlikely that there will be total agreement on the best technical approach to satisfy a need--or, indeed, on the need itself. The annual budget cycle and budget constraints almost ensure that some projects will not be funded at the level desired--if at all. Tests are not always successful. Estimates of time, costs, effectiveness, and technical feasibility are often "wide of the mark" for complex systems. After all, they are estimates that are projected well into the future based on sketchy data. These real-world problems reinforce the fact that capabilities development and system acquisition management are complex tasks of great importance to national defense. Capabilities development and system acquisition can be a wellspring of new and

effective weapons systems, where effective management and professionalism can make the difference in overseas contingency operations. As with any activity involving the use of scarce resources to meet organizational goals and objectives, the people involved--the capability developers, materiel developers and the Soldier users and maintainers--constitute the most vital link to mission accomplishment.

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SECTION XVIII
GLOSSARY

TERMS:

Acquisition Category (ACAT)
Categories established to facilitate decentralized decision-making and execution, and compliance with statutorily imposed requirements. The categories determine the level of review, decision authority and applicable procedures. ACAT I programs are those programs that are defined as major defense acquisition programs (MDAPs) or that are designated ACAT I by the milestone decision authority (MDA) as a result of the MDA's special interest. In some cases, an ACAT IA program, as defined below, also meets the definition of a MDAP. The Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) decides who will be the MDA for such automated information systems (AIS) programs. Regardless of who is the MDA, the statutory requirements that apply to MDAPs apply to such AIS programs. ACAT I programs have two sub-categories: ACAT ID, for which the MDA is USD(AT&L) (the "D" refers to the Defense Acquisition Board (DAB), which advises the USD(AT&L) at major decision points) or ACAT IC, for which the MDA is the DOD Component Head or, if delegated, the DOD Component Acquisition Executive (CAE) (the "C" refers to component). ACAT IA programs are those programs that are major automated information systems (MAISs) or that are designated as ACAT IA by the MDA as a result of the MDA's special interest. ACAT IA programs have two sub-categories: ACAT IAM for which the MDA is the DOD USD(AT&L) (the "M" in ACAT IAM refers to MAIS) or ACAT IAC, for which the USD(AT&L) has delegated milestone decision authority to the CAE or Component CIO (the "C" (in ACAT IAC) refers to component). The USD(AT&L) designates programs as ACAT IAM or ACAT IAC.

Acquisition Executive
The individual within the OSD and components charged with overall system acquisition management responsibilities within his or her respective organization. The Under Secretary of Defense for Acquisition, Technology, and Logistics is the Defense Acquisition Executive (DAE) responsible for all acquisition matters within the DOD. The Component Acquisition Executives (CAEs) for each of the components are the Secretary of the Military Departments or the Heads of Agencies with power of re-delegation. The CAEs are responsible for all acquisition matters within their respective component.

Acquisition Knowledge Sharing System
An automated repository of acquisition information that consists of an electronic desk reference set, a tool catalog, and a forum for the exchange of information. The

reference set organizes information into two main categories: mandatory guidance and discretionary information.

Acquisition Phase
All the tasks and activities needed to bring the program to the next major milestone occur during an acquisition phase. Phases provide a logical means of progressively translating broadly stated capabilities-based needs into well defined system specific requirements and ultimately into operationally effective, suitable, and survivable systems.

Acquisition Program
A directed, funded effort designed to provide a new, improved or continuing weapons system or automated information system (AIS) capability in response to a validated operational need. Acquisition programs are divided into three different acquisition categories (ACATs) that are established to facilitate decentralized decision-making, and execution and compliance with statutory requirements.

Acquisition Program Baseline (APB)
Each program's APB is developed and updated by the program/project/product manager (PM) and will govern the activity by prescribing the cost, schedule and performance constraints in the phase succeeding the milestone for which it was developed. The APB captures the user capability needs, including the key performance parameters (KPPs), which are copied verbatim from the capability development document (CDD).

Acquisition Strategy (AS)
The AS documents the appropriate planning process and provides a comprehensive approach (roadmap) for achieving goals established in material requirements. It serves as a principal long-range document, charting the course of a major acquisition program over its life-cycle.

Advance Procurement (long lead items)
A pre-approved exception to DOD's full funding policy that allows procurement of long lead-time components, material, parts, and effort in a fiscal year before that in which the related end item is to be procured. Authority provided in an appropriations act to obligate and disburse during a fiscal year before that in which the related end item is procured. The funds are added to the budget authority for the fiscal year and deducted from the budget authority of the succeeding fiscal year. Used in major acquisition programs for advance procurement of components whose long-leadtime require purchase early in order to reduce the overall procurement lead-time of the major end item. Advance procurement of long lead components is an exception to the DOD "full funding" policy and must be part of the President's budget request.

Advanced Technology Demonstrations (ATDs)
ATDs are typically integrated demonstrations that are conducted to demonstrate the feasibility and maturity of an emerging technology. They provide a relatively low-cost approach for assessment of technical risks and uncertainties associated with critical technologies prior to the incorporation of these technologies into a system entering the formal acquisition process. They are conducted at the service and DOD agency level with internal funding. They focus on evolving a specific element of technology nominally at the 6.3 advanced technology development point (typically technology readiness level (TRL) 5-6) to reduce its risk of implementation by an acquisition program or even feed to a joint capability technology demonstration (JCTD).

Affordability
The degree to which the life-cycle cost of an acquisition program is in consonance with the long-range investment and force structure plans of DOD or individual DOD services. Affordability procedures establish the basis for fostering greater program stability through the assessment of program affordability and the determination of affordability constraints.

Allocated Forces
The forces and resources provided to the commander of a unified command by the President and Secretary of Defense for execution planning or operations.

Analysis of Alternatives (AoA)
The evaluation of the performance, operational effectiveness, operational suitability, and estimated costs of alternative systems to meet a mission capability. The AoA assesses the advantages and disadvantages of alternatives being considered to satisfy capabilities, including the sensitivity of each alternative to possible changes in key assumptions or variables. The AoA is one of the key inputs to defining the system capabilities in the capability development document (CDD).

Application
A software program or group of programs that people use to carry out generalized or mission-specific tasks or processes for which a computer is used, i.e., packages (Net-Centric Operational Environment Joint Capability Document).

Apportioned Forces
The chairman of the Joint Chiefs of Staff apportions forces and capabilities to combatant commands to develop contingency plans.

Architecture
This is a framework or structure that portrays relationships among all the elements of

the subject force, system, or activity. It describes the structure of components, their relationships, and the principles and guidelines governing their design and evolution over time. Architecture provides data sets that describe the missions and tasks that must be performed and for what purpose – the operational view; the nodes and their characteristics that support the missions and tasks – the system view; and how the nodes exchange information and interact to perform the desired effects associated with the tasks – the technical view.

Army Acquisition Executive (AAE)
Senior Army acquisition executive responsible for administering acquisition programs IAW established policies and guidelines. The AAE is also the senior Army procurement executive. The Assistant Secretary of Army (Acquisition, Logistics, and Technology) is the AAE.

Army Acquisition Objective (AAO)
The quantity of an item of equipment or ammunition required to equip the U.S. Army approved force and to sustain that force, together with specified allies, in wartime from D–Day through the period prescribed and at the support level directed in the latest Office of the Secretary of the Defense Consolidated Guidance.

Army Capabilities Integration Center (ARCIC) Campaign Plan (ArCP)
ARCIC publishes the ArCP to implement a campaign plan that manages and governs capability developments and helps balance resources between supporting the current fight and developing the force. This approach to achieve resource-informed, integration-focused, and outcome-based solutions for the Army and Joint Force Commander is the ArCP. The ArCP supports and implements guidance provided by the Army Campaign Plan (ACP) and TRADOC Campaign Plan (TCP). The ArCP informs Army processes with respect to a continuously modernized, based Army that is full spectrum capable. The ArCP is an outcome-based management process and governance mechanism that will consolidate and prioritize the needs and requirements throughout the developments community.

Army Capabilities Integration Center (ARCIC) Gatekeeper (TRADOC)
The ARCIC gatekeeper acts as the entry and exit point for all Joint Capabilities Integration and Development System (JCIDS) capability documents forwarded by TRADOC and non-TRADOC proponents for validation and other service capability documents sent to the ARCIC for review. The gatekeeper manages the TRADOC staffing of JCIDS capability documents and loads ARCIC validated and CG, TRADOC endorsed capability documents into the HQDA capabilities and AROC management system (CAMS) database for AROC/JROC validation. The ARCIC gatekeeper is the JCIDS gatekeeper for TRADOC.

Army Capstone Concept (ACC)
This is the highest level Army warfighting concept. The foundational document that provides a description of future armed conflict and how the Army will conduct future joint land operations. It provides a common framework to help Army leaders think about future war and to guide Army force development and modernization. The ACC describes the broad capabilities the Army will require in 2016-2028 to overcome a combination of adaptive enemies and challenging missions within complex operational environments across the spectrum of conflict in order to facilitate the achievement of national objectives. There is only one capstone concept at a time and *TRADOC Pamphlet 525*-3-0 serves as the ACC.

Army Concept Framework (ACF)
Army concepts, documented in *TRADOC 525-series pamphlets*, illustrate how future forces will operate and the capabilities required to carry out a range of military operations (ROMO) against adversaries in the expected joint operational environment (JOE). They describe future capabilities within a proposed structure of future military operations for a period of 6-18 years. These concepts are the basis for assessment that may include studies, experimentation, wargaming, analyses, testing and simulations leading to determination of joint doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) solution sets to gain the specific capabilities required in approved concepts. The ACF consists of a capstone concept and a set of subordinate operating and functional concepts.

Army Cost Position (ACP)
System life-cycle cost estimate briefed for all Army overarching integrated product team (OIPT), Army Systems Acquisition Review Council (ASARC), and OSD cost analysis reviews for all major and special interest programs. The ACP is developed by the Army Cost Review Board (CRB). The ACP is also the basis for the development and justification of the program's associated budget. The ASA(FM&C) is the final approval authority for the ACP.

Army Cost Review Board (CRB)
CRB is responsible for the recommended Army Cost Position (ACP), which is the system life-cycle cost estimate. The ASA(FM&C) is the final approval authority for the ACP. The CRB is chaired by the Principal Deputy (ASA(FM&C) with members from the senior leadership of ASA(ALT); Army Budget Office (ABO); DCS, G–3/5/7; DCS, G–4; DCS, G–8; G-8 PA&E; ASA(I&E); and the CIO/G–6. The Deputy for Cost and Economics to the ASA(FM&C) is the non-voting CRB secretary. The CRB Working Group (CRBWG) supports the CRB principals. The CRBWG members are the principals' representatives working to develop the system's life-cycle cost estimate.

Army Enterprise Equipping and Reuse Conference (AEERC)
The AEERC is a week-long forum held semi-annually that the HQDA G-8 uses to synchronize the process of equipping units to mission. The AEERC provides a holistic and strategic review of the Army's equipping posture and policies with the objective of influencing and improving the Army's Equipping Readiness. Ensuring that Soldiers are properly equipped and trained for war is one of the Army's top priorities. For the past seven years, members of the Equipping Enterprise and force development communities (including Army Commands, Army Service Component Commands, and both Reserve and Active Components) have convened semi-annually to discuss modular conversion plans, Army Force Generation (ARFORGEN) prioritization, funding, production deliveries, reset rates, theater-provided equipment and other essential factors to synchronize delivery of authorized equipment to units, and define mitigation strategies to address equipping shortfalls.

Army Force Generation (ARFORGEN) Cycle
The Army's method for effectively and efficiently generating trained and ready forces for combatant commanders on a sustainable, rotational basis.

Army Force Generation (ARFORGEN) Force Pools
The force pools are an organizing construct that differentiates between relative readiness levels of rotational units and specifies unit activities over a three phase process.

Army Functional Concepts (AFCs)
AFCs describe how the Army force will perform military functions across the full spectrum of operations. The AFCs draw operational context from joint concepts, the Army capstone concept, and the AOC. As an integrated suite of concepts, the AFCs describe the full range of land combat functions across the range of operations (ROMO). It contains an initial, broad description of required capabilities necessary to achieve the objectives outlined in higher level concepts. An AFC develops sufficient required capability granularity in the body of the document or the appendices to initiate a capabilities-based assessment (CBA).

Army JCIDS Gatekeeper
Army gatekeepers assigned to DAMO-CIC are the POC for the HQDA DCS, G-3/5/7 to oversee and manage all JCIDS documents submitted to the Army Requirements Oversight Council (AROC) and Joint Requirements Oversight Council (JROC) staffing processes.

Army Operating Concept (AOC)
It provides a generalized visualization of operations across the full spectrum of operations. It describes how an Army force commander accomplishes operational or

tactical level effects and identifies required capabilities to achieve objectives in land operations in support of a joint force commander's military campaign or operation. The AOC may not have the resolution required to initiate a capabilities-based assessment (CBA).

Army Resource Priority List (ARPL)
The ARPL is an unclassified/for official use only document generated by the HQDA DCS, G–3/5/7 ARFORGEN Division and provides broad categorization of resources against 4 prioritization categories.

a. Expeditionary Capabilities (Deployed)
b. Mission Critical Capabilities (Next to Deploy)
c. Mission Essential Capabilities (RESET/Generating Force)
d. Mission Enhanced Capabilities (Remaining/Resetting Units)

Assigned Forces
Those forces and resources placed under the combatant command (COCOM) of a unified commander by the direction of the Secretary of Defense.

Army Systems Acquisition Review Council (ASARC)
Top level, HQDA review/advisory body for ACAT I, IAC, and II programs. Convened at formal DAS milestone reviews or other program reviews to provide information and develop recommendations for decision by the Army Acquisition Executive (AAE).

Army Technology Objectives (ATOs)
ATOs are the fundamental science and technology (S&T) "building blocks" for future Army weapon systems that will be technologically superior to the threat. These programs are the highest priority top-level S&T efforts in applied research (S&T stage 6.2) and advanced technology development (S&T stage 6.3). They are used by the Army to focus and stabilize the 6.2 and 6.3 program stages, conduct management by objectives, and provide feedback to Army scientists and engineers regarding their productivity and customer satisfaction. ATOs are part of a rigorous process to "deliver" technology within a scheduled timeframe based upon need. There are 3 distinct types of ATOs. ATO (Research) focus on laboratory applications to determine feasibility and potentially provide technology options in the mid- and far-terms. ATO (Demonstration) focus on products to transition to acquisition Engineering and Manufacturing Development (EMD) phase for warfighting capability. ATO (Manufacturing Technology) focused on improving affordability and producibility of new technology and reducing operation and support (O&S) cost for fielded systems.

Army Warfighting Challenges (AWFCs)
AWFCs are the enduring first-order capabilities the Army must develop to ensure current and future force combat effectiveness. AWFCs serve as the foundation for U.S. Training and Doctrine Command's (TRADOC) Campaign of Learning. Centers of Excellence (COEs), Combined Arms Center (CAC), and Army Capabilities Integration Center (ARCIC) drive learning and capability development by describing military problems and gaps in current and future force capabilities. This is an annual process to inform concept development, wargaming, experimentation, and science and technology (S&T) decisions. AWFCs support capability developments through the Integrated Capability Packages (CPs), Total Army Analysis (TAA), and Capability Needs Analysis (CNA) to inform the Program Objective Memorandum (POM).

Attribute
A testable or measurable characteristic that describes an aspect of a system or capability.

Automated Information Systems (AIS)
A combination of computer hardware and software, data, telecommunications, that performs functions such as collecting, processing, transmitting, and displaying information. An AIS can include computer hardware only, computer software only, or a combination of the above. Excluded are computer resources, both hardware and software, that are physically part of, dedicated to, or essential in real time to the mission performance of weapon systems.

Base Operations (Enterprise) Requirements
Base operations are any requirements which do not fall within the definition of "warfighting" requirements, e.g., those requirements that have no interaction with tactical units and do not support an exchange of warfighting information. Examples of base operations requirements include morale, welfare and recreation services; base services support; real estate; facility support services; maintenance and repair; minor construction; and environmental compliance.

Basis of Issue Plans (BOIPs)
Basis of Issue Plans (BOIPs) is developed for new or improved items of equipment. A BOIP describes in detail a new item, its capabilities, component items of the equipment, where the item is to be used, and identifies the associated support items of equipment and personnel (ASIOEP). BOIPs include personnel changes caused by the introduction of new items into the Army inventory and address the military occupational specialty (MOS) needed to operate and maintain the equipment.

Brassboard Configuration
An experimental device (or group of devices) used to determine feasibility and to develop technical and operational data. It is normally a model sufficiently hardened for use outside of laboratory environments to demonstrate the technical and operational principles of immediate interest. It may resemble the end-item but is not intended for use as the end-item.

Breadboard Configuration
An experimental device (or group of devices) used to determine feasibility and to develop technical data. It normally is configured only for laboratory use to demonstrate the technical principles of immediate interest. It may not resemble the end-item and is not intended for use as the projected end-item.

Brigade Combat Team Modernization (BCTM)
The BCT Modernization Strategy replaces the Future Combat Systems approach. The Army's transition to a brigade combat team (BCT) modernization strategy is being done to build a versatile mix of mobile, networked and combat effective BCTs. The intent is to field capabilities in alignment with the way BCTs are structured and trained. In this manner the Army is ensuring that our Soldiers have the right capabilities to fight effectively as a system in the environments they are facing. The plan will set in motion the continual modernization of all Army BCTs with the delivery of new Capability Packages every few years - growing, adapting, and improving the capabilities provided to Soldiers. The Army will also decide to sustain, improve, or divest current tracked and wheeled vehicles based upon their operational value, capabilities shortfalls, and resources available.

Brigade Modernization Command
The Brigade Modernization Command conducts physical integration and evaluations of the Network, capability packages, and other adaptive and core capabilities in order to provide Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities recommendations to the Army.

Brigade Test Unit
The BTU is an assemblage of personnel and equipment from the Brigade Modernization Command (BMC) that supports the conduct and physical integration and evaluations of the network, capability packages, and other adaptive and core capabilities in order to provide doctrine, organization, training, materiel, leadership and education, personnel and facilities recommendations to the Army. The BTU is not a professional test unit, but is the operational unit made available to support NIE activities at Ft. Bliss/WSMR.

Capability
The ability to achieve a desired effect under specified standards and conditions through combinations of means and ways to perform a set of tasks. It is defined by an operational user and expressed in broad operational terms in the format of an initial capabilities document (ICD) or a joint doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) change recommendation (DCR). In the case of materiel proposals and documents, the definition will progressively evolve to DOTMLPF-P performance attributes identified in the capability development document (CDD) and the capability production document (CPD).

Capabilities and Army Requirements Oversight Council (AROC) Management System (CAMS)
CAMS is the Army DCS, G-3/5/7 database driven knowledge management decision support information technology system that supports Army Requirements Oversight Council (AROC) document staffing and commenting from numerous users and organizations within the Army into a central database repository. The system allows users to view document information and monitor document progress through AROC validation until submission to the Joint Requirements Oversight Council (JROC) staffing and validation process.

Capability Architecture Development and Integration Environment (CADIE)
The CADIE provides the ability to govern and configuration manage architecture projects and data based on established TRADOC policies and procedures. The CADIE serves as a common architecture net-centric data strategy for implementing the DOD Architecture Framework, complementing the DOD Architecture Repository System, and ensuring Army and TRADOC specific capabilities are satisfied. CADIE is managed and controlled by the Army Capabilities Integration Center (ARCIC) Architecture Integration and Management Directorate (AIMD) as part of an overall DOD-wide data strategy focused on the Core Architecture Data Model. Leading edge tools and resources for state of the art architecting are incorporated in the CADIE to achieve greater effectiveness in a collaborative environment.

Capabilities-based Assessment (CBA)
The CBA is the Joint Capabilities Integration and Development System (JCIDS) analysis process. It answers several key questions for the validation authority prior to their validation: define the mission; identify capabilities required; determine the attributes/standards of the capabilities; identify gaps; assess operational risk associated with the gaps; prioritize the gaps; identify and assess potential non-materiel solutions; provide materiel and non-materiel recommendations for addressing the high priority capability gaps.

Capability-Based Planning (CBP)
The DOD process for planning under uncertainty to provide capabilities suitable for a wide range of modern-day challenges and circumstances while working within an economic framework that necessitates choice.

Capability Developer (CAPDEV)
A person who is involved in analyzing, determining, prioritizing, and documenting requirements for doctrine, organizations, training, leader development and education, materiel and materiel-centric DOTMLPF-P requirements, personnel, and facilities within the context of the force development process. Also responsible for representing the end user during the full development and life cycle process and ensures all enabling capabilities are known, affordable, budgeted, and aligned for synchronous fielding and support.

Capabilities Development
Identifying, assessing, and documenting changes in doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) that collectively produce the force capabilities and attributes prescribed in approved concepts, concept of operations (CONOPS), or other authoritative sources.

Capability Development Document (CDD)
A document that captures the information necessary to develop a proposed program(s), normally using an evolutionary acquisition strategy. The CDD outlines an affordable increment of militarily useful, logistically supportable, and technically mature capability. Each concept proposed at MS B is described in an initial CDD in terms of minimum acceptable requirements (thresholds) that defines the system capabilities needed to satisfy a materiel need. When appropriate, objectives for each parameter representing a measurable, beneficial increment in operational capability or operations and support are established. ACAT ID and IAM CDDs are validated by the Joint Requirements Oversight Council (JROC) unless previously delegated. All other Army generated CDDs are validated by HQDA after Joint Staff, J-8 review for JROC interest, Joint Capability Board (JCB) interest, and interoperability assessment. CDDs are refined and expanded for MS C (capability production document (CPD)) to include thresholds and objectives for more detailed and refined performance capabilities and characteristics based on the results of trades studies and testing conducted during acquisition Engineering and Manufacturing Development (EMD) phase.

Capability Developments Integration Directorate (CDID)
This organization develops Center of Excellence (CoE)-related concepts and requirements, and conducts experiments to validate DOTMLPF-P integrated combined arms capabilities that complement joint, interagency, and multinational

capabilities. A CDID is organized under a CoE, except for the Combined Arms Center (CAC) CDID (Mission Command) who is organized under the Deputy to CG, CAC.

Capability Gap (or Gap)
The inability to execute a specified course of action.The gap may be the result of no existing capability, lack of proficiency orsufficiency in an existing capability solution, or the need to replace an existing capability solution to prevent a future gap.

Capabilities Needs Analysis (CNA)
The TRADOC CNA provides senior Army leadership an integrated, operational assessment of the Army's capability to meet current mission readiness while building the future force (expressed as risks). By determining risk elimination/mitigation and trades strategies, it provides warfighter-based recommendations to influence Program Objective Memorandum (POM) decisions, underpinned by sound analysis.

Capability Production Document (CPD)
A document that addresses the production elements specific to a single increment of an acquisition program. The CPD defines an increment of militarily useful, logistically supportable, and technically mature capability that is ready for a production decision. The CPD defines a single increment of the performance attributes (key performance parameters, key system attributes, and other attributes) to support a Milestone C decision.

Capability Requirement (or Requirement)
A capability required to meet an organization's roles, functions, and missions in current or future operations. To the greatest extent possible, capability requirements are described in relation to tasks, standards, and conditions in accordance with the Universal Joint Task List (UJTL) or equivalent DOD Component Task List. If a capability requirement is not satisfied by a capability solution, then there is also an associated capability gap which carries a certain amount of risk until eliminated. A requirement is considered to be 'draft' or 'proposed' until validated by the appropriate authority.

Capability Set
A required capability for a specific time frame (two years starting with an odd year) and all Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy (DOTMLPF-P) solutions necessary to satisfy the capability by unit for each area.

Capstone Concept for Joint Operations (CCJO)
The CCJO is the overarching warfighting concept that guides the development of

future joint capabilities. The purpose of the CCJO is to lead force development and employment primarily by providing a broad description of how the future joint force will operate. Service concepts and subordinate joint concepts expand on the CCJO solution. The CCJO broadly describes how future joint forces are expected to operate across the range of military operations 8 - 20 years in the future in support of strategic objectives. It applies to operations around the globe conducted unilaterally or in conjunction with multinational military partners and other government and non-government agencies. It envisions military operations conducted within a national strategy that incorporates all instruments of national power.

Catalog of Approved Requirements Documents (CARDS)
CARDS is an HQDA, G-37 Current and Future Warfighting Capabilities Division (DAMO-CIC) publication that lists approved materiel capabilities documents (MCDs). Its purpose is to provide up-to-date reference information to the capabilities and materiel development communities.

Capability Development Tracking and Management (CDTM) System
CDTM is a "turbo-tax" like web based application to assist capability developers in writing capability documents - initial capabilities documents (ICDs), capability development documents (CDDs), capability production documents (CPDs), and DOTmLPF-P change recommendations (DCRs). The system presents a series of "wizard" pages that guide the user through data entry and complete document creation. Once data is entered, the system handles workflow within customized workgroups. When a capability document is ready for vetting by the ARSTAF and Joint Staff (JS), CDTM handles "pushing" the document to external systems like the Army's Capabilities and Army Requirements Oversight Council (AROC) Management System (CAMS) and the JS Knowledge Management/Decision Support (KM/DS) for further processing. Using CDTM, these are no longer just documents, but structured information that can be aggregated, tabulated, and searched. What was once a document is now information broken down into field-level data that is stored in the CDTM database. The data can be reassembled into a document at any time, but is workable in pieces, by any number of users. Capability documents were created in a variety of formats and templates, the final result being multiple files that were non-standard and difficult to search. With CDTM, capabilities documents are created "on the fly" by dynamically assembling all the data elements into a standard format. Effective June 30 2011, the CDTM format was required for the creation, reading, and editing of all JCIDS capability documents. CDTM is located on https://cdtm.js.mil/Default.aspx (NIPRNET) and https://cdtm.js.smil.mil <https://cdtm.js.smil.mil/>(SIPRNET).

Capability Set (CS)
A required capability for a specific time frame (two years starting with an odd year) and all Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF-P) solutions necessary to satisfy the capability by unit for each area.

Capability Set Baseline Systems
A set of systems that have been determined to be part of the Army's baseline. An assessment will be conducted during an NIE to evaluate the end-to-end performance of these Network baseline capabilities prior to fielding; however, there may not be a DOTMLPF-P assessment on each system. The CS baseline system(s) may be part of an overarching Network evaluation. These systems must also meet all delivery, integration, and training requirements to participate in the event.

Capability Solution
A single or combination of DOTMLPF-P identified action(s), materiel (using the JCIDS process) or non-materiel (using TRADOC process), that may partially or completely solve a capability gap or capability need.

Central Technical Support Facility
The CTSF is the Army's strategic facility responsible for interoperability engineering, executing Army Interoperability Certification (AIC) testing, maintaining configuration control for all operational- through tactical- level information technology/national security systems, and supporting deployed Warfighters' digital needs.

Center of Excellence (CoE)
A designated organization, centered on TRADOC core functions, that improves combined arms solutions for joint operations, fosters doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) integration, accelerates the development process, and unites all aspects of institutional training to develop warfighters, leaders, and civilians who embody Army values. Each CoE will have a Capability Developments Integration Directorate (CDID), to focus on concept development, experimentation and requirements determination in support of the CoE mission.

Army CoE: A premier organization that creates the highest standards of achievement in an assigned sphere of expertise by generating synergy through effective and efficient combination and integration of functions while reinforcing unique requirements and capabilities.

TRADOC CoE: Designated Command or organization within an assigned area of expertise that delivers current warfighting requirements; identifies future capabilities; integrates assigned DOTMLPF-P dimensions; and presents resource-informed,

outcomes-based recommendations to the TRADOC Commanding General (CG).

TRADOC Center: Designated command or organization within an assigned area of expertise that facilitates the exchange of thought and best practices; informs and assists in the development and review of doctrine, training and education; and informs concept development and experimentation to more effectively enable DOTMLPF-P integration across the Army.

TRADOC CoE types: Multi-Branch CoEs are Maneuver, Fires, Maneuver Support, and Sustainment CoEs. Single-Branch CoEs are Aviation, Intelligence and Signal CoEs. Functional CoE is Basic Combat Training (BCT) CoE.

Certification
A statement of adequacy provided by a responsible agency for a specific area of concern in support of the validation process.

Commercial item
A commercial item is any item, other than real property, that is of a type customarily used for nongovernmental purposes and that has been sold, leased, or licensed to the general public; or has been offered for sale, lease, or license to the general public; or any item evolved through advances in technology or performance and that is not yet available in the commercial marketplace, but will be available in the commercial marketplace in time to satisfy the delivery requirements under a government solicitation. Also included in this definition are services in support of a commercial item, of a type offered and sold competitively in substantial quantities in the commercial marketplace based on established catalog or market prices for specific tasks performed under standard commercial terms and conditions; this does not include services that are sold based on hourly rates without an established catalog or market price for a specified service performed.

Concept
A notion or statement of an idea – an expression of how something might be done – that can lead to an accepted procedure. A military concept is the description of methods (ways) for employing specific military attributes and capabilities (means) in the achievement of stated objectives (ends).

Concept of Operations (CONOPS)
A verbal or graphic statement, in broad outline, of a commander's assumptions or intent in regard to an operation or series of operations. The CONOPS frequently is embodied in campaign plans and operation plans; in the latter case, particularly when the plans cover a series of connected operations to be carried out simultaneously or in succession. The concept is designed to give an overall picture of the operation. It is included primarily for additional clarity of purpose. CONOPS is also called the commander's concept.

Contingency Expeditionary Force (CEF)
Army general purpose force units designated during the Army Force Generation (ARFORGEN) synchronization process and given an available force pool date (AFPD) in order to execute a contingency mission, operational plan or other Army requirement.

Cost-benefit Analysis (C-BA)
A C-BA is a decision support and planning tool developed by HQDA G-8 that documents the effect of actions under consideration to solve a problem or take advantage of an opportunity. It defines the potential financial impacts and considers non-financial or non-quantifiable benefits of a specific course of action. The C-BA also provides an evaluation of a proposed solution (including any associated expenditures) before a significant amount of funds are invested.

Cost Analysis Requirements Description (CARD)
A complete description of the salient features of the acquisition program and of the system itself. It is the common description of the technical and programmatic features of the program that is used by the teams preparing the Program Office Estimate (POE), Component Cost Estimate (CCE), and independent Life-Cycle Cost Estimates (LCCEs).

Critical Design Review (CDR)
CDR ensures that the system can proceed into system fabrication, demonstration, and test; and can meet the stated performance requirements within cost, schedule, risk, and other system constraints. The CDR assesses the system final design as captured in product specifications for each configuration item in the system (product baseline), and ensures that each product in the product baseline has been captured in the detailed design documentation. The CDR provides input to the CDR report for the milestone decision authority (MDA) required before the program can transition from the integrated system design work effort of Engineering and Manufacturing Development (EMD) to system capability and manufacturing process demonstration work effort.

Critical Design Review (CDR) Report
The program/project/product manager (PM) provides a CDR Report to the milestone decision authority (MDA) that provides an overall assessment of design maturity and a summary of the system-level CDR results. The MDA reviews the CDR Report and the PM's resolution/mitigation plans and determines at the Post-CDR Assessment whether additional action is necessary to satisfy Engineering Manufacturing Development (EMD) phase exit criteria and to achieve the program outcomes specified in the acquisition program baseline (APB).

Critical Operational Issues and Criteria (COICs)
Key operational concerns (that is, the issues) of the decision maker, with bottom line standards of performance (that is, the criteria) that, if satisfied, signify the system is operationally ready to proceed beyond the full rate production (FRP) decision review. The COICs are not pass/fail absolutes but are "show stoppers" such that a system falling short of the criteria should not proceed beyond the FRP unless convincing evidence of its operational effectiveness, suitability, and survivability is provided to the decision makers. COICs are few in number, reflecting total operational system concern.

Critical Technology Element (CTE)
A technology element is critical if the system being acquired depends on this technology element to meet capability thresholds (with acceptable development cost and schedule and with acceptable production and operation costs) and if the technology element or its application is either new or novel.

Configuration Steering Board (CSB)
A CSB is required to be established for every Army acquisition category (ACAT I) program. CSB's are chaired by the Army Acquisition Executive (AAE) with broad membership from the Army acquisition and CAPDEV communities as well as the DOD Under Secretary of Defense (Acquisition, Technology, and Logistics), and the Joint Staff. The CSBs review all proposed requirements changes and any proposed technical configuration changes which have the potential to result in cost, schedule or performance impacts to the program.

Decision Points (DPs)
There are three identified Decision Points within the Agile Process. These occur at the end of Phase I (Potential Solutions List Approval), the end of Phase II (Approved Solutions for Evaluation), and at the end of Phase VI (field, do not field, or continue to develop or assess SUEs).

Defense Acquisition Executive (DAE)
The DAE is the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) who has responsibility for supervising the Defense Acquisition Management System (DAS). The DAE takes precedence on all acquisition matters after the Secretary and the Deputy Secretary.

Defense Acquisition Executive Summary (DAES)
This provides standard, comprehensive reporting of acquisition category (ACAT) I programs between milestone decision points. The DAES is an internal early warning report for the Defense Acquisition Executive (DAE) designed to highlight, on a regular and systematic basis, indications of both potential and actual program

problems before they become significant. Recognizing that problems are expected to surface in these programs aids in communication and early resolution. Program/project managers (PMs) submit the DAES report to the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) through the Program Executive Officer (PEO) and cognizant Component Acquisition Executive (CAE) by the last working day of each designated quarterly reporting month.

Defense Business System
An information system, other than a national security system, operated by, for, or on behalf of the Department of Defense, including financial systems, mixed systems, financial data feeder systems, and information technology and information assurance infrastructure, used to support business activities, such as acquisition, financial management, logistics, strategic planning and budgeting, installations and environment, and human resource management.

Defense Business Systems Management Committee (DBSMC)
The DBSMC is responsible for coordination of defense business system modernization initiatives, as codified in *Title 10, Section 186*.

Deployment Expeditionary Force (DEF)
Army general purpose force units assigned or allocated during the Army Force Generation (ARFORGEN) synchronization process and given a latest arrival date (LAD) in order to execute assigned missions.

Director, National Intelligence/Intelligence Resources Board (DNI/IRB)
The DNI/IRB manages the national requirements process that reviews, validates, and approves national requirements for future intelligence capabilities and systems. It is the senior validation authority for future intelligence requirements funded within the National Foreign Intelligence Program and provides advice and counsel on future intelligence requirements funded outside that body.

Do Not Deploy (DND) Equipment List
The DND Equipment List is the equipment that the unit is either prohibited from deploying into theater or recommended not to deploy into theater from home station. The DND list is generated and updated by the supported Army service component command (ASCC) in coordination with any theater commands and HQDA, G-37. Units may submit an exception to policy through the ASCC to HQDA, G-37.

Doctrine, Organization, Training, materiel, Leadership and Education, Personnel , Facilities, and Policy (DOTmLPF-P)
Term used to describe/discuss the components of a capability limiting the materiel component to existing, type-classified equipment as the primary system or as required

supporting equipment for a new materiel system.

Document Sponsor
The organization submitting a JCIDS document. Solution sponsors for successor documents – Capability Development Documents (CDDs), Capability Production Documents (CPDs), and Joint DOTmLPF-P Change Recommendations (Joint DCRs) - may be different than the Requirement Sponsors for initial documents – Initial Capabilities Documents (ICDs), Urgent Operational Needs (UONs), Joint UONs (JUONs), and Joint Emergent Operational Needs (JEONs). Different Sponsors for requirements and solutions occurs most commonly when the initial requirement Sponsor does not have delegated acquisition authority and a different organization is designated to develop and field a capability solution.

DOTMLPF-P
Problem solving construct for assessing current and future force capabilities while managing change.

DOTMLPF-P Change Recommendation (DCR)
This is a recommendation for changes to existing joint resources when such changes are not associated with a new defense acquisition program.

Dynamic Army Resource Priority List (DARPL)
The DARPL is a document generated by the HQDA DCS, G–3/5/7 Force Management Directorate and provides detailed prioritization of specific units over time. The DARPL guides the distribution of resources by operational priorities, synchronizes detailed mission planning by HQDA and the Army command (ACOM)/Army service component command (ASCCs), and supports transformation initiatives such as the Army force, unit stabilization, and force rebalancing. The DARPL assigns a priority to each unit identified in the Army structure and manpower allocation system (SAMAS) Master Force at the unit identification code (UIC) level of detail. Priorities are derived from the Army resource priority list (ARPL), the integrated requirement priority list (IRPL), and ARFORGEN definitions and concepts. The DARPL uses force activity designators (FADs) to stratify priorities into 5 distinct levels. In general, deployable units are placed in dynamically changing priority tiers based on mission assignment and reset/train, ready, and available force pools in each fiscal year. Non-rotational units are placed in priority tiers IAW ARPL priorities based on command, location, mission and force structure.

Early Operational Assessment (EOA)
An operational assessment (OA) conducted prior to, or in support of, milestone (MS) B. An EOA assesses the most promising design approach sufficiently early in the acquisition process to ensure it has the potential to fulfill user requirements.

Endorsement
A statement of adequacy, and any limitations, provided by a responsible agency for a specific area of concern in support of the validation process.

Equipment Common Operating Picture (ECOP)
ECOP is the SIPRNET-based Army "start to finish" application that provides current policy information, libraries of approved equipment lists and a means to create, submit and monitor critical equipment requests all in one tool. Commanders, operations officers, and logisticians can access the application on the classified internet to review modified table of organization and equipment (MTOEs), Mission Essential Equipment Lists (MEELs) and initiate operational needs statements (ONSs) requests for special equipment not on their MTOE or an approved MEEL.

Equipment Reset
Equipment Reset is the repair, recapitalization, or replacement of equipment to a desired level of combat capability commensurate with a unit's future mission. Reset reverses the effects of combat stress on equipment. The components of this reset include:

- Replacement – procurement of new end item to replace equipment lost due to combat, washout (non-economical repairable), or end of life cycle;
- Recapitalization – a modernization process for selected equipment to near zero time/zero miles, which includes technology insertion, and results in a new model-new life; and
- Repair – the application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures, and maintenance actions to identify deficiencies and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

Evolutionary Acquisition
Evolutionary acquisition is the preferred DOD strategy for rapid acquisition of mature technology for the user. An evolutionary approach delivers capability in increments, recognizing, up front, the need for future capability improvements. The objective is to balance needs and available capability with resources, and to put capability into the hands of the user quickly. The success of the strategy depends on time-phased definition of capability needs and system requirements, and the maturation of technologies that lead to disciplined development and production of systems that provide increasing capability over time. Each increment is a militarily-useful and supportable operational capability that can be developed, produced, deployed, and sustained. Each increment will have its own set of threshold and objective values set by the user.

Experimentation (Learning)
The exploration of innovative methods of operating, especially to assess their feasibility, evaluate their utility, or determine their limits to reduce risk in the current force (today's operations) and the future force (developments). Experimentation identifies and verifies acceptable solutions for required changes in doctrine, organization, training, leadership and education, personnel, and facilities (DOTMLPF-P) to achieve significant advances in current and future capabilities. Experiments aid in validating the feasibility of future requirements determination efforts.

Family of Systems (FoS)
A set of systems that provide similar capabilities through different approaches to achieve similar or complementary effects. For instance, the warfighter may need the capability to track moving targets. The FoS that provides this capability could include unmanned or manned aerial vehicles with appropriate sensors, a space-based sensor platform or a special operations capability. Each can provide the ability to track moving targets but with differing characteristics of persistence, accuracy, timeliness, etc.

First Unit Equipped Date (FUED)
The scheduled date system or end item and its agreed upon support elements are issued to the designated initial operational capability (IOC) unit and training specified in the new equipment training plan (NETP) has been accomplished.

Five Year Test Program (FYTP)
A compendium of Test Schedule and Review Committee (TSARC) recommended and HQDA DCS, G-3/5/7 approved test resource plans (TRPs) in the following 5 years. The FYTP identifies validated requirements to support the Army's user test programs. It is developed within the existing budget and program constraints in accordance with Army priorities. It is a tasking document for the current and budget years and provides test planning guidelines for the subsequent years.

Follow-on Operational Test and Evaluation (FOT&E)
A test conducted during and after the acquisition Production and Deployment (P&D) phase to verify correction of deficiencies observed in earlier tests, to refine information obtained during the initial operational test and evaluation (IOT&E); to provide data to evaluate changes; or to provide data to reevaluate the system to ensure that it continues to meet operational needs.

Force Modernization Proponent
The HQDA Principal Official, commander, commandant, director, or chief of the respective center, school, institution, agency with primary duties and responsibilities

relative to doctrine, organization, training, materiel, leadership development and education, personnel, and facilities and matters related to a designated function.

Full Operational Capability (FOC)
The full attainment of the capability to employ effectively a weapon, item of equipment, or system of approved specific characteristics, which is manned and operated by a trained, equipped, and supported military unit or force. A program's capability development document (CDD) and capability production document (CPD) defines what actually constitutes FOC and when it should be attained.

Full-Rate Production
Contracting for economic production quantities following stabilization of the system design and validation of the production process.

Functional Area Analysis (FAA)
An analysis that uses "strategy-to concept-to task" (e.g., *National Defense Strategy (NDS)* to individual mission tasks) methodology to identify the operational and support tasks necessary to execute a warfighting concept (former mission area analysis).

Functional Capabilities Board (FCB)
A permanently established Joint Staff (JS) body that is responsible for the organization, analysis, and prioritization of joint warfighting requirements within an assigned functional area.

Functional Capabilities Board (FCB) Working Group
The FCB working groups are the analytic support for the FCBs. They perform the review and assessment of Joint Capabilities Integration and Development System (JCIDS) documents, work with the sponsors to resolve issues, and make recommendations to the FCB.

Functional Needs Analysis (FNA)
An analysis designed to assess one's ability to accomplish the tasks identified during the functional area analysis (FAA). The analysis uses a "task-to-need" methodology to identify mission needs (capability gaps). It can also highlight technological opportunities and identify reliability and maintainability improvements that enhance warfighting.

Functional Solution Analysis (FSA)
An analysis designed to produce an achievable set of potential non-materiel and materiel solution approaches for the needs identified in the functional needs analysis (FNA). The analysis first looks at doctrine, organization, training, leadership and

education, personnel, facilities, and policy (DOTmLPF-P) solutions to solve mission and system deficiencies, then at types of materiel solution approaches.

Increment
A militarily useful and supportable operational capability that can be effectively developed, produced or acquired, deployed, and sustained. Each increment of capability will have its own set of threshold and objective values set by the user. Technology is developed to a desired maturity and injected into the delivery of an increment of capability.

Information Exchange Requirements (IER)
Requirements that define the interoperability key performance parameter (KPP) threshold and objective values documented in capability development documents (CDDs) and capability production documents (CPDs). The IERs reflect both the information needs required by the system under consideration and the needs of other supported systems. The IERs cover all communication and computing requirements for command, control, and intelligence of the proposed system.

Information Support Plan (ISP)
The ISP describes system dependencies and interface requirements in sufficient detail to enable testing and verification of information technology (IT) and National Security Systems (NSS) interoperability and supportability requirements. The ISP also includes IT and NSS systems interface descriptions, infrastructure and support requirements, standards profiles, measures of performance, and interoperability shortfalls.

Information Technology (IT)
Any equipment, or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the executive agency. This includes equipment used by a component directly, or used by a contractor under a contract with the component, which requires the use of such equipment, or requires the use, to a significant extent, of such equipment in the performance of a service or the furnishing of a product. The term “IT” also includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources. Notwithstanding the above, the term “IT” does not include any equipment that is acquired by a federal contractor incidental to a federal contract. The term “IT” includes National Security Systems.

Initial Capabilities Document (ICD)
Summarizes a capabilities-based assessment (CBA) and justifies the requirement for a materiel or non-materiel approach, or an approach that is a combination of materiel

and non-materiel, to satisfy specific high priority capability gap(s). It identifies required capabilities (RCs) and defines the high priority capability gap(s) in terms of the functional area, the relevant range of military operations, desired effects, time and doctrine, organization, training, materiel, leadership and education, personnel, and facilities, and policy (DOTMLPF-P) implications and constraints. The ICD summarizes the results of the DOTMLPF-P analysis and the DOTMLPF-P approaches (materiel and non-materiel) that may deliver the RC. The outcome of an ICD could be one or more joint DOTmLPF-P change recommendations (DCRs) or recommendations to pursue materiel solutions.

Initial Operational Capability (IOC)
The IOC is the first attainment of the capability by a modified table of organization and equipment (MTOE) unit and supporting elements to operate and maintain effectively a production item or system provided the following:

- the item or system has been type classified as standard or approved for limited production;
- the unit and support personnel have been trained to operate and maintain the item or system in an operational environment; and
- the unit can be supported in an operational environment in such areas as special tools, test equipment, repair parts, documentation, and training devices.

Initial Operational Test and Evaluation (IOT&E)
The dedicated field test, under realistic combat conditions, of production or production representative items of weapons, equipment, or munitions to determine operational effectiveness, suitability, and survivability for use by representative military or civilian users. IOT&E is usually the "go/no go" test prior to the full rate production (FRP) decision review.

Integrated Capabilities Development Team (ICDT)
An integrated team made up of people from multiple disciplines formed to perform the capabilities-based assessment (CBA) to identify capability gaps; identify non-materiel and/or materiel approaches to resolve those gaps; and develop an initial capabilities document (ICD) or Joint DOTmLPF-P change recommendation (DCR), when directed. There are 6 TRADOC Center of Excellence (CoE) standing ICDTs.

Integrated Product Team (IPT)
A working level team of representatives from all appropriate functional disciplines working together to build successful and balanced acquisition programs, identify and resolve issues, and provide recommendations to facilitate sound and timely decisions. IPTs may include members from both government and industry, including program contractors and sub-contractors. Procedures for IPTs in the acquisition oversight and review process are described in *DODI 5000.02.*

Integrated Requirement Priority List (IRPL)
The IRPL is a classified document generated by the HQDA DCS, G–3/5/7 ARFORGEN Division and provides Army prioritization of all validated force requirements (both geographic combatant commander (GCC) and institutional) across the four Army Resource Priority List (ARPL) prioritization categories.

Integration
The process of comprehensive analysis, design and assessment of requirements, concepts and resources to combine and arrange DOTMLPF-P requirements and solutions to unify and improve warfighting capabilities.

Level 1 Integration – This is a shared process where Army Capabilities Integration Center (ARCIC) ARCIC, in coordination with TRADOC Centers of Excellence (CoEs) and Force Modernization Proponents ensures there is continuity of key ideas and required capabilities in concepts and learning activities which minimize the potential for overlaps or disconnects.

Level 2 Integration – This is the process where CoEs/Force Modernization Proponents ensure capabilities within assigned functions are logical; consistent; and complete from a functional, doctrine, organization, training, leadership and education, personnel, facilities, and policy (DOTMLPF-P), and individual organization perspectives and where solutions balance combat power with key supportability and affordability constraints.

Level 3 Integration – The process where ARCIC verifies, prioritizes and synchronizes DOTMLPF-P capability developments across functions and organizational designs to enable effective, complementary and reinforcing capabilities to provide the most urgent warfighting capabilities for the Army within available resources.

Integration Evaluation (IE)
A set of tests and evaluations performed primarily at Ft. Bliss/White Sands on Network and non-Network systems to determine their readiness for acquisition and/or fielding in a designated Capability Set.

Integration Rehearsal (IR)
A set of preparation and rehearsal activities performed primarily at Ft. Bliss/White Sands on Network and non-Network systems to be tested and evaluated during IE.

Interoperability
The ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces, and to use these services to enable them to operate effectively together.

Joint Capabilities Board (JCB)
The JCB functions to assist the JROC in carrying out its duties and responsibilities. The JCB reviews and, if appropriate, endorses all JCIDS and DCR documents prior to their submission to the JROC. The JCB is chaired by the Director of Force Structure, Resources, and Assessment, Joint Staff J-8. It is comprised of general and flag officer representatives of the services.

Joint Capability Area (JCA)
JCAs are collections of similar capabilities logically grouped to support strategic investment decisionmaking, capability portfolio management, capability delegation, capability analysis (gap, excess, and major trades), and capabilities-based and operational planning. JCAs provide a common capabilities language for use across many related DOD activities and processes and are an integral part of the capabilities-based planning process.

Joint Capabilities Board (JCB) Memorandum (JROCM)
Official JCB correspondence generally directed to an audience(s) external to the JCB. It is usually decisional in nature.

Joint Capability Technology Demonstration (JCTD)
The JCTD, previously called Advanced Concept Technology Demonstration (ACTD), spans two to four years, provides the user an opportunity to assess innovative technologically mature capabilities and determine the military utility before deciding to acquire additional units. JCTDs are intended to exploit mature and maturing technologies to solve important military problems and to concurrently develop the associated concept of operations (CONOPS) to permit the technologies to be fully exploited. These capabilities and operational concepts are then evaluated in military exercises on a scale large enough to clearly establish operational utility and system integrity. Emphasis is on technology assessment and integration rather than technology development. The demonstration is jointly sponsored by the operational user and the materiel development communities. JCTDs typically have one of three outcomes: 1) enter into formal acquisition as a new program; 2) by integrating with an existing program use residual operational capability only; 3) return to technology development. A JCTD becomes a candidate for transition following a successful military utility assessment (MUA). A key goal of JCTDs is to move into the appropriate phase of formal acquisition without loss of momentum. The Deputy Undersecretary of Defense for Advanced Systems and Concepts (DUSD(AS&C)) is responsible for oversight of the JCTD process.

Joint Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy Change Recommendation (DCR)
A recommendation for changes to existing joint resources when such changes are not

associated with a new defense acquisition program.

- joint doctrine – Fundamental principles that guide the employment of US military forces in coordinated action toward a common objective. Though neither policy nor strategy, joint doctrine serves to make US policy and strategy effective in the application of US military power. Joint doctrine is based on extant capabilities. Joint doctrine is authoritative guidance and will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise.
- joint organization - A joint unit or element with varied functions enabled by a structure through which individuals cooperate systematically to accomplish a common mission and directly provide or support joint warfighting capabilities. Subordinate units and elements coordinate with other units and elements and, as a whole, enable the higher-level joint unit or element to accomplish its mission. This includes the joint staffing (military, civilian and contractor support) required to operate, sustain and reconstitute joint warfighting capabilities.
- joint training – Training, including mission rehearsals, of individuals, units, and staffs using joint doctrine or joint tactics, techniques, and procedures (TTPs), to prepare joint forces or joint staffs to respond to strategic, operational, or tactical requirements considered necessary by the combatant commanders to execute their assigned or anticipated missions.
- joint materiel – All items (including ships, tanks, self-propelled weapons, aircraft, etc., and related spares, repair parts, and support equipment, but excluding real property, installations, and utilities) necessary to equip, operate, maintain, and support joint military activities without distinction as to its application for administrative or combat purposes.
- joint leadership and education – Professional development of the joint commander is the product of a learning continuum that comprises training, experience, education, and self-improvement. The role of professional military education and joint professional military education is to provide the education needed to complement training, experience, and self-improvement to produce the most professionally competent individual possible.
- joint personnel – The personnel component primarily ensures that qualified personnel exist to support joint capabilities. This is accomplished through synchronized efforts of joint force commanders and service components to optimize personnel support to the joint force to ensure success of ongoing peacetime, contingency, and wartime operations.
- joint facilities – Real property consisting of one or more of the following: a building, a structure, a utility system, pavement, and underlying land. Key facilities are selected command installations and industrial facilities of primary importance to the support of military operations or military production programs. A key facilities list is prepared under the policy direction of the Joint Chiefs of Staff.
- joint policy - Any DOD, interagency, or international policy issues that may prevent effective implementation of changes in the other seven DOTmLPF-P

elemental areas.

Joint Emergent Operational Need (JEON)
UONs that are identified by a Combatant Command as inherently joint and impacting an anticipated or pending contingency operation.

Joint Experimentation (Learning)
An iterative process for developing and assessing capabilities-based hypotheses to identify and recommend the best value-added solutions for changes in doctrine, organizational training and education, materiel, leadership, and personnel required to achieve significant advances in future joint operational capabilities.

Joint Operating Environment (JOE)
Describes the physical, demographic, political, economic, technological and military conditions in which the joint force will operate during the next 25 years. It is derived from an analysis of military and civilian documents, classified and unclassified, that describes future world conditions. The JOE is the basis for shaping the transformation of the future joint force to support the *National Security Strategy (NSS).*

Joint Program
Any acquisition system, subsystem, component, or technology program that involves a strategy that includes funding by more than one DOD component during any phase of a system's life-cycle.

Joint Requirements Oversight Council (JROC)
Advisory council responsible to the Vice Chairman of the Joint Chiefs of Staff (VCJCS) for the Joint Capabilities Integration and Development System (JCIDS) IAW *CJCS Instruction 3170.01H* and supporting *JCIDS Manual*.

Joint Requirements Oversight Council Memorandum (JROCM)
Official JROC correspondence generally directed to an audience(s) external to the JROC. It is usually decisional in nature.

Joint Staffing Designator (JSD)
A designation assigned by the Joint Staff gatekeeper to determine the Joint Capabilities Integration and Development System (JCIDS) validation process and the potential requirement for certifications and/or endorsements. A system can be assigned one of 5 designations: Joint Requirements Oversight Council (JROC) Interest, Joint Capabilities Board (JCB) Interest, Joint Integration, Joint Information, or Independent.

• JROC Interest - This designation applies to all acquisition category (ACAT) I/information assurance programs where the capabilities have a significant impact on

joint warfighting or have a potential impact across services or interoperability in allied and coalition operations. All joint DOTmLPF-P change recommendations (DCRs) will be designated as JROC Interest. A JSD of JROC Interest will be presumed for all capabilities documents within the following Joint Capability Area (JCA) portfolios: battlespace awareness; command and control; logistics; and net-centric. It may also apply to intelligence capabilities that support DOD and national intelligence requirements. Capability documents designated as JROC Interest will be staffed through the JROC for validation. An exception may be made for ACAT IAM programs without significant impact on joint warfighting (such as business-oriented systems). These programs may be designated Joint Integration, Joint Information, or Independent.

• JCB Interest - This designation will apply to all ACAT II and below programs where the capabilities and/or systems associated with the document affect the joint force and an expanded joint review is required. These documents will receive all applicable certifications, including a weapon safety endorsement when appropriate, and be staffed through the JCB for validation.

• Joint Integration - This designation applies to ACAT II and below programs where the capabilities and/or systems associated with the document do not significantly affect the joint force and an expanded review is not required. Staffing is required for applicable certifications (information technology and National Security Systems interoperability and supportability and/or intelligence) and for a weapon safety endorsement when appropriate. Once the required certification(s)/weapon safety endorsement are completed, the document may be reviewed by the Functional Capabilities Board (FCB). Joint Integration documents are validated by the sponsoring component.

• Joint Information - This designation applies to ACAT II and below programs that have interest or potential impact across the services or defense agencies, but do not have significant impact on the joint force and do not reach the threshold for JROC Interest. No certifications or endorsements are required. Once designated Joint Information, staffing is required for informational purposes only and the FCB may review the document. Joint Information documents are validated by the sponsoring component.

• Independent - This designation applies to ACAT II and below programs where the capabilities and/or systems associated with the document do not significantly affect the joint force, an expanded review is not required, and no certifications or endorsements are required. Once designated Independent, the FCB may review the document. Independent documents are validated by the sponsoring component.

Joint Staff Gatekeeper

That individual who makes the initial joint potential designation of Joint Capabilities Integration and Development System (JCIDS) documents. This individual also makes a determination of the lead and supporting Functional Capabilities Boards (FCBs) for

capability documents. the gatekeeper is supported in these functions by the FCB working group leads and the Joint Staff/J-6. The Joint Staff Deputy Director, Requirements, J-8 serves as the gatekeeper.

Joint Transformation Integration System (JTIS)
A Joint Staff-supported database focused on transformation decisions and information dissemination. The mission of the JTIS is to support CJCS decision-making by providing a single-point comprehensive database of related and linked initiatives associated with joint DOTMLPF-P implementation. Using the latest information technology, the JTIS integrates diverse and rapidly changing transformation data and makes it available to senior leadership in a unified and comprehensible manner. The leadership uses this information to assess and guide the transformation process.

Joint Urgent Operational Need (JUON)
An urgent operational need identified by a combatant commander (CCDR) involved in an ongoing overseas contingency operation. A JUON's main purpose is to identify and subsequently gain Joint Staff validation and resourcing solution, usually within days or weeks, to meet a specific high priority CCDR need. The scope of a JUON will be limited to addressing urgent operational needs that fall outside of the established service processes; and most importantly, if not addressed immediately, will seriously endanger personnel or pose a major threat to ongoing operations. They should not involve the development of a new technology or capability; however, the acceleration of a science and technology joint capability technology demonstration (JCTD) or minor modification of an existing system to adapt to a new or similar mission is within the scope of the JUON validation and resourcing process.

Joint Weapon Safety Technical Advisory Panel (JWSTAP)
The JWSTAP provides subject matter expertise review and constructive comments to the Joint Staff J-8, Deputy Director for Force Protection (DDFP) regarding the safe employment, storage, and transport of munitions and weapons in joint operating environments. Pre-existing requirement or capability documents are not within the scope of the JWSTAP. The JWSTAP review is focused on the capability attributes and metrics of a given weapon to identify potential safety issues resulting from interaction between the proposed weapon and other capabilities existing within the same joint operating environment. Safety concerns identified by the JWSTAP are presented to the DDFP with recommended revisions to the capability document to reduce or eliminate the identified safety concern while maintaining the desired operational effectiveness.

Key Performance Parameters (KPPs)
Those minimum attributes (testable or measurable characteristics) considered most essential for successful mission accomplishment. Failure to meet a capability

development document (CDD)/capability production document (CPD) KPP threshold can be cause for the concept or system selection to be reevaluated or the program to be reassessed or terminated. For Army sponsored CDDs or CDDs, KPPs are validated by either the Army Requirements Oversight Council (AROC) or the Joint Requirements Oversight Council (JROC). CDD and CPD KPPs are included verbatim in the acquisition program baseline (APB).

Key System Attribute (KSA)
An attribute or characteristic considered crucial in support of achieving a balanced solution/approach to a key performance parameter (KPP) or some other key performance attribute deemed necessary by the sponsor. KSAs provide decision makers with an additional level of capability performance characteristics below the KPP level and require a sponsor 4-Star, defense agency commander, or principal staff assistant (PSA) to change.

Knowledge Management/Decision Support (KM/DS) Tool
KM/DS is the authoritative Joint Staff automated tool for processing, coordinating, tasking, and archiving JCIDS documents and related Joint Capabilities Integration and Development System (JCIDS) action items. The KM/DS Tool is located on the SIPRNET Web site at https://jrockmds1.js.smil.mil/guestjrcz/gbase.guesthome.

LandWarNet
A concept of operations and the Army's portion of the Global Information Grid (GIG). As a portion of the GIG, LandWarNet is a combination of infrastructure and services; it moves information and enables the management and use of Warfighting and business information (*TRADOC Pam 525-5-600*)

Lead DOD Component
The service or agency that has been formally designated as lead for a joint program by the milestone decision authority (MDA). The lead component is responsible for common documentation, periodic reporting, and funding actions.

Learning Objectives (LOs)
Learning Objectives are an approved, prioritized list of topics recommended for experimental venues and are used to guide the TRADOC Army Capabilities Integration Center (ARCIC) annual experimentation guidance. A learning demand is an expression of a focused need for learning, top-down or bottom-up, comprised of a question and all the information that makes that question meaningful. LOs are focused and specifically generated – some to address top-down outcomes, and some to address Center of Excellences (CoEs)' critical LOs to enable creativity and innovation.

Life-Cycle Sustainment Plan (LCSP)
LCSP spans a system's entire life-cycle, from acquisition Materiel Solution Analysis (MSA) phase to disposal. It translates force provider capability and performance requirements into tailored product support to achieve specified and evolving life-cycle product support availability, reliability, and affordability parameters. Life-cycle sustainment planning is considered during MSA, and matures throughout the acquisition Technology Development (TD) phase. An LCSP is prepared for milestone B. The planning is flexible and performance-oriented, reflecting an evolutionary approach, and accommodates modifications, upgrades, and reprocurement. The LCSP is part of the program's acquisition strategy (AS) and is integrated with other key program planning documents. The LCSP is updated and executed during acquisition Production and Deployment (P&D) and Operations and Support (O&S) phases. Life-cycle sustainment considerations include supply; maintenance; transportation; sustaining engineering; data management; configuration management; human systems integration (HSI); manpower, personnel, training, habitability, survivability, environment, safety (including explosives safety), and occupational health; protection of critical program information and anti-tamper provisions; supportability; and interoperability.

Limited User Test (LUT)
Any type of research, development, test and evaluation (RDTE) funded user test conducted before full-rate production (FRP) decision review that does not address all of the operational effectiveness, suitability, and survivability issues and is therefore limited in comparison to an initial operational test and evaluation (IOT&E) that must address all effectiveness, suitability, and survivability issues. The LUT addresses a limited number of operational issues. The LUT may be conducted to provide a data source for operational assessments in support of low-rate initial production (LRIP) decisions and for reviews conducted before IOT&E. The LUT may be conducted to verify fixes to problems discovered in IOT&E that must be verified prior to FRP decision review when the fixes are of such importance that verification cannot be deferred to the follow-on operational test and evaluation (FOT&E).

Logistic Support
Logistic support encompasses the logistic services, materiel, and transportation required to support continental U.S.-based and world wide deployed forces.

Long-Term Transfer (LTT)
LTT is a HQDA, G-8 recommended and HQDA, G-3/5/7 approved resourcing solution to fill a HQDA validated requirement involving the transfer of equipment from a re-deploying unit departing the area of responsibility (AOR), to the unit deploying in to the AOR. Validation of the requirement occurs in two different categories. The first category is a valid modified table of organization and equipment

(MTOE), table of distribution and allowances (TDA), or mission essential equipment list (MEEL) shortage. The second category is a validated requirement based on an operational needs statement (ONS) validated by HQDA, G-37. Once the requirement is validated commands will cross level equipment at the lowest level possible. Once command redistribution has been completed, if an equipment shortfall still exists; and all other resourcing solutions have been exhausted, HQDA, G-8 may recommend a LTT of equipment between the incoming unit and outgoing unit for longer than 90 days but not longer than one rotation. If the resourcing solution of an LTT is approved, the supported Army service component command (ASCC) will manage the property.

Low-Rate Initial Production (LRIP)
The first work effort of the acquisition Production and Deployment (P&D) phase. The purpose of this effort is to establish an initial production base for the system, permit an orderly ramp-up sufficient to lead to a smooth transition to full rate production (FRP), and to provide production representative articles for initial operational testing and evaluation (IOT&E) and full-up live fire testing. This effort concludes with a FRP decision review to authorize FRP and deployment. The minimum number of systems to provide production representative articles for operational testing (OT), to establish an initial production base, and to permit an orderly increase in the production rate sufficient to lead to FRP upon successful completion of OT.

Major Automated Information System (MAIS) Acquisition Program
An automated information system (AIS) acquisition program that is designated by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) as a MAIS, or estimated to require program costs in any single year in excess of $32 million in fiscal year (FY) 2000 constant dollars, total program costs in excess of $126 million in FY 2000 constant dollars, or total life-cycle costs in excess of $378 million in FY 2000 constant dollars.

Major Defense Acquisition Program (MDAP)
An acquisition program that is not a highly sensitive classified program (as determined by the SECDEF) and that is designated by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) as an MDAP, or estimated by the USD(AT&L) to require an eventual total expenditure for research, development, test and evaluation (RDT&E) of more than $365 million in fiscal year (FY) 2000 constant dollars or, for procurement, of more than $2.19 billion in FY 2000 constant dollars.

Major Milestone
The decision point that separates the phases of an acquisition program. Major defense acquisition program (MDAP) milestones include, for example, the decisions to

authorize entry into the acquisition Engineering and Manufacturing Development (EMD) phase or Production and Deployment (P&D) phase.

Major System
A combination of elements that function together to produce the capabilities required to fulfill a mission need, including hardware, equipment, software, or any combination thereof, but excluding construction or other improvements to real property. A system shall be considered a major system if it is estimated by the DOD component head to require an eventual total expenditure for research, development, test and evaluation (RDT&E) of more than $140 million in Fiscal Year (FY) 2000 constant dollars, or for procurement of more than $660 million in FY 2000 constant dollars, or if designated as major by the DOD component head.

Manpower and Personnel Integration (MANPRINT)
The Army's program to ensure that Soldier performance is the central consideration in system design, development, and acquisition. It is the technical process of integrating the interdependent elements of human factors engineering, manpower availability, personnel skills and abilities, training design, system safety, health hazards, and survivability. The MANPRINT program has three primary objectives: 1) optimize both the quantity and quality of the personnel needed for systems; 2) design systems that are easily useable by Soldiers, safe to operate, cause no unnecessary health problems, and maximize Soldier survivability; and 3) ensure acceptable trade-offs are made among performance, design, and Soldier capabilities and limits. This ensures that Soldier readiness is not compromised by equipment that is difficult to use or maintain.

Market Research
A process for gathering data on product characteristics, suppliers' capabilities, and the business practices that surround them, plus the analysis of that data to make acquisition decisions. Market research has two phases:

- Market Surveillance: All the activities that acquisition personnel perform continuously to keep themselves abreast of technology and product developments in their areas of expertise.
- Market Investigation: Market research conducted in response to a specific materiel need or need for services.

Materiel
A generic word for equipment. It is inherently plural. It is distinguished from material, which is what things are made of. Material can be singular or plural. For example, aircraft are materiel; the materials aircraft are made of include aluminum, steel, and titanium.

Materiel Availability
A measure of the percentage of the total inventory of a system operationally capable (ready for tasking) of performing an assigned mission at a given time, based on materiel condition. This can be expressed mathematically as the number of operational end items/total population.

Materiel Capabilities Documents (MCDs)
A document specifically written to articulate the user's operational performance and support requirements for a materiel system. The initial capabilities document (ICD), capability development document (CDD), and the capability production document (CPD) are the Army's primary MCDs.

Materiel Developer (MATDEV)
The research, development, and acquisition (RDA) command, agency, or office assigned responsibility for the system under development or being acquired. The term may be used generically to refer to the RDA community in the Defense Acquisition Management System (counterpart to the generic use of capabilities (combat) developer in the capabilities development process).

Materiel Developments
The conception, development, and execution of solutions to capabilities-based materiel requirements identified and initiated through the capabilities development process, translating equipment requirements into executable programs within acceptable performance, schedule, and cost parameters.

Materiel Fielding
The process of planning, coordinating, and executing the deployment of a materiel system and its support. The measure of success for materiel fielding is an orderly and satisfactory deployment of a materiel system and its initial support, beginning with the first unit equipped and extending until initial deployment to all [designated] units is completed. The goal of materiel fielding is to ensure that the PM and Gaining Command are able to successfully acquire, ship, de-process, deploy, and sustain a materiel system being fielded.

Materiel Release
The processes used to ensure materiel systems are safe when operated within stated parameters; suitable and meets operational performance requirements, and can be supported logistically within the environment it is intended to operate. There are four types of materiel release that a materiel system may obtain:

- Full - Formal certification that the materiel system is safe, suitable (meets all its performance requirements), and supportable (logistically) when used within stated operational parameters.

- Conditional – Used when all Full Materiel Release (FMR) are not met and:
  - the AAE allows a acquisition system to proceed to Full-Rate Production (FRP) under a Conditional Materiel Release (CMR);
  - the acquisition program has no planned FRP as part of the approved acquisition strategy;
  - the acquisition program fields Low-Rate Initial Production (LRIP) materiel prior to a FRP' or
  - a post FRP acquisition program prepares to field an upgrade that meets the applicability criteria for MR.
- Urgent – A limited (rapid need to field materiel to meet a capability need/gap) certification that the materiel system:
  - meets the minimum safety requirement(s),
  - is suitable based upon a requirements memorandum directed by an operational need statement (ONS) or DCS, G3/5/7, and
  - is supportable logistically when used within stated operational parameters.
- Training – A limited (provides materiel to TRADOC/GC schools and training sites for express purpose of curriculum development and training of soldiers) certification; the following limitations / issues must be identified and accepted by the trainer:
  - critical safety limitations/issues,
  - availability of spare/repair parts,
  - technical documentation shortfalls,
  - maintenance support responsibility(s), and
  - any other materiel limitations/issues that may impact performance, cost, maintenance or operation of the materiel by the trainer or gaining command.

Materiel Reliability
A measure of the probability that the system will perform without failure over a specific interval. Reliability must be sufficient to support the warfighting capability needed. Materiel reliability is generally expressed in terms of a mean time between failure (MTBF).

Materiel Requirements
Changes or additions to any of the Army's families of weapon systems, support systems, or training aids devices simulators and simulations (TADSS). They range from modernizing existing materiel through parts replacement; major product improvements of existing materiel; one for one replacement of old materiel with new materiel designed to do the same job; to completely new families of materiel designed to do something that has not been done before.

Materiel Solution
A new item (including ships, tanks, self-propelled weapons, aircraft, etc., and related spares, repair parts, and support equipment, but excluding real property, installations, and utilities) developed or purchased to satisfy one or more capability requirements (or needs) and reduce or eliminate one or more capability gaps.

Materiel Fielding
The process of planning, coordinating, and executing the deployment of a materiel system and its support. The measure of success for materiel fielding is an orderly and satisfactory deployment of a materiel system and its initial support, beginning with the first unit equipped and extending until initial deployment to all [designated] units is completed. The goal of materiel fielding is to ensure that the PM and Gaining Command are able to successfully acquire, ship, de-process, deploy, and sustain a materiel system being fielded.

Measure of Effectiveness (MOE)
Measure of a unit or system ability to perform its operational missions e.g., probability of kill, tonnage delivered, probability of successful message delivery, loss exchange ratio, etc.

Measure of Performance (MOP)
Measure of a system's performance expressed as speed, payload, range, time on station, frequency, or other distinctly quantifiable performance features. Several MOPs and/or measures of suitability may be related to the achievement of a particular measure of effectiveness (MOE).

Measure of Suitability (MOS)
Measure of an item's ability to be supported in its intended operational environment. MOSs typically relate to readiness or operational availability, and hence reliability, maintainability, and the item's support structure.

Materiel Release (MR)
The processes used to ensure materiel systems are safe when operated within stated parameters; suitable and meets operational performance requirements; and can be supported logistically within the environment it is intended to operate. There are four types of materiel release that a materiel system may obtain:

a. Full - Formal certification that the materiel system is safe, suitable (meets all its performance requirements), and supportable (logistically) when used within stated operational parameters.

b. Conditional – Used when all Full Materiel Release (FMR) are not met and:

(1) The AAE allows an acquisition system to proceed to Full-Rate Production (FRP) under a Conditional Materiel Release (CMR),

(2) The acquisition program has no planned FRP as part of the approved acquisition strategy,

(3) The acquisition program fields Low-Rate Initial Production (LRIP) materiel prior to a FRP. Still requires PM to develop a plan for achieving FMR at the FRP decision as well as address all LRIP materiel previously fielded under a CMR, or

(4) A post FRP acquisition program prepares to field an upgrade that meets the applicability criteria for MR.

c. Urgent – A limited (rapid need to field materiel to meet a capability need/gap) certification that the materiel system:

(1) Meets the minimum safety requirement(s),

(2) Is suitable based upon a requirements memorandum directed by an ONS or DCS, G3/5/7, and

(3) Is supportable logistically when used within stated operational parameters.

d. Training – A limited (provides materiel to TRADOC/GC schools and training sites for express purpose of curriculum development and training of Soldiers) certification; the following limitations / issues must be identified and accepted by the trainer:

(1) Critical safety limitations/issues,

(2) Availability of spare/repair parts,

(3) Technical documentation shortfalls,

(4) Maintenance support responsibility(s), and

(5) Any other materiel limitations/issues that may impact performance, cost, maintenance or operation of the materiel by the trainer/GC.

Milestones
Major decision points that separate the phases of an acquisition program.

Milestone Decision Authority (MDA)
The MDA is the designated individual with overall responsibility for an acquisition program. The MDA has the authority to approve entry of an acquisition program into the next phase of the acquisition process and is accountable for cost, schedule, and performance reporting to higher authority, including Congressional reporting.

Militarily Useful Capability
A capability that achieves military objectives through operational effectiveness, suitability, and availability; which is interoperable with related systems and processes; transportable and sustainable when and where needed; and at costs known to be affordable over the long term.

Mission Force
The composition of forces in the Army Force Generation (ARFORGEN) Available Force Pool consisting of all Deployment Expeditionary Force (DEF) and Contingency

Expeditionary Force (CEF).

Mission Requirements Board (MRB)
The MRB manages the national requirements process that reviews, validates, and approves national requirements for future intelligence capabilities and systems. It is the senior validation authority for future intelligence requirements funded within the National Foreign Intelligence Program and provides advice and counsel on future requirements funded outside that body.

Modification
The alteration, conversion, or modernization of an end item which changes or improves the original purpose or operational capacity in relation to effectiveness, efficiency, reliability or safety of that item. This includes conversions, field fixes, retrofits, remanufacture, redesign, upgrades, extended service programs, engineering changes, software revisions, system enhancement program (SEP), service life extension program (SLEP), product improvement program (PIP), pre-planned product improvement (P3I) and technology insertions.

National Defense Strategy (NDS)
A document approved by the Secretary of Defense for applying the Armed Forces of the United States in coordination with Department of Defense agencies and other instruments of national power to achieve national security strategy objectives.

National Military Strategy (NMS)
A document approved by the Chairman of the Joint Chiefs of Staff for distributing and applying military power to attain national security strategy and national defense strategy objectives.

National Security Strategy (NSS)
A document approved by the President of the United States for developing, applying, and coordinating the instruments of national power to achieve objectives that contribute to national security.

Net-Centric
Relating to or representing the attributes of a net-centric environment. A net-centric environment is a robust, globally interconnected network environment (including infrastructure, systems, processes, and people) in which data is shared timely and seamlessly among users, applications, and platforms. A net-centric environment enables substantially improved military situational awareness and significantly shortened decision-making cycles.

Net-Ready Key Performance Parameter (NR-KPP)
The NR-KPP assesses information needs, information timeliness, information assurance, and net ready attributes required for both the technical exchange of information and the end-to-end operational effectiveness of that exchange. The NR-KPP consists of measurable and testable characteristics and/or performance metrics required for the timely, accurate, and complete exchange and use of information to satisfy information needs for a given capability.

Network Capability Set
A holistic combination of requirements and DOTMLPF-P solutions across all LandWarNet/Mission Command (LWN/MC) segments for a two-year increment, which will be fielded to resetting forces and designated agencies. It is also integrated and interoperable with previous and subsequent sets, and supports the incremental development and fielding of LWN/MC capabilities over time.

Network Integration Evaluation (NIE)
A set of tests and evaluations performed primarily at Ft. Bliss/White Sands on Network and non-Network systems to determine their readiness for acquisition and/or fielding in a designated Capability Set (CS).

Network Integration Rehearsal (NIR)
A set of preparation and rehearsal activities performed primarily at Ft. Bliss, Texas/White Sands Missile Range, NM on network and non-network systems to be tested and evaluated during Network Integration Evaluation (NIE).

New Equipment Training
Providing the initial training and transfer of knowledge from the materiel developer (MATDEV) or contractor to the tester and user. It represents the knowledge that is needed for operation, maintenance and logistics support during testing and initial introduction of new material into the Army inventory.

Non-developmental Item (NDI)
Any previously developed item used exclusively for governmental purposes by a federal agency, a state or local government, or a foreign government with which the United States has a mutual defense cooperation agreement.

Non-Materiel Solution (DOTmLPF-P)
These are changes in Doctrine, Organization, Training, Leadership and Education, Personnel, and Facilities or policy (including all human systems integration domains) to satisfy identified functional capabilities. The materiel portion is restricted to commercial or non-developmental items that may be purchased commercially, or by purchasing more systems from an existing materiel program.

Non-Network Systems
Those systems that provide capability to the Soldier but do not directly access or exchange information through the Army Integrated Network on a persistent basis.

Nunn-McCurdy Unit Cost Breach
A Nunn-McCurdy unit cost breach occurs when a major defense acquisition program (MDAP) experiences an increase of at least 15% in program acquisition unit cost (PAUC) or average procurement unit cost (APUC) above the unit costs in the acquisition program baseline (APB). For programs with unit cost increases of at least 25%, a Secretary of Defense (SECDEF) certification is required. Certification responsibility has been delegated to the Under Secretary of Defense for Acquisition, Technology & Logistics (USD(AT&L)). Unit cost reporting is required by *10 USC 2433.*

Objective Value
That capability desired by the user and which the program/project/product manager (PM) is attempting to obtain. The objective value represents an operationally meaningful, time critical, and cost effective increment of capability above the threshold. Program objectives may be refined based on the results of each program phase. The spread between the objective and the threshold is individually set based on characteristics of the program (e.g., maturity, risk, etc).

Operational Architecture (OA)/Operational View (OV)
Description (often graphical) of the tasks and activities, operational elements, and information flows required to accomplish or support a warfighting function. Documents the tasks, activities, and movement of information.

Operational Assessment (OA)
An assessment of risk and progress towards operational effectiveness, operational suitability, and survivability and progress towards initial operational test and evaluation (IOT&E) made by an independent operational test activity, with user support as required, on other than production systems. The focus of an OA is on significant trends noted in development efforts, programmatic voids, areas of risk, adequacy of requirements, and the ability of the program to support adequate operational testing. OAs may be made at any time using technology demonstrators, prototypes, mockups, engineering development models, or simulations but will not substitute for the IOT&E necessary to support a full-rate production (FRP) decision review.

Operational Effectiveness
Measure of the overall ability to accomplish a mission when used by representative personnel in the environment planned or expected for operational employment of the

system considering organization, doctrine, supportability, survivability, vulnerability, and threat.

Operational Mode Summary/Mission Profile (OMS/MP)
The TRADOC Center of Excellence (CoE) proponent develops the OMS/MP as a supporting document to the capability development document (CDD). It is developed from the applicable concept and the concept of operations (CONOPS) summary contained in the CDD. The OMS/MP describes the anticipated missions; units (active, reserve, and institutional training base); or mix of units that will use the system over time to include times of peace, crisis situations, national conflict, and war; in what environments and under what conditions (climate, terrain, battlefield environment, etc.) as well as how it will be supported and maintained. The OMS/MP is a source document for many agencies – logistician, capability documents writers, organizational document writers, trainers, testers, system evaluators, operational planners, and manpower resource personnel – during the materiel acquisition process.

Operational Needs Statement (ONS)
Operational field commanders use an ONS to document the urgent need for a materiel solution to correct a deficiency or to improve a capability that impacts upon mission accomplishment. The ONS is not a materiel capabilities document (MCD). Response to an ONS varies depending on the criticality of the need for the proposed item. Response can range from a HQDA directed requirement and fielding of a materiel system to the forwarding of the action to TRADOC Army Capabilities Integration Center (ARCIC) for review and appropriate action.

Operational Suitability
The degree to which a system can be placed and sustained satisfactorily in field use with consideration given to availability, compatibility, transportability, interoperability, reliability, wartime usage rates, maintainability, environmental, safety and occupational health, human factors, habitability, manpower, logistics, supportability, logistics supportability, natural environment effects and impacts, documentation, and training requirements.

Operational Test Agency (OTA)
The agency established by a service to conduct operational test and evaluation (OT&E) for that service. Each service has one designated operational test agency: the Air Force has the Air Force Operational Test and Evaluation Center (AFOTEC); the Navy has the Operational Test and Evaluation Force (OPTEVFOR); the Army has the Army Test and Evaluation Command (ATEC); and the Marine Corps has the Marine Corps Operational Test and Evaluation Activity (MCOTEA).

Operational Test Agency (OTA) Test Plan (TP)
The OTA TP documents the test design, supporting methodology, and analytic details required for the specific test for each operational test (OT), live fire test (LFT), and selected developmental test (DT). The OTA TPs for acquisition categories (ACATs) I and II and OSD Oversight list programs for OT and LFT are provided to the OSD Director, Operational Test and Evaluation (D,OT&E) for approval prior to the test.

Operational Test Agency (OTA) Assessment Report (OAR)
The OAR is used to document the capabilities, limitations, and progress of the acquisition program in meeting its requirements based on test results. An OAR will not be used for reporting acquisition program effectiveness, suitability, and survivability to OSD Defense Acquisition Executive (DAE) or Component Acquisition Executive (CAE) for an acquisition decision. It replaces the system assessment (SA).

Operational Test Agency (OTA) Evaluation Report (OER)
The OER is used to document the acquisition program's demonstration of its effectiveness, suitability, and survivability. It replaces the full-rate production (FRP) system evaluation report (SER).

Operational Test Agency (OTA) Follow-on Evaluation Report (OFER)
The OFER is used to document the acquisition program's risk and progress towards meeting effectiveness, suitability, and survivability criteria beyond full-rate production (FRP). It replaces both the system assessment (SA).and system evaluation report (SER).

Operational Test Agency (OTA) Milestone "X" Assessment Report (OMAR)
The OMAR is used to document the acquisition program's risk and progress towards meeting effectiveness, suitability, and survivability. It replaces the milestone (MS) A system evaluation report (SER), the MS B SER, and the MS C SER (unless MS C is for a full-rate production (FRP) decision, in which case an OTA Evaluation Report will be used instead).

Operational Test Report (OTR)
The OTR is used by the Army Test and Evaluation Command (ATEC) Operational Test Command (OTC) to document test results from all operational test events. The OTR is the document of record for operational tests that require an in-depth test report.

Overarching Integrated Product Team (OIPT)
The OIPT is a team led by the appropriate OSD technical director, and composed of the program/project/product manager (PM), program executive officer (PEO),

component staff, Under Secretary of Defense (Acquisition, Technology, and Logistics) staff, the Joint Staff, and other OSD staff principals, or their representatives, involved in the oversight and review of a particular major defense acquisition program (MDAP) for which the USD(AT&L) is milestone decision authority (MDA). The OIPT provides strategic guidance for the early resolution of issues, as well as oversight and review as the program proceeds through its acquisition life-cycle.

Overarching Integrated Product Team (OIPT) Leader
The person in OSD who leads the OIPT team and is responsible for providing an assessment of each assigned program. The OIPT leader is not in the decision-making line of authority for programs.

Performance-Based Logistics (PBL)
A strategy for weapon system product support that employs the purchase of support as an integrated performance package designed to optimize system readiness. It meets performance goals for a weapon system through a support structure based on performance agreements with clear lines of authority and responsibility.

Preliminary Design Review (PDR)
The PDR is a multi-disciplined technical review to ensure that the system under review can proceed into detailed design, and can meet the stated performance requirements within cost (program budget), schedule (program schedule), risk, and other system constraints. Generally, this review assesses the system preliminary design as captured in performance specifications for each configuration item in the system, and ensures that each function in the functional baseline has been allocated to one or more system configuration items. Configuration items may consist of hardware and software elements and include such items as airframes, avionics, weapons, crew systems, engines, trainers/training, etc.

Preliminary Design Review (PDR) Report
A PDR is conducted for each candidate design. PDR Report includes recommended requirements trades based upon a program, project, or product manager (PM) assessment of cost, schedule, and performance risk. The PM submits a PDR report to the milestone decision authority (MDA).

Pre-Planned Product Improvement (P3I)
Planned future evolutionary improvement of developmental systems for which design considerations are accomplished during development to enhance future application of projected technology. Includes improvements planned for ongoing systems that go beyond the current performance envelope to achieve a needed operational capability.

Program Executive Officer (PEO)
A military or civilian official who has primary responsibility for directing several major defense acquisition programs (MDAPs) and for assigned major system and non-major system acquisition programs. A PEO has no other command or staff responsibilities, and only reports to and receives guidance and direction from the Army Acquisition Executive (AAE). The Army currently has 13 PEOs.

Program Management
The process whereby a single leader exercises centralized authority and responsibility for planning, organizing, staffing, controlling, and leading the combined efforts of participating/assigned civilian and military personnel and organizations, for the management of specific defense acquisition program or programs, through development, production, deployment, operations, support, and disposal.

Program, Project, Product Manager (PMs)
A HQDA board-selected manager for a system or program. A PM may be subordinate to either the Army Acquisition Executive (AAE) or program executive officer (PEO). The PM refers to the management level of intensity the Army assigns to a particular weapon system or information system. As a general rule, a program manager is a general officer or senior executive service (SES); a project manager is a colonel or GS-15; a product manager is a lieutenant colonel or GS-14.

Prototype
An original or model on which a later item is formed or based. Early prototypes may be built during the acquisition Engineering and Manufacturing Development (EMD) phase, (integrated system design work effort) and tested. Production representative prototypes are built during the EMD phase (system capability and manufacturing process demonstration work effort) and tested prior to milestone C low-rate initial production (LRIP) approval decision.

Qualified Prototype Project
A unique materiel system developed for demonstration under field conditions to confirm adequacy as a solution for a validated mission gap. To be a qualified project, a prototype must have Joint Capabilities Integration and Development System (JCIDS) validation of mission gap and include an independent military utility assessment (MUA) and/or final report including those relevant elements of an initial capabilities document (ICD).

Quick Reaction Technology Project
A research project transitioning products directly into demonstrations under field conditions and intended for immediate warfighting end users. To be a qualified project, a prototype must have Joint Capabilities Integration and Development System

(JCIDS) validation of capability gap and include an independent military utility assessment (MUA) and/or final report including those relevant elements of an initial capabilities document (ICD).

Rapid Acquisition
A streamlined and tightly integrated iterative approach, acting upon validated urgent or emergent capability requirements, to: conduct analysis and evaluate alternatives and identify preferred solutions; develop and approve acquisition documents; contract using all available statutory and regulatory authorities and waivers and deviations of such, appropriate to the situation; identify and minimize technical development, integration, and manufacturing risks; and rapidly produce and deliver required capabilities.

Replaced System Sustainment Plan
The plan for the existing system if the capability provided by the existing system will remain necessary and relevant during fielding of and transition to the new system. The sustainment plan provides for the budgeting to sustain the existing system until the new system assumes the majority of mission responsibility. The plan includes the schedule for developing and fielding the new system, and includes an analysis of the ability of the existing system to maintain mission capability against relevant threats.

Requirements Manager
A military manager or DOD civilian manager charged with assessing, developing, validating, and prioritizing requirements and associated requirements products through the Joint Capabilities Integration and Development System (JCIDS) process. Requirements managers are identified by the sponsor and are certified by Defense Acquisition University (DAU) upon completion of the appropriate courses.

Reset Pool
Those units who are either a unit that returned from deployment or a unit that was in the Available/Ready Pool (for deployment) and was not deployed and was then returned to the Reset Pool.

Scenario
This is a graphic and narrative description of area, environment, means (political, economic, social, and military), and events of a future hypothetical conflict. Scenarios provide a framework for assessing the U.S. force capabilities under specified situations; identifying potential improvements to Army, joint, and other service doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P); and evaluating proposed concepts and changes to the Army.

Selected Acquisition Report (SAR)
This report provides standard, comprehensive summary reporting of cost, schedule, and performance information for major defense acquisition programs (MDAPs) within DOD. The SAR provides the status of total program cost, schedule, and performance, as well as program unit cost and unit cost breach information to Congress.

Senior Warfighter Forum (SWarF)
The SWarF is a mechanism by which a combatant commander (CCDR) can engage with his senior warfighting counterparts to identify the issues and capabilities associated with a particular mission or function of one or more combatant commands. The scope of a SWarF is defined by the CCDR leading the effort.

Short-Term Loan (STL)
A STL is a HQDA G-8 recommended and HQDA G-3/5/7 approved resourcing solution to fill a validated requirement that involves the transfer of equipment from a re-deploying unit departing the warfighting area of responsibility (AOR), to the unit deploying into the warfighting AOR. A STL of equipment between the incoming unit and outgoing unit is to fulfill a short-term need of 90 days or less unless otherwise specified. The validation of the requirement occurs is the same as the long-term transfer (LTT).

Software Block (SWB)
A technical integration process to synchronize the development and fielding of software-based systems and their updates.

Spin-Outs (SO)
A term that was used in the Army in conjunction with the Future Combat System (FCS) program, and is now aligned to the Brigade Combat Team Modernization (BCTM) effort. It describes the method in which the BCTM is now planning, earlier than originally scheduled, to provide mature BCT capabilities/technologies to the current force while simultaneously maintaining focus on achieving threshold and objective capabilities for the Army's future force. This term is used to avoid confusion with the term Spiral that refers to technologies inserted into an acquisition program over time as described in DOD 5000 series publications.

Sponsor
The DOD component, principal staff assistant, or domain owner responsible for all common documentation, periodic reporting, and funding actions required to support the capabilities development and acquisition process for a specific capability proposal.

Standard
Quantitative or qualitative measures for specifying the levels of performance of a task.

Supportability
Supportability is a key component of system availability. It includes design, technical support data, and maintenance procedures to facilitate detection, isolation, and timely repair and/or replacement of system anomalies. This includes factors such as diagnostics, prognostics, real-time maintenance data collection, and manpower and personnel integration (MANPRINT) considerations.

Surge Force
Selected contingency expeditionary force units in the Army Force Generation (ARFORGEN) Train/Ready Force Pool designated for emergent requirements or contingency operations.

Sustainability
The ability to maintain the necessary level and duration of operational activity to achieve military objectives. Sustainability is a function of providing for and maintaining those levels of ready forces, infrastructure assets, materiel, and consumables necessary to support military effort.

Sustainment
The provision of personnel, training, logistic, environment, safety and occupational health management, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or of the national objective.

Synchronization
The process of coordinating the timing of the delivery of capabilities, often involving different initiatives, to ensure the evolutionary nature of these deliveries satisfies the capabilities needed at the specified time that they are needed. Synchronization is particularly critical when the method of achieving these capabilities involves a family of systems or system of systems approach.

System Architecture (SA)/System View (SV)
Description, including graphics, of systems and interconnections providing for or supporting warfighting functions. Documents the actual systems (boxes) that information flows.

System Evaluation Plan (SEP)
The SEP documents the evaluation strategy and overall test/simulation execution

strategy effort of a system for the entire acquisition cycle through fielding. Integrated test and evaluation (T&E) planning is documented in a SEP. The detailed information contained in the SEP supports parallel development of the test and evaluation master plan (TEMP) and is focused on evaluation of operational effectiveness, suitability, and survivability. While the documents are similar, the TEMP establishes "what" T&E will be accomplished and the SEP explains "how" the T&E will be performed.

System of Systems (SoS)
A set or arrangement of systems that are interrelated or connected to provide a given capability. The loss of any part of the system degrades the performance or capabilities of the whole. Few systems in a modernized unit operate independently. Digital systems are interoperable, networked, and interdependent in order to optimize each component's capabilities. As a result, the Army's modernization strategy focuses on the functional capability of single systems, and on the relationships and dependencies of that system to all other systems within the SoS.

System Training
All training methodologies (embedded, institutional, mobile training team (MTT), computer, and web-based) that can be used to train and educate operator and maintainer personnel in the proper technical employment and repair of the equipment and components of a system and to educate and train the commanders and staffs in the doctrinal tactics, techniques, and procedures for employing the system in operations and missions.

System Training Plan (STRAP)
The STRAP is the master training plan and training tool for a new or modified system. It is prepared to support a Training Support System that meets the training requirements of the warfighter. It outlines the development of the total training concept, strategy, and training support system estimates for integrating the system or family of systems into the operational, institutional, and self -development domains. The STRAP will be an extension of the training information contained in the capability development document (CDD) and capability production document (CPD), and will provide additional training support details. It is not a mandatory document for the CDD and CPD, but it can be submitted to provide supporting information.

System Under Evaluation (SUE)
A System that has gone through the Agile Process Candidate Evaluation Process and been approved by a GOSC, G-3/5/7, and BMC to participate in the Integration Evaluation (IE) and receive a DOTMLPF-P assessment. The system must meet all delivery, integration, and training requirements to participate in the event.

System Under Test (SUT)
A system that has been approved by the TSARC to undergo a formal operational test during the Integration Evaluation (IE). The system will be fully instrumented to collect test data for this operational test. The system must meet all delivery, integration, and training requirements to participate in the event.

Task
An action or activity (derived from an analysis of the mission and concept of operations (CONOPS)) assigned to an individual or organization to provide a capability.

Technical Architecture (TA)/Technical View (TV)
A minimum set of rules governing the arrangement, interaction, and interdependence of system parts or elements, whose purpose is to ensure that a conformant system satisfies a specific set of requirements. Documents the engineering design, standards, protocols, etc.

Technology-enabled Capability Demonstration
A technology or set of technologies that either measurably enhances performance and effectiveness of an existing capability or enables a new and necessary capability for the Soldier.

Technology Project
A directed, incrementally funded effort designed to provide new capability in response to technological opportunities or an operational or business (e.g., accounting, inventory cataloging, etc.) need. Technology projects are "pre-systems acquisition," do not have an acquisition category (ACAT), and precede program initiation (milestone B). Technology is the output of the science and technology (S&T) program that is used in systems acquisition.

Test
Any program or procedure that is designed to obtain, verify, or provide data for the evaluation of any of the following:

- progress in accomplishing developmental objectives
- the performance, operational capability, and suitability of systems, subsystems, components, and equipment items; and
- the vulnerability and lethality of systems, subsystems, components, and equipment items.

Test and Evaluation Master Plan (TEMP)
Documents the overall structure and objectives of the Test and Evaluation (T&E) program. It provides a framework within which to generate detailed T&E plans and it

documents schedule and resource implications associated with the T&E program. The TEMP identifies the necessary developmental testing (DT), operational testing (OT), and live fire testing (LFT) activities. It relates program schedule, test management strategy and structure, and required resources to: critical operational issues (COIs), critical technical parameters (CTPs), objectives and thresholds documented in the capability development document (CDD), evaluation criteria, and milestone decision points.

Test Scheduling and Review Committee (TSARC)
The general officer (GO)/senior executive service (SES) TSARC resolves test requirement conflicts, reviews and recommends test priorities, and recommends test resource plans (TRPs) for inclusion in the Army's five year test program (FYTP). There are two working groups, initial and mid-cycle. The initial working group meets in February and August and reviews new or revised TRPs for presentation to the GO TSARC for review and comment. The mid-cycle working group does the same thing, meeting in April and October. Both working groups identify issues requiring GO TSARC resolution, and review resource allocation priorities for tests having execution and budget year requirements.

Theater Provided Equipment (TPE)
TPE is equipment identified by HQDA and positioned forward to offset equipment requirements in the Combatant Commander's area of responsibility (AOR). TPE is distinct from Army pre-positioned stock (APS) equipment unless otherwise directed by HQDA. HQDA G-3/5/7 is the validation authority for individual equipment items or entire equipment groups' addition or deletion from the TPE list, to include commercial off the shelf (COTS) equipment. The supported Army service component command (ASCC) for that combatant command AOR will manage the property and the local Theater Property Book Office will account for the property IAW published accountability guidance.

Threshold Value
A minimum acceptable operational value below which the utility of the system becomes questionable.

Total Ownership Cost (TOC)
The sum of financial resources to organize, equip, sustain, and operate military forces to meet national goals, policies, and standards of readiness, environmental compliance, safety, and quality of life concerns. The TOC for defense systems consists of the costs to research, develop, acquire, own, operate, and dispose of weapon and support systems. It includes direct costs and indirect costs attributable to the systems and infrastructure costs not directly attributable to the system. Product support mainly concerns the portion of TOC that occurs after the system is deployed

(the sustainment and disposal phase of a system's life-cycle). For purposes of costing, the program/project/product manager (PM) uses life-cycle costs as defined in *DOD 5000.4-M, Cost Analysis Guidance and Procedures.*

Total Package Fielding (TPF)
The Army's standard fielding method used to provide Army units a new/product improved materiel system and all its related support materiel at one time to include all associated training support, training support infrastructure, and installation infrastructure. The materiel is consolidated in unit level packages and the handoff of the end items and related support materials is coordinated. Entrance criteria for materiel fielding include: Type Classification (*AR 700-142*), Materiel Release (*AR 700-142*), HQDA authentication of technical manuals (*AR 25-30*), and completion of all residual actions required in the Full-Rate Production (FRP) Acquisition Decision Memorandum (ADM).

Trades
A balancing of factors all of which are not attainable at the same time. A selection among alternatives, with the intent of obtaining the optimal, achievable system configuration. Often a decision is made to opt for less of one (cost, schedule, performance) parameter in order to achieve a more favorable overall system result.

TRADOC Capability Manager (TCM)
TRADOC managers of selected capability areas and acquisition category (ACAT) I, ACAT II, or other high priority materiel systems which provide added intensive management when a need exists for management outside the normal capacity available to proponents for capability development, capability and training integration and synchronization, and accomplishing user requirements in the materiel acquisition process.

Training Aids, Devices, Simulators, and Simulations (TADSS)
TADSS simulate or demonstrate the function of equipment or weapon systems. These items are categorized as follows:

a. Standalone TADSS. An autonomous item of training equipment designed to enhance or support individual or collective training.

b. Embedded. Training that is provided by capabilities designed to be built into or added onto operational systems to enhance and maintain the skill proficiency necessary to operate and maintain that system. Embedded training capabilities encompass four training categories:

- Category A - Individual/operator. To attain and sustain individual, maintenance, and system orientation skills.
- Category B - Crew. To sustain combat ready crews/teams. This category builds on skills acquired from Category A.

• Category C - Functional. To train or sustain commander, staffs, and crews/teams within each functional area to be utilized in their operational role.

• Category D - Force Level (Combined Arms Command and Battle Staff). To train or sustain combat ready commanders and battle staffs utilizing the operational system in its combat operational role.

c. System. A TADSS item that supports a specific materiel system or family of systems program.

d. Non-system. All TADSS not defined as system TADSS.

e. Simulators. A training medium that replicates or represents the functions of a weapon, weapon system, or item of equipment generally supporting individual, crew, or crew subset training. Simulators may stand alone or be embedded.

f. Simulations. A training medium designed to replicate or represent battlefield environments in support of command and staff training. Simulations may stand alone or be embedded.

Training Requirements Analysis System (TRAS)
The purpose of the TRAS is to ensure that students, instructors, facilities, ammunition, equipment, and funds are all at the right place and time to implement directed training as required by current and future proponent Combined Army Training Strategies (CATS) institutional strategies. The TRAS is a management system that provides for the documentation of training and resource requirements in time to inject them into resource acquisition systems.

Training Support System (TSS)
TSS is a system of systems that provides the networked, integrated, interoperable training support necessary to enable an operationally relevant training environment for warfighters. It is comprised of product lines, architectures and standards, and management, evaluation, and resource processes that enhance training effectiveness.

Type I Evaluation - Capability Solutions Under Test (SUT)
Formal acquisition that require formal TFT, FDTE and OTs to achieve an acquisition decision; systems receive an assessment of the progress toward achieving system requirements and resolution of issues. The scope of issues to be addressed by the SA is flexible in that it may or may not cover all aspects of operational effectiveness, suitability, and survivability. It may address technical aspects of a system.

Type II Evaluation – Developing Capability Solutions (also considered a SUE)
Existing acquisition programs with sufficient maturity levels to accelerate, Theater Provided Equipment or ONS/JUONs impacting the Network.

Type III Evaluation – Emerging Capability Solutions (also considered a SUE)
Industry solutions, COTs capabilities, REF, JIEDDO, DARPA, and the S&T

community capabilities that may fill a known Gap, need Soldier feedback, recommend design improvements or further identify potential capability uses.

Type-Classification (TC)
Army unique acquisition process that identifies the life-cycle status of a materiel system after a production decision by the assignment of a type-classification designation. The process records the status of a materiel system as a guide to procurement, authorization, logistical support, asset and readiness reporting. Identifies degree of acceptability of the acquisition system and designated system is approved for service use. Milestone Decision Authority (MDA)/Materiel Developer (MATDEV) is responsible for determining system TC. *AR 70-1* provides governing guidance.

Type-Classification (TC) Designations

- TC - Standard (STD): Item is fully acceptable for mission intended and supportable in operational environment.
- TC - Generic: Commercial/Non developmental Items (NDI) to be acquired for test and evaluation prior to milestone (MS) C. Intend to TC-STD prior to full -rate production (FRP).
- TC - Limited Procurement (LP): Item required for special use for limited time without intent to procure additional items.
- TC - Low-Rate Production (LRP): Item approved for Low-rate Initial Production (LRIP) at MS C.
- TC - Contingency: Item no longer fully acceptable but with value for training or other use.
- TC - Obsolete: Item no longer required or acceptable.

Urgent Operational Need (UON)
Capability requirements identified by a DOD Component as impacting an ongoing or anticipated contingency operation. If left unfulfilled, UONs result in capability gaps potentially resulting in loss of life or critical mission failure. DOD Components, in their own terminology, may use a different name for a UON.

Validation
The review and approval of capability requirement documents by a designated validation authority. The JROC is the ultimate validation authority for capability requirements unless otherwise delegated to a subordinate board or to a designated validation authority in a Service, Combatant Command, or other DOD Component. The Army's validation authority is the Army Requirements Oversight Council (AROC).

Validation Authority
The individual within the DOD components charged with overall capability definition and validation. In his role as Chairman of the Joint Requirements Oversight Council (JROC), the Vice Chairman of the Joint Chiefs of Staff is the validation authority for all potential major defense acquisition programs. The validation authority for Joint Capabilities Integration and Development System (JCIDS) documents is dependent upon the joint staffing designator (JSD) of the program or initiative as specified below:

- JROC Interest – JROC or as delegated.
- Joint Capabilities Board (JCB) Interest - JCB or as delegated.
- Joint Integration – Sponsor
- Joint Information – Sponsor
- Independent – Sponsor

Warfighter Outcomes (WFO)
Stand alone statements that articulate capabilities needed for the Army warfighter by fiscal year (FY) 2024 and include a clearly articulated description of capability, a rationale explaining reason for the capability, and metrics to describe achievement of the capability. TRADOC Army Capabilities Integration Center (ARCIC) WFOs focus the efforts of the Army's science and technology (S&T) community.

Warfighting Requirement
An established need justifying the timely allocation of resources to achieve a capability to accomplish approved military objectives, missions or tasks.

Wargaming
Exercises or simulations to investigate the application of military force as it might exist in the future. A simulation, by whatever means, of a military operation involving two or more opposing forces using rules, data, and procedures designed to depict an actual or assumed real life situation. Wargames generally have key "human-in-the-loop" participants making decisions at key junctures of the simulation.

Weapon Safety Endorsement
Endorsement is the means for documenting, in support of the Joint Capabilities Integration and Development System (JCIDS) process, the extent to which weapon capabilities documents provide for safe integration into joint operating environments. Endorsement recommendations are prepared by the Joint Weapon Safety Technical Advisory Panel (JWSTAP) and submitted to the Joint Staff J-8/Deputy Director for Force Protection for appropriate staffing and endorsement by the Force Protection Functional Capabilities Board (FCB).

Weapon System
An item or set of items that can be used directly by warfighters to carry out combat or combat support missions to include tactical communication systems.

ACRONYMS :

A&TWF	acquisition and technology work force
AA	active Army
AAA	Army Audit Agency
AAC	Army Acquisition Corps
AAE	Army Acquisition Executive
AAEP	Air Assault and Expeditionary Force
AAO	Army acquisition objective
AAWO	Army Asymmetric Warfare Office
ABCS	Army battle command system
ABCTMP	Army Brigade Combat Team Modernization Program
ABO	Army Budget Office
AC	active component
ACAT	acquisition category
ACC	Army capstone concept
ACE	advanced collaborative environment
ACF	Army concept framework
ACM	advanced concept manager
ACOM	Army command
ACP	Army cost position; Army Campaign Plan
ACR	advanced concepts and requirements
ACS	advanced civilian schooling
ACS(IM)	Assistant Chief of Staff (Installation Management)
ACSIM	Assistant Chief of Staff for Installation Management
ADCMO	Assistant Deputy Chief Management Officer
ADM	acquisition decision memorandum
ADP	Army Doctrine Publication
ADRP	Army Doctrine Reference Publication
AEC	Army Evaluation Center
AEP	Army experimentation plan
AFARS	Army Federal Acquisition Regulation Supplement
AFC	Army functional concept
AFPD	available force pool date
A&ID	Analysis and Integration Directorate (ARCIC)
AIMD	Architecture Integration and Management Directorate (ARCIC)
AIS	automated information systems
AKO	Army Knowledge Online
AKSS	Acquisition Knowledge Sharing System
AMA	analysis of materiel approaches
AMC	U.S. Army Materiel Command
AMCB	Army Marine Corps Board
AMCOM	Aviation and Missile Command
AMEDDC&S	Army Medical Department Center and School
AMFP	Army modernization fielding plan
AMP	Army modernization plan

AMT	Army modernization training
AoA	analysis of alternatives
AOC	Army operational concept
AOP	Army order of precedence
AOR	area of responsibility
APB	acquisition program baseline
APMC	Advance Program Management Course
APMG	Army Program Guidance Memorandum
APRB	Army Requirements Oversight Council (AROC) Process Review Board
APS	Army pre-positioned stocks
APUC	average procurement unit cost
AR2B	Army Requirements and Resourcing Board
ARB	Army Resources Board
ARCENT	US Army Forces, US Central Command
ARCIC	Army Capabilities Integration Center (TRADOC)
ArCP	Army Capabilities Integration Center Campaign Plan
ARFOR	Army Forces
ARFORGEN	Army Force Generation
ARL	Army Research Laboratory
ARNG	Army National Guard
ARO	Army Research Office
AROC	Army Requirements Oversight Council
ARPA	Advanced Research Projects Agency
ARPL	Army resourcing priorities list
ARSOF	Army special operations forces
ARSTAF	Army staff
AS	acquisition strategy
ASA (ALT)	Assistant Secretary of the Army (Acquisition, Logistics, and Technology)
ASA (CW)	Assistant Secretary of the Army (Civil Works)
ASA (FM&C)	Assistant Secretary of the Army (Financial Management and Comptroller)
ASA (IE&E)	Assistant Secretary of the Army (Installations, Energy, and Environment)
ASA (M&RA)	Assistant Secretary of the Army (Manpower and Reserve Affairs)
ASA(ALT)	Assistant Secretary of Army (Acquisition, Logistics, and Technology)
ASA(FM&C)	Assistant Secretary of Army (Financial Management & Comptroller)
ASARC	Army Systems Acquisition Review Council
ASB	ARFORGEN Synchronization Board
ASB	Army Science Board
ASCC	Army service component command
ASD(NII)	Assistant Secretary of Defense for Networks and Information Integration
ASIOE	associated support items of equipment
ASPG	Army Strategic Planning Board

ASRC	ARFORGEN Synchronization and Resourcing Conference
AST	Army Test and Evaluation Command system team; ARFORGEN Synchronization Tool
ASTAG	Army Science and Technology Advisory Group
ASTMP	Army science and technology master plan
ASTWG	Army Science and Technology Working Group
ATD	Advanced Technology Demonstration
ATEC	Army Test and Evaluation Command
ATEC	Army Test and Evaluation Command
ATO(D)	Army technology objectives (demonstration)
ATO(M)	Army technology objectives (manufacturing technology)
ATO(R)	Army technology objectives (research)
ATR	above threshold reprogramming
ATRRS	Army Training Requirements and Resources System
ATSC	Army Training Support Center
AUG TDA	Augmented Table of Distribution and Allowances
AUTL	Army universal task list
AW	Asymmetric Warfare
AWE	advanced warfighting experiment
AWFC	Army Warfighting Challenges
BAA	broad agency announcement
BBS	Brigade-Battalion Battle Simulation
BCT	brigade combat team
BCTP	Battle Command Training Program
BDE	brigade
BES	budget estimate submission
BLCSE	battle lab collaborative simulation environment
BLRIP	beyond low-rate initial production
BMC	Brigade Modernization Command
BoD	Board of Directors
BOG	Boots on the Ground
BOI	basis of issue
BOIP	basis of issue plan
BOS	battlefield operating system; budget operating systems
BRP	basic research plan; budget requirements and programs board
BTR	below threshold reprogramming
C&L	Capabilities and limitations
C2	command and control
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CAC	Combined Arms Center
CAC-T	Combined Arms Center-Training
CAD	Capabilities and Acquisition Division (J-8)
CAE	Component Acquisition Executive
CAIV	cost as an independent variable

CAM	combined arms maneuver
CAMS	capabilities and Army Requirements Oversight Council (AROC) management system
CAP	critical acquisition position
CAPDEV	capability developer
CAR	Chief, Army Reserve
CARD	Cost Analysis Requirements Description
CARDS	catalog of approved requirements documents
CASCOM	Combined Arms Support Command
CATS	combined arms training strategy
CBA	capabilities-based assessment
C-BA	cost-benefit analysis
CBARB	Cost-benefit Analysis Review Board
CBM	condition-based maintenance analysis
CBP	capabilities-based planning
CBS	corps battle simulation
CCDR	Combatant Commander
CCE	component cost estimate
CCJO	Capstone Concept for Joint Operations
CCP	concept capability plan
CD&E	Concept Development and Experimentation
CDD	capability development document
CDID	Capabilities Development and Integration Directorate (CoE)
CDLD	Concept Development and Learning Directorate (ARCIC)
CDR	Critical Design Review
CDRT	capability development for rapid transition
CDTM	Capabilities Development Tracking and Management System (JS)
CE	continuous evaluation
CECOM	Communications and Electronics Command
CEF	Contingency Expeditionary Force
CENTCOM	Central Command
CEP	concept experimentation program
CFSOCC	Combined Forces Special Operations Component Command
CGA:	Chairman's Gap Assessment
CI	configuration item
CIC	critical intelligence category
CIEF	Capability integration Enterprise Forum (ARCIC)
CIO	Chief Information Officer
CIO/G–6	Chief Information Officer/G–6
CJCS	Chairman of the Joint Chiefs of Staff
CNA	capabilities needs analysis
CoC	council of colonels
COCOM	combatant command
CoE	Center of Excellence (TRADOC)
COE	Chief of Engineers
COFT	Conduct of Fire Trainer

COIC	critical operational issues and criteria
COIN	counter insurgency
COIST	Company Intelligence Support Team
CONOPS	concept of operations
CONUS	Continental United States
COTS	commercial-off-the-shelf
CP	capability packages
CPA	Chief, Public Affairs
CPD	capability production document
CPI	critical program information
CPR	Capability Portfolio Review
CRB	Cost Review Board, Army
CROWS	Common Remote Operated Weapons System
CRR	Critical Readiness Review
CS	Capability Set
CSA	Chief of Staff of the Army
CSB	Configuration Steering Board
CSL	command select list
CSM	Capability Set Management
CSS	combat service support
CTA	common table of allowance
CTC	Combat Training Center
CTE	critical technology element
CTSF	Central Technical Support Facility
D,DT&E	Director, Developmental Test and Evaluation (DOD)
D,OT&E	Director, Operational Test and Evaluation (DOD)
DA	Department of the Army
DAB	Defense Acquisition Board
DACM	Director of Acquisition Career Management
DAE	Defense Acquisition Executive
DAES	Defense acquisition executive summary
DAGO	Department of the Army General Order
DAGR	Defense Advanced GPS Receiver
DALSO	DA logistics support officer
DAMPL	DA master priority list
DARNG	Director, Army National Guard
DARPA	Defense Advanced Research Projects Agency
DARPL	Dynamic Army Resource Priority List
DAS	Defense Acquisition Management System
DASA(CE)	Deputy Assistant Secretary, Army (Cost and Economics)
DASA(R&T)	Deputy Assistant Secretary, Army (Research and Technology)
DASC	DA system coordinator
DAU	Defense Acquisition University
DAWIA	Defense Acquisition Workforce Improvement Act
DBSMC	Defense Business Systems Management Committee
DCAPE	Director of Cost Assessment and Program Evaluation (OSD)

DCG	Deputy Commanding General
DCI	Director, Central Intelligence
DCR	DOTmLPF-P change recommendation
DCS, G-1	Deputy Chief of Staff, G-1
DCS, G–2	Deputy Chief of Staff, G–2
DCS, G–3/5/7	Deputy Chief of Staff, G–3/5/7
DCS, G–4	Deputy Chief of Staff, G–4
DCS, G–8	Deputy Chief of Staff, G–8
DD,R	Deputy Director for Requirements (Joint Staff/J-8)
DDACM	Deputy Director of Acquisition Career Management
DDFP	Deputy Director for Force Protection (Joint Staff/J-8)
DEF	Deployment Expeditionary Force
DEPSECDEF	Deputy Secretary of Defense
DET	displaced equipment training
DFARS	Defense Federal Acquisition Regulation Supplement
DIA	Defense Intelligence Agency
DICR	DOTmLPF-P Integrated Capabilities Recommendation
DIR, FD	Director, Force Development (HQDA G-8)
DIS	distributed interactive simulations
DISA	Defense Information System Agency
DJ-1	Joint Staff Director, J-1 (Manpower and Personnel Directorate)
DJ-5	Joint Staff Director, J-5 (Strategic Plans and Policy Directorate)
DJ-7	Joint Staff Director, J-7 (Operational Plans and Joint Force Development Directorate)
DJ-8	Joint Staff Director, J-8 (Force Structure, Resources, and Assessment Directorate)
DJI	Director of Joint and Integration (HQDA G-8)
DL	distance learning
DLA	Defense Logistics Agency
DMAG:	Deputy's Management Action Group (OSD)
DNI/IRB	Director, National Intelligence/Intelligence Resources Board
DOD	Department of Defense
DODD	Department of Defense Directive
DODI	Department of Defense Instruction
DODR&R(SP)	Defense Research and Engineering Strategic Plan
DOM	Director of Materiel (HQDA G-8)
DOR	Director of Resources (HQDA G-8)
DOTLPF	doctrine, organization, training, leadership and education, personnel, and facilities
DOTMLPF-P	doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy
DP	decision point
DPAE	Director of Program Analysis and Evaluation (HQDA G-8)
DPG	Defense Planning Guidance
DPS	Defense Planning Scenarios
DRMO	Defense Reutilization and Marketing Office

DRR	Design Readiness Review
DRU	direct reporting unit
DSB	Defense Science Board
DSLC	Defense Senior Leadership Conference
DSMC	Defense Systems Management College
DT	developmental test
DTT	doctrine and tactics training
DUSD(AS&C)	Deputy Undersecretary of Defense (Advanced Systems & Concepts)
DUSD(S&T)	Deputy Undersecretary of Defense (Science and Technology)
E3	electromagnetic environmental effects
EA	economic analysis
ECOP	Equipment Common Operating Picture database (HQDA G-3/5/7)
EDM	engineering development model
EE PEG	Equipping Program Evaluation Group
E-IBCT	early infantry brigade combat team
EMD	Engineering and Manufacturing Development
EOA	early operational assessment
EPP	extended planning period
ESD	equipment sourcing document
ESOH	environment, safety & occupational health
EW	electronic warfare
FA	functional area
FAA	functional area analysis
FAR	Federal Acquisition Regulation
FbA	formation-based assessment
FCB	Functional Capabilities Board
FDD	Force Design Directorate (ARCIC)
FDIIS	Force Development Investment Information System
FDTE	force development test and experimentation
FFID	Future Force Integration Directorate (ARCIC)
FFR	force feasibility reviews
FFRDC	Federally Funded Research and Development Center
FLE	Force-Centric Logistics Enterprise
FMR	full materiel release
FNA	functional needs analysis
FOA	field operating agency
FOC	force operating capability; full operational capability
FORSCOM	Forces Command
FoS	family-of-systems
FOT&E	follow-on operational test and evaluation
FPO	functional process owner
FRP	full-rate production
FRPDR	Full-Rate Production Decision Review
FSA	functional solution analysis
FSO	full spectrum operations
FUED	first unit equipped date

FY	fiscal year
FYDP	Future Years Defense Program
FYTP	Five-Year Test Program
GAO	General Accounting Office
GC	The General Counsel
GCV	ground combat vehicle
GF	generating force
GFM	Global Force Management
GFMAP	Global Force Management Allocation Plan
GIG	global information grid
GOSC	general officer steering committee
GOTS	government-off-the-shelf
GOWG	general officer working group
GRF	Global Response Force
GSA	Government Supply Agency
HEAT	HMMWC Egress Trainer
HFEA	human factors engineering analysis
HHA	health hazard assessment
HLD	Homeland Defense
HQ	headquarters
HQDA	Headquarters, Department of the Army
HRI	horizontal requirements integration
HSI	human systems integration
HTI	horizontal technology integration
IAW	in accordance with
ICAF	Industrial College of the Armed Forces
ICD	initial capabilities document
ICDT	integrated capabilities development team
ICE	independent (life-cycle) cost estimate
ICW	in coordination with
IED	improvised explosive devices
IER	information exchange requirement
IG	Inspector General
IIQ	initial issue quantity
ILS	integrated logistics support
ILSM	integrated logistic support manager
ILSMT	integrated logistic support management team
IM	insensitive munitions
IMA	ideas for materiel approaches
IMCOM	U.S. Army Installation Management Command
IMO	information management office
INFOSEC	information security
INSCOM	U.S. Army Intelligence and Security Command
IOC	initial operational capability
IOT&E	initial operational test and evaluation
IPA	integrated program assessment

IPR	Interim Program Review; In-Process Review
IPT	integrated product team
IR&D	independent research and development
IRPL	integrated requirements priority list
ISEW	intelligence, security and electronic warfare
ISO	in support of
ISP	Information Support Plan
ISR	In-Service Review
IT	information technology
ITAB	Information Technology Acquisition Board
ITMRA	Information Technology Management Reform Act of 1996
ITR	Initial Technical Review
JC	joint concept
JCA	joint capability area
JCB	Joint Capabilities Board
JCIDS	Joint Capabilities Integration and Development System
JCTD	Joint Capability Technology Demonstration
JEON	Joint Emergent Operational Need
JIAB	Joint Intelligence Acquisition Board
JIIM	joint, interagency, intergovernmental, and multi-national
JIEDDO	Joint Improvised Explosive Devices Defeat Organization
JITC	Joint Interoperability Test Command
JM&L	Joint Munitions and Lethality Command
JOA	joint operating area
JOC	joint operating capability
JOE	joint operating environment
JRAC	Joint Rapid Acquisition Cell
JRB	Joint Requirements Board
JROC	Joint Requirements Oversight Council
JROCM	Joint Requirements Oversight Council Memorandum
JSCP	Joint Strategic Capabilities Plan
JSD	joint staffing designator
JSIMTP	Joint Staff Insensitive Munitions Technical Panel
JTA-A	Joint Technical Architecture - Army
JTIS	Joint Transformation Integration System
JUON	Joint Urgent Operational Need
JWCA	joint warfighting capabilities assessment
JWCO	joint warfighting capability objective
JWE	joint warfighting experiment
JWSTAP	Joint Weapon Safety Technical Advisory Panel
JWSTP	Joint Warfighting Science and Technology Plan
KIP	key interface profiles
KM/DS	Knowledge Management/Decision Support Tool Database (J-8)
KPP	key performance parameter
KSA	key system attribute
LAD	latest arrival date

LCMC	Life-Cycle Management Command
LCSEC	Life-Cycle Software Engineering Center
LCSP	Life-cycle Sustainment Plan
LFT&E	live fire test and evaluation
LIN	line item number
LMI	logistics management information
LNO	liaison officer
LRIP	low-rate initial production
LTT	long-term transfer
LUT	limited user test
LVC	live, virtual, constructive
LWN	LandWarNet
M&S	modeling and simulation
MAIS	major automated information system
MANPRINT	manpower and personnel integration
MANSCEN	Maneuver Support Command (TRADOC)
MATDEV	materiel developer
MCA	Military Construction, Army (Appropriation)
MCD	materiel capabilities document
MDA	Missile Defense Agency, Milestone Decision Authority
MDAP	Major Defense Acquisition Program
MDD	Materiel Development Decision (acquisition decision point)
MDEB	Missile Defense Executive Board
MDEP	management decision package
MDR	milestone decision review
MEDCOM	U.S. Army Medical Command
MEEL	mission essential equipment list
MER	manpower estimate report
METL	mission-essential task list
METT-TC	mission, enemy, terrain, troops available, time and civilians
MFA	materiel fielding agreement
MFP	materiel fielding plan
MFS	materiel fielding schedule
MILCON	military construction (appropriation)
MILDEP	military deputy
MILPERS	military personnel (appropriation)
MILSPECs/STDs	military specifications and standards
MIPS	modified integrated program summary
MOA	memorandum of agreement
MOB	mobilization
MOE	measurements of effectiveness
MON	memorandum of notification
MOP	measurements of performance
MPT	manpower, personnel, training
MRAP	mine resistant ambush protected vehicle
MRB	Mission Requirements Board

MRD	materiel requirements document
MRE/MRX	mission rehearsal exercise
MRL	materiel requirements list
MS	milestone
MSA	materiel solution analysis
MSP	mission support plan
MTA	maintenance task analysis
MTBF	mean time between failure
MTOE	modified table of organization and equipment
MTT	mobile training team
MUA	military utility assessment
MYR	mid-year reprogramming
NCOES	Noncommissioned Officer Education System
NDAA	National Defense Authorization Act
NDI	non-developmental item
NDS	National Defense Strategy
NDU	National Defense University
NEPA	National Environment Policy Act of 1969
NET	new equipment training
NETCOM	Network Enterprise Technology Command
NETP	new equipment training plan
NETT	new equipment training team
NGB	National Guard Bureau
NGS	non-government standards
NIE	Network Integration Evaluation
NIR	Network Integration Rehearsal
NMIB	new materiel introductory briefing
NMS	National Military Strategy
NR-KPP	Net-Ready Key Performance Parameter
NSA	National Security Agency
NSDD	national security decision directive
NS-E	non-standard equipment
NSN	national stock number
NSS	National Security Strategy; National Security System
NSTD	Non-standard training aids, devices, simulations, and simulators
O&O	operational and organizational
O&R	oversight and review
O&S	operation and support
OA	operational architecture; operational assessment
OAR	operational test agency (OTA) assessment report
OCAR	Office of the Chief Army Reserve
OCIE	organizational clothing and individual equipment
OCLL	Office, Chief of Legislative Liaison
OCO	overseas contingency operations
OCONUS	outside continental United States
OE	operating environment

OER	operational test agency (OTA) evaluation report
OF	Operating Force
OFER	operational test agency (OTA) follow-on evaluation report
OI	organization integrator
OIPT	overarching integrated product team
OJDA	Office of Joint and Defense Affairs
OMA	Operations and Maintenance, Army (Appropriation)
OMAR	operational test agency (OTA) milestone "x" assessment report
OMB	Office of Management and Budget
OMS/MP	operational mode summary/mission profile
ONS	operational needs statement
OOD	out-of-DAMPL
OPA	Other Procurement, Army (Appropriation)
OPCON	operational control
OSD	Office of the Secretary of Defense
OT	operational testing
OTA TP	OTA test plan
OTA	operational test agency
OTR	operational test report
OTRR	Operational Test Readiness Review
P&D	Production and Deployment
P3I	preplanned product improvement
PA&E	Program Analysis and Evaluation (HQDA G-8)
PAUC	program acquisition unit cost
PB	President's Budget
PBA	performance-based agreement
PBAT	Program Budget Assessment Team
PBL	performance-based logistics
PBR	Program Budget Review
PCA	Physical Configuration Audit
PDR	Preliminary Design Review
PDTE	pre-deployment training equipment
PEG	program evaluation group
PEO	program executive officer
PERSSO	personnel system staff officer (HQDA G-1)
PI	product improvement
PM	program manager, project manager, or product manager
PME	professional military education
PMJ	professional military judgment
PMO	program management office
POC	point of contact
POE	program office (life-cycle cost) estimate
POM	Program Objective Memorandum
POR	program of record
PPBE	Planning, Programming, Budgeting, and Execution System
PPBES	Planning, Programming, Budgeting, and Executing System

PPP	program protection plan
PQT	production qualification test
PRR	Production Readiness Review
PSA	principal staff assistant
PSS	product support strategy
QDR	Quadrennial Defense Review
R&D	research and development
RAD	Requirements and Assessment Division (J-8)
RAM	reliability, availability, and maintainability
RC	required capability; reserve component
RDA	research, development and acquisition
RDD	required delivery date
RDEC	Research, Development, and Engineering Center
RDECOM	Research, Development, and Engineering Command (AMC)
RDTE	research, development, test and evaluation
REF	rapid equipping force
RFF	request for forces
RFI	rapid fielding initiative
RFP	request for proposal
RID	Requirements Integration Directorate (ARCIC)
RIO	resourced-informed, integration-focused, outcome-based
RMD	Requirements Management Division (J-8)
RMS	reliability, maintainability & supportability
ROC	rehearsal of concept drill
ROMO	range of military operations
ROS	responsible official for sustainment
RPG	rocket-propelled grenade
RSO	requirements staff officer (HQDA G-37)
S&T	science and technology
SA	Secretary of the Army; system assessment; supportability analysis
SAP	special access program
SAR	selected acquisition report
SB	software blocking
SBCT	Stryker brigade combat team
SDDC	Surface Deployment and Distribution Command
SE	systems engineering
SECDEF	Secretary of Defense
SEP	system evaluation plan; system enhancement program; Systems Engineering Plan
SER	system evaluation report
SES	Senior Executive Service
SFR	System Functional Review
SI	systems integrator
SIG	Senior Integration Group (OSD)
SIGINT	signal intelligence
SIPRNET	Secret Internet Protocol Router Network

SIPT	supportability integrated process team
SLEP	service life extension program
SLRG	Senior Leader Review Group
SMART	simulation & modeling for acquisition, requirements, and training
SoS	system of systems
SOW	statement of work
SPR	System Program Review
SRA	strategic research area
SRG	Senior Review Group
SRO	system readiness objective
SRR	System Requirements Review
SSA	system safety assessment; source selection authority
SSO	staff synchronization officer (DA G-8)
SSTRO	stabilization security, transition, and reconstruction
ST	sustainment training
STA	system threat assessment
STAR	system threat assessment report
STL	short-term loan
STRAP	system training plan
SUE	System under Evaluation
SUT	System under Test
SVR	System Verification Review
SWarF	Senior Warfighter Forum
T&E	test and evaluation
TA	technical architecture
TAA	total army analysis
TACOM	Tank-Automotive and Armaments Command
TADSS	training aids, devices, simulations, and simulators
TAP	The Army Plan
TC	type classification
TCM	TRADOC capability manager
TD	technology demonstration, training development
TDA	table of distribution and allowances
TDS	technology development strategy
TECD	Technology Enabled Capability Demonstration
TEDP	Army Training and Education Development Process
TEMP	test and evaluation master plan
TEWIPT	test and evaluation working-level integrated product team
TF	task force
TFT	Technical Field Tests
TGM	Technical Guidance Memorandum
TISO	threat integration staff officer (HQDA G-2)
TLCSM	total life-cycle systems management
TMA	training mission area
TMD	theater missile defense
TNGDEV	training developer

TOA	total obligation authority
TOC	total ownership cost
TOE	table of organization and equipment
TPE	theater provided equipment
TPF	total package fielding
TPFDL	time phased force and deployment list
TPG	Transformation Planning Guidance
TRA	technology readiness assessment
TRAC	U.S. Army Training and Doctrine Command Analysis Center
TRADOC	U.S. Army Training and Doctrine Command
TRAP	TRADOC Requirements Arbitration Panel
TRAS	Training Requirements Analysis System
TRL	technology readiness level
TRO	training and readiness oversight
TRP	test resource plan
TRR	Test Readiness Review
TSARC	Test Schedule and Review Committee
TSG	The Surgeon General
TSR	training support requirements
TSS	Training Support System
TSWG	training support working group
TTP	tactics, techniques, and procedures
UAS	unmanned aerial system
UCP	Unified Command Plan
UFR	unfunded requirement
UIC	unit identification code
UJTL	universal joint task list
UMFP	unit materiel fielding points
UO	urban operations
UON	Urgent Operational Need
URAM	Unit Rotation Assessment Model
USAMRMC	U.S. Army Medical Research and Materiel Command
USAR	United States Army Reserve
USARC	U.S. Army Reserve Command
USARCENT	U.S. Army Forces, Central Command
USAREUR	U.S. Army Forces, European Command
USARNORTH	U.S. Army Forces, Northern Command
USARPAC	U.S. Army Forces, Pacific Command
USARSO	United States Army Forces, Southern Command
USASMDC	U.S. Army Space and Missile Command/Army Strategic Command
USASOC	U.S. Army Special Operations Command
USC	United States Code
USD(AT&L)	Under Secretary of Defense (Acquisition, Technology, and Logistics)
USF	unit set fielding
USF-A	United states Forces, Afghanistan
USF-I	United states Forces, Iraq

USJFCOM	U.S. Joint Forces Command
USR	unit status report
VCCT	Virtual Combat Convoy Trainer
VCJCS	Vice Chairman of the Joint Chiefs of Staff
VCSA	Vice Chief of Staff of the Army
WAS	wide-area security
WFF	Army warfighting functions
WFO	Warfighter Outcomes Analysis (TRADOC)
WIN-T	Warfighter Information Network-Tactical
WIPT	working-level integrated product team
WIT	weapons intelligence team
WPB	War Production Board
WSMR	White Sands Missile Range
WSR	Weapon System Review
WTCV	Weapons and Tactical Combat Vehicles