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Headquarters, United States Army
Training and Doctrine Command
Fort Monroe, Virginia 23651-1047

*TRADOC Regulation 71-20

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Force Development

CONCEPT DEVELOPMENT, CAPABILITIES DETERMINATION, AND
CAPABILITIES INTEGRATION

FOR THE COMMANDER:

OFFICIAL:

JOHN E. STERLING, JR.
Lieutenant General, U.S. Army
Deputy Commanding General/
Chief of Staff


JOHN D. CAMPBELL
Assistant Deputy Chief of Staff, G-6

History. This publication is a rapid action revision. Portions affected by the rapid action revision are listed in the summary of change.

Summary. This regulation prescribes responsibilities and policy for the development of warfighting concepts, the determination of capability requirements, integration of capabilities, and implementation of capabilities innovation throughout the Army. This regulation also prescribes the U.S. Army Training and Doctrine Command (TRADOC) responsibilities and policy for the implementation of the Joint Capabilities Integration and Development System (JCIDS), and how TRADOC's capability development efforts integrate with the Defense Acquisition System.

Applicability. This regulation applies to all Army organizations and proponents that conduct concept development, experimentation, and capabilities development activities. The term capabilities development includes identifying, assessing, and documenting changes in doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) that collectively produce the force capabilities and attributes prescribed in approved concepts or other prescriptive guidance.

*This regulation supersedes TRADOC Regulation 71-20, dated 6 October 2009.

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Proponent and exception authority. The proponent of this regulation is the TRADOC Director, Army Capabilities Integration Center (ARCIC)/Deputy Commanding General, Futures. The proponent has the authority to approve exceptions or waivers to this document consistent with controlling law and regulations. Activities may request a waiver to this regulation by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through higher headquarters to Director, ARCIC (ATFC-ZA), 33 Ingalls Road, Fort Monroe, VA 23651-1049.

Army management control process. This regulation does not contain management control provisions.

Supplementation. Supplementation of this regulation is prohibited unless specifically approved by the Director, ARCIC/Deputy Commanding General, Futures (ATFC-ZA), 33 Ingalls Road, Fort Monroe, VA 23651-1049.

Suggested improvements. Users are invited to send comments and suggested improvements on Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms) through channels to Director, ARCIC (ATFC-O), 33 Ingalls Road, Fort Monroe, VA 23651-1061, or to email monr.arcicgatekeeper@us.army.mil. Suggested improvements may also be submitted using DA Form 1045 (Army Ideas for Excellence Program (AIEP) Proposal).

Distribution. This publication is approved for public distribution and is available on the TRADOC Homepage at <http://www.tradoc.army.mil/tpubs/regndx.htm>.

Summary of Change

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Concept Development, Capabilities Determination, and Capabilities Integration

This rapid action revision, dated 23 February 2011-

- o Changes the name of the regulation to reflect increased emphasis placed on capabilities integration and to reflect the new titles of the Army Capabilities Integration Center Core Functions as outlined in U.S. Army Training and Doctrine Command Regulation 10-5 (para Summary, para 1-4).
- o Reassigns U.S. Army Training and Doctrine Command Deputy Commanding General, G-9 responsibilities to the Deputy Director, Army Capabilities Integration Center (para 2-10).
- o Adds responsibilities of the U.S. Army Training and Doctrine Command G-8 and Deputy Director, Army Capabilities Integration Center (para 2-7, 2-10).
- o Adds the Army Warfighting Challenges, Army Concept Framework, and development of cost-benefit analysis for force modernization proposals to the responsibilities of Director, Army Capabilities Integration Center (para 2-9).
- o Updates the circumstances under which an integrated capabilities development team is established and limits their use (para 2-9, 2-12, 4-5).
- o Directs readers to U.S. Army Training and Doctrine Command Regulation 10-5-2 for the responsibilities of the Army Capabilities Integration Center Directorates (para 2-11).
- o Updates concept development efforts to reflect a shift in approaches from Army concept strategy to Army concept framework (para 3-5).
- o Updates the use of concept capability plans (para 3-5).
- o Recommends inclusion of the Army Capabilities Integration Center Studies and Analysis Division in the review of all capabilities-based assessments and cost-benefit analysis efforts (para 6-2, 7-11).
- o Adds a chapter on capabilities integration in U.S. Army Training and Doctrine Command and defines three levels of integration along with the roles of capability developers at the different levels (chapter 5 and appendix C).
- o Adds integration governance principles (para 5-3).
- o Adds the Campaign of Learning to the Army Concept Development and Learning environment (para 3-8).

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- o Adds the function of modeling and simulation to the capabilities innovation key enabler (para 6-1).
- o Adds clarification on architecture use and integration requirements during operational architecture development (para 6-4).
- o Adds the requirement to consider chemical, biological, radiological, and nuclear survivability for all new weapon systems, equipment, and acquisition programs (para 8-11, 8-12).
- o Adds guidance for the conduct of cost-benefit analyses (para 7-11).
- o Adds goals for limiting the size of requirements documents (para 8-10, 8-11, 8-12).
- o Captures changes to the Defense Acquisition Management System (chapter 9).
- o Updates the accelerated capabilities development process (chapter 10).
- o Updates Appendix B, Requirements and Criteria for Capability Document Briefings to include requirements mandated by Headquarters, Department of the Army guidance.
- o Updates glossary to reflect additional terms and acronyms.

This rapid action revision, dated 6 October 2009-

- o Updates the purpose of the Army Capabilities Integration Center Campaign Plan in relation to the core functions of the Army Capabilities Integration Center (para 1-1).
- o Defines requirement that capability development efforts be resource-informed, integration-focused, and outcome-based (para 1-1 and 7-1).
- o Updates Future Combat System terminology to Brigade Combat Team Modernization in accordance with U.S. Army Campaign Plan guidance (para 2-8).
- o Adds the responsibility for Director, Army Capabilities Integration Center to senior rate all U.S. Army Training and Doctrine command Capability Developments Integration Directorate directors per U.S. Army Training and Doctrine Command Campaign Plan decision point 34 (para 2-8j).
- o Adds the requirement for Army Capabilities Integration Center Architecture Integration and Management Directorate to re-certify architecture data that has been modified before it can be considered authoritative (para 5-6).
- o Updates the functional solution analysis step of the capabilities-based assessment (para 6-9).
- o Changes the doctrine, organization, training, materiel, leadership and education, personnel, and facilities domain review focus to reinforce resources, integration and outcomes (para 6-9).

- o Updates requirement to document resource-informed, integration-focused, outcome-based doctrine, organization, training, materiel, leadership and education, personnel, and facilities solutions, and provides further clarification for the conduct of force structure organizational doctrine, organization, training, materiel, leadership and education, personnel, and facilities assessments (para 7-1 and 7-4).

This rapid action revision, dated 6 May 2009-

- o Groups identical responsibilities for multiple organizations and updates force modernization proponents in accordance with recently published Army Regulation 5-22 (chap 2).
- o Refines description of architecture to stay in compliance with Department of Defense Architecture Framework, Volume-I (para 5-6).
- o Clarifies security and program protection procedures (para 5-10).
- o Refines capabilities-based assessment description (para 6-6).
- o Updates the functional solution analysis step of the capabilities-based assessment as well as related paragraphs and tables (para 6-9).
- o Adds requirement to consider condition based maintenance plus, and the common logistics operating environment, for all new weapon systems, equipment, and acquisition programs (paras 8-15 and 8-26).
- o Refines the accelerated capabilities development process (chap 9).
- o Updates references, abbreviations, and terms in appendix A.

This new publication, dated 5 March 2009-

- o Establishes the roles and responsibilities of Headquarters, United States Army Training and Doctrine Command and the Army Capabilities Integration Center in the conduct of development, experimentation, and requirements determination (chap 2).
- o Establishes the roles of the centers of excellence, and the capability development integration directorates within them, in developing capabilities (chap 2).
- o Incorporates responsibilities under Department of the Army General Order Number 2006-04 to determine and integrate force requirements, and synchronize the development of solutions across the Army (chaps 2 and 5).
- o Establishes the accelerated capabilities development process in the Army Capabilities Integration Center and describes its purpose and functions performed in support of the current force (chap 9).

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- o Establishes Army Capabilities Integration Center responsibilities in support of the (Department of Army G-3/5/7) in the conduct of the operational needs statement review process (chapter 9).
 - o Describes the policy for use of the Joint Capabilities Integration and Development System in U.S. Training and Doctrine Command capability development activities.
 - o Describes the policy for concept development in United States Army Training and Doctrine Command (chap 3).
 - o Describes the experimentation policy in United States Army Training and Doctrine Command (chap 4).
 - o Provides U.S. Army Training and Doctrine Command linkages to Army policy for execution of capabilities determination and adherence to the Defense Acquisition System.
 - o Describes the roles and responsibilities for validation of capability documents by the Director, Army Capabilities Integration Center prior to submission to Department of the Army (chap 7 and app B).
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Chapter 1 Introduction

1-1. Purpose

This regulation assigns responsibilities and establishes policies that U.S. Army Training and Doctrine Command (TRADOC) and non-TRADOC proponents must follow to develop concepts, conduct experiments, identify gaps in capability, and develop resource-informed, integration-focused, outcome-based (RIO) doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions to address gaps requiring mitigation or closure. This regulation implements the Joint Capabilities Integration and Development System (JCIDS) as outlined in Chairman of the Joint Chief of Staff Instruction (CJCSI) 3170.01G and the Manual for the Operation of the JCIDS (hereafter referred to as the JCIDS Manual). It describes how TRADOC supports the Defense Acquisition System as outlined in Department of Defense Directive (DODD) 5000.01, Department of Defense Instruction (DODI) 5000.02, and Army Regulation (AR) 70-1. Finally, it describes how TRADOC supports AR 71-9, Warfighting Capabilities Determination.

1-2. References

Required and related publications and prescribed and referenced forms are listed in [appendix A](#). It is the responsibility of the user of this TRADOC Regulation to ensure they are using the latest version of any publication listed in the references. Check for the latest version of the references before using them to apply to guidance and policy contained in this document.

1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this publication are explained in the [glossary](#). The terms "validate requirements," "requirements determination," and "documenting requirements" as used in this regulation are not to be confused with Headquarters (HQ) TRADOC, G-8 functions as outlined in the AR 570 series (Manpower and Equipment Control).

1-4. Guidance

TRADOC is the DOTMLPF capability developer (CAPDEV) and operational architect for the Army. TRADOC designs, develops, and integrates warfighting requirements; fosters innovation; and leads change for the Army. To accomplish these responsibilities, TRADOC established concept development, requirements (capabilities) determination, and capabilities integration as core functions and assigned the Army Capabilities Integration Center (ARCIC) as the lead. These core functions are linked together to provide a process to validate capabilities for the warfighter. Supporting these three core functions is the capabilities innovation key enabler.

a. Core function: Concept development.

(1) Concepts feed the JCIDS process and products. Concepts illustrate how forces will operate, describe the capabilities required to carry out full-spectrum operations (FSO) against adversaries in the expected joint operational environment, and how a commander, using military art and science, might employ these capabilities to achieve desired effects and objectives. Army concepts consist of future capabilities descriptions within a proposed structure of military

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operations for a period of 6-18 years in the future. Each concept describes problems to solve, the components of potential solutions, and how those components work together to solve problems.

(2) As an integral part of the TRADOC HQ Staff, ARCIC leads Army concept development and supports joint concept development in collaboration with TRADOC and non-TRADOC proponents. ARCIC develops and manages the Army Concept Framework (ACF) family of concepts; develops the Army Capstone Concept (ACC); and directs, manages, and synchronizes the development of concepts of operations (CONOPS) by integrated capabilities development teams (ICDTs) and TRADOC and non-TRADOC proponents. ARCIC serves as the TRADOC lead integrator for modeling & simulation (M&S) support to concept development. Finally, ARCIC ensures the integration of land force capabilities in the development of joint concepts in coordination with (ICW) Headquarters, Department of the Army (HQDA), Deputy Chief of Staff (DCS), G-3/5/7, Joint Staff J-7, U.S. Joint Forces Command (USJFCOM), or the appropriate command or agency), and other combatant commands.

(3) ARCIC leads the Campaign of Learning (CoL), focused on Army Warfighting Challenges (AWFCs) that represent enduring first-order capabilities our Army must have to ensure current and future force combat effectiveness.

b. Core function: Requirements (capabilities) determination.

(1) Requirements (capabilities) determination assesses required capabilities to identify gaps, specify their risk level, and develop DOTMLPF-RIO solutions to resolve or mitigate the gaps identified as having unacceptable risk. Risk consists of determining, prioritizing, and documenting changes in DOTMLPF, as well as supporting analysis using Field Manual (FM) 5-19. New requirements are the result of JCIDS capabilities-based assessments (CBAs), operational needs statements (ONS), operational lessons learned, and senior leader decisions to accelerate the fielding of future capabilities to the force. Initial capabilities documents (ICDs); capability development documents (CDDs); capability production documents (CPDs); joint DOTMLPF change recommendations (DCRs); and Army DOTmLPF integrated capabilities recommendations (DICRs) formally document these new requirements.

(2) The Army uses both deliberate and accelerated developments processes to address capability requirements. JCIDS provides the deliberate process to assess force concepts or CONOPS, identify gaps in required capabilities, and determine DOTMLPF-RIO solutions to mitigate gaps with unacceptable risk. ARCIC participates in the accelerated capabilities development (ACD) process to address capability gaps identified as urgent by an operational commander, and approved by HQDA DCS, G-3/5/7.

(3) On behalf of TRADOC HQ, ARCIC recommends policy and guidance to CG, TRADOC to execute the JCIDS and ACD processes within TRADOC. ARCIC coordinates, synchronizes, and integrates Army capabilities developments with DOD agencies, Joint Staff, other services, other Army commands (ACOMs), Army service component commands (ASCCs), and combatant commands' developments.

(a) ARCIC manages the CBA conducted by proponents to identify gaps in joint and Army capabilities. CBA results propose DOTMLPF-RIO approaches to resolving or mitigating high risk gaps, proposes gaps that can remain unmitigated due to acceptable risk or affordability concerns; and proposes divestments due to unnecessary redundancy.

(b) ARCIC manages the development of JCIDS capability documents (that is, DCRs, DICRs, ICDs, CDDs, and CPDs).

(c) ARCIC coordinates, staffs, and validates JCIDS capability documents and then forwards them on behalf of the Commanding General (CG), TRADOC, to HQDA DCS, G-3/5/7 for Army Requirements Oversight Council (AROC) validation and Army approval. The AROC validates that identified gaps are linked with modernization priorities; proposed strategies to resolve those gaps, including associated DOTMLPF changes, are consistent with Army modernization strategies; the operational improvements sought justify the costs to deliver that capability at the appropriate time and in the appropriate quantities; and proposed strategies, including long-term supportability requirements, are affordable within overall Army programs (within the program objective memorandum (POM)).

(4) ARCIC participates in the ACD process by leading and managing the following activities:

(a) Identification of current capability needs and candidate solutions.

(b) Providing the context for capabilities development through continuous CONOPS and DOTMLPF-RIO analysis.

(c) Determination of deployment and employment options.

(d) Provisioning of assessments, and determination of a way ahead for rapidly equipped capabilities.

(e) Identification of alternate paths into the deliberate JCIDS process.

(f) Unit-level integration and assessment of solutions ICW the Rapid Equipping Force (REF) Office and the Army Asymmetric Warfare Office (AAWO).

c. Core Function: Capabilities integration.

(1) Capabilities integration is the continuous process to identify, assess, prioritize, synchronize, and communicate required capabilities across time, WFFs, DOTMLPF, resourcing, organizations, and operational themes. The ARCIC designs and manages the integration construct to ensure the full range of solutions across all DOTMLPF domains interoperate in a manner consistent with the appropriate concepts, and that solutions are fielded in an integrated manner.

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(2) TRADOC uses a collaborative approach to concept and capabilities development. The use of standing ICDTs allows TRADOC to maximize efforts using limited resources. These multidisciplinary ICDTs, chartered by the Director (Dir), ARCIC, efficiently expedite the JCIDS and acquisition processes through the early involvement of key stakeholders and subject matter experts (SMEs) from different agencies and services. Integrated capabilities development team (ICDT) membership varies, but includes appropriate representation from across the Army, combatant commands, DOD organizations, and other Federal agencies. Industry and academia participate as needed.

d. Key enabler: Capabilities innovation. Capabilities innovation assesses concepts and capability recommendations by leveraging the full range of learning methods to: challenge assumptions, investigate alternative approaches and mitigate risk. This enabler fosters innovative thinking and adaptive solutions. The functions included in this key enabler are M&S, studies and analysis, experimentation, operational architecture development and integration, and science and technology.

Chapter 2 Responsibilities

Section I Headquarters, TRADOC

2-1. Commanding General, U.S. Army Training and Doctrine Command

The CG, TRADOC will-

- a. Execute responsibilities delineated in TRADOC Regulation (TR) 10-5, Organizations and Functions.
- b. Approve the Army Operating Concept (AOC).
- c. Be responsible for final validation of Army DOTMLPF-RIO force modernization proposals submitted to HQDA DCS, G-3/5/7 Future Warfighting Capabilities Division (DAMO-CIC) for AROC and Joint Requirements Oversight Council (JROC) review and approval. This responsibility has been further delegated to Dir, ARCIC/Deputy Commanding General (DCG), Futures (DCG, Futures) by TR 10-5.
- d. Identify requirements that warrant special access program (SAP) protection in accordance with (IAW) AR 380-381.
- e. Recommend approval of the ACC to the Chief of Staff, Army (CSA).
- f. Serve as the Army proponent for asymmetric warfare (AW).
- g. Serve as the DOTMLPF CAPDEV and operational architect of the Army.

- h. Approve AWFCs.

2-2. Deputy Commanding General, Futures

The DCG, Futures is dual-hatted as the Dir, ARCIC and will-

- a. Execute responsibilities delineated in TR 10-5-2.
- b. Validate Army DOTMLPF-RIO force modernization proposals submitted to HQDA DCS, G-3/5/7 DAMO-CIC for AROC and JROC review and approval.
- c. Serve as a voting member of the Army Geospatial Governance Board.
- d. Serve as a voting member of the Army Space Council with the CG, U.S. Army Space and Missile Defense Command (SMDC) and senior leaders of the Army staff.
- e. Serve as the senior TRADOC representative to the configuration steering boards (CSBs) and the Army-Defense Advanced Research Projects Agency (DARPA) Senior Advisory Group.
- f. Serve as the senior TRADOC representative to the Army-Air Force Integration Forum with the United States Air Force Air Combat Command.
- g. Establish TRADOC capabilities determination policy and guidance. Provide direction to execute the JCIDS and manage its implementation and execution within TRADOC.
- h. Validate TRADOC operational architecture policy and guidance in support of approved concepts and capabilities.

2-3. TRADOC Deputy Chief of Staff, G-1/4

The TRADOC DCS, G-1/4 will-

- a. Execute responsibilities delineated in TR 10-5 and TR 10-5-1 related to capabilities development, requirements (capabilities) determination, and capabilities integration.
- b. Coordinate with the supporting Installation Management Command garrisons to ensure DD Form 1391 (FY__ Military Construction Project Data) project documentations are completed as required to support capability development efforts.
- c. Participate as an ICDT member, as required.

2-4. TRADOC DCS, G-2

The TRADOC DCS, G-2 will-

- a. Execute responsibilities delineated in TR 10-5-1 related to concept development, requirements (capabilities) determination, & capabilities integration.
- b. Assist ARCIC in the development of Army concepts IAW the ACF.

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c. Develop, coordinate, and approve the operational environment (OE) portrayal, IAW TR 71-4 and TR 10-5-1.

d. Assist in developing and documenting the OE and threat products that serve as the benchmarks for all systems or capability development IAW AR 381-11 and TR 381-1.

e. Manage the OE functional bin for learning objectives (LOs).

f. Support ICDTs and CBAs as required.

g. Support development of AWFCs as required.

2-5. TRADOC DCS, G-3/5/7

The TRADOC DCS, G-3/5/7 will-

a. Assist ARCIC by providing staff management for the training, leadership and education, and personnel (TLP) domain input into the JCIDS process through SME reviews, consolidated CoP responses, and adjudication of TLP domain issues.

b. Provide consolidated TRADOC G-3/5/7 staff review and input on TLP aspects of capabilities development documents as well as joint and Army concepts, strategies, plans, and policies (for example, warfighting concepts, etc.).

c. Provide staff management of new systems training (proponent led and rapid fielding) to ensure policy, training strategies, and resourcing are coordinated and synchronized among HQDA, major subordinate organizations, and proponents.

d. Provide staff management and integration for military occupational classification and structure (MOCS) proposals within the context of DOTMLPF-RIO IAW AR 611-1 and DA Pam 611-21.

e. Assist ARCIC with analyzing personnel domain implications in force design assessments and updates.

f. Assist ARCIC by serving as lead for training, leadership and education (TL) science and technology (S&T) efforts by synchronizing and consolidating commandwide input for TRADOC Pam 525-66, assist in developing warfighter outcomes, assist in coordinating with S&T agencies, and representing the TL community in S&T forums.

g. Provide staff management for TLP actions related to ARCIC's CoL, AWFCs, capabilities needs analysis (CNA), experimentation, and studies.

h. Assist ARCIC by providing review and comment on JCIDS capability documents.

i. Coordinate with U.S. Army Combined Arms Center (CAC) for Army training, leadership, and education requirements identified in approved DCRs or DICRs. Transition and execute

these requirements through the training development process IAW AR 350-1, AR 350-10, AR 350-38, TR 350-70, and TRADOC Pamphlet 350-70-1.

- j. Support development of AWFCs as required.

2-6. TRADOC DCS, G-6

The TRADOC DCS, G-6 will execute responsibilities delineated in TR 10-5-1 and provide ICDTs with subject matter expertise, as required.

2-7. TRADOC DCS, G-8

The TRADOC DCS G-8 will execute responsibilities delineated in TR 10-5-1 and provide ICDTs with subject matter expertise, as required.

2-8. TRADOC Safety Office

- a. Will execute responsibilities delineated in TR 10-5-1 and provide ICDTs with subject matter expertise, as required.

- b. Serve as principal advisor on system safety matters for the ARCIC and proponents (IAW TR 385-1).

- c. Manage TRADOC system safety program as it pertains to capability documents.

Section II

Army Capabilities Integration Center (ARCIC) (figure 2-1)

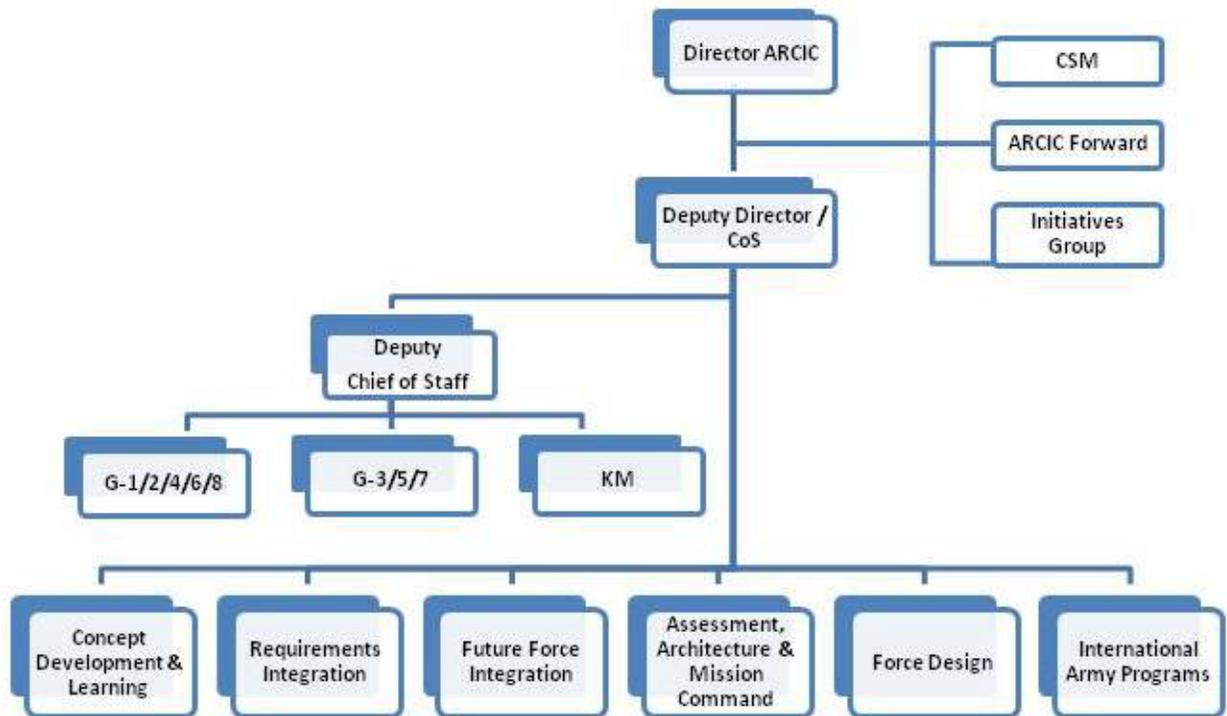


Figure 2-1. ARCIC organization

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2-9. Dir, ARCIC

The Dir, ARCIC is dual-hatted as the TRADOC DCG, Futures and will-

a. Determine and integrate force requirements, and synchronize the development of DOTMLPF-RIO solutions across the Army.

(1) Approve capabilities development roadmaps for future efforts such as strategic frameworks (SF), strategies, and plans. These efforts focus on a specified capability area and/or organizations to depict capabilities integration and synchronization.

(2) Direct and approve ICDT charters led by CoEs to conduct capabilities development across the Army. These ICDT charters are executed by CoEs (and their CDIDs) and will be limited in quantity and aligned with the WFFs. Exceptions are permitted as approved by Dir, ARCIC.

(3) Approve cost-benefit analyses (C-BA) conducted by force modernization proponents. Determine at the earliest feasible point to continue, adjust, or place a force modernization proposal in abeyance for reasons of technical risk, minimal value added, or change in military priorities, strategy, or doctrine.

(4) Use concepts, experimentation, wargaming and architecture to develop and integrate capability requirements from a comprehensive DOTMLPF-RIO perspective.

b. Coordinate, staff, and validate JCIDS capability documents, then forward them on behalf of the CG, TRADOC to HQDA DCS, G-3/5/7 for AROC validation and Army approval.

c. Lead joint concept development and experimentation (CDE), Army CDE, and learning efforts through TRADOC and non-TRADOC proponents.

(1) Assist HQDA in the development of Office of the Secretary of Defense (OSD) defense planning scenarios (DPS) including multiservice force deployment documentation and related efforts.

(2) Direct the study of future warfare.

(3) Validate and forward AWFCs for CG, TRADOC approval. Approve Integrated Learning Plans (ILPs) in support of the CoL. Manage the ACF.

(4) Lead TRADOC experimentation and synchronize efforts with non-TRADOC organizations across the concept development and learning (CDL) CoP.

(5) Synchronize and integrate Army CDL with joint CDE, lead the development of joint concepts and architectures, and lead the development of Army concepts ICW Joint Staff, USJFCOM (or the appropriate command or agency), HQDA, other combatant commands, and functional capabilities board (FCB) working groups in support of land force capabilities.

d. Lead execution of the JCIDS process by TRADOC force modernization proponents and/or non-TRADOC force modernization proponents to determine capability requirements for the force.

(1) Coordinate, synchronize, and integrate Army capabilities development with Joint Staff, other services, other Federal agencies, other ACOMs, ASCCs, and combatant commands, as required.

(2) Direct and approve the results of CBAs, CNAs, warfighter needs analysis (WfN), and warfighter outcomes (WFO).

e. Lead AW efforts within TRADOC per charter signed by CG TRADOC, ICW HQDA DCS, G-3/5/7 (AAWO). Integrate and synchronize proponent activities within the AW areas of electronic warfare force protection and improvised explosive device defeat.

f. Lead the Brigade Combat Team Modernization (BCTM) strategic communications, integrated concept teams, and board of directors. Identify requirements for HQDA approval to execute the BCTM strategy and BCTM general officer steering committee (GOSC) efforts to integrate BCTM into the Army.

g. Manage, coordinate, develop, and maintain the Battle Lab Collaborative Simulation Environment (BLCSE) federation of M&S, and distributed simulation network in support of joint and Army concept development, capabilities determination, and capabilities integration.

h. Provide guidance for the execution of TRADOC force design goals and objectives, and recommend approval to release organizational changes and adjustments for Armywide staffing.

i. Provide security classification guidance for ARCIC-originated sensitive information IAW AR 380-5.

j. Serve as the lead for TRADOC M&S. Manage M&S requirements in support of the advanced concepts and requirements (ACR) domain agent for review and validation of ACR domain M&S capabilities and support concept development, requirements determination, and capabilities integration. Serve as the senior TRADOC representative to the Army M&S GOSC.

k. Serve as the senior rater for directors of the Capability Developments Integration Directorates (CDIDs).

l. Support the CG, TRADOC in his role of providing operational architectures for the Army.

(1) Develop, validate, and integrate operational architectures depicting warfighting capabilities by guiding and managing proponent architecture efforts and providing the policy for operational architecture in TRADOC.

(2) Support ICDT capability development efforts by providing operational architecture expertise and data through the Architecture Integration and Management Division.

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(3) Provide TRADOC approval of Army warfighting operational architectures.

m. ICW the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)), validate research and development priorities for Army S&T needs (to include SAP) and the required capabilities outlined in Army concepts and existing concept capability plans (CCPs). Conduct reviews of SAP and new S&T initiatives as required to ensure technology is aligned with future needs.

2-10. Deputy Director, ARCIC

The Deputy Dir, ARCIC will-

a. Develop, review, and submit concept development, AWFCs, ILPs, experimentation, requirements (capabilities) determination, capabilities integration and architecture policy, and guidance to DCG, Futures for validation.

b. Provide staff management of CDL, experimentation, capabilities integration, and requirements determination in the following areas:

(1) The assessment of required capabilities to identify gaps and the development of integrated DOTMLPF-RIO solutions to resolve or mitigate gaps with unacceptable risk.

(2) The broad studies of future warfare to isolate those issues vital to development of the Army's forces.

(3) The conduct of Army and TRADOC experiments, synchronized with joint and other service experiments, to support force developments.

(4) The development, approval, and use of scenarios to support TRADOC experiments, studies, and analysis for capabilities developments.

(5) The development of Army concepts including the Army capstone, operating, and functional concepts.

(6) The development and execution of the ARCIC Campaign Plan (ArCP).

(7) The M&S support to concept development, experimentation, capabilities integration, and capabilities determination. Serve as the Designated Approval Authority for the ARCIC BLCSE Simulation Lab (BLCSE SimLab).

(8) The planning, preparation, and execution of the Army Title 10 Wargame, Senior Leader Seminar, related seminars, planning meetings, political-military seminars, and staff planning exercises.

2-11. ARCIC Directorates

All ARCIC directorates support Dir, ARCIC by executing responsibilities delineated in TR 10-5-2, providing support to ICDTs as required, support AWFCs, support CSBs, to include assessing de-scoping options proposed by the ASA(ALT) community to our approved capability documents, and perform integration responsibilities specified in [appendix C](#). The International Army Programs Directorate also manages and coordinates TRADOC international activities to synchronize the exchange of DOTMLPF information with ASCC priority countries, allies, and friends to enhance current and future operational capabilities; increase interoperability; and build partnerships.

2-12. Chair, Integrated Capabilities Development Team

The ICDT will be chartered by the Dir, ARCIC. The ICDT chair can assign a lead to manage daily activities of the ICDT. ARCIC review/approval is not required for establishing internal ICDT operations and activities. The ICDT chair will-

- a. Conduct CBA of identified required capabilities in concepts/CONOPS, as directed.
 - (1) Identify required capabilities for the force across the DOTMLPF spectrum.
 - (2) Conduct and approve the functional area analysis (FAA).
 - (3) Conduct the functional needs analysis (FNA). Forward the prioritized list of capability gaps, redundancies, and supporting FAA and FNA results for Army Requirements Oversight Council Process Review Board (APRB) review and Dir, ARCIC functional area analysis (approval to the ARCIC JCIDS gatekeeper (ATFC-O) via NIPRNET at monr.arcicgatekeeper@us.army.mil or SIPRNET at monr.jcids@us.army.smil.mil.
 - (4) Conduct the functional solution analysis (FSA) on selected gaps as directed by Dir, ARCIC. Forward FSA recommendations to the ARCIC JCIDS gatekeeper for Dir, Requirements Integration Directorate (RID), Assessment, Architecture & Mission Command Directorate (A2MCD), or Future Force Integration Directorate (FFID) approval (as delegated in table 7-1), and action as appropriate.
- b. Ensure all future concepts contain sufficient detail to initiate a CBA.
- c. Ensure the TRADOC DCS, G-2 approves threats used in concept development and any modeling efforts supporting capabilities developments.
- d. Coordinate development of operational architecture products by proponents required by the concept, initial capabilities document (ICD), and if ICDT is still convened, the CDD and CPD with Dir, Architecture Integration and Management Division (AIMD). Assist AIMD by providing subject matter expertise in functional areas, and insights into the operational content depicted by the architecture products.
- e. Prepare and forward JCIDS capability documents as directed to the ARCIC JCIDS gatekeeper for Dir, ARCIC validation and approval by the AROC.

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f. Conduct C-BA throughout development. Make recommendations to Dir, ARCIC for decisions at the earliest feasible point to continue, adjust, or place a force modernization proposal in abeyance for reasons of technical risk, minimal value added, or change in military priorities, strategy, or doctrine.

g. Propose charter amendments or cancellations as appropriate and terminate the ICDT when the charter is rescinded by Dir, ARCIC.

h. Transfer responsibility for development of CDD(s) and CPD(s) to applicable proponent organization, if directed by Dir, ARCIC.

Section III

Force Modernization Proponents

2-13. Common responsibilities

a. Force modernization proponents are identified in AR 5-22. The common responsibilities outlined below apply to all TRADOC force modernization proponents and those other force modernization proponents that have, or should have a memorandum of understanding with TRADOC for DOTMLPF capability development processes and document validation. When common responsibilities overlap, use AR 5-22 for additional guidance to determine the proponent with primary responsibility. These proponents include, but are not limited to specialty branches and functions such as U.S. Army John F. Kennedy Special Warfare Center and School; U.S. Army Medical Department Center and School; U.S. Army Chaplain Center and School; The Judge Advocate General's Legal Center and School; the Dir, Army Public Affairs Center; and any proponents executing DOTMLPF processes IAW AR 5-22. To establish a memorandum of understanding with TRADOC, contact the ARCIC G-1/2/4/6/8.

b. TRADOC proponents and non-TRADOC proponents with MOUs will-

(1) Execute proponent responsibilities for designated areas as outlined in AR 5-22.

(2) Approve new equipment training plans for their areas of subject matter expertise and responsibility. New equipment training plans that cover more than one proponent functional area will be coordinated by lead proponent.

(3) Develop, coordinate, and provide blue force concept input and development support to ARCIC, to include the Joint and Army Concepts Division (JACD) for integration into scenario developments IAW TR 71-4.

(4) Support the CBA of joint and Army concepts by ICDTs by analyzing those portions within proponent's area of functional expertise as specified in AR 5-22 or as assigned by CG, TRADOC.

(5) Conduct analyses of alternatives (AoAs) for acquisition category (ACAT) III programs as required, for ACAT II programs when directed by Dir, ARCIC, and support conduct of AoAs

for ACAT I programs. Perform analyses to determine key performance parameters (KPPs), key system attributes (KSA), and other requirements analyses in collaboration with pertinent TRADOC centers, schools, and battle laboratories.

(6) Ensure their supporting TRADOC related manpower and personnel integration (MANPRINT) analyses are conducted for each of the MANPRINT domains for each materiel alternative.

(7) Ensure that supporting proponents are fully integrated into the analysis process.

(8) Coordinate with combatant commands during the JCIDS process to ensure their requirements are addressed during CBAs and the development of JCIDS documents. The Combatant Commanders (CCDRs) are now required to input their requirements directly to the JROC, so proponents must consider their input before sending the documents forward for TRADOC and AROC validation and approval.

(9) Develop a CDD, CPD, and/or DCR/DICR, as appropriate, to support the acquisition or fielding of a capability demonstrated through a joint capability technology demonstration (JCTD), qualified prototype project, or quick reaction technology project, when directed by Dir, ARCIC.

(10) Develop C-BA as required throughout development. Based on these analyses, make recommendations to Dir, ARCIC for decision at the earliest feasible point to continue, adjust, or place a force modernization proposal in abeyance for reasons of technical risk, minimal value added, or change in military priorities, strategy, or doctrine.

(11) Develop individual and collective training systems and programs to execute approved concepts.

(12) Develop non-system training aids, devices, simulators, and simulations (TADSS) requirement documents for validation by CAC-T and forward to Dir, ARCIC for validation, integration, and submission to HQDA DCS, G-3/5/7 via the Capabilities and AROC Management System (CAMS).

(13) Coordinate and approve scenario inputs within area of expertise IAW TR 71-4.

(14) Ensure newly approved joint and Army concepts and existing CCPs are integrated into proponent doctrinal and training products.

(15) Establish an ICDT to conduct the CBA, and/or prepare capability documents in support of an ICDT, as chartered by Dir, ARCIC.

(16) Lead assigned accelerated solution developments, operational assessments, and integration to resolve critical warfighter needs, when directed by Dir, ARCIC.

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(17) Prepare and forward capability documents to the ARCIC JCIDS gatekeeper for TRADOC and AROC validation when directed by Dir, ARCIC.

(18) Support TRADOC and HQDA G-3/5/7 at the applicable CSBs, to include assessing proposed performance de-scoping options to our approved capability documents.

(19) Review and update FM 7-15, The Army Universal Task List (AUTL) and participate in the review and development of Chairman of the Joint Chief of Staff Manual (CJCSM) 3500.04, Universal Joint Task List (UJTL).

(20) Review TRADOC Pam 525-series concepts to ensure accuracy and currency of content and to determine the extent to which doctrinal and training publications, force design, materiel solutions, leadership and education, personnel, and facilities issues require changing to execute the concept, as needed.

(21) Serve as CAPDEV for virtual and constructive M&S within proponent's area of functional expertise.

(22) Serve as the user representative in the development, acquisition, testing, and fielding of capabilities within designated area specified in AR 5-22 or as assigned by CG, TRADOC.

(23) Support CDL efforts, when directed by Dir, ARCIC.

(a) Develop and execute experiment plans IAW the ArCP priorities.

(b) Develop detailed cost estimates for planned experiments and forward them to Dir, Concept Development and Learning Directorate (CDLD) for approval.

(c) Participate in the development of joint concepts, when directed by Dir, ARCIC.

(d) Provide assistance to the Army staff (ARSTAF) and the Dir, ARCIC, as requested.

(e) Provide Dir, CDLD a written report of experiment results within 90 days of experiment completion, and follow the process outlined in [Chapter 6](#), identifying whether the experiment director is someone other than the proponent.

(f) Provide Dir, CDLD a detailed accounting of manpower resources, funds expended and obligated, and for what purposes, to execute each experiment.

(g) Provide Joint and Army Experimentation Division (JAED), Joint and Army Modeling and Simulation Division (JAMSD), and Studies and Analysis Division (S&AD) with experiment objectives, M&S capability needs, and their attendant study issues.

(h) Support development of the AWFCs and associated learning demands, running estimates, Interim Solution Strategies, and ILPs. Ensure concept and CAPDEVs identify learning demands to drive learning activities in support of AWFCs.

(24) Develop operational architecture products for concepts and capability documents when submitting CONOPS, functional concepts, ICDs, CDDs, and CPDs. Provide functional area subject matter expertise and validate the operational content depicted within the architecture products.

(25) Support development and execution of the ArCP.

(26) Participate in the CNA process, specifically the required capabilities, solution input, organizational assessment, Council of Colonels (COC) and GOSC elements. All proponents will also participate in the weapons systems reviews during the POM/program budget review (PBR) development phase as requested.

(27) Ensure that any new, updated or revised JCIDS documents prepared and submitted to the ARCIC JCIDS gatekeeper account for the capability gaps identified in the currently approved CNA.

2-14. Centers of excellence (CoEs)

CoEs will-

a. Support accelerated capability developments using the ACD process.

b. Ensure CDID organizations support the CoE in execution of its responsibilities for concept development, experimentation, capabilities determination and capabilities integration.

(1) Coordinate with other CDIDs and CoEs to execute the CoE functions of delivering current warfighting requirements, identifying future capabilities, integrating DOTMLPF dimensions/domains, and presenting resource-informed, outcome-based recommendations to the Dir, ARCIC and TRADOC CG.

(2) Coordinate and synchronize with ARCIC, CAC, proponent CDIDs, and the joint community as appropriate when concepts & DOTMLPF-RIO solutions are proposed to solve or mitigate gaps.

(3) Coordinate and synchronize DOTMLPF integration with other CDIDs and the joint community when appropriate for any assigned capabilities, systems, or system of systems (SoS).

(4) Lead assigned AWFCs and ILPs using a holistic and integrated perspective, leveraging all relevant sources of information to develop an ILP to maintain a running estimate. Develop interim solution strategies that resolve the AWFCs in the context of other current and futures development – concept development, CNA, organizationally-based analysis, and capability package development. Responsible for coordinating with functional divisions in ARCIC and learning venue leads, providing quarterly status reviews, and developing an annual report of the findings for AWFCs.

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(5) Participate in experimentation, as directed by ARCIC, with other CDIDs and experimentation activities, and the joint community. Specifically, participate in Unified Quest experimentation efforts.

(6) Work through their respective TCMs and/or CDIDs to ensure the review of requests for proposals (RPFs) prior to release for competition to assist the program manager (PM) in correctly identifying required operational capabilities.

c. Execute responsibilities approved by the Vice Chief of Staff of the Army (VCSA) and manage the CDID on behalf of the force modernization proponent.

d. Review combined arms solutions for joint and Army operations ICW other CoEs.

e. Use their respective CDID organization to conduct DOTMLPF prioritization, integration and synchronization within their functional areas of responsibility.

2-15. Commander, U.S. Army Combined Arms Center

In addition to the responsibilities identified in TR 10-5, the Commander, CAC will-

a. Develop and manage M&S requirements for Leader Development, Training, and Doctrine.

b. Provide policy for the submission of Leader Development, Training, and Doctrine M&S capability needs and validate capability documents prior to submission for approval.

c. Assist ARCIC by supporting ICDTs and special CBAs as required.

d. Assist ARCIC in managing the identification of training system requirements in support of JCIDS and the acquisition processes.

e. Approve and forward system training requirements to Dir, ARCIC for entry into the CAMS as JCIDS supporting information.

f. Conduct validation staffing for non-system TADSS requirements documents to ensure technical sufficiency prior to TRADOC G-3/5/7 validation and submission to Dir, ARCIC for integration, final validation, and submission to HQDA.

2-16. Commander, U.S. Army Combined Arms Support Command (CASCOM)

In addition to the responsibilities identified in TR 10-5, the Commander, CASCOM will-

a. Develop, coordinate, and approve sustainment scenario inputs within area of expertise and incorporate input from the U.S. Army Medical Department Center and School, U.S. Army Chaplain Center and School, and The Judge Advocate General's Legal Center and School IAW TR 71-4.

b. Serve as the TRADOC DOTMLPF-RIO integration portal for medical, chaplain, and judge advocate general proponents.

c. ICW ARCIC Sustainment Division, ensure they execute their responsibility to review all JCIDS documents for compliance with supportability requirements (for example, prepare an integrated logistics plan to support the capability, as required).

Section IV

Separate TRADOC Activities

2-17. Dir, TRADOC Analysis Center

The Dir, TRAC will-

a. Assist Dir, ARCIC by conducting analyses of Army concepts, existing CCPs, major TRADOC experiments, and operational architectures, and developing scenarios that depict future force operations IAW emerging concepts and existing CCPs. Support these efforts with database management, scenario development, and simulations as needed.

b. Assist Dir, ARCIC and TRADOC G-3/5/7 by conducting Training Effectiveness Analyses to identify new TADSS, as well as training systems for both institutional and sustainment training, concurrent with AoAs and in support of proponent training system acquisition processes.

c. Assist Dir, ARCIC by conducting analyses of major TRADOC experiments IAW Army Experimentation Guidance (AEG) and support experimentation with database management, scenario development, simulations, and analysis.

d. Assist Dir, ARCIC by conducting studies and analyses to inform key decisions by Joint Staff, ARSTAF, TRADOC and senior leaders pertaining to capabilities integration and development. Perform M&S for AoAs (primarily ACAT I, information assurance (IA), and select applicable ACAT II), key performance parameter (KPP), and other requirements analyses in collaboration with TRADOC centers, schools, and battle laboratories.

e. Develop defense planning scenario-compliant TRADOC standard scenarios depicting echelons above corps, corps, division, and brigade combat team (BCT) forces in a joint operational context for studies, analysis, and experimentation IAW TR 71-4 and as directed by Dir, ARCIC. ICW TRADOC DCS, G-2, ensure accurate representation of the OE.

f. Develop nonstandard TRADOC scenarios, such as the Multi-Level Scenario, for unclassified studies, analysis, and experimentation IAW TR 71-4 and as directed by Dir, ARCIC.

g. Develop, maintain, and provide configuration management of TRADOC's verified and validated force on force and functional operations models and simulations for which TRAC is the proponent, to support capability developments and operations analysis.

h. Serve as CG, TRADOC's authority on matters of study design, data management, scenario development and application, and selection of models and simulations for use in analyses.

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i. Support or lead complex CBAs of joint concepts, large complex Army CBAs, and other Force Development Analyses, when directed by Dir, ARCIC.

(1) Advise the ICDT in developing analytic requirements and analysis plans.

(2) Conduct selected analytic tasks exceeding the ability of the ICDT.

j. Ensure consistency of analytic standards and the integrity of databases, models, and scenarios for which TRAC is the proponent.

k. Participate in and support the CNA process, especially the organizational based assessment.

2-18. TRADOC Capability Managers (TCMs)

TCMs are chartered by the CG, TRADOC and will-

a. Coordinate with CoEs, other proponents, other TCMs, TRADOC project offices, and materiel developers relative to supporting TRADOC DOTMLPF-RIO products key to their capabilities' implementation, fielding and operations.

b. Execute responsibilities as outlined in TR 71-12.

c. Leverage proposed BCTM technologies and components to the greatest extent possible in the course of assessing means to mitigate identified gaps.

d. Participate in the materiel developers' system concept, cost performance trade-off, and cost as an independent variable analyses by providing detailed warfighting capability impact of specific system characteristics. Present TRADOC's recommendation(s) at all design reviews.

e. Provide membership to ICDTs, when directed by Dir, ARCIC or requested by other proponents.

f. Support relevant AWFCs by informing the Interim Solution Strategy (ISS).

g. Represent CG, TRADOC at joint (functional area working group, JROC, FCB), other service, Army (for example, ASARCs and CSBs), multinational, and/or coalition requirements forums, as required.

h. Review all applicable TRADOC DOTMLPF-RIO products (to include capability documents) for clarity, consistency, and adequacy and assist in their staffing for validation with Dir, ARCIC. Validated documents are sent by the ARCIC JCIDS gatekeeper to HQDA DCS, G-3/5/7 for approval.

i. Serve as the CG, TRADOC representative to the Program Executive Office (PEO) and/or PM for those capabilities for which the TCMs have responsibility.

j. Work with CDIDs and appropriate CAPDEV's divisions to review RFPs and statements of work prior to being released for competition to ensure the PM is correctly describing the required performance and other DOTMLPF attributes.

k. Participate in the CNA process, specifically the required capabilities, solution input, organizational assessment, COC, and GOSC elements. All TCMs will also participate in the weapons systems reviews during the POM/PBR development phase as requested.

l. TCMs will look at materiel solutions associated with their CoEs and all materiel assigned/employed by their functional area CAPDEVs. TCMs will also work issues across all aspects of DOTMLPF to ensure organizations remain capable of executing their role in all concepts of operation.

m. TCMs work closely with their respective WFF forums to ensure they have a current understanding of their functional organizations by executing post combat survey lessons learned following each CONOPS rotation to glean the latest tactics, techniques, and procedures (TTPs) from in-theater operations.

2-19. Commandant, U.S. Army War College

The Commandant, USAWC will-

a. Assist Dir, CDLD in blue force concept input and development support for integration into scenario developments IAW TR 71-4.

b. Ensure newly approved joint and Army concepts and existing CCPs are appropriately integrated into resident and nonresident curriculum of the USAWC.

c. Provide assistance in the development and synchronization of DOTMLPF-RIO solutions for peace and stability operations.

d. Provide membership to ICDTs, as directed by Dir, ARCIC or requested by other proponents.

e. Review TRADOC Pam 525-series of concepts as needed to assist in ensuring accuracy and currency of content and assist in determining the extent to which DOTMLPF issues require change to execute the concept.

f. Support CDE efforts and responsibilities identified in paragraph [2-13.b.\(22\)](#), when directed by Dir, ARCIC.

g. Support the CBA of Joint and Army Concepts by ICDTs by analyzing those portions within their functional expertise, when requested by an ICDT Chair (for ICDTs approved by Dir, ARCIC).

Chapter 3
Concept Development and Learning

3-1. General

a. Concepts are the foundation for the Army's JCIDS process. The Army participates in the development of joint concepts and leverages them in the development of Army concepts. Concepts provide a visualization of future operations. They describe a problem or series of problems to be solved, the components of the solution, and the interaction of those components in solving the problem. Concepts define how the force functions (operational concept), the timeframe and conditions it must be able to operate in (the OE), its physical and organizational characteristics (design parameters and architecture), and what it must be able to execute (required capabilities) in terms of performing missions or producing effects.

b. Concepts illustrate how future joint and Army Forces will operate, describe the capabilities required to carry out FSO they are likely to conduct against adversaries in the expected JOE, and how a commander, using military art and science, might employ these capabilities to achieve desired effects and objectives. Joint Concepts consist of future capability descriptions within a proposed structure of future military operations for a period of 8-20 years, while Army concepts cover a period of 6-18 years in the future.

3-2. Strategic guidance

Strategic guidance and national policies are developed in response to security needs in an ever changing geo-political environment. These changes prompt the need to continually reexamine joint and service capabilities to determine whether they can meet future needs. Strategic guidance and the range of operational considerations that accompany them provide the authoritative sources CAPDEVs use to identify and develop future capabilities. Strategic guidance identifies the operations that the U.S. expects its military forces to perform, the effects they must achieve, the attributes those forces must possess, where they must operate, and what kind and size of force is expected to execute those operations.

3-3. Operational environment

a. The OE is a forward-looking effort to more accurately discern the challenges the Army will face at the operational level of war and determine their inherent implications. The OE describes the composite conditions, circumstances, and influences that affect commanders' decisions on the employment of military capabilities. Analysis of the OE identifies potential implications for the U.S. Army training, experimentation, and doctrinal development communities; establishes the framework for thinking about threat capabilities and environmental influences on modern conflict; and identifies points of reference necessary for guiding the capabilities-based model for force development.

b. TRADOC DCS, G-2 and the intelligence community research and analyze evolving worldwide developments and trends. The aim of these ongoing efforts is to maintain currency and relevance in our understanding and portrayal of both the contemporary and joint OEs and the threats that operate within those environments. These efforts frame the breadth and complexity

of the OE, identify critical variables, and examine the adaptive adversaries the Army will confront today and tomorrow.

c. TRADOC DCS, G-2 supports the development of the OE information (as established by Defense Intelligence Agency (DIA)) used in all concepts and existing CCP developments, CBAs, and the development of DOTMLPF-RIO solutions.

3-4. Joint Operations Concepts (JOpsC) overview

a. The JOpsC family consists of a Capstone Concept for Joint Operations (CCJO) and supporting joint concepts. These concepts address the period 8-20 years in the future. The National Security Strategy (NSS), National Defense Strategy (NDS), National Military Strategy (NMS), Unified Command Plan, Guidance for the Development of Forces (GDF), and quadrennial defense reviews (QDR) provide top-level strategic guidance for JOpsC development and are the impetus for deriving capabilities needed to shape the joint force. See CJCSI 3010.02B for additional information on concepts.

b. The CCJO is the joint capstone concept that guides the development of future joint and service 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. It applies to joint and interagency operations around the globe conducted unilaterally or in conjunction with multinational military partners and other non-government agencies. It envisions military operations conducted within a national strategy that incorporates all instruments of national power. It proposes solutions to meet challenges across the Range of Military Operations (ROMO) and describes key characteristics of the future joint force. The CCJO concludes by presenting risks and implications associated with this concept.

3-5. Army Concept Framework

a. The Army documents its fundamental ideas about future joint operations using an ACF. The translation of concepts into capabilities is an iterative process. While concepts may be bounded by the maturity of technologies, their aspirations are not limited to near term realities. To maximize their future utility, concepts must be broadly based and encompass both the art and science of future warfighting, continually refined through wargaming, experimentation, architecture development, assessment, and analysis.

b. Components or inputs of a concept include a description of the OE and its associated range of challenges, a set of key ideas that address the "how to" of countering and/or overcoming the challenges posed, and a corresponding set of capabilities and initial force design principles needed to implement the ideas delineated in the concept.

c. ARCIC leads Army concept development and supports joint concept development in collaboration with proponents through CDLD. It develops and manages the ACF; develops Army concepts; and directs, manages, and synchronizes the development of Army Functional Concepts (AFCs) and existing CCPs by ICDTs. ARCIC also ensures the integration of land force capabilities in the development of joint capstone, and joint concepts ICW HQDA DCS,

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G-3/5/7 (Department of the Army Military Operations - Strategic Plans and Policy (DAMO-SS)), the Joint Staff J-7, USJFCOM or appropriate command/agency, and other combatant commands.

d. Army concepts are documented in TRADOC Pam 525-series concepts that serve as the foundation for required capability and architecture development, for gap identification, and for generating DOTMLPF solutions such as doctrine development (principles and Army TTPs), organizational design changes, training initiatives, materiel solutions, leadership and education requirements, personnel solutions, and facilities renovation and design which address warfighter gaps. These concepts are unproven ideas that require assessments, which include studies, experimentation, wargaming, analyses, testing, and simulations to determine what DOTMLPF-RIO solution sets are necessary to gain the specific capabilities required for the future force. AWFCs are an essential mechanism to support concept development.

e. The ACF consists of the ACC, AOC, AFCs, existing CCPs, and concepts directed by CG, TRADOC. Concepts facilitate the visualization and communication of the Army's key ideas on future operations. These key ideas lead to the development of conceptual required capabilities as outlined in AFCs, and if necessary are further refined with concept capability statements. During the subsequent CBA, those capability statements are further refined through studies, wargames, experiments, and other venues. The CBA process then identifies gaps in capabilities and proposes solutions to resolve or mitigate those gaps. The Army implements JCIDS to produce an integrated set of DOTMLPF solutions to collectively address the required capabilities delineated in the concept. The JCIDS process, grounded in joint and Army concepts, also provides traceability of all Army system and nonsystem solutions back to overarching national strategic guidance.

f. TRADOC Pam 525-3-0 is the ACC. It provides an overarching description of how the future Army, as part of the joint force, will operate across the FSO. It is the unifying framework for developing the AOC, AFCs, existing CCPs (no new CCPs will be established, but existing CCPs will continue to be worked), and integrated architectures. The goal is to limit the main body of the concept to 25 pages in length.

g. TRADOC Pam 525-3-1 is the AOC. It provides a generalized visualization of operations across the FSO. 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.

h. TRADOC Pam 525-3-XX series are the AFCs. AFCs describe how the Army force will perform military functions across the full FSO. The AFCs draw operational context from joint concepts, the ACC, and the AOC. As an integrated suite of concepts, the AFCs describe the full range of land combat functions across the FSO. 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 CBA. The Army Functional Concepts currently address the areas of:

- (1) Movement and Maneuver (Maneuver CoE).

- (2) Intelligence (Intelligence CoE).
- (3) Mission Command (Mission Command CoE).
- (4) Fires (Fires CoE).
- (5) Sustainment (Sustainment CoE).
- (6) Protection (Maneuver Support CoE).

i. Existing CCPs provide a description of how an Army commander could perform a specific operation or function 6-18 years into the future. It has a narrow focus to derive detailed required capabilities. The subsequent CBA, along with wargames, studies, experiments, and other venues, further refines its key ideas and required capabilities.

j. CG, TRADOC may direct the development of other concepts and studies to focus on a particular aspect of future operations not addressed in the other Army concepts outlined above (such as, TRADOC Pam 525-3-7: The U.S. Army Concept for the Human Dimension in Full Spectrum Operations 2015-2024).

3-6. Army concepts

a. The development of Army concepts is initiated by:

(1) CG, TRADOC direction to develop new operating and functional concepts to change the way the Army conducts operations in the future.

(2) A new military assessment that identifies a need to document a conceptual view of new capabilities or requirements (such as joint concepts, a QDR, or Total Army Analysis (TAA)).

b. Army concept review and approval:

(1) The CSA approves the ACC. CG, TRADOC approves the AOC and any CG directed concepts.

(2) Dir, ARCIC approves functional concepts and CCPs.

(3) After concepts are approved, TRADOC DCS, G-6 authenticates them IAW TR 25-35. Once authenticated, concepts become TRADOC Pam 525-series concepts.

3-7. Concept of operations

a. A CONOPS is a verbal or graphic statement, in broad outline, of a commander's assumptions or intent about an operation or series of operations. It is designed to give an overall picture and a useful visualization of how a future operation would be conducted. It is frequently embodied in campaign and/or operational plans. CONOPS are included in operational plans that

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cover a series of connected operations to be carried out simultaneously or in succession. When used in concept development, it is a tool used to help describe how a particular operation is conducted in the future.

b. For JOpsC and ACF families of concepts, the CONOPS provides 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 8-20 years into the future. The CONOPS focuses on describing the complete stream of activities and how the commander might accomplish those activities.

c. The following two types of CONOPS may be used in the JOpsC and ACF families' concept development process:

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

(2) DPS and Army scenarios (based on DPS) are written at 8-20 years into the future and 6-18 years into the future for Army scenarios to facilitate experimentation and CBAs. 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.

d. 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 in the near term (now through 6-7 years into the future) 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. Used in lieu of a joint, operational, or functional concept, these CONOPS and the appropriate assessment results are coordinated with the appropriate FCB, and its capabilities are submitted to the Joint Staff J-8 via the Knowledge Management Decision Support (KMDS) system. When used as the basis for a CBA, the JROC or a combatant command must endorse the CONOPS. CONOPS that were not staffed through ARCIC, HQDA, and the JROC for endorsement must be attached as an appendix to the DCR/DICR or ICD so that the reviewers can understand the context used to identify and evaluate the capabilities identified. 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.

3-8. Campaign of Learning and Warfighting Challenges

a. The CoL. The Concept Development and Learning (CD&L) line of operation (LOO) is one of several LOOs within the ArCP which implement directed missions from the TRADOC Campaign Plan (TCP) and in turn, the Army Campaign Plan (ACP). The intent of synchronized execution of ARCIC LOOs within the ArCP is to accomplish ARCIC's mission to integrate current and future force developments. This involves recognition of a difference between the

force we have and the force that we perceive we need based on the national goals and the projected OE. To frame the development of the force we need, these differences are reconciled in concepts which specify required warfighting capabilities. A comparison of required capabilities to current and planned capabilities results in the identification of capability gaps (through the CBA process and supported by the CNA process), which are used as a managerial tool to prioritize capabilities developments. Finally, it is necessary to integrate the developed DOTMLPF solutions for coherent delivery to the force as a capability package. At each of these steps, there is a discovery of both things that must be done and things that must be learned. As an integrated component of the ArCP, the CD&L LOO is the holistic, synchronized treatment of what must be learned to integrate current and future developments. The CoL is comprised of development and refinement of AWFCs and an integrated set of continuous learning activities to address those challenges. Figure 3-1 addresses the gaps as we go through in the developments cycle. This depiction of the developments cycle is intended to generalize the notion of capability gaps to other areas of developments as proposed solutions are addressed. In this figure, a solution gap is the difference between the solution we need and the solution we can acquire (taking into consideration affordability, technical feasibility, etc.). The force integration gap is the capability delta that remains once a solution is delivered.

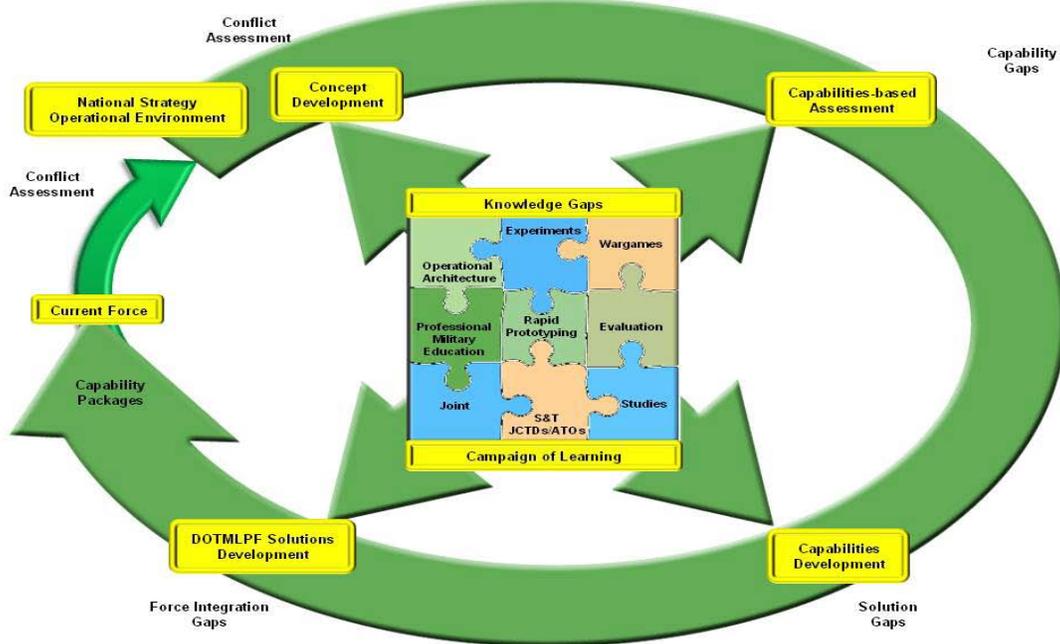


Figure 3-1. The CoL within the developments cycle

b. AWFCs AWFCs are statements of military problems describing enduring first-order capabilities our Army must develop to ensure current and future force combat effectiveness. They include a robust context for the problem, with detailed learning demands, references, and other relevant information. AWFCs provide a prioritized and balanced perspective for capabilities development activities in support of current operations and for future force capabilities development, as well as support integration efforts addressed in chapter 5 of this regulation. AWFC will consider experience and learning from current force as well as the required capabilities described in concepts related to the future force. By bringing the present

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and the future together in an integrated review and assessment, the AWFC serves as a bridge between the current and future force. They connect learning activities, running estimates (including assessments, interim solution strategies and ILPs) and help provide a balanced view of the force across time. AWFCs lead and focus the learning plan for ARCIC, CoEs, U.S. Army Research, Development, and Engineering Command (RDECOM) and other partners providing context and outcomes for integration and synchronization of concept development, studies and analysis, wargaming, experimentation, S&T priorities, requirements determination (CBA, CNA, and organization based assessment (OBA)), rapid acquisition, and capability package development. Annually, HQDA G-3/5/7 solicits Armywide review and input on AWFCs. Also annually, ARCIC CDLD will assess a subset of applicable AWFCs for submission to U.S. (or the appropriate command or agency) as Joint Warfighting Challenges. AWFCs are developed to support the TRADOC 2-year cycle of development efforts (see chapter 5) and coincide with concept revision and capability package development. AWFC are led by assigned CoEs or other organizations as appropriate.

c. AWFC running estimates. The running estimate reflects what is known about the AWFC (referenced to supporting documentation). It will evolve as learning activities are completed, and as the environment for the military problem adapts. It includes an assessment of what is known about the problem, the ISS and the ILP (see below for explanation).

(1) Assessment. The AWFC assessment collects the results of previous work and the outcomes of ongoing activities to focus the ISS and ILP.

(2) ISS. The ISS presents action plans, a way ahead, and decisions points for actions which can include initiating JCIDS actions across DOTMLPF; POM and TAA submissions to HQDA; context and input to capability package development; input to the CBA, CNA, and OBA; S&T program input and warfighting future operating capability revisions; and feedback to concept developers for concept revisions.

(3) ILP. The ILP provides Army, joint, interagency, intergovernmental, and multinational (JIIM) learning activities that inform the AWFC. AWFC leads will identify learning planned in the form of studies, experiments, wargames, science, and technology efforts, and operational architectures, and integrate with appropriate lessons learned from recent operations, after-action reports, evaluations, rapid prototyping, and other means, as appropriate. AWFC leads also need to identify learning demands for which no venue is planned and the effect on their AWFCs.

d. Information management. AWFCs and running estimates (including assessments, interim solution strategies and supporting ILPs) are dynamic, and are maintained using collaborative mechanisms (for example, milBook and milWiki). The CoP supports AWFC leads by providing appropriate input; ARCIC CDLD will provide configuration control.

e. CoP. The CoP includes ARCIC CDLD, AWFC leads (CoEs or other designated organization who are representatives for CBAs), representatives for CNAs and the OBA, S&T, FFID OBA, and other partners needed to assess progress on resolving AWFCs and the development of interim recommendations and solution strategies.

f. Governance. ARCIC CDLD is the lead for the overall CoL. ARCIC generates and provides specific content and format requirements as required, and coordinates required collaboration, planning and approval venues. Quarterly, approximately ¼ of AWFCs will be selected for leadership focus and will be briefed to Dir, CDLD; Deputy Dir, ARCIC (Chief of Staff Synchronization Meeting); Dir, ARCIC (through the Capabilities Integration Enterprise Forum (CIEF)); and CG, TRADOC Quarterly Futures Review (QFR) for AWFC, ISS and ILP approval.

Chapter 4

Capabilities Determination

4-1. Capabilities development and integration in the Army

The Army implements the JCIDS process to identify capabilities and integration needs based upon a concept or CONOPS. The primary focus is ensuring the Army, as part of the joint force, has the necessary capabilities to perform its missions across the FSO in all relevant OEs anywhere in the world. Recent operations emphasize the necessity of integrated and interoperable joint warfighting capabilities. A joint and Army concept-centric capabilities identification process or lessons learned from current conflicts are required to define how new capabilities are identified and developed.

4-2. Joint Capabilities Integration and Development System

a. The procedures established in JCIDS support the Chairman, Joint Chiefs of Staff and the JROC in their efforts to identify, assess, and prioritize joint military capability needs. It is a component of the capability-based planning process that encompasses the principal decision support processes for transforming military forces to support the NMS and the defense strategy. JCIDS plays a key role in the process of identifying capabilities required by the warfighter to support these strategies. However, successful delivery of those capabilities relies on JCIDS working in concert with DOD and joint decision processes (acquisition and planning, programming, budgeting, and execution (PPBE)) within the capability-based planning process and the threat environment.

b. JCIDS follows a capabilities identification process that flows from top-level strategic guidance (see figure 4-1). Based on this guidance, the family of JOpsC and the ACF portray how joint and Army forces are expected to operate in support of strategic objectives across the ROMO 8-20 years in the future. New future capability requirements, materiel or nonmateriel approaches, must relate directly to capabilities identified in the JOpsC and/or the ACF. Therefore, the JOpsC and ACF do not provide immediate solutions. Rather, they propose capability requirements that should be carefully examined over a more extended period of time. Conversely, a CONOPS or warfighter lessons learned resulting in an operational need provides the operational context to determine near term capability needs thus allowing the joint community to add, adjust, or divest current capabilities. As they are developed, joint and/or Army concepts provide the conceptual basis for the CBAs that identify required capabilities, gaps (or redundancies), and potential nonmateriel and materiel approaches to address the gaps in capability.

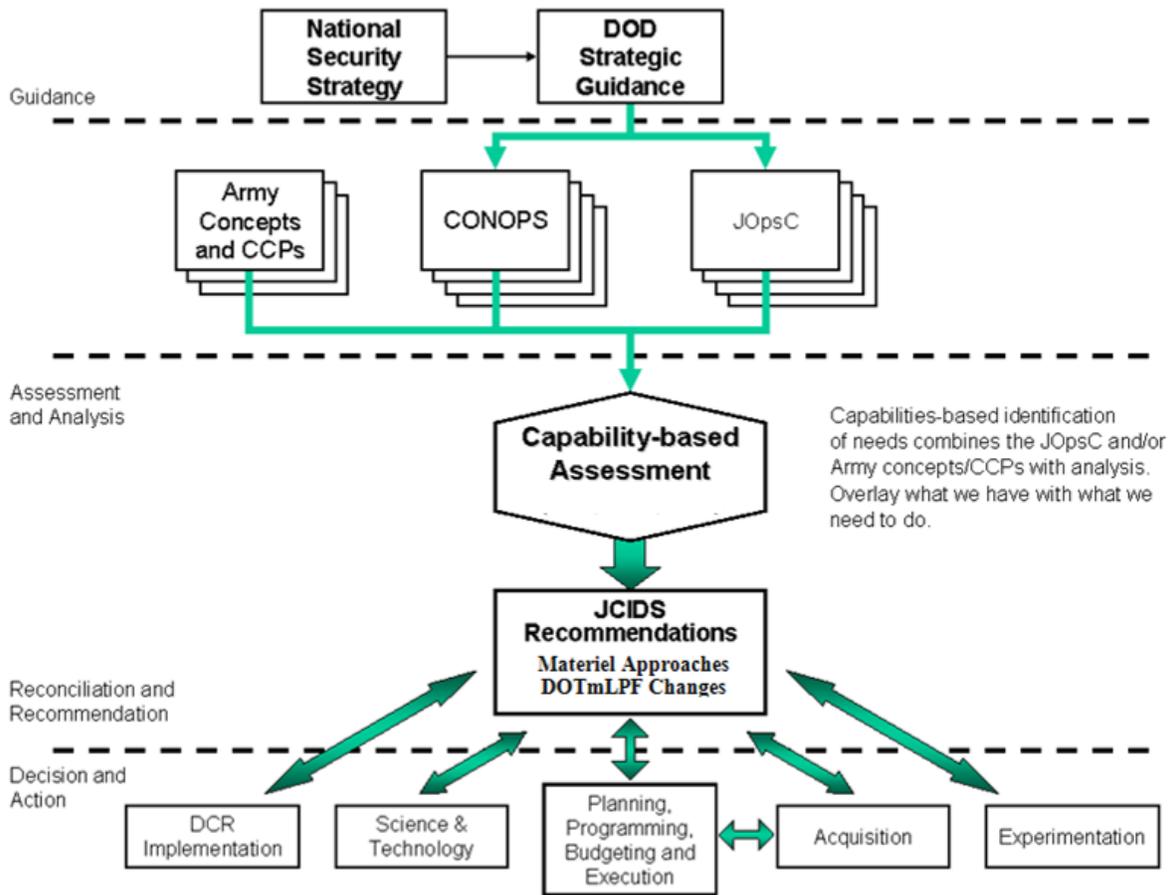


Figure 4-1. Top down capabilities identification methodology

c. The JCIDS process is initiated through the execution of a CBA based on existing joint and Army concepts or CONOPS. The CBA identifies the capabilities and operational performance criteria required to execute missions successfully within a specified threat environment; the shortfalls in delivering those capabilities and the associated risks; and the possible solutions for the capability shortfalls. Appropriate component, cross-component, and interagency expertise; S&T community initiatives; wargaming, experimentation, and other appropriate analytic results and integrated architectures must be considered in the development of DOTMLPF-RIO solutions. Throughout the CBA, the ICDT lead or the proponent ensures their analyses accounts for joint capabilities, concerns, and approaches to solutions.

d. The JROC and/or AROC validates the necessity to address capability gaps with a materiel and/or nonmateriel solution and that those solutions are potentially affordable and technically feasible. The AROC reviews ICDs for which the Army is the lead service. ARCIC, AROC, and/or JROC may also identify capability gaps where the operational risk is at an acceptable level and therefore no further action is taken. Finally, the JROC or AROC may approve a nonmateriel approach (DCR/DICR) to address the capability gap as an alternative or adjunct to advocating for a new materiel solution. The approved ICD becomes the basis for further analysis to identify the most appropriate solution(s) to provide the desired capabilities. When a materiel

approach is identified in an approved ICD, the milestone decision authority: determines the scope of the subsequent AoA; the appropriate entrance milestone (A, B, or C); and the lead agency/component(s) during the Materiel Development Decision (MDD) review. These decisions are documented in an Acquisition Decision Memorandum.

e. The lead defense, other service, or Army agency responsible for acquiring an individual system(s) performs an AoA based on the ICD to identify the best alternative approach(es). After the AoA is done, a draft technology development strategy (TDS) is developed by the materiel developer to describe the proposed approach. During the technology development process the TDS is finalized, user requirements are refined, and the viability of technologies is assessed for feasibility. One approach for technology assessment is through mandatory prototyping.

f. Upon completion of the technology development process, the acquiring service or agency finalizes a CDD. The primary objective of the CDD is to specify the system technical performance criteria that will deliver the capability meeting the operational performance criteria specified in the ICD. The JROC/AROC performs several functions in approving the CDD. They are: validating the KPPs and KSAs and their associated threshold and objective values; assessing the risks in meeting those KPPs and KSAs in terms of cost, schedule, and technological maturity; and assessing the affordability of the system as compared to the operational capability being delivered. JROC/AROC validation and approval of the CDD supports the final decision by the milestone decision authority (MDA) to initiate a program and execute engineering and manufacturing development (EMD) after the Milestone B decision.

g. Upon completion of the EMD process, the acquiring service or agency finalizes a CPD. The primary objective of the CPD is to describe the actual performance attributes of the system that goes into production. The JROC/AROC objective in approving the CPD is to ensure that the system delivered meets the needs originally defined in the ICD, at an affordable cost. If the system does not meet threshold levels for KPPs, the JROC/AROC assesses the systems operational acceptability. The approved CPD becomes the basis for the MDA decision to approve production of the system (Milestone C decision).

4-3. Alternative paths into JCIDS

a. Recognizing that not all capabilities and/or systems require the same level of analysis, the JCIDS process is tailorable. The JROC identified several alternative paths to allow the accelerated identification of capability gaps and potential solutions, and to allow them to enter into the JCIDS process at the appropriate stage to deliver those capabilities more rapidly. Other sources may be used to justify entering the JCIDS process without an ICD. These sources include combatant command integrated priority lists (IPLs), joint and Army lessons learned, joint assessments, joint urgent operational needs (JUONs), ONS, improvised explosive device (IED) defeat initiatives, JCTDs, Missile Defense Agency initiatives, qualified prototype projects, and quick reaction technology projects. Once the JROC validates the gap identified in the source document, the proponent can initiate development of a CDD or CPD as appropriate.

b. The fielding of capabilities to address immediate needs in the year of execution is done through the JUONs and/or Army ONS processes (see CJCSI 3470.01 and AR 71-9 for JUONs

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and Army ONS). Combatant command and Army compliance with the JCIDS process is not required to support fielding immediate solutions to warfighter's urgent operational needs. Urgent needs are worked through the joint rapid acquisition cell, the appropriate combatant command per CJCSI 3470.01, an Army directed requirement or the ONS process via the equipment common operating picture (ECOP) accessible at SIPRNET www.ecop.army.smil.mil/ecop/login.aspx. The fielding of immediate needs will not create placeholders for future funding or provide a means to bypass the normal capabilities and acquisition processes. The capabilities development for rapid transition (CDRT) process will be used on rapidly fielded solutions to determine whether they will transition into programs of record via the JCIDS process.

4-4. Joint capability areas (JCAs)

a. JCAs are the mandated framework DOD uses for reviewing and managing capability analysis, requirements, and solutions. They are collections of similar capabilities grouped to support strategic development, investment decisionmaking, capability portfolio management, and capabilities-based force development 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. Functionally aligned JCAs simplify the framework and increase utility across DOD by facilitating cross-referenced views by operations, components, processes, and activities. The JCAs are maintained in a database called the JCA Management System (JCAMS). JCIDS requires establishment of linkages to one or more JCAs from the tier 1 and tier 2 levels within capability documents.

b. Tier 1 JCAs are high-level capability categories that facilitate capabilities-based planning, major trade analysis and decisionmaking. All DOD capabilities can be mapped to a tier 1 JCA. There are currently nine tier 1 JCAs: force application, building partnerships, command and control, net-centric, battle space awareness, protection, logistics, force support, and corporate management and support. The definitions of these JCAs can be found at www.dtic.mil/futurejointwarfare under the "Joint Capability Areas," "Definitions" link, or on the JCAMS referenced in paragraph a. above.

c. A tier 2 JCA has sufficient detail to help identify required military capabilities or joint force generation and management capabilities. A tier 2 JCA scopes, bounds, clarifies, and defines the intent of its parent tier 1 JCA. Tier 2 JCAs reduce duplication between tier 1 JCAs and are not service, mission, or platform specific.

4-5. Army implementation of JCIDS

a. Implementation of the JCIDS within the Department of the Army is through guidance contained in AR 71-9. It establishes policies and assigns responsibilities for the identification, determination, and integration of required warfighting capabilities. ARCIC supports the CG, TRADOC and the Army's force modernization proponents in the design, development, and integration of force capability requirements and provides the management structure for approving capability gaps, confirming and integrating requirements needed to resolve those gaps, and synchronizing the development of DOTMLPF-RIO solutions across the Army.

b. ARCIC is designated by HQDA General Order Number 2006-04 (<http://www.army.mil/USAPA/epubs/pdf/go0604.pdf>), AR 71-9, and AR 5-22 as the Army's lead to identify capability gaps and to direct analytical support for DOTMLPF capabilities development. ARCIC does this through an analysis of needs expressed in integrated priority lists (IPLs), ONS, JUONS, lessons learned, and an analysis of the Army's ability to meet warfighting requirements articulated in joint and Army concepts to determine a single, integrated list of capability gaps. This single, integrated list of capability gaps covers the spectrum of time, driving the capabilities development processes (such as the Army experimentation plan, studies and analysis program, and JCIDS) and POM decisions across the Army. The outcome of this work includes a common required capabilities foundation, as well as prioritized lists of DOTMLPF capability gaps, RIO solutions, developmental priorities, and gap to solution strategies. ARCIC directs and manages development efforts of proponents through the ArCP and approved ICDTs.

c. TRADOC charters multidisciplinary ICDTs to address JCIDS and acquisition processes through the early, collaborative involvement of key stakeholders and SMEs. The centralized management of these teams allows the capabilities development community to prioritize, integrate, and synchronize key developments and maximize the use of limited resources. ICDTs for SAPs will not be established.

(1) Dir, ARCIC charters standing ICDTs to conduct CBAs, and/or prepare capability documents currently aligned with the six WFFs in the ACF. Other DOTMLPF domain-specific or unique functional CBA efforts may be chartered on an extremely limited basis.

(2) The standing ICDTs focus on broad, complicated, high visibility CBA efforts, which involve more than one proponent. Any request by HQDA DCS, G-3/5/7 for ARCIC to establish an ICDT to assist in the development of a joint concept, the conduct of a joint CBA, and/or the development of capability documents to resolve a gap in joint capabilities must come through TRADOC G-3/5/7 and ARCIC G-3/5/7, and this work will normally be included in the ongoing efforts of the standing ICDTs.

d. The ARCIC publishes the ArCP as the management structure for capabilities integration and development. The ArCP guides, integrates, and synchronizes the execution of concept development, experimentation, learning, capabilities determination and integration. ARCIC G-3/5/7 develops the ArCP in collaboration with ARSTAF (DCS, G-3/5/7; DCS, G-4; DCS G-6/Chief Information Officer (CIO); DCS for Resource Management (DCS, G-8)); ASA(ALT); USJFCOM or appropriate command/agency; TRADOC and non-TRADOC proponents, the TRADOC staff, U.S. Army Materiel Command (AMC) and RDECOM. Approved by Dir, ARCIC, the ArCP provides top driven guidance based on desired outcomes. Outcomes drive the ArCP major objectives, which are clearly defined, measurable, and quantifiable statements of key tasks and outputs that collectively lead to the achievement of a respective outcome. ARCIC outcomes also drive the ARCIC LOs, which focus learning in support of achieving outcomes.

4-6. Accelerated capabilities development

The exigencies of combat operations drive the Army to organize and develop processes that accelerate capabilities development to support immediate warfighter needs. Deployed forces identify needs, and organizations such as the Joint Improvised Explosive Device Defeat Organization (JIEDDO), AAWO, and the REF Office identify key gaps, develop solutions, and deploy capabilities to forces more rapidly than the deliberate capability development process. ARCIC works on specific capabilities designated as critical by these higher headquarters to ensure an integrated approach across the DOTMLPF. This process facilitates transition into a warfighting unit and provides the basis for follow-on assessments of rapidly equipped capabilities and ensures institutionalization of the capability, if appropriate. The CG, TRADOC assigns ARCIC to lead TRADOC ACD efforts in support of the current operations. The ACD process also informs AWFCs through running estimates (current efforts to resolve the problem), interim solution strategies (potential solutions in accelerated development) and ILPs (assessments in support of accelerated developments). The ACD process is further addressed in [chapter 10](#).

4-7. Security and program protection

a. Protecting sensitive technology and capability development information is a critical consideration throughout the JCIDS and acquisition process. Original classification authorities are required to issue security classification guidance for each system, plan, program, or project in which classified information is involved IAW AR 380-5. PMs are required to formally assess their program to identify whether it contains critical program information (CPI), IAW DODI 5200.39 and AR 70-1, and must produce a formal protection plan for any CPI found. However, measures must be initiated well before the inception of the acquisition program to protect sensitive information which may later rise to the level of being classified, or determined to be CPI. Means and practices available for this early protection include:

(1) Use of distribution restriction statements IAW AR 25-30 and DA Pam 25-40.

(2) Use of the "For Official Use Only" marking IAW AR 25-55.

(3) Operations security measures IAW AR 380-5 and AR 530-1.

(4) IA measures IAW AR 25-2.

(5) Public disclosure processes IAW AR 360-1, including developing communications plans.

b. Foreign disclosure requests are coordinated through TRADOC DCS, G-2 Foreign Disclosure Office. Instances of inappropriate requests from foreign entities will be reported through the activity security manager to the supporting regional 902^d Military Intelligence Group (Counterintelligence) office.

c. TRADOC DCS, G-2, through Army Research and Technology Protection Center-TRADOC, works closely with ARCIC and proponents to ensure the protection of the Army's sensitive information and critical technologies.

Chapter 5

Capabilities Integration

5-1. Overview

a. Capabilities integration is the process of comprehensive analysis, design, and assessment of requirements, concepts, and resources to merge, deconflict, and synchronize functional, organizational, and DOTMLPF requirements and solutions to unify and improve warfighting capabilities. Fielding synchronization is a companion process which coordinates the delivery of capabilities to provide warfighting capability within organizations when needed.

b. To drive continuing relevance to the OE and react to budgetary constraints, TRADOC implemented a deliberate, time-phased capabilities development process based upon a recurring 2-year cycle. The Concept-to-Capability Framework, figure 5-1, depicts the recurring 2-year cycle designed to examine concepts and conduct analysis. This biennial process provides a holistic basis for examining and updating relevant concepts, and integrating and synchronizing capabilities developments for the Army's modernization efforts by leveraging the warfighting focused concepts and using them as the basis for the CBAs. The results of the CBAs, its associated required capabilities, validated gaps and DOTMLPF-RIO solutions, are used to update the CNA and feed HQDA events that impact the POM, force structure, and Capability Portfolio Reviews. The results of the HQDA events impact the Army force generation (ARFORGEN) cycle to provide better support to our CCDRs. This process also requires an annual revalidation of required capabilities. The results provide updates to the second year of the cycle to ensure TRADOC is tracking with requirements from strategic guidance and changes from the operating environment and lessons learned. This biennial process yields affordable force modernization strategies that enable the Army to invest in the right capabilities consistent with analysis of current and future OEs.

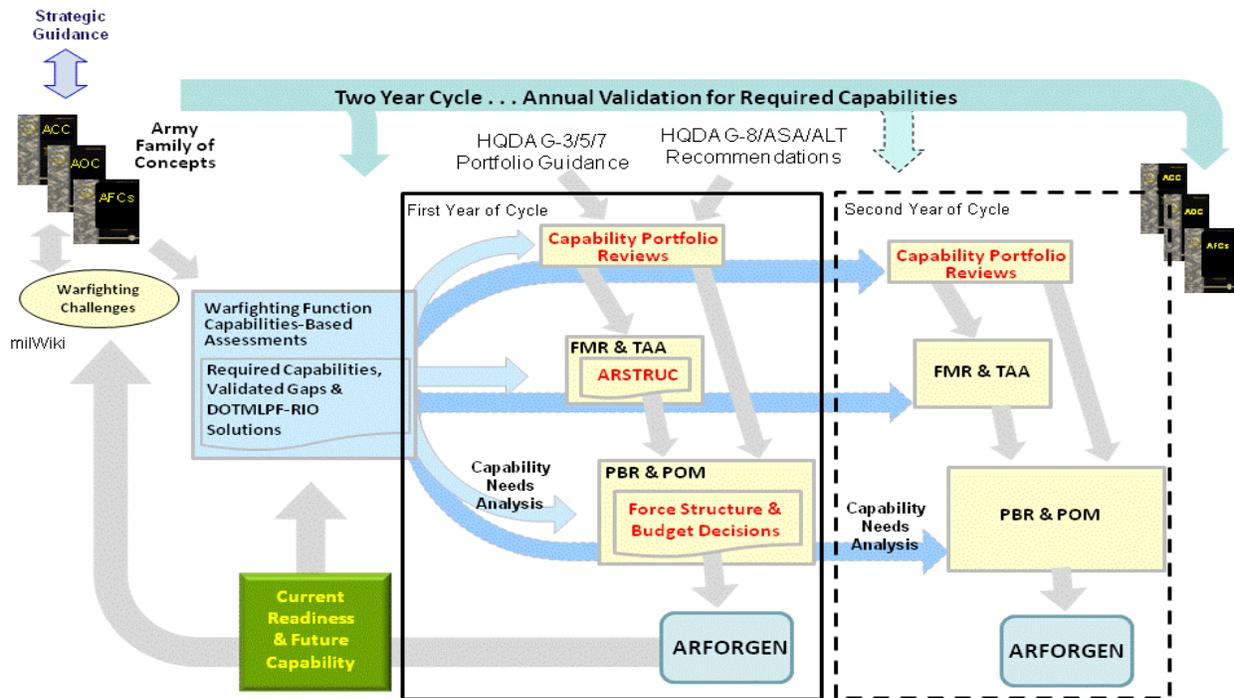


Figure 5-1. Concept-to-Capability framework

c. In the process of identifying integrated and prioritized required capabilities, needs, and solutions, the capabilities developments CoP (which is also the capabilities integration CoP) may develop strategic roadmaps that portray the major developments and potential DOTMLPF trades to deliver affordable and integrated warfighting solutions when needed, to include the portrayal of residual gaps requiring solutions not yet attainable. Further information on the SF can be found in [paragraph 5-4](#).

5-2. Levels of integration construct

a. The Construct. Within the capabilities development CoP, concepts, learning, and requirements determination products and activities must be integrated and synchronized. The Levels of Integration construct is comprised of three levels as illustrated in figure 5-2. A summarized list of integration responsibilities is located in [appendix C](#).

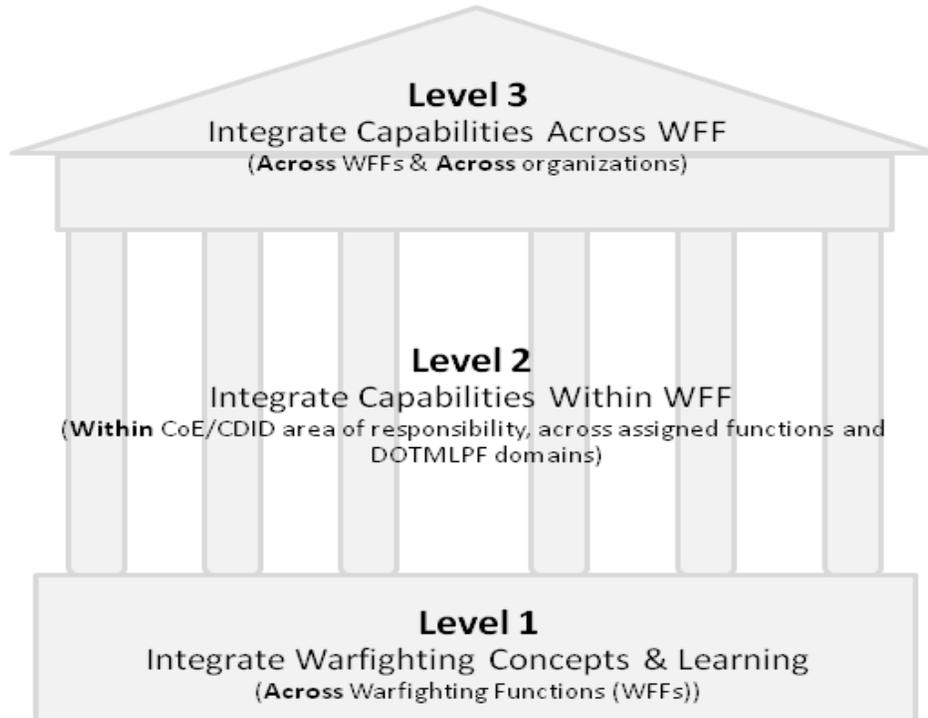


Figure 5-2. Construct for the levels of integration

b. Level 1, integrate warfighting concepts & learning (across WFFs). This is a shared process where ARCIC, ICW TRADOC CoEs, ensures continuity of key ideas and required capabilities in concepts and learning activities to minimize potential overlaps or disconnects. ARCIC is the lead for Level 1 integration. CoEs and CDIDs assist as required and provide support across joint and force modernization proponent interdependencies.

(1) ARCIC develops concepts and learning activities in Level 1. These activities include development of the ACC, AOC, and de-conflicting and synchronizing AFCs and existing CCPs across AWFCs and WFFs. ARCIC also includes existing CCPs as it develops the CoL and combines the ILP into a single, coherent, and synergistic CoL. Required capabilities and CONOPS are key outputs for Level 1 integration.

(2) The CoEs lead the development of functional concepts and generate integrated ILPs for proponentries and for the AWFCs assigned to the CoE. They also lead investigations and learning activities for assigned AWFC. CoEs assist ARCIC in the development of WFFs by providing subject matter expertise, and assist other CoEs to develop functional concepts and ensure accuracy and sufficiency of CoE specific topics areas.

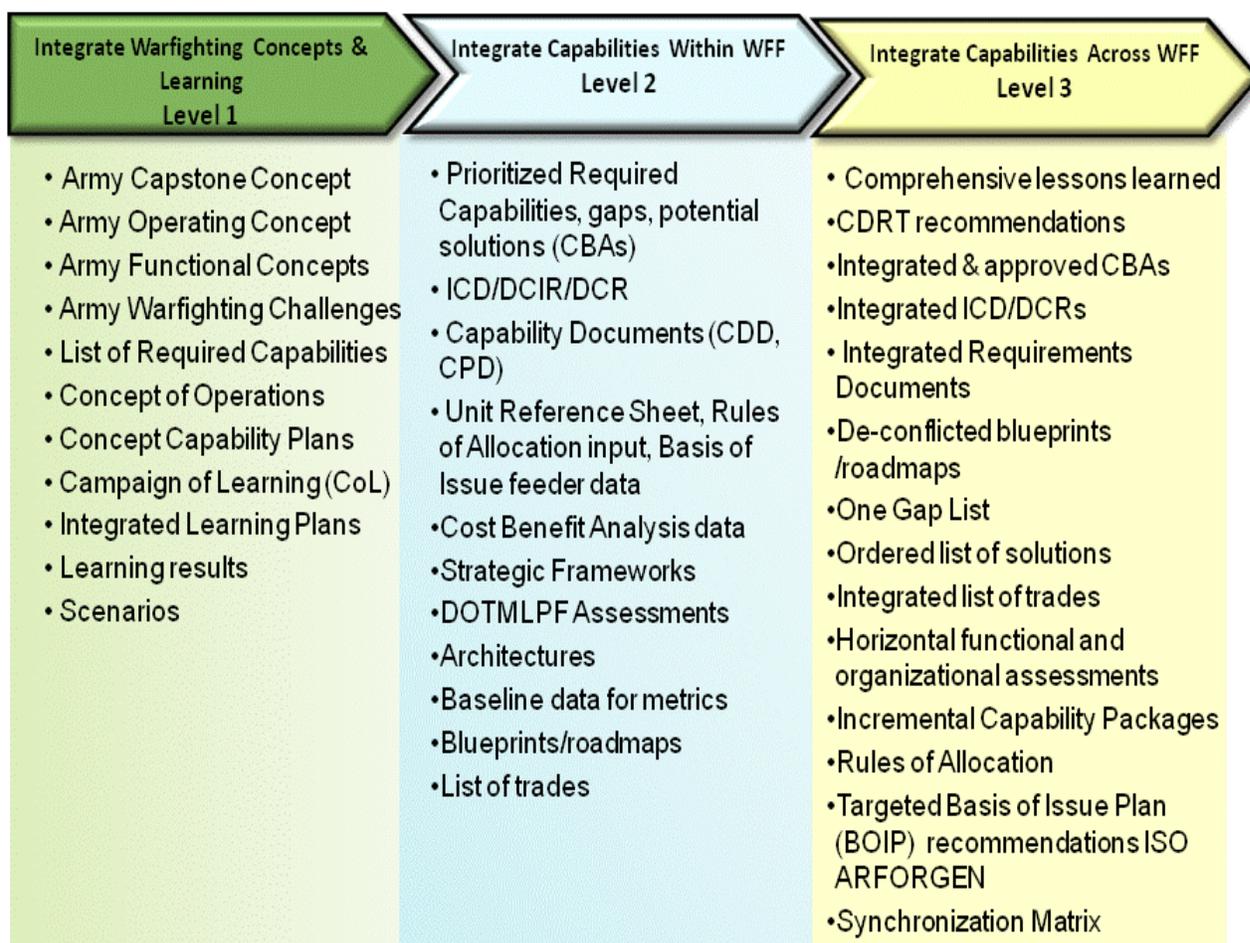


Figure 5-3. Levels of integration products

c. Level 2: Integrate capabilities within WFF (within the CoE/CDID area of responsibility, across assigned functions and DOTMLPF domains). CoEs/CDIDs serve as leads for Level 2 integration and are responsible for integrating requirements within their assigned areas of responsibility. The CoEs/force modernization proponents must ensure capabilities within assigned functions are logical, consistent, and complete from functional, DOTMLPF, and individual organization perspective. Proposed solutions must balance combat power with key supportability and affordability constraints.

(1) CoEs/CDIDs chair their assigned standing ICDT with support from other CoEs/CDIDs and force modernization proponents as required. The ICDT supports the conduct of the WFF CBA and other WFF-related organizational and functional assessments. The CBA provides the primary analytic basis to support capability portfolio reviews.

(2) Based on required capabilities identified in Army concepts, CoE/CDIDs and force modernization proponents identify prioritized DOTMLPF capability gaps and recommend solutions and potential trades for their assigned areas. CoEs conduct a C-BA to ensure

affordability. A list of trades is developed to assist with enterprise-level prioritization. ICW ARCIC, lead CoEs provide Army WFF input to joint developments.

(3) ARCIC provides staff management to facilitate coordination and dissemination of CBA results; assists and coordinates proponent's efforts; and analyzes, monitors, and develops capability recommendations for CG, TRADOC.

d. Level 3: Integrate capabilities across WFFs and organizations. At this level, ARCIC verifies, prioritizes, and synchronizes DOTMLPF capability developments across functions and organizational designs to enable effective, complementary, and reinforcing capabilities that provide the most urgent warfighting capabilities within available resources. As the lead for Level 3, ARCIC's primary focus is to integrate and synchronize across WFFs, organizations, and DOTMLPF domains, with CoEs/CDIDs assisting as required.

(1) ARCIC's role is threefold - 1) identify trades; 2) minimize redundancies, and 3) balance risks across proponent capability portfolios to deliver optimal capabilities within cost, schedule, performance, and resource constraints. Essentially, the ARCIC prioritizes solutions and capability development efforts across the Army to mitigate the highest risk capability gaps given all known constraints. Warfighting requirements are also synchronized with joint initiatives as required.

(2) ARCIC, in conjunction with the CoEs, develops an ordered gap list, an ordered solution list, and an ordered integrated list of trades across functions, organizations, and DOTMLPF domains to provide CNA products and recommendations to HQDA.

(3) In conjunction with the Army and Joint Staffs, force modernization recommendations are validated by Dir, ARCIC and submitted to the AROC for approval and implementation. Upon approval, ARCIC staff synchronizes planned milestones with other related activities to ensure capabilities arrive on schedule.

(4) ARCIC develops incremental capability packages for selected brigades to recommend modernization fielding priorities based on fiscal realities, the delivery of solutions to the Army, and the timing of the ARFORGEN rotations. In addition, ARCIC is responsible for incorporating capability set solutions into capability packages as appropriate.

(5) With support from force modernization proponents, ARCIC conducts train-evaluate-test events for incremental capability packages and other selected DOTMLPF developments.

(6) ARCIC updates the ArCP as required to direct capability development activities and ensure requirements are consistent with priorities established during CBAs.

(7) The CoEs/CDIDs provide assistance on cross-WFF assessments (for example, CNA), the development of an ordered gap list (that is, One Gap List), a unified prioritized DOTMLPF solutions list, and a list of potential trades across functions and organizations.

5-3. Governance principles

a. Governance processes and procedures are developed to ensure integration and synchronization across Army concepts, CBAs, and subsequent development activities. A recurring 2-year cycle for concept and capabilities development, along with the ArCP and TCP Battle Rhythms, is leveraged to support governance requirements for integration across the concepts and capabilities development CoP. This approach prepares the senior leaders to make decisions and drives the adaptation of the Army to meet warfighter needs during a much shorter decision cycle.

b. Governance mechanisms support the execution of the ACP, TCP, and ArCP. Governance forums vary depending upon the needs of leadership to focus on problem solving and decision-making based on the various campaign decision points. The governance mechanisms permit the leadership to assess progress, ensure compliance and proper prioritization, provide guidance, and prepare information and recommendations for higher and lateral level forums.

c. ARCIC's TR 10-5 core functions are synchronized by use of the synchronization matrix which aligns these functions along governance lines and with TAA and POM events. In figure 5-4 under the "Governance" title, are examples of senior leader governance forums that are used by TRADOC to execute governance activities (QFR, TRADOC Synchronization Meetings, CIEF, Chief of Staff Synchronization Meeting). Further information on these forums can be found in the ArCP.

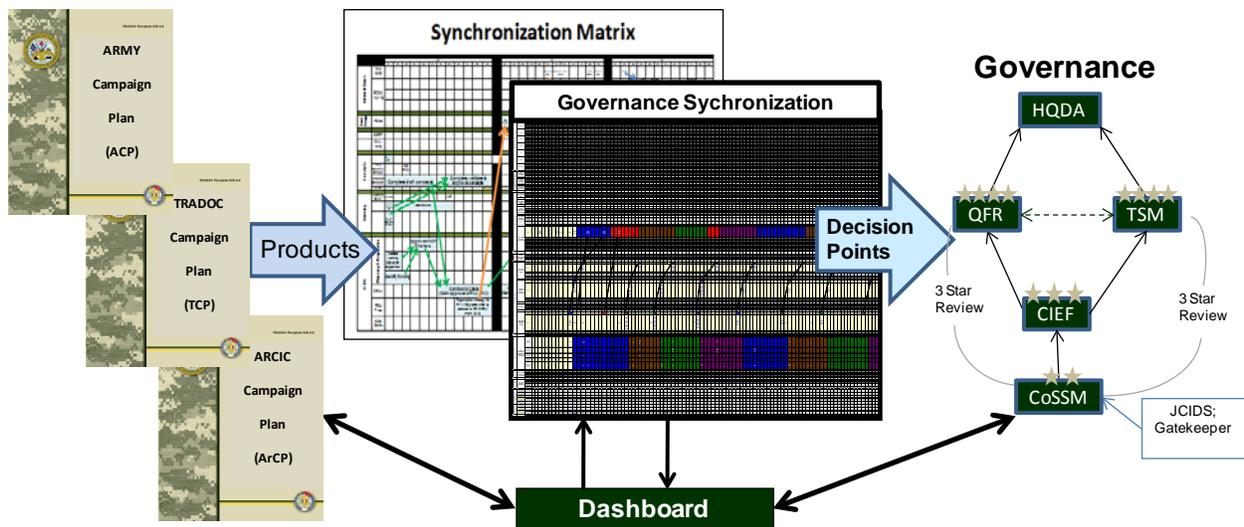


Figure 5-4. ARCIC Campaign Plan Management

5-4. The Strategic Framework

a. The strategic framework is an integrating and synchronizing mechanism for capabilities development activities. It is a visual portrayal providing a common view of capabilities development over time. By identifying linkages and interdependencies between development activities, SFs support problem identification, issue resolution and decisionmaking. SFs are data

focused, living documents with several data owners that address required capabilities, gaps, current and planned DOTMLPF capability developments, key capability dependencies, critical events and decision points, and trades (risk assessments and mitigation strategies). SFs can assist senior leaders in communicating capability implementation strategies, timing, and issues to higher headquarters when utilized.

b. SFs are mandatory attachments to CDD and CPD JCIDS documents. At the document level, the SF portrays how the proposed system integrates into the Army's overall force modernization plan. In the future, Dir, ARCIC may also request consolidated SFs for proponent capability portfolios or organizational groupings. If developed, proponents forward their portfolio SFs to the ARCIC for L3 integration review. SFs at this level allow proponents to portray their integration and synchronization plans within their assigned portfolios. ARCIC performs L3 integration actions across SFs as required. By integrating portfolio or organizational SFs, ARCIC can capture the issues, concerns, risks, and risk mitigation at the highest levels. These SFs can provide visibility of integration and synchronization issues that may not be apparent at the proponent level. The ARCIC JCIDS gatekeeper (monr.arcicgatekeeper@us.army.mil) can be contacted for the latest SF information and requirements. A SF guide is also available for use on the ARCIC's Army Knowledge Online (AKO) policy site.

Chapter 6

Capabilities Innovation

Capabilities innovation enablers include M&S, studies and analysis, experimentation, operational architecture development and integration, and science and technology.

6-1. Modeling and simulation

a. ARCIC is the lead for the TRADOC Key Enabler Capabilities Innovation, which includes M&S as a key enabling function. The ARCIC JAMSD serves as the office of principal responsibility (OPR) and lead for the M&S enabling function.

b. See the glossary for the following M&S Definitions: models, simulations, live simulation, virtual simulation, constructive simulation, gaming, and data.

c. JAMSD manages TRADOC M&S activities through the implementation of a TRADOC M&S Enterprise Governance process. The goals of the M&S Enterprise are:

(1) An integrated M&S environment that:

(a) Leverages DOD and Army standards, architectures, scenarios, and networks and promotes the sharing of tools, data, and information across the enterprise.

(b) Supports TRADOC core competencies, functions, and LOO.

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- (2) Enterprise policies that:
 - (a) Support DOD and Army M&S policies.
 - (b) Promote interoperability and the use of common M&S capabilities.
 - (c) Minimize duplication and encourage reuse of M&S capabilities.
 - (d) Leverage capabilities across DOD, Army, and JIIM community.
- (3) Management and governance processes for M&S that:
 - (a) Enforce M&S policies and procedures.
 - (b) Facilitate the cost-effective and efficient development and use of M&S.
 - (c) Identify M&S gaps and prioritize and integrate M&S requirements and solutions.

d. Managing TRADOC's M&S activities is essential to align tools, data, architectures, scenarios, and networks. TRADOC is designated as the Army domain agent for two of the three M&S domains, the ACR and the Training, Exercises, and Military Operations domains. M&S governance provides a well defined structure for oversight and execution of a common approach to coordinate requirements, resources, and management of TRADOC's M&S activities.

e. TRADOC governs its M&S Enterprise through the implementation of several hierarchical accountability boards. The Dir ARCIC, as the lead for the capabilities innovation key enabler, has executive oversight of TRADOC M&S activities. The activities consist of the following:

(1) Board of Governors (BoG): The BoG consists of 1 or 2-star GO/SES equivalents from TRADOC LOO leads and specified Modeling and Simulation Offices, DCSs, and Special Activities. The BoG provides senior level M&S guidance and approves TRADOC M&S requirements. Currently, the Scenario BOG is utilized to address M&S issues as it pertains to the OE.

(2) COC: Chaired by the Chief, ARCIC JAMSD and consisting of O-6/GM-15 representatives from TRADOC LOO leads and specified MSOs, DCSs, and Special Activities. The COC validates and prioritizes TRADOC M&S requirements, gaps, and solutions and provides management recommendations to the BoG.

(3) M&S Advisory Working Group (MSAWG): Chaired by JAMSD and consisting of representatives from the TRADOC LOO leads and specified MSOs, DCSs, and Special Activities. The MSAWG provides a forum to review and integrate M&S capabilities, promote integration, reduce duplication, leverage resources, and identify M&S requirements, gaps, and solutions.

6-2. Studies and analysis

a. The purpose of S&A is to provide the evidence Army leaders require to make informed decisions or to gain understanding of complex problems. The DOD and Army vision of concept development, accelerated development, integration, and fielding of DOTMLPF-RIO solutions requires the carefully managed and focused commitment of analytic resources. TRADOC conducts research studies, wargames, experiments, CBAs, AoAs, and force development analyses to inform the development of concepts and capabilities. Figure 6-1 depicts the general framework for defining the right type of analysis to address key questions on the concept and capability development path. Requirements analysis (below) is an informal process conducted by CAPDEVs resulting in the identification of key requirements and performance attributes for JCIDS documents.

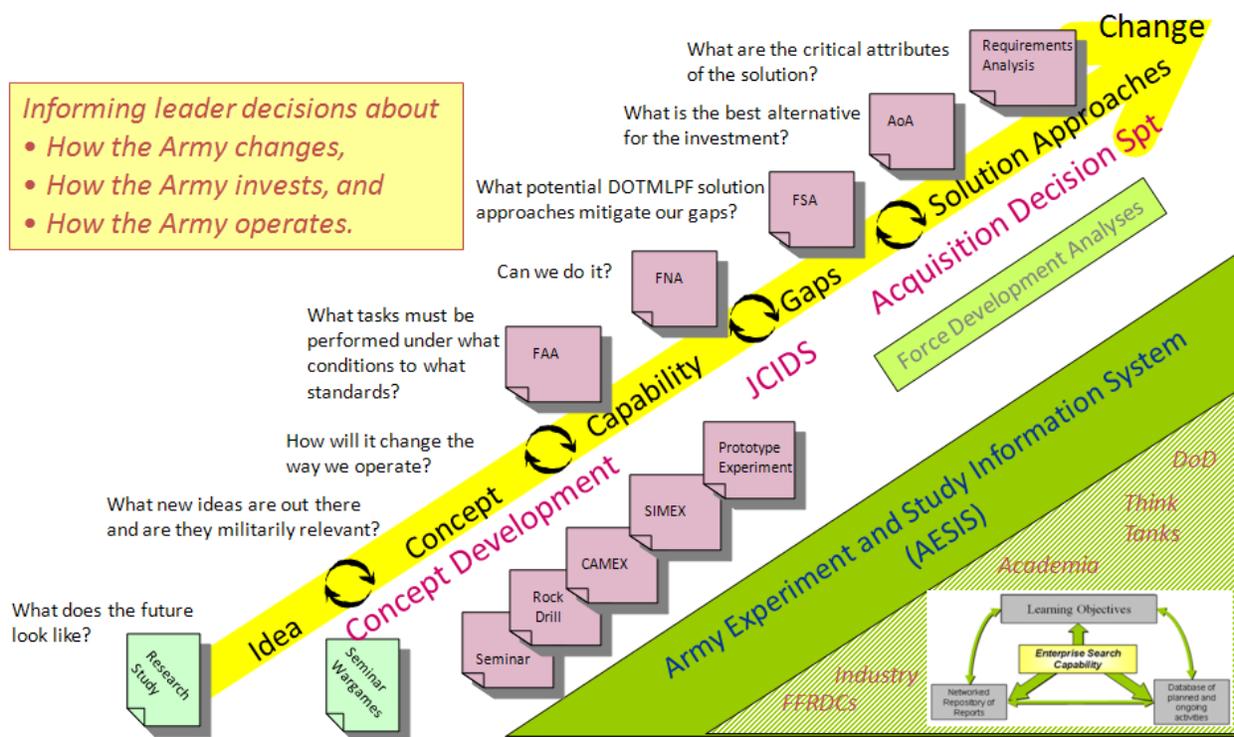


Figure 6-1. Matching analysis types to stages of development

(1) As described in [paragraph 6-3](#), S&AD leads venue analysis to determine the appropriate analytic venue (for example, research study, wargame, experiment) and commitment of analytic resources necessary to answer high priority learning demands to resolve AWFCs. S&A is one of the learning venues used in the ILP. Results from S&A support AWFCs by informing AWFC leads of relevant studies for the running estimate and assessment, and may also inform interim solution strategies.

(2) S&AD is the TRADOC lead for the commitment and management of TRADOC analytic resources across the full breadth of analytic activities for JCIDS and materiel acquisition related action ongoing at any given time. Dir, ARCIC or Dir, A2MCD on behalf of Dir, ARCIC

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establishes priority of effort and provides focused direction for the execution of studies and analysis activities through the TRADOC Studies and Analysis Program. S&AD is also responsible for the analytic quality assurance of TRADOC analytic activities conducted by force modernization proponents, and as such TRADOC organizations (except TRAC) should coordinate with S&AD for a review of CBA & C-BA efforts to ensure analytic requirements are met.

b. Analytic practices.

(1) In the conduct of JCIDS, there are certain guiding principles that facilitate completion of structured, defensible analyses. Refer to the TRADOC CBA Guide for additional guidance on conducting analysis.

(2) Constraints, limitations, and assumptions (CLA). CLA are vital to a successful study. They bound (scope) a study effort by identifying what must (or must not) and can (or cannot) be accomplished; they frame the study space and set the stage for the study team's methodology development; they serve as a "contract" between the study sponsor and the study team; and they provide a basis for the sponsor to reconcile the study results. CLA provide the framework for both the study team and the study sponsor to understand the conditions under which a study's results are applicable. Although commonly misrepresented or used interchangeably, these three terms are distinctly different in meaning and use in the context of a study.

c. Documenting and storing results. Locating relevant information among the vast number of analytic reports in disparate and disjointed repositories is cumbersome and ineffective. Documenting results and storing relevant information regarding past, present, and projected analytic efforts is important. Within TRADOC, the Army Experiment and Study Information System (AESIS) serves as the central repository for analytic reports and products.

d. Studies and analysis support AWFCs through informing AWFC leads of relevant studies for the running estimate and assessment, and are one of the learning venues used in the ILP. Results of studies may also inform ISS.

6-3. Experimentation

a. AEG.

(1) The purpose of the AEG is to mitigate risk to our warfighters and improve capabilities for the Army Modular Force by executing live, virtual, and constructive experiments that produce actionable recommendations used to inform decisions across the DOTMLPF. The AEG reinforces TRADOC's role as the Army's user representative focused on the development of a flexible requirements process that recognizes opportunities and seizes the initiative for accelerating solutions to the warfighter. The AEG is RIO, focused on the joint warfighter, and is contained in the ArCP.

(2) The AEG supports the CoL through the conduct of experiments ICW other learning venues to address AWFCs. It also incorporates specific COE learning demands and rapid

experimentation to address emerging challenges and opportunities. Experiments determine our capability vulnerabilities and improvements, and apply our operational experience to understand the challenges, refine the visualization of the solutions, and shape the development of our capabilities. Experiment leads inform AWFCs of relevant results from the experiment to action plans (ETAP), to include direct input to the AWFC milWiki.

b. JIIM experimentation. Army forces must be strategically responsive, have campaign qualities, be dominant across the ROMO and be fully integrated within the JIIM security framework. Partnering and collaborating with USJFCOM or appropriate command/agency, other service, multinational partners, and Army and CDE agencies is required to ensure the integration of knowledge requirements during the capabilities development process.

(1) Joint experimentation processes are initially coordinated through the USJFCOM Joint Concept Development and Experimentation (JCD&E) Enterprise Campaign Plan, or the appropriate agency or command's plan, which identifies the overall objectives for the CDE pathways. Additional coordination is accomplished with other service experimentation offices. Army participation in joint experimentation planning and implementation ensures Army objectives are accomplished within the joint experiments. In a similar fashion, Army participation in other service planning provides opportunities for accomplishing Army experimental objectives and supporting other service experimental objectives.

(2) As DOD's executive agent for JCD&E, USJFCOM (or the appropriate command or agency) develops DCRs for JROC submissions that are based upon the results of joint experimentation. The Dir, CDLD leads the Army's participation in this process, including the development of Army input to USJFCOM (or the appropriate commands or agencies) warfighting challenges and the incorporation of them in Army experimentation.

(3) USJFCOM (or the appropriate command or agency) conducts exercises to prototype and operationalizes emerging joint concepts. This process parallels the Army's process in that it begins with a draft concept and includes a series of planned efforts to determine the DOTMLPF requirements needed to operationalize that concept. Dir, CDLD leads the Army's participation, ICW HQDA DCS, G-3/5/7, in JCD&E events designed to prototype and operationalizes concepts as well as synchronize joint and Army interfaces. Dir, CDLD will apprise leadership of any concept revisions emerging from this process at the conclusion of these events. This coordination includes Army support to USJFCOM (or to the appropriate agency or commands) experiment events designed to support this process, including exercises, limited objective experiments, and field experiments.

(4) The Army conducts experimentation incorporating multinational cooperation consistent with Army and joint concepts. Dir, CDLD develops, refines, and coordinates execution of a plan to ensure multinational concepts are matured and realized with our multinational partners. Dir, CDLD also works to solve interoperability issues with our JIIM partners at the small unit level.

c. Experimentation program design.

(1) Experimentation must embrace change and anticipate transformation without succumbing to rigidity of thought and processes, while preserving emphasis on enduring themes that provide essential stability (figure 6-2). Emphasizing the AEG as a process for maturing warfighting capabilities embodies an intent to conduct structured investigations that reduce risk and optimize resources. As with any future-oriented process based on estimates of potential events, the AEG is a continuous, dynamic process that must be refined and adapted to varying circumstances.

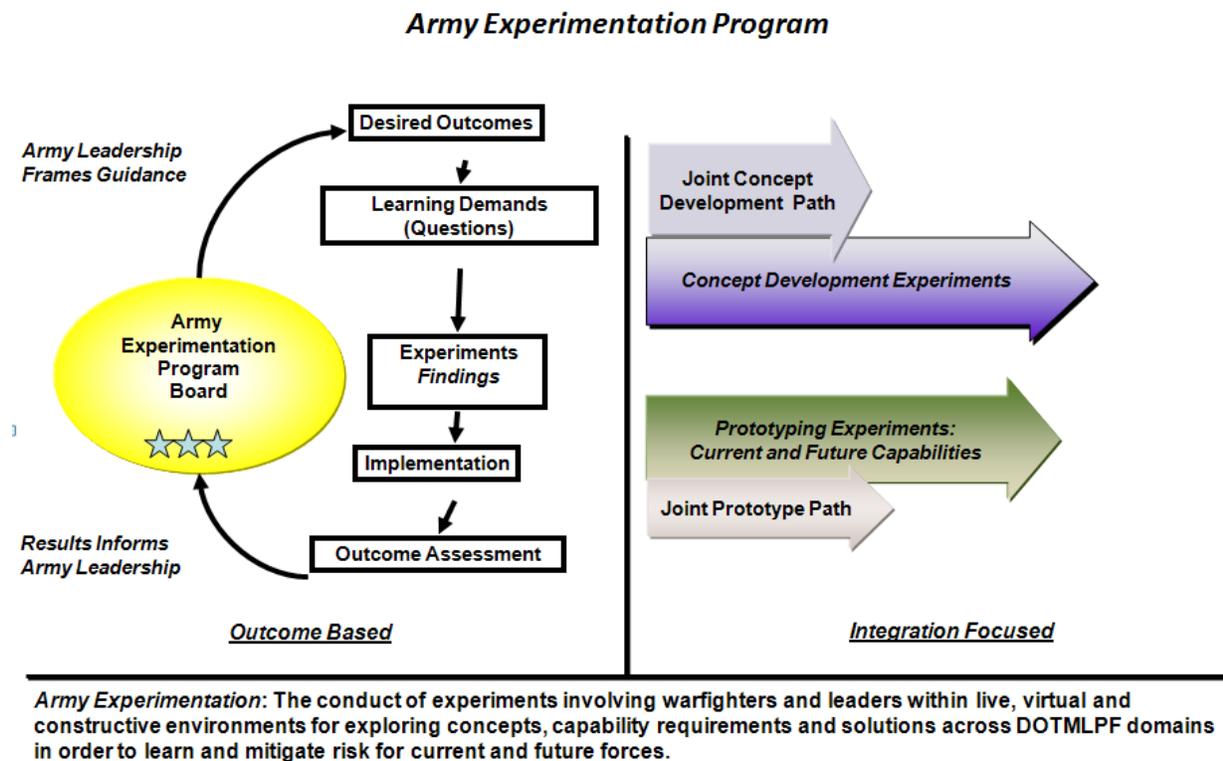


Figure 6-2. Experimentation program design

(2) Supporting AWFCs within the CoL requires a significant amount of learning through various venues. Experimentation supports this learning. This learning is both deliberate, to support specific AWFC learning demands, and adaptive, to leverage key current and future force data and current operational requirements. AWFC learning demands are addressed through diverse learning venues including: Army technology objectives, JCTDs, combat operations, evaluations, experimentation, operational architecture, rapid prototyping, studies, and wargames. As a result, experimentation balances top-down learning demands as defined in AWFCs with CoE learning demands emphasizing creative, innovative approaches, while retaining the flexibility to exploit opportunities to support current operations. Experimentation venues in support of AWFCs are integrated by AWFC leads with other learning activities as a part of their ILPs. Experimentation learning demands and results are shared across the Army through ETAP and the Army Experimentation Program Board of Directors.

(3) Since experiments may include concepts and their associated capabilities that are significantly different from current operations, training for the experiment may impact the readiness of participating units - the more revolutionary the experiment, the more likely the impact. As such, a sustained campaign of experimentation requires the designation of warfighting forces appropriate to experiment requirements. Experimentation planning should identify warfighting force requirements with sufficient lead-time to permit deconfliction with standing missions for those units. It requires the identification of the requirement, validation by ARCIC and HQDA DCS, G-3/5/7, and submission of the validated requirement to U.S. Army Forces Command (FORSCOM) in time to be considered for the ARFORGEN process.

d. Planning process. Development of the AEG begins one year prior to the year of execution with the generation of experiment proposals with sufficient detail to synchronize efforts and resources across the CoP. Initial guidance consists of learning demands (in support of AWFCs) assigned to the executing organization in the annual experimentation guidance. Based on the learning demands assigned in the AEG, and the broader perspective of AWFC ILPs, the lead organization conducts background research, develops assumptions and constraints, and develops the experiment proposals for their learning demands. The lead organization develops analytical metrics for approved study issues and essential elements of analysis detailing the type and resolution of information required, and uses this information to select the appropriate venue, analytical approach, threat, and scenario for the experiment. The annual planning process is executed in four phases.

(1) Phase 1. AWFC venue analysis and ILP development. As a part of the CoL, ARCIC CDL leads the effort to develop and refine AWFCs. Learning demands for the AWFCs are assessed by ARCIC S&AD to recommend the appropriate learning venue. AWFC leads then develop ILPs that detail how multiple learning venues will cumulatively address the AWFC. The relevant result for experimentation is a list of learning demands assigned to experimental venues, and the ILPs providing the relationship of experiments to other learning venues.

(2) Phase 2. Annual experimentation guidance. Using the learning demands in support of AWFCs, critical COE learning demands, and emerging challenges and opportunities, ARCIC develops the AEG providing specific issues, recommended venues, and analytic leads to inform personnel and funding requirements, and implications for M&S and scenario development. For the long term, these requirements are the basis for developing input to ARFORGEN and POM processes, and in the near-term, form the basis for experimentation guidance. Learning demands assigned to experimentation venues, their associated costs based on the activity costing model, and the annual budget determines how many learning demands and associated experiments are executed.

(3) Phase 3. Experiment proposal. JAED assigns the nominated venues with resource guidance for the battle labs and experiment and analysis elements to develop proposals for their experiments. Since experiments may be added or deleted from the AEG as required by emerging results and circumstances, experiment proposals may also be developed throughout the year of execution.

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(4) Phase 4. Experimentation plan. A summary of the broad sequence of events for annual experiment planning is as follows:

(a) JAED develops the annual experimentation guidance ICW the CoP. This guidance assigns specific leads for learning demands and recommends appropriate venues.

(b) Lead organizations develop and submit experiment proposals and supporting experiment resource workbooks to JAED no later than 45 days after completion of the venue analysis (separate experiment proposals are typically developed for concept development and prototype pathway efforts). Proposals should mature assigned learning demands into objectives, issues, and, if possible, essential elements of analysis. In general, essential elements of analysis alone are not sufficient to define the experiment in detail; hence the lead organization will extrapolate known data to assess the recommended venue in more detail and estimate resource requirements. Proposals must project the desired outcome of the experiment, as well as link back to one or more ARCIC outcomes.

(c) JAED and participating organizations synchronize and prioritize experiments resulting in a set of approved experiment proposals that together constitute the AEG.

(5) A quarterly COC ensures that development of the required body of knowledge remains closely synchronized. These venues permit mid-level leadership to present emerging insights, collaboratively adjust execution plans, present and incorporate emerging results from prototype experimentation, and provide recommendations for revising strategic and operational plans. Chaired by the Dir, CDLD, the COC is comprised of a board of directors (O6 level representation from CDLD and proponent battle labs) and representation (as associate members) from across the CoP. COCs are typically preceded by an action officer working group to refine issues for the council.

e. The experiment cycle.

(1) Whether developed through the annual planning process, or approved subsequently as an addition to the AEG, an approved proposal is the entrance criteria for the experiment cycle. See figure 6-3 for the experiment cycle. The approved proposal is executed relative to the planned experiment dates and addresses experiment planning, preparation, execution, assessment, and transition of results. For each experiment event, the executing agency prepares an analysis plan to measure merit level and refine resource workbooks covering all events within the experiment. A draft plan must be developed and submitted to JAED no later than (NLT) 180 days prior to a major experiment, or 120 days prior to other experiments. The drivers for this timeline are twofold: first, requirements for the BLCSE must be provided 180 days out for those events that require modification to the BLCSE federation of models. Second, manpower requirements that exceed the lead organization's capacity must be documented and forwarded to JAED.

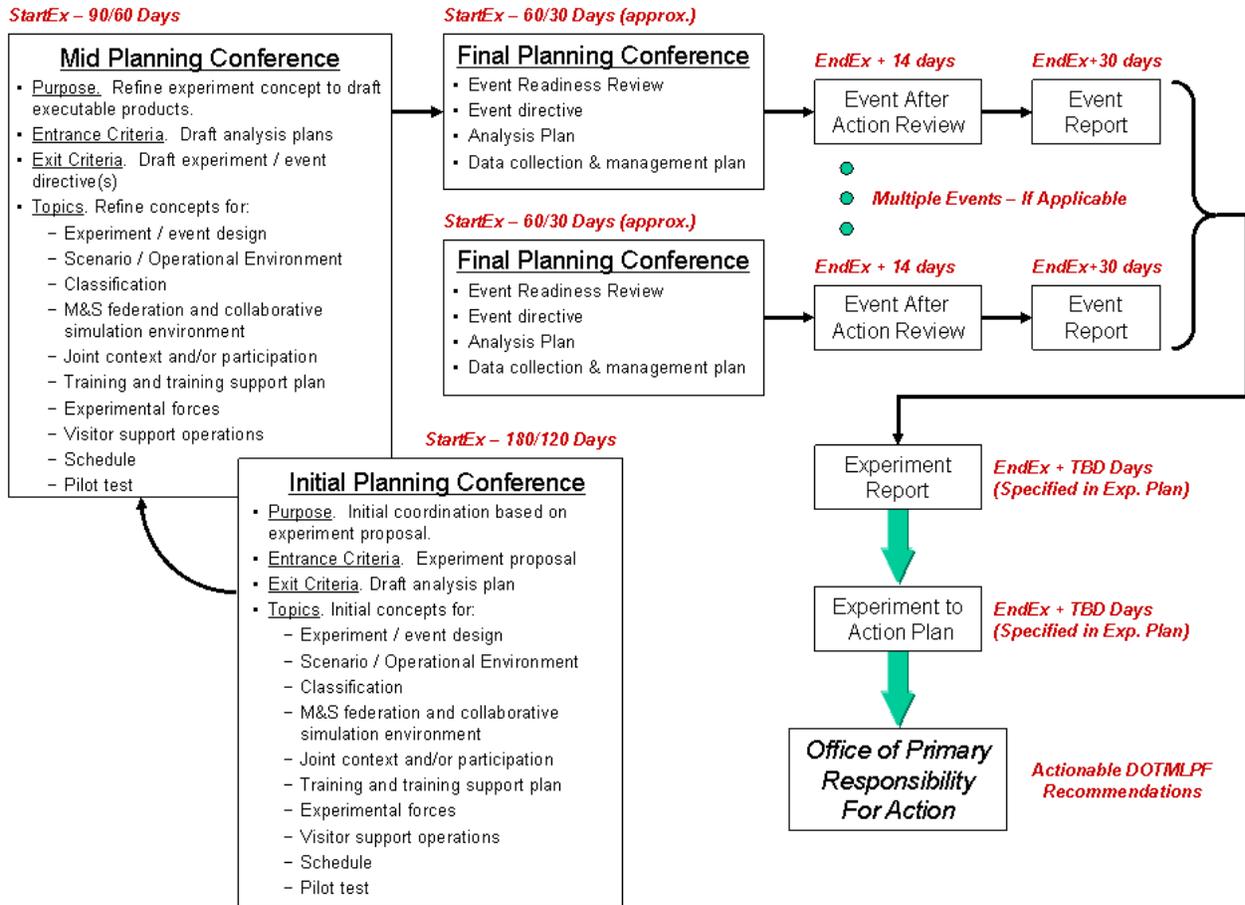


Figure 6-3. Experiment cycle

(2) S&AD reviews all submitted experiment analytical information prior to CoE approval (proposals, analysis plans, data collection and management plans, and event/experiment reports) and provides JAED its concurrence/nonconcurrence with the document. S&AD also reviews event directives for analytical consistency. Experiments are not resourced without an approved experiment proposal and experiment resource workbook. An experiment director is proposed in each experiment proposal, which is approved by Deputy Dir, ARCIC, to conduct functions laid out in the experiment directive. That role can be filled by a proponent or a proponent battle lab. The experiment director is typically the CoE commandant, but can be the CDID or battle lab director based on the scope of the experiment. The experiment director is the approval authority for each experiment.

(3) The ARCIC, JAMSD develops an overarching M&S plan that supports the experimentation guidance and strategy. JAMSD reviews all experimentation proposals and experiment resource workbooks to ensure consistency with the M&S plan prior to approval. Additionally, JAMSD provides JAED its concurrence/nonconcurrence with the document. M&S requirements are not resourced without an approved experiment proposal, and experiment resource workbook. JAMSD is the technical integration lead for the BLCSE federation for all TRADOC distributed experiments.

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(4) The scope of experiment proposals and analysis plans vary according to purpose. If the purpose is concept exploration, the venue may be a series of seminars or wargames with a highly flexible structure. If the purpose is to evaluate the operational effectiveness of an integrated set of capabilities, it may require a large-scale field experiment with detailed M&S, operational architectures, data collection, and management support. Whatever the required level of detail, the proposal itself is a planning document and not an execution document. An event directive is the execution document for each event within an experiment or group of events.

(5) For all experiments, including integrating or capstone, S&AD recommends an analytical lead. The lead develops the analysis plan, data collection and management plan, event report, and experiment report.

f. Experiment planning, preparation, and execution.

(1) The annual experimentation guidance shapes battle lab experimentation to support force development. The guidance defines the analytical approach to develop the body of knowledge required to inform current and future force decisions. More specifically, it assigns learning demands to sponsoring battle labs, including recommended venues and projected experimental forces, funding, M&S and scenario requirements; it includes synchronization with joint and RDECOM events; and it includes overarching analysis of the required study areas. AEG and associated resources are contained in the ArCP. The AEG and any deviations must be approved by the Deputy Dir, ARCIC.

(2) The preparation phase begins with approval of the analysis plan and continues until successful execution of pilot tests for experimental events. An analysis plan provides the detailed analytic approach for accomplishing assigned objectives. It identifies the event being conducted; describes how the event is nested in the fiscal year experiment program; and defines the analytic structure and methodology for the assigned objectives.

(a) A mid-planning conference is conducted during the preparation phase involving all participating organizations, with the scope of the conference proportional to the scope of the experiment. The conference addresses draft event directives(s) to include analysis, data collection, M&S, experiment objectives; expected outcomes; scenario/OE concept; and architectures. The conference also refines the experiment/event design to include issues with the security classification; experiment/event environment; M&S federation and collaborative simulation environment; joint context and/or participation; training areas/ranges/instrumentation, requirements and resources; training support plan – both individual and collective; experiment forces (live or constructive) to include blue force and Operational Force participation; visitor support operations (if applicable); refined schedule; and pilot test design to include procedures for horizontal and vertical integration for executing distributed events. A key experiment schedule item is to identify configuration control milestones and delivery milestones. A cutoff date must be established at which point the experimental design must be placed under configuration control with subsequent changes allowed only with approval of the experiment director. Also, a delivery date must be identified for all items to be utilized in the event. These dates must be prior to start of player unit train-up to ensure a stable training environment; otherwise the validity of the experiment is placed at risk.

(b) The preparation phase transitions the focus from the overall experiment plan to individual events. This phase concludes with successful execution of the pilot test for each experiment event. Pilot tests cover all technical and administrative aspects of executing the experiment. These tests must be accomplished sufficiently in advance to allow for refinements of infrastructure and processes. The requirement for a pilot test varies based on the complexity of the selected venue; a rock drill may require only an internal walk-through for adequate preparation while a large scale field experiment may require a full-up rehearsal.

(3) The execution phase begins with the conclusion of a successful pilot test and concludes with the execution of the experimental event (including redeployment of personnel and reconfiguration as required). Executing agencies conduct a final planning conference that serves as a total event readiness review, incorporating all participating organizations. The scope of the conference varies with the selected venue.

(a) The execution document is the event directive, which must be completed prior to the final planning conference.

(b) Following the conclusion of the experimental event, the executing agency conducts the experiment, operational, and technical after action reviews to capture insights and issues for future resolution. Results are documented and presented in the event report NLT 30 days after the completion of the event.

g. Analysis and transition. The culmination of the experimentation effort is the transition of results. A key function of ARCIC is to integrate all experimental insights and findings to produce the integrated body of knowledge supporting decisionmaking as presented in the AEG. The event report, experiment report, and ETAP represent the minimum information required to support the overall experimentation process and effectively capture the critical information for the Army. From this data a repository of observations, insights, findings, and recommendations can be readily constructed to facilitate decisionmaking. Several transitions are available such as a DCR/DICR, but the essential requirement is a formal method to capture the results and ensure they are transitioned to the authoritative organization for implementation. Results from experiments, which vary in resolution, are classified as observations, insights, or findings. Observations represent the knowledge of a phenomenon in its framework of previous knowledge and ideas; an insight is the synthesis of a set of observations that reveal a desired capability or a warfighting impact; and a finding represents an insight supported by a sufficient body of knowledge to warrant transition to implementation.

(1) The executing organization (or analytic lead for integrating and capstone experiments) provides an after action review briefing to the CoP NLT 14 days after the event, followed by an event report(s) and experiment report. The event report is developed within 30 days of event completion and is a scripted briefing that provides relevant information to the experimentation and development community as rapidly as possible. The experiment report (with a completion date provided in the study plan, typically within 60-90 days of experiment completion) provides detailed findings, observations, and results of the experiment execution. Developed from the event report(s), the experiment report constitutes the final approved assessment of results associated with the experiment. These reports must be presented in the form of insights and

findings, with associated recommendations for the DOTMLPF domains. Contact CDLD for access to reports and experiment findings.

(2) In parallel with the experiment report, the executing organization develops an ETAP which identifies DOTMLPF recommendations for each experimental observation, insight, and finding. The ETAP recommends an OPR and office(s) of coordinating responsibility (OCR) to assess and take appropriate action on each observation, insight, and finding. The experiment director approves the experiment report, the ETAP, and drafts transmittal memoranda to OPRs and OCRs using the Dir, ARCIC signature block. Dir, CDLD (JAED) staffs the experiment report, ETAP and OPR/OCR memoranda through ARCIC for Dir, ARCIC approval and forward the recommendations in the ETAP to the designated OPRs/OCRs. The experiment director recommends OPRs/OCRs for integration coordination. ARCIC tracks the status of the ETAP by following-up with designated OPRs/OCRs (6 months after transmittal of the OPR/OCR memoranda or as required) to determine the status of action on ETAP recommendations. ARCIC maintains a web-accessible database of findings, insights, and observations from all experimentation and the status of follow-up actions. This database serves as a reference for experimentation planning/literature review, and ensures previously-investigated issues are considered when planning subsequent experiments. Experiment leads inform AWFCs leads of relevant results from the ETAP.

6-4. Operational architecture development and integration

a. DOD and joint directives mandate the use of architectures to support milestone decisions and capability document development (ICD, CDD, and CPD). Architectures within DOD are created for a number of reasons. From a compliance perspective, DOD's development of architectures is compelled by law and policy (for example, Clinger-Cohen Act, Office of Management and Budget Circular A-130). The management of employing sophisticated systems and technologies in pursuit of joint missions demands a structured, repeatable method for evaluating investments and investment alternatives, as well as the ability to effectively implement organizational change, create new systems, and deploy new technologies. Towards this end, the DOD architecture framework (DODAF) was established as a guide for the development of DOD architectures. The DODAF provides the guidance and rules for developing, representing, and understanding architectures based on a common denominator across DOD, joint, and multinational boundaries. It provides insight for external stakeholders into how the DOD develops architectures. The DODAF is intended to ensure that architecture descriptions can be compared and related across programs, mission areas, and ultimately, the enterprise, thus establishing the foundation for analyses that supports decisionmaking processes throughout the DOD. When integrated into a cohesive architecture set, the operational, systems, and technical architectures reflect the results of disciplined analysis and inform decisionmakers about the effects of their choices in all of the DOTMLPF domains. Thus, architectures are both inputs and products of the capabilities analysis process. Approved concepts and capabilities are rendered in architectural views derived from integrated architecture data that describes the total aggregation of missions, tasks, and activities that must be performed to achieve capabilities (operational architecture), the nodes and systems that support the missions and tasks, and how they exchange information to effect the desired outcome (system architecture) within specified standards (technical architecture).

b. CG, TRADOC is the operational architect of the Army and is responsible for developing operational architectures. Dir, ARCIC acts on behalf of CG, TRADOC to lead, manage, and provide guidance for the development of operational architectures through the A2MCD, and their AIMD division. TRADOC proponents develop and validate operational architecture IAW DoDAF 2.0, AR 25-1, TR 10-5-2 and TR 71-20. ASA(ALT) is responsible for developing the system architectures. The HQDA DCS, G-6/CIO is responsible for developing the technical architectures. TRADOC ensures that operational systems and technical architectures are integrated by validating that proposed solutions represented by the systems architecture satisfy the warfighter needs represented by the operational architecture.

c. In support of CG, TRADOC, TRADOC and designated non-TRADOC proponents, with support from AIMD, develop operational architectures in support of approved concepts, and ICW DOD and JCS concepts, directives, and policies. Operational architecture products describe the interrelationships among operational elements, define the types of information requirements/flows, the frequency of exchanges, which tasks and activities are supported by the information exchanges, the characteristics of information exchanges, the guidelines and principles governing their design and how these relationships change over time. AIMD develops policy for development, integration, validation/verification, and maintenance of operational architectures ensuring a consistent standard across TRADOC. AIMD manages the architecture validation process for integrated operational architectures and selected conceptual systems architecture products in support of JCIDS. AIMD is responsible for conducting verification and TRADOC/non-TRADOC proponents are responsible for conducting validation. To facilitate verification and validation, operational architectures are developed IAW the guidance outlined in the Operational Architecture Verification and Validation Guide. Architecture not developed IAW this guide will not be validated.

d. Architecture data formats for deliverable products will adhere to the standards stipulated in the most current DODAF version and the standards set IAW the Army Architecture Data Management Plan provided by the Architecture Data Steward. The Architecture Data Steward for the Army is the Chief of AIMD, A2MCD, ARCIC. All operational architecture development and analysis activities will use the Capability Architecture Development Integration Environment (CADIE) and the associated commercial and government tools. CADIE contains authoritative architecture data. Using CADIE architecture data for purposes beyond those for which it was validated may result in erroneous results and/or erroneous conclusions being made from that data. Therefore, any modification, addition, or deletion of architecture data from CADIE will require AIMD to recertify that architecture data before it can be considered authoritative. Training is available for authorized users of CADIE by contacting AIMD Operations at 757-788-5489, or DSN 680-5489. Access to the CADIE can be obtained by submitting a new account request form from the CADIEView webpage at <https://cac.cadieview.army.mil>.

e. Operational Architectures are used as one of the learning venues in AWFC ILPs. This may include the use of architectural analysis to address learning demands, or using the results of architectural analysis to inform the running estimate and/or ISS.

6-5. Science and technology

a. The prioritized joint and Army warfighting capabilities identified through the JCIDS process inform and focus the developmental efforts of the S&T community as specified in the Joint Warfighting S&T Plan and the Army Science and Technology Master Plan. Army technology objectives identified in the Army Science and Technology Master Plan provide the basis for the construct of advanced technology demonstrations (ATDs). ATDs are used by the Army to address selected high priority full operating capabilities (see TRADOC Pam 525-66) to demonstrate a new capability that does not exist, similar to a JCTD. JCTDs, ATDs, and qualified prototype projects are important mechanisms in this process as they assess the military utility of new capabilities, accelerate the maturation of advanced technologies, assist in providing cost data for possible solutions, and provide insight into non-materiel implications. These demonstrations and projects should be on a scale large enough to demonstrate operational utility and end-to-end system integrity. These activities also serve as venues to accelerate solutions that address capability gaps in the current force. The JROC reviews and validates joint mission needs cited as the foundation of JCTDs. In the Army, the ATDs that receive TRADOC and ASA(ALT) endorsement must have a technology transfer agreement with a program of record or developmental program to transition the militarily useful results of the demonstration to an established program via the JCIDS process.

b. Results of the JCTDs, ATDs, and qualified prototype projects will comply with the JCIDS process as they transition into the acquisition process. ATDs are handled in a similar manner as JCTDs by the HQ Army staff and ARCIC.

(1) The military utility assessment (MUA) completed at the end of the JCTD, or assessments conducted at the end of ATDs may be suitable for the required analysis used to prepare an ICD. 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; associated risks; and how the materiel and nonmateriel 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 is used to support the development and subsequent JROC/AROC approval of the CDD or CPD. A CDD or CPD, as appropriate, is developed for the JCTD to transition into a program of record. Developed prototypes are used and disposed of as determined by the acquisition community.

(2) 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 joint/Army solutions. This consideration shall be based on mission need validation and MUA processes as applied to JCTDs. Army projects derived from operationally validated quick reaction technology projects proceed through the ACD process laid out in chapter 10 for consideration as a joint/Army solution.

(3) When the sponsor of a JCTD, qualified prototype project, or quick-reaction technology project determines that the demonstration is complete, but additional development is required

before fielding, the MUA is used to support the development of the CDD. The CDD, with the supporting MUA, is then submitted for staffing and approval prior to the Milestone B decision.

(4) If the sponsor determines that the demonstration is complete and the capability is ready for immediate fielding for other than limited quantities, a CPD is developed to support approval for production and fielding. The MUA is used to support the development of the CPD. The CPD with the supporting MUA will then be submitted for validation and approval prior to the Milestone C decision.

c. Science and technology products are occasionally classified as SAPs. When classified as such, they require special handling by a SAP representative who is working the science and technology efforts for the force modernization proponent. These products are managed as stipulated in AR 380-381 (Special Access Programs). For questions pertaining to the handling of SAP science and technology products, contact the Science and Technology Division, CDLD.

d. S&T is one of the learning venues for AWFC ILPs. ARCIC S&TD will inform AWFC leads of relevant S&T learning activities and facilitate the inclusion of the results of ATDs into AWFC running estimates and solution strategies.

6-6. Scenarios

a. A scenario is a graphic, data, and narrative tool that describes the global conditions before, during, and sometimes after a conflict. It also provides the friendly and threat forces in details great enough to support capabilities development efforts such as experimentation, concepts, wargames, capabilities needs assessments, operational based assessments, and the CBA. Scenarios provide a unique integration capability as they are intended to be used laterally within TRADOC, ARCIC, the CDIDs, the battle labs, the various centers and schools; and vertically, for leadership and education, and training, through the Common Scenario Framework (CSF). DCG, Futures/Dir, ARCIC is the TRADOC staff proponent for TRADOC scenarios. Dir, CD&L will approve brigade and below scenarios, vignettes derived from TRADOC-approved CDS scenarios, and similarly echeloned studies. Chief, Joint and Army Concepts Division, will execute scenario responsibilities of the ARCIC and coordinate scenario activities for TRADOC. Dir, TRAC is the TRADOC executive agent for development of scenarios for use in studies and analyses. See TR 71-4, paragraph 1-4 for further information on the roles and responsibilities of TRADOC in regards to scenarios.

b. Purpose of scenarios.

(1) Support capabilities development. Since some changes may take DOD-level approval, capabilities development scenarios must comply with classified DPSs. See TR 71-4 for further information on capability development scenarios.

(2) Support experimentation. Scenarios support experimentation by exploring innovative methods of operating, especially to assess their feasibility, evaluate their utility, or determine their limits to reduce risk in the current and future force. Experimentation includes the full range of experiments and Title 10 wargames conducted to examine or demonstrate the potential of new

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technologies or new concept based capabilities. All TRADOC live, virtual, and constructive experiments should use approved TRADOC scenarios or vignettes.

(3) Support studies and analysis. Scenarios provide the analytical space to measure and analyze the differences in performance and effectiveness among various military capabilities and resources, to include concepts, forces, systems, or tactics.

(4) Support testing and evaluation. DPS-derived TRADOC standard scenarios provide the foundation for testing of materiel systems and organizations. (See AR 381-11 and TR 381-1 for TRADOC G-2 support in testing and evaluation.)

(5) Support leadership and education, and training. The CSF establishes a linkage between capabilities development, leadership and education, and training scenario processes that generate efficiencies in how these scenarios are produced and used to develop Soldiers, leaders, and the capabilities necessary for successful joint land operations. The CSF institutes a systemic method to produce a common scenario framework between the three domains (capabilities development, leader development and education, and training) while recognizing that unique requirements still exist. These domains may use scenarios developed for capabilities developments as the basis for leadership and education, and training scenarios.

Chapter 7 Capabilities Analysis

7-1. The capabilities-based assessment process

a. The JCIDS process begins with the execution of a CBA as illustrated in figure 7-1. The CBA is a structured, three-step process based on an approved joint or Army concept, existing CCP, CONOPS, or an identified operational need. It should be noted that when sufficient analysis exists to complete a CBA step, or even the entire CBA, that analysis can be captured and forwarded for approval to enter an assessment at a later step, or even complete the CBA itself. Supporting analysis such as the CNA and WfN should also be examined for usable information. The JCIDS CJCSI and Manual are prescriptive guidance that addresses the uses, functions, and considerations for conducting a CBA. Refer to the TRADOC CBA guide for more details on the FAA, FNA, and FSA steps of the CBA process discussed in this chapter. The [TRADOC CBA Guide](#) is the descriptive source for guidance on conducting the CBA. The TRADOC CBA Guide supports guidance contained in the joint instructions and incorporates Army guidance for this process.

b. The preference is to avoid high rigor and time-consuming detail in the CBA, and concentrate on whether to recommend action. CBAs that are tightly focused on recapitalization, replacement actions, evolutionary needs, or information systems should take no more than 90 days, while more complex CBAs dealing with large uncertainties should take no more than 180 days. These timeframes are goals found in the JCIDS guidance. It is recognized that CBAs covering an entire WFF may take a year to complete.

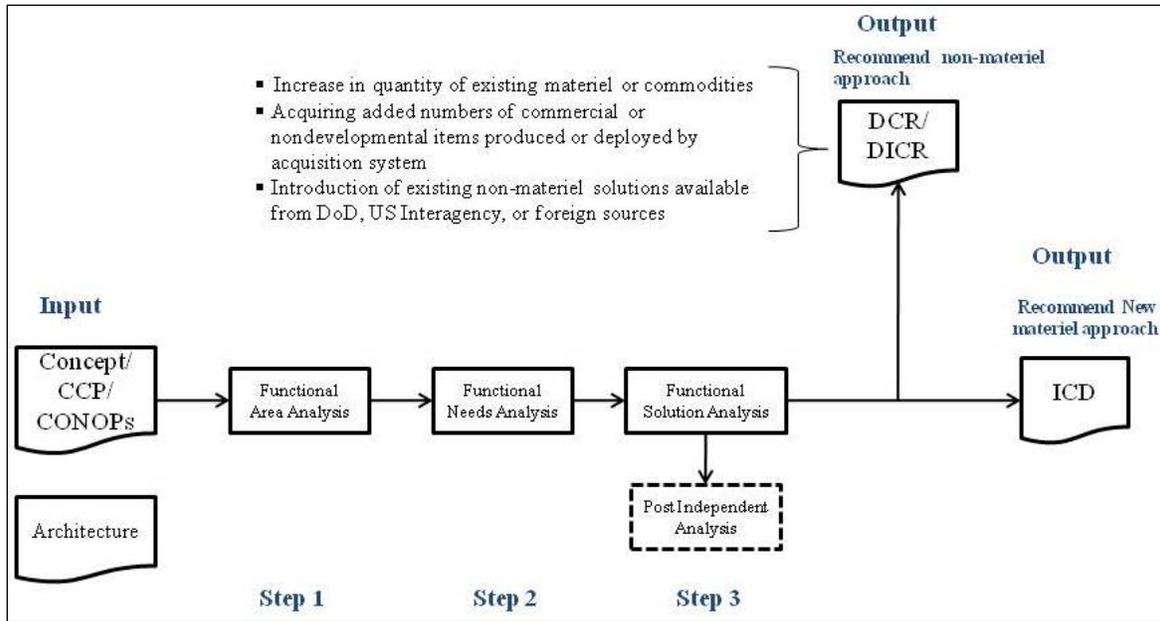


Figure 7-1. CBA

c. Table 7-1 depicts the management of the CBA in TRADOC in terms of functions, responsibilities, timing, output, and approvals. The results of the CBA are documented in a DICR (for joint use a DCR) and/or an ICD, which is used to support the materiel solution analysis (MSA) (AoA) phase of the DAS.

Section I
CBA Steps

7-2. Functional area analysis

a. The FAA is the first analytical step of the CBA. For complex CBA efforts, S&AD is responsible for coordinating with TRAC for required analytic support. S&AD should be leveraged to review FAA results as they are developed. The capabilities in the FAA must be defined (with associated tasks, conditions, and standards) using the common lexicon for capabilities established in the JCAs. The FAA also identifies the joint interdependencies between other service and Army capabilities.

Table 7-1.
CBA functions and responsibilities

Analysis	Directed by	Performed by	When	Outputs/Use	Approved by
Step 1: FAA	Dir, ARCIC	Proponent / ICDTs	Conducted for each approved concept and CCP; or CONOPS (when applicable)	Tasks, conditions, standards mapped to the required capabilities Basis for the FNA Basis for the initial threat environment assessment (ITEA)	ICDT Chair/proponent
Step 2: FNA	ICDT Chair/proponent	Proponent / ICDTs	Following the FAA	Gaps in capability or performance Risk analysis identifies priority needs Basis for the FSA	Dir, ARCIC
Step 3: FSA	Dir, ARCIC	Proponent / ICDTs	After Dir, ARCIC approves which gaps to explore based on FNA results	Recommendation on whether to proceed with an ICD and/or DCR/DICR, forwarded to ARCIC	See below
Ideas for non-materiel approaches (DOTMLPF analysis)		Proponent / ICDTs		Recommendations for the DOTMLPF-RIO solution approaches (RSA) substep below	
Ideas for materiel approaches		Proponent / ICDTs with RDECOM support		Recommendations for the RSA substep below	
Recommended DOTMLPF-RIO solution approaches		Proponent / ICDT Chair: Validates results Makes DCR/ DICR/ ICD recommendations to ARCIC leadership		List of RIO-based and prioritized materiel & nonmateriel approaches and their associated DOTMLPF implications. Modernization recommendations for decision by ARCIC directors.	Dir, RID, A2MCD, or FFID (after completion of post independent analysis (PIA) if requested – see below)
PIA (as needed)	Dir, A2MCD	S&AD, ARCIC	As requested by Dir, RID, A2MCD, or FFID for high visibility programs	Recommendation to functional director (RID, A2MCD, or FFID) to approve the FSA	Dir, A2MCD

b. The proponent conducting the CBA will use their SME to apply operational context from the strategic guidance provided, and will also use the JCA taxonomy as a point of reference to assist in categorizing and linking the proposed solution to joint CAs and the strategic guidance. Capstone documents such as the QDR, NDS, NMS, CCJO, and TRADOC Pam 525-3-0 provide frameworks for describing the breadth of the strategy environment. These documents should be used to select an adequate scenario sample. Additionally, operational architecture modeling based on UJTL/AUTL tasks associated with roles assigned to people and platforms in organizations can be leveraged to provide capabilities requirements insights.

c. The military objectives of these scenarios provide a source for developing the list of required capabilities to be examined. These required capabilities and their associated tasks, coupled with the scenarios, should be further refined by the use of UJTIs and/or AUTLs. JCAs are currently the preferred method DOD uses for reviewing and managing capabilities.

d. To ensure early and consistent consideration of threat and OE in the CBA process, the ICDT lead or proponent coordinates with TRADOC DCS, G-2 to ensure threat considerations were included in the proposed operational tasks, conditions, and standards. TRADOC DCS, G-2 ensures that DIA produces an ITEA of the projected OE and adversarial capabilities that could specifically affect the potential capability. The ITEA constitutes the baseline threat assessment for all JCIDS threat documentation and ongoing analysis. When completed, the FAA is approved by the ICDT chair or proponent.

7-3. Functional needs analysis

a. The FNA is the second analytic step in the CBA. Validated baseline architectures (such as the current Modular Force architecture and the Army integrated logistics architecture) can aid in providing input to support capability gap analysis.

b. The ARCIC published guidance on distribution of standardized benefits and metric descriptors to assist in CBA efforts by identifying outcomes and requirements for capability gaps (Memorandum entitled "Standardized Benefits and Metrics Descriptors", signed 12 August 2010 by Dir, ARCIC posted on AKO Policy site at URL <https://www.us.army.mil/suite/files/5234025>, ARCIC Policy and References). Use of this guidance provides initial metrics that can be applied during the conduct of the FNA.

c. The FNA produces a prioritized set of gaps the Army should address, or concludes that no pressing gaps exist. You must research CCDR input to the JROC regarding what they perceive as military requirements and gaps. The gap list may not include all the capability gaps discovered, but it must reflect the gaps that pose unacceptable risk to achieving the aims of the national and military strategies. Since the JCIDS process ultimately identifies which gaps are pervasive or important enough to address, the suggested gaps must be directly linked to operational situations and the consequences of failing to meet objectives. The FNA results in a prioritized list of gaps that are directly linked to priorities in strategic guidance. It must include sufficient information to illustrate how these priorities were developed. Conclusions in the FNA must be presented concisely, and compelling factors behind the recommended priorities must include the in depth information senior leaders need if they choose to make adjustments to the results.

d. The ICDT Chair or proponent forwards the prioritized list of capability gaps, redundancies, and the supporting final FAA and draft FNA Final Report to the ARCIC JCIDS gatekeeper for APRB review and Dir, ARCIC approval. Following the FNA, Dir, ARCIC will direct the ICDT Chair or proponent to proceed with an FSA for those needs considered critical to executing operations IAW the concept and the overall needs of joint and Army forces. Noncritical needs may also be approved for FSA exploration depending on resources available.

e. CBAs developed by non-TRADOC proponents should include TRADOC coordination of the final FAA-draft FNA through the ARCIC JCIDS gatekeeper. See the TRADOC CBA Guide for more information.

7-4. Functional solution analysis

a. The FSA is the third analytic step in the CBA. It assesses potential DOTMLPF-RIO solutions and policy approaches to solving, or at least mitigating, one or more of the capability gaps identified in the FNA. The approaches identified should include the broadest possible range of joint/Army possibilities for addressing the capability gaps. The results of the FSA will influence the future direction of integrated architectures and provide input for SFs.

b. The ARCIC published guidance on distribution of standardized benefits and metric descriptors to assist in CBA efforts by identifying outcomes and requirements for capability gaps (Memorandum entitled "Standardized Benefits and Metrics Descriptors", signed 12 August 2010 by Dir, ARCIC posted on AKO Policy site at URL <https://www.us.army.mil/suite/files/5234025>, ARCIC Policy and References). Use of this guidance provides updated metrics that can be applied during the conduct of the FSA.

c. Ideas for nonmateriel approaches (INMA). The INMA identifies whether nonmateriel DOTMLPF and/or policy approaches can address the capability gaps (needs) identified in the FNA. If the ICDT chair or proponent determines that the capability gap(s) can be addressed (fully or partially) by nonmateriel and/or policy approaches, the ICDT or proponent (when directed by ARCIC) will develop a DICR (for joint, develop a DCR) in addition to any required ICDs.

d. Ideas for materiel approaches.

(1) Materiel approaches run the gamut from new uses of fielded systems to research, development, and fielding programs on the scale of the Manhattan Project. The emphasis in JCIDS is to fully examine and assess existing materiel before recommending new starts.

(2) The ICDT or proponent should leverage the expertise of all government agencies to include defense agencies; joint; interagency; other services; S&T; and research, development, and acquisition communities, as well as industry, in identifying possible materiel approaches within the guidelines established in AR 380-5. The ICDT or proponent should always consider existing or developmental materiel programs that can be modified to meet the capability needs.

e. Recommended DOTMLPF-RIO solution approaches.

(1) Although a detailed solutions analysis is no longer a formal CBA requirement under JCIDS, it is still necessary to provide advice in the form of DOTMLPF-RIO approaches and considerations for those gaps deemed to have an unacceptable level of risk to the force. It may be necessary to write a DCR/DICR and/or an ICD, so the elements for those documents must be addressed in the CBA results. While the level of analysis is reduced, it is still crucial to analytically defend the need for a new solution, especially a materiel solution. Things such as feasibility, affordability, supportability, etc. still need to be assessed at some basic level and all recommended approaches must reflect RIO characteristics.

(2) The RSA utilizes a limited assessment philosophy and should be conducted in parallel for all gaps being explored. It may be discovered that certain nonmateriel and or materiel approaches address multiple gaps under review. This strengthens the case for recommending those particular approaches as long as they meet the other characteristics or RIO, feasibility, affordability, supportability, etc.

(3) The final product of this step is a list of RIO materiel and nonmateriel approaches (or combination of approaches) and their associated DOTMLPF implications evaluated against the metrics identified in the FAA. After the assessment is complete, some of the alternatives may be ruled out (as they apply to a particular gap) due to low technical maturity, high operational risk, etc. The remaining alternatives are then prioritized and the best combinations of those approaches will be ranked in priority order and listed in the CBA summary worksheet, as contained in the CBA Guide.

f. The PIA is an optional step in the FSA process. PIAs are only conducted on completed CBAs, not individual products like the FAA, FNA, or FSA. However, the draft FAA, FNA, and FSA documents (as they are being developed) should be staffed with S&AD before finalizing the reports for approval. CBAs selected for PIAs might include broad ranging, high visibility efforts, and/or anticipated ACAT I programs. The ARCIC JCIDS gatekeeper, when making distribution on approved CBA results, provides the final product to the Dirs, A2MCD and RID for screening as a candidate for a PIA. Dir A2MCD, through S&AD, performs PIAs when required. The Dir, RID or Dir, A2MCD will coordinate directly with the ICDT lead for resolution of any issues that may arise from the PIA. If the CBA needs to be updated as a result of the PIA, a change 1 will be produced to the CBA results.

g. The ICDT chair or proponent forwards the recommended nonmateriel or materiel approach, or combination of approaches, the final FAA and FNA, and the supporting draft FSA Final Report to the ARCIC JCIDS gatekeeper for TRADOC internal staffing and subsequent functional Dir (RID, A2MCD, or FFID) approval. As required, an ICDT Chair or proponent is then directed to compile the analysis and all necessary JCIDS data into a DICR (for joint, use a DCR), and/or an ICD, or both. Authorization from the Dir, ARCIC is required to proceed with an ICD. All ICDs will be validated by Dir, ARCIC.

(1) When a materiel approach is required, the ICD will make a recommendation on the type of materiel approach preferred. The materiel initiatives fall within three broad types: information system approach which includes development and fielding of information systems or evolution of the capabilities of existing information systems; evolutionary development approach of an existing capability with significant improvement; transformational approach which includes breakout 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.

(2) The ICD also summarizes the DOTmLPF and policy changes (nonmateriel approaches) that were considered in satisfying deficiencies, in part or in whole.

Section II

Other Capabilities Analyses

The remainder of this chapter addresses analyses conducted by the CAPDEV, which expands on the work done in the CBA. These analyses include the AoA, requirements analysis (the analyses that supports the development of key performance parameters and performance attributes for a system), the CNA, the WfN, WFO, and the C-BA. Table 7-2 describes the roles and responsibilities for the conduct of the analyses and how the analyses are used. During all analyses, to include the CBA, you must conduct trades to ensure that proposed solutions are resource-informed.

7-5. Conducting trades in a joint, resource constrained environment

a. The Army is operating in an environment where we cannot afford, nor is it necessary to obtain every capability to fully mitigate every gap. CAPDEVs must accept that some incremental increases in warfighting capability may not be necessary since the gap is within an acceptable level of risk. Because of these realities, CAPDEVs must make risk assessments and trades at every step in both the capabilities development and acquisition processes, from the CBA to the deployment of a solution. Trades must be considered to ensure that capability documents and the solutions they propose have RIO characteristics. This means the proposed solutions account for and balance the resources required with the resources available to address the most critical gaps in operational capability.

b. There are many considerations when making effective trades. Please note that these trades are not synonymous with "trade studies." Although there may be times when a trade study is appropriate, this paragraph discusses trades that can be conducted with research, basic analysis, and good professional military judgment. Trades must be based on strong operational and rational considerations, grounded in facts, and linked (through metrics) to missions. Trades should also be evaluated across the DOTMLPF domains to determine the tactical, operational, and strategic impacts of trades in a holistic fashion. The effect of a change in one domain on another must be considered - to include the second and third order effects on other interdependent domains and materiel systems, and other warfighting organizations, both Army and joint. Trades also provide a means in which we can propose alternative paths to close or mitigate gaps. All trades must be analytically sound and risk-informed and they must consider integration with joint and other service capabilities. Proposed trades must also take into consideration the results of the solutions (primarily materiel) in the most recently approved CNA (for example, how the solution competed in the CNA, how the solutions support the organizational assessment and their applicability to capability packages). Ensure that trades neither create new gaps nor increase current gaps unless solid analysis supports that recommendation.

c. Overarching trade considerations include, but are not limited to: organizational impacts; warfighting functional impacts; operational risk (risk to mission and risk to force, both Army and JIIM); level of integrated capability; resource availability (dollars, personnel, etc.); C-BA (show the value to the force); technical feasibility (technical readiness), and cost, schedule, and performance.

d. Trades requirements and metrics are outlined in TRADOC CBA, DICR, ICD, CDD, and CPD Guides.

7-6. Analysis of alternatives

a. This analysis supports the Milestone A, and/or the Milestone B and C decision reviews (if required), and is initially conducted following the MDD. The purpose of the AoA is to assess the potential materiel approaches and solutions to satisfy the capability need identified in the approved ICD. S&AD is the ARCIC lead for all studies and analyses related to capabilities development and works with HQDA DCS, G-3/5/7 (DAMO-CIC), TRAC, and proponents to determine the proper analytic requirements to support program milestone decisions.

b. The AoA is one of the key inputs used to define system capabilities in the capability development document. It is an evaluation of the performance, operational effectiveness, operational suitability, and estimated costs of alternative systems required 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. These key assumptions and variables inform the KPP, KSA, and performance attributes used for proposed solutions during the acquisition process.

(1) When directed by Dir, ARCIC or Dir, A2MCD, TRAC leads the AoA for ACAT I and IA solutions (see table 7-2). For ACAT II and III solutions, ARCIC designates a proponent to conduct the AoA while S&AD provides technical oversight. TRAC provides support and technical oversight for high visibility/special interest solutions within the confines of their resources. If required, other analytic resources (in particular, proponents, Army Materiel Systems Analysis Activity (AMSAA), or contractors) may be used. AMSAA and the Deputy Assistant Secretary of the Army for Cost and Economics (DASA(C&E)) provide specialized analytic support as required. HQDA DCS, G-3/5/7 capabilities integration (CI) forwards ACAT I and special interest program AoAs to the Army Systems Acquisition Review Council (ASARC) and OSD (Cost Assessment and Program Evaluation (CAPE)).

Table 7-2.
Supporting analysis functions and responsibilities

Analysis	Directed by	Performed by	When	Product/Use	Approved by
Analysis for KPP, KSA, and performance attribute development	Dir, A2MCD	<ul style="list-style-type: none"> • TRAC for ACAT I and IA programs • Designated proponent for ACAT II and III • AMSAA and DASA(C&E) support as required 	As directed by ARCIC	<ul style="list-style-type: none"> • KPPs, KSAs, and other performance attributes for recommended solutions • Provides trade-space analysis • Basis for writing paragraph 6 of the CDD 	Dir, ARCIC
Analysis of alternatives (AoA: DOD 5000-series)	Dir, ARCIC; Deputy Dir, ARCIC; or A2MCD	<ul style="list-style-type: none"> • TRAC for ACAT I and IA programs • Designated proponent for ACAT II and III • AMSAA, and DASA(C&E) support as required • HQDA DCS G8 for affordability analysis 	As directed by ARCIC AMSAA provides system performance data and performance trade-off analysis DASA(C&E) reviews cost analysis and develops the Army cost position	<ul style="list-style-type: none"> • Provides preferred solution (cost-benefit/ effectiveness) • Refines the selected concept documented in the approved ICD • Provides the basis for the TDS • Provides basis for prototyping requirements 	Dir, ARCIC or Dir, A2MCD validates senior advisory group (SAG) approves for ACAT I and special interest programs MDA approves for potential ACAT II and III programs
CNA	Dir, A2MCD	<ul style="list-style-type: none"> • ARCIC Capabilities Assessment and Reliability, Availability, and Maintainability Division • TRADOC staff and TRADOC/non-TRADOC proponents support 	Annually	<ul style="list-style-type: none"> • Provides ordered list of Army required capabilities, banded by risk to mission accomplishment if not performed • Provides a list of Macro-level force capability gaps & a list of development priorities • Assesses whether programmed DOTMLPF solutions can accomplish the required capabilities • Informs CBAs and POM development • Informs Experimentation planning and the LO development 	Dir, ARCIC
Current Force WfN	Dir, RID	<ul style="list-style-type: none"> • ARCIC (RID/Accelerated Capabilities Division (AC DIV)) • TRADOC/ non-TRADOC proponents support 	Semiannually	<ul style="list-style-type: none"> • Warfighter needs categorized by Tier 1 and 2 JCA 	Dir, ARCIC

Analysis	Directed by	Performed by	When	Product/Use	Approved by
WFO Analysis	Dir, CDLD	<ul style="list-style-type: none"> S&T Division (CDLD) TRADOC force operating capability leads Army S&T community 	Annually	<ul style="list-style-type: none"> Capabilities & solutions required by operational forces 10-20 yrs in future Assists S&T community to focus investment for future warfighting needs 	Dir, ARCIC
TRADOC Cost-Benefit Analysis (C-BA)	Dir, ARCIC; Deputy Dir, ARCIC; or A2MCD/RID/FFID	<ul style="list-style-type: none"> CoEs/CDIDs or designated proponent 	As required in conjunction with capabilities documents	Provides value analysis to inform TRADOC integration, prioritization, and programming decisions	Dir, ARCIC

(2) The inputs for the AoA are operational scenarios, architectures, behaviors (doctrine, TTP), OE, system performance data (alone and in combination with other systems), system cost data, and the required capabilities over time (described in the ICD and CDD). HQDA DCS, G-3/5/7, the MDA, and OSD (Dir, CAPE) will provide specific issues and study alternatives that the AoA must address to ensure the AoA fully addresses higher level HQs issues and concerns. Public Law 104-106, Section 5123; and 40 United States Code, Section 11313; mandate that there be a clear linkage between the AoA, system requirements, and test and evaluation (T&E) measures of effectiveness. The outputs are a measure of the comparative operational effectiveness and cost of specific solutions and combinations of solutions. TRAC provides the operational scenarios and supporting models used to analyze operational effectiveness and populates them with system performance data certified by AMSAA and behavioral data approved by the concept proponent or, in the case of multifunctional and SoS alternatives, by TRADOC as the user representative. AIMD provides approved architecture data and expertise as required. TRADOC Signal CoE provides electromagnetic spectrum supportability data and expertise as required. TRADOC DCS, G-2 and TRADOC Intelligence Support Activity provide OE data, to include threat system performance and behavior. The office of the DASA(C&E) guides and/or provides cost analysis and develops the Army cost position. For all ACAT I MS A AoAs, DASA(C&E) also conducts lifecycle cost analysis. TRAC conducts lifecycle cost analysis for all MS B or later ACAT I AoAs and for other AoAs when directed by ARCIC. Proponents with ACAT II and III programs will coordinate with S&AD regarding the need for AoAs for their proposed systems. S&AD assists them in obtaining the required information from the organizations mentioned in this paragraph (as required) to allow them to conduct an AoA.

(3) The AoA employs quantitative methods as it deals with the performance and cost of specific systems, and it may evaluate the results of simulations. The reliability of the conclusions is dependent upon the accuracy of the data used to replicate performance, cost, and employment of proposed solutions. Where appropriate, the analysis addresses the interoperability and commonality of components or systems that are similar in function to other DOD component programs or allied programs. Performing the AoA prior to the beginning of technology development requires assumptions about future performance and costs. The AMSAA provides the best available data at a point in time, but as technology development progresses, the demonstrated performance data may replace or modify the assumptions. The key to preserving the integrity of the AoA is disciplining the data used in models and simulations.

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This requires using only certified or approved data. Data is continuously updated as approved hard data becomes available from experiments and tests of systems and organizations in the JOE.

c. The first AoA is done during the MSA phase of the DAS and updated in the technology development phase of the acquisition life cycle. Chapter 9 provides additional details on AoAs in the context of the acquisition management process.

7-7. Requirements Analysis (KPPs, KSAs, and performance attributes)

a. The analyses done during the CBA and AoA provide the basis for the KPPs, KSAs, and performance attributes. The CDD and CPD contain the KPPs, KSAs, and performance attributes that define the minimum requirements for producing an increment of capability to meet warfighter needs as described in the ICD. The KPPs, KSAs, and performance attributes set metrics for materiel developers to develop a system, inform S&T about investment decisions for future increments, and establish the limits of performance trade-offs that materiel developers can use in managing their programs. The CDD brings together the chosen materiel approach and the performance attributes of the materiel systems and organizations that host capabilities. Analyses performed in the JCIDS process provide the basis for answering these questions:

(1) What are the performance attributes that the system must possess to provide the full desired capabilities as described in the ICD?

(2) Given an incremental development strategy, which of the system's performance attributes are so essential for the current increment that they constitute KPPs? Given the established KPP thresholds, can the system meet the overall capability requirement in the CDD/CPD? If the system cannot, it will result in a reevaluation, reassessment, or termination of the program, or a modification of the content of production increments. For KPPs, more is not better. Note: KPP selection excludes those KPPs already designated as mandatory. Still, appropriate thresholds must be established for all KPPs.

b. S&AD manages different types of requirements analyses that contribute to the selection of those KPPs, KSAs, and other performance attributes included in the CDD. Ultimately, the designated proponent is responsible for determining the KPPs, KSAs, and performance attributes. The supporting proponents assist by performing those portions within their areas of functional expertise. For other programs, S&AD tasks proponents to answer specific questions about minimum essential performance and determines, sometimes with TRAC support, the threshold values for each increment of capability. The AMSAA supports this process with system performance data and trade-off analysis on KPPs, KSAs, and other performance attributes.

c. The key inputs for all these analyses are the required operational capabilities (in the CDD and CPD), force design parameters in the concept, operational, and systems architectures that show how the capability fits into the larger force, the OE, AoAs and assessments of technological maturity, readiness of complementary or enabling capabilities, and resourcing status. The outputs are the KPPs and KSAs (threshold and objective performance values) for systems that relate directly to operational capabilities.

d. Currently there are four mandatory KPPs: survivability, force protection, sustainment, and net-ready. The sustainment KPP and its two mandatory supporting KSAs (reliability and ownership cost) are developed for all JROC interest programs and non-JROC interest programs as determined by the sponsor. There are also selectively applied KPPs on system training and energy efficiency that must be addressed whether they apply to the proposed solution or not. For further information on these required KPPs/KSAs, see the JCIDS Manual or the TRADOC [CDD Writer's Guide](#) and [CPD Writer's Guide](#). These guides are a descriptive source for assembling a CDD or CPD and provide electronic templates to assist in writing the documents.

e. Since KPPs and KSAs are major cost drivers and have the potential to kill programs, the goal is to limit CDD/CPDs to no more than six KPPs, no more than five KSAs, and no more than ten additional performance attributes.

7-8. Capabilities needs analysis

The annual CNA process is a TRADOC-led, 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 and programmed DOTMLPF solutions. Following guidance from the HQDA DCS, G-3/5/7, the CNA identifies, assesses, integrates and orders the Army's required capabilities based on risk to mission accomplishment; DOTMLPF solutions, capability gaps, and gap solution strategies associated with the required capabilities; and developmental priorities and big ideas guiding future capabilities development work. The CNA products are used by HQDA to inform the POM, support JCIDS by informing the CBA and focus developmental priorities and requirements determination guidance in the ArCP. A description of the CNA and completed results are available at <https://cna.tradoc.army.mil>.

7-9. Warfighter needs analysis

a. The WfN tracks the identification, validation, authorizing, and resourcing of requested Army Commanders' materiel requirements, as reported by the ECOP, for current operations intended to correct a deficiency, improve a capability, or request the procurement of a new/emerging capability to enhance mission accomplishment. WfN are derived from approved and validated Army ONS and JUONS. The WfN database provides leaders an on-demand hasty analysis and trend identification capability and also provides current operations capability needs information annually to the CNA.

b. ARCIC AC Div leads the WfN by reviewing ONS, JUONS, and on-going initiatives (such as the IED defeat). HQDA DCS, G-3/5/7 directs TRADOC to perform specific DOTMLPF analysis for ONS where no current capability exists. The division sends out a weekly ONS/JUONS report (grouped by JCA) to TRADOC staff sections, centers and schools, and select organizations outside of TRADOC. Proponents assess the report to determine potential future requirements or other DOTMLPF impacts and then use their results to inform the CNA process.

7-10. Warfighter outcomes analysis

a. The WFO analysis is an annual assessment led by the S&T Division of CDLD. This analysis is oriented on those capabilities and solutions required by or delivered to operational forces 10-20 years in the future commonly referred to as the extended planning period. This analysis draws information from joint/Army concepts, force operating capabilities (FOCs) from TRADOC Pam 525-66, Army lessons learned, known S&T programs, high priority residual (unaddressed) warfighter needs, and high priority residual CNA gaps.

b. The WFOs are used to assist the S&T community in focusing their investment strategy to meet future warfighter needs; inform the Army S&T community during the annual Army technology objective (ATO) and focus discussions about investments during ARCIC Technology Information Exchange program engagements. The analysis is led by the S&T Division and the TRADOC CoE leads with active participation by the Army S&T community. The Army S&T community consists of: ARCIC (S&T Division); ASA(ALT); RDECOM; Medical Research & Materiel Command; SMDC; Army Corps of Engineers Engineer Research Center; and the Army Research Library. The primary audiences for the WFO products are HQDA (ASA(ALT)); DCS, G-2; DCS, G-3/5/7; DCS, G-8; Army S&T community, DARPA, and industry.

7-11. Cost-Benefit Analysis

a. A VCSA memo (Cost-Benefit Analysis to Support Army Enterprise Decision Making) dated 30 Dec 2009 was published to address Army needs to develop stronger considerations of cost and benefit tradeoffs and to take steps to avoid too much capability redundancy. To facilitate these cost and benefit considerations, the VCSA provided additional cost guidance to the Army directing that each unfunded requirement and new or expanded program proposals be accompanied by a thorough C-BA. The analysis must identify the total cost of the proposal, the benefits that result, billpayers for the new capability, and the second and third order effects of the funding decision. The net result of the C-BA should be a strong "value proposition" – a clear statement that the benefits more than justify the costs and trade-offs."

b. The VCSA memo underscores the importance of conducting resource-informed capabilities development. This memorandum provides guidance on cost considerations for CAPDEVs to build on to conduct C-BAs for capability documents. The more cost-benefit analyses we conduct, the better we can estimate the cost impacts to the Army and joint force and assist our leadership in making fiscally informed decisions. TRADOC supports the VCSA memorandum and published guidance for C-BA considerations when JCIDS documents are prepared by force modernization proponents.

c. All capabilities documents will be prepared IAW the guidance published 28 Jun 2010, "Implementing Cost-Benefit Analysis (C-BA) Guidance for Joint Capabilities Integration and Development System (JCIDS) Capabilities Documents." Dir, ARCIC approves all TRADOC C-BAs incorporated into capabilities document before submission to HQDA. The general guidelines outlined in the [U.S. Army Cost Benefit Analysis Guide](http://asafm.army.mil/offices/LinksDocsOffice.aspx?OfficeCode=1400) available at <http://asafm.army.mil/offices/LinksDocsOffice.aspx?OfficeCode=1400> will be followed. DASA(C&E) reviews the C-BAs sent from the TRADOC gatekeeper to the AROC and makes

recommendations regarding affordability of the proposed capability. Examples of cost-benefit analyses and resource-informed briefings can be found on AKO at <https://www.us.army.mil/suite/files/5232873> in the "Sample cost-benefit analyses" folder. Consult the ARCIC S&AD when doing C-BAs to ensure compliance with published guidance.

Chapter 8

Documenting Resource-Informed, Integration-Focused, and Outcome-Based (RIO) DOTMLPF Solutions

8-1. General

a. The Secretary of the Army designated TRADOC as the lead for designing, developing, and integrating force capabilities as well as synchronizing the development of DOTMLPF solutions across the Army. These TRADOC responsibilities are executed by the ARCIC. ARCIC's role as the lead Army capabilities development integrator is executed within TRADOC's authority to build the future Army.

b. The implementation of DOTMLPF-RIO meets the Army's intent to address cost throughout the JCIDS development process. DOTMLPF solutions having RIO characteristics are resource-informed (achieve optimal warfighting capabilities at an affordable cost); are integration-focused across the DOTMLPF domains and all warfighting capability areas; and they portray performance characteristics that are relevant (outcome-based) and reflect the acceptance of prudent operational risk.

c. Proponents are responsible for all DOTMLPF integration within their force modernization areas of responsibility, as described in AR 5-22. CDIDs review the capability documents from a force modernization proponent perspective to ensure that integrated capabilities development products describe how DOTMLPF-RIO solutions mitigate validated gaps to ensure mission success at an acceptable level of risk to personnel and equipment. When outlining an integrated set of proposed DOTMLPF-RIO solutions to achieve required capabilities, TRADOC's objective is to give gaining organizations the tools and solutions necessary to achieve mission success and sustain readiness. Proponents must also ensure that DOTMLPF and policy changes required to support integration of the system/capability with existing capabilities is considered and documented as appropriate in capability documents.

d. TRADOC organizations responsible for each DOTMLPF domain assist the ARCIC by executing a lead, assist, or staff management function as defined in TR 10-5 (see table 8-1). HQDA DOTMLPF leads can be found in AR 5-22.

e. Capabilities Assessment and reliability, availability, and maintainability (CARD) (RAM) Division serves as the ARCIC point of contact for T, L, and P issues and proposals not directly tied to a specific system. They perform the following T, L, and P review and integration efforts:

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(1) As a key facilitator of ARCIC DICR staffing, they coordinate DICR review with those POCs on the ARCIC Validation Staffing List, to include the appropriate T, L, and P staff managers listed in table 8-1.

(2) Review ICD recommendations for nonmateriel T, L, and P approaches and determine if a companion DICR has been submitted (if required). Update CNA DOTmLPP database as required.

(3) ICW the ARCIC staffing action officer, review CDDs and CPDs to determine if CNA DOTmLPP database updates are required. For those T, L, and P requirements lying outside the Acquisition Program Baseline or outside programmed resources, ensure the proponent has begun efforts to submit the proper requests for approval and resourcing to HQDA (via TRADOC).

(4) Provide the rank order of proposed DOTMLPP capabilities relative to the CNA.

(5) Work with the appropriate ARCIC functional division to determine impacts of the proposed T, L, and P solutions on other DOTMLPP capabilities (if any).

Table 8-1.
TRADOC DOTMLPF domain leads and integrator responsibilities

Domain	TRADOC Org (Domain lead and/or Staff Manager)	Performed by	Output Examples	If TRADOC CG or higher-level approval required: Validated by
Doctrine	CAC (lead)	CAC/ Combined Arms Doctrine Directorate Doctrine proponents	<ul style="list-style-type: none"> Field manual Doctrine principles Tactic, techniques, & procedures 	CAC CDR and Dir, ARCIC
Organization	ARCIC (lead)	ARCIC, Force Design Directorate (FDD)	<ul style="list-style-type: none"> Basis of issue guidance Organization & operations plan (as needed) Unit reference sheet Force structure DOTMLPF (organizational) assessments Force design update (FDU) FDU JR Any other force structure assessments 	Dir, ARCIC
Training and Training Support	TRADOC DCS, G-3/5/7 (staff management)	ICDT/proponent in collaboration with CAC-T (U.S. Army Training Support Center) and TRADOC G-3/5/7	<ul style="list-style-type: none"> Training input to Army Modernization Plan System training plan Training support plans; such as BCTM Training land acquisition strategic-level training concepts, plans, and strategies; such as BCTM training strategy Training facilities (major range projects, CACTF facilities, battle command training centers, and classroom facilities) Training analyses supporting a training KPP and required training resource requirements. 	TRADOC DCS, G-3/5/7 and Dir, ARCIC
Materiel	ARCIC (lead)	ICDT/proponents in collaboration with ARCIC functional divisions	<ul style="list-style-type: none"> ICD, CDD, CPD, DCR, DICR 	Dir, ARCIC
Leadership and Education	TRADOC DCS, G-3/5/7 (staff management)	CAC	<ul style="list-style-type: none"> Professional military education (PME) redesign proposals PME Concept Plans ALDP Integrated Priorities Lists, Inputs to the ACP 	TRADOC DCS, G-3/5/7 and Dir, ARCIC
Personnel	TRADOC DCS, G-3/5/7 (staff management)	ICDT/Proponent & TRADOC G-3/5/7, Generating Force Directorate, Personnel Development Division (PDD)	<ul style="list-style-type: none"> MOCS proposals Health, welfare, and viability of the branch or functional area, including impacts on female Soldiers, regarding career development, utilization, and promotion opportunities 	TRADOC G-3/5/7 and Dir, ARCIC
Facilities	TRADOC DCS, G-1/4 (staff management)	ICDT/Proponent & TRADOC G-1/4	DD 1391____ <ul style="list-style-type: none"> Major construction Army (MCA) Major facility renovation for training facilities or materiel facilities 	Dir, ARCIC and TRADOC DCS, G-1/4 (Engineer) and Assistant Chief of Staff for Installation Management (ACSIM)

Note: HQDA DOTMLPF Leads can be found in AR 5-22. Definitions of lead & staff management are found in TR 10-5.

Section I

Documenting nonmateriel solutions

8-2. Joint and Army DOTMLPF change recommendations

a. ICDTs or proponents prepare DCRs/DICRs when it is necessary to implement changes in the DOTMLPF to resolve or mitigate a capability gap that cannot be resolved by using the existing domain's established procedures and resources. As such, the DCR/DICR focuses on changes that are primarily nonmateriel in nature, although there may be some limited materiel changes as well. For changes that are primarily nonmateriel in nature, we use the acronym DOTMLPF. While it is recognized that system-specific DOTMLPF and policy changes are an integral part of any new start major acquisition program, those system-specific changes are normally addressed by the CDD and/or CPD. The DCRs/DICRs are normally referred to as non-materiel solutions, while new start acquisition programs are referred to as materiel solutions. A DCR/DICR may request additional numbers of existing commercial or nondevelopmental materiel items. The JROC and AROC will review specific change recommendations for joint and Army warfighting utility and programmatic implications. Based on the findings, the JROC and AROC will provide recommendations for review and action.

b. The DCRs/DICRs may be submitted to:

(1) Recommend a change, institutionalize, and/or introduce new joint and/or Army DOTMLPF and/or policy change resulting from joint and Army experimentation, lessons learned, or other assessments to meet operational needs which do not require a new materiel start.

(2) Recommend a change, institutionalize, and/or introduce new joint and Army DOTMLPF and/or policy change resulting from the CBA which is outside the scope or oversight of a new defense acquisition program.

(3) Request additional numbers of existing commercial or nondevelopmental items previously produced or deployed via the JCIDS process in addition to other considerations of DOTMLPF.

(4) Introduce existing nonmateriel solutions available from U.S. interagency or foreign sources.

c. The ICDT or proponent forwards the draft DCR/DICR to the ARCIC JCIDS gatekeeper for review, internal HQ TRADOC staffing and Dir, ARCIC validation. Following Dir, ARCIC validation, the ARCIC JCIDS gatekeeper forwards the DCR/DICR to HQDA DCS, G-3/5/7 (Future Warfighting Capabilities Division) for APRB review and AROC validation (and approval). JROC review will occur for DCRs and policy changes.

d. The DCR and its format are described in detail in the JCIDS Manual. The DICR, its format and preparation guidance is described in AR 71-9. The goal is to limit the length of both the DCR and DICR to 7-10 pages.

8-3. Documenting doctrine requirements

a. TR 25-36 establishes policy for the TRADOC doctrine program (also applies to non-TRADOC proponents), which includes the detailed guidance for establishment of doctrinal requirements. Combined Arms Center, Combined Arms Doctrine Directorate manages this policy.

b. A doctrine requirement is a validated need to implement actions in the doctrine process to develop new or revised doctrine publications to sustain or achieve desired operational capabilities. Doctrinal requirements may be generated through the JCIDS process for achieving a required capability or in support of the other solution set domains. As a result of the CBA, the ICDTs or proponents may prepare DICRs when it is necessary to implement doctrinal changes (across the Army) to resolve or mitigate a capability gap outside the TRADOC doctrine program, especially when HQDA visibility is desired.

c. The doctrinal solution set is considered the most desirable within the DOTmLPF domains because it is considered the most cost effective to develop and implement. A doctrinal solution may impact other domains and drive other requirements to achieve the desired capabilities validated in the concept. New or revised doctrine may drive organizational change, new training products to teach implementation, modification of ranges or other training facilities, and other nondoctrinal changes. New or revised doctrinal requirements may also be generated to support employment of new materiel solutions to the force.

d. Doctrinal requirements are also generated as a result of other change catalysts. Some of these catalysts are:

- (1) An 18-month assessment of current doctrine for relevancy and currency.
- (2) Changes to the NSS, NDS, and NMS.
- (3) Other DOD policy changes.
- (4) Senior leader guidance.
- (5) New or revised Army capstone and keystone doctrine.
- (6) Joint doctrinal changes.
- (7) Changes in the CoE.
- (8) Operational lessons learned.
- (9) Mission, organization, architecture, and/or equipment changes.

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(10) Technological changes.

e. The program directive (PD) is used to define and document in detail the requirement for a doctrine publication. The PD drives detailed analysis and is used by the proponents to document the established or validated need or requirement for a new and/or revised doctrinal publication. The development of a PD is embedded in the doctrine developments process, specifically in phase 1 (assessment) and phase 2 (planning) of the Army 6-phase doctrine development process. See TR 25-36, chapter 4, for details. If the doctrinal requirement is generated through the JCIDS process, proponents' CDIDs will review the capability documents for the doctrine domain requirements from a force modernization proponent perspective to ensure the specifics of the requirements contained in the document accurately reflect doctrinal needs. As the TRADOC doctrine domain lead, TRADOC CAC will ensure a review of doctrinal documents from a HQ TRADOC perspective.

f. The PD is the official document approved by the appropriate authority that confirms a requirement for Army doctrine. The proponent prepares a detailed PD that governs all aspects of producing a particular doctrine product. The PD is staffed with affected proponents and contentious issues resolved before proceeding with the development of doctrine. The proponent submits the PD through the appropriate channels for approval. For TRADOC, the PD approval authority is normally the CG, CAC. Non-TRADOC doctrine proponents must staff through CAC for coordination and obtain appropriate ACOM approval. Once the PD is approved, the proponent is authorized to apply appropriate resources for the development, approval, publishing, and distribution of the doctrinal publication (field manual; Army TTP) to provide a solution to support an identified capability gap or the employment of new equipment being fielded to the force.

8-4. Documenting organizational requirements

a. Organizations have their beginnings in concepts, existing CCPs, and architectures that are connected to the CCJO and the ACC. These concepts and architectures provide the basis for the proposed organization and address a unit's mission, functions, and required capabilities. The CAPDEVs, who have organizational development responsibilities, develop new designs or correct deficiencies in existing organizations by developing functional concepts.

b. Organizational requirements are derived from continuous assessments by proponents to identify whether a new or modified organization is required for tomorrow's OE. Combatant commands, HQDA, ACOMs, ASCCs, or field units may initiate these assessments. Organizational requirements are described through interrelated development processes, such as FDU process; unit reference sheet development; table of organization and equipment (TOE) development; and basis of issue plan (BOIP) development (see AR 71-32 for more on the TOE and BOIP development). Proponents' CDIDs will review the capability documents for the organization domain requirements from a force modernization proponent perspective to ensure the specifics of the requirements contained in the document accurately reflect organization needs. As the TRADOC organization domain lead, FDD (ARCIC) ensures a review of organizational documents from a HQ TRADOC perspective. To ensure Dir/Deputy Dir, ARCIC

visibility, FDD acts as the gatekeeper for all organizational force structure assessments, reviewing and coordinating recommendations with the appropriate ARCIC functional division prior to submission. FDD also ensures the ARCIC G-3/5/7 Tasking Branch is aware of the tasking for Dir, ARCIC Commander's Critical Information Requirements.

c. Force design update.

(1) The FDU is the Army process used to develop new organizational requirements or changes to existing organizations and includes capabilities development, requirements approval and implementation decisions. It develops organizational design solutions to overcome identified capability shortfalls that cannot be accommodated by doctrine, training, leadership and education, or personnel solutions. As part of the solution development, CDIDs consider courses of action across the DOTMLPF domains with the intent of driving materiel and organizational solutions as a last resort. Additionally, once an organizational solution becomes the recommendation, the CDIDs assess and begin the integration process across the DOTMLPF domains.

(2) FDUs are conducted semiannually with submissions in May and December. Special out-of-cycle FDUs may be conducted to handle complex design issues or issues of special emphasis, such as those directed by HQDA. In addition, CDIDs can submit an FDU junior issue at any time. FDU junior issues involve minor adjustments to designs that normally do not impact other proponents and do not contain personnel bills.

(3) FDUs begin with the CDID identifying a capability shortfall derived from a variety of sources that include (but are not limited to) organizationally based assessments, ONS, senior leader visits to units, lessons learned, commander conferences, and inputs from the field. CDIDs conduct a DOTMLPF analysis of the capability shortfall to determine the most appropriate DOTMLPF-RIO solution. If the CDID determines an organizational solution is the only/preferred means to address the shortfall, the CDID prepares and submits an FDU packet. See the TRADOC Action Officer Guide to the Force Design Update (FDU) located on AKO at <https://www.us.army.mil/suite/folder/12376023> for more details and illustrative examples.

d. The TAA is a biennial process initiated during even-numbered years. The purpose of the TAA is to define the required Army force structure (modified TOE and table of distribution and allowances) necessary to comply with the GDF. It is the resource process that supports OSD, as well as the DOD and Army PPBE process.

8-5. Documenting training requirements

a. As the TRADOC training staff management lead, TRADOC G-3/5/7 ensures a review of training documents from a HQ TRADOC perspective. Specific training requirements determination guidance is in AR 350-1, AR 350-10, AR 350-38, TR 350-70, and the TRADOC Pam 350-70 series.

b. JCIDS identifies changes to the DOTMLPF domains that ultimately affect training programs. Capability training developers participate in ICDTs or proponent efforts to conduct the CBA and determine training components of DOTMLPF-RIO solutions. During the FSA, CAPDEVs explore and identify potential training solutions to resolve or mitigate the capability

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gap. The DCR/DICR documents proposed nonmateriel training solutions for validation and approval.

c. Training/TD (task) proponents prepare Training Requirements Analysis System (TRAS) documents for courses developed by TRADOC. Additionally, training task proponents prepare TRAS documents for interservice training review organization consolidated courses at TRADOC centers and schools, and other service locations.

d. The appropriate proponent or TRADOC activity develops training products (in particular warfighter and unit training publications, training support packages, and training strategies) IAW TR 350-70. Upon approval, these products are posted to the General Dennis J. Reimer Training and Doctrine Digital Library. The training GOSC provides the executive forum to review gaps in required capability and map the appropriate nonmateriel solutions across the doctrine, training, leadership and education, and personnel domains of the DOTMLPF. The Army Training Strategy informs the training GOSC.

e. All system training support requirements that must be developed and fielded by the PM will be written as required attributes of the system. The attributes will be identified in the capability document within the same context as the materiel system's attributes in the CDD and CPD, paragraph 6. Proponents' CDIDs review the documents from a force modernization proponent perspective to ensure the specifics of the requirements accurately reflect training needs and coordinate with CARD for integration of the T domain requirements. The proponent for training systems, TADSS, and nonstandard training strategies documents these requirements with supporting analyses early in the JCIDS process.

f. The documentation requirements for nonsystem TADSS will be developed IAW JCIDS and AR 350-38. If required, contact the ARCIC JCIDS gatekeeper who will work with HQDA DCS, G-3/5/7 (Future Warfighting Capabilities Division) to obtain guidance from the APRB on documenting materiel requirements for training solutions.

8-6. Documenting leadership and education requirements

a. HQDA DCS, G-3/5/7 is the ARSTAF lead for training requirements, leadership requirements, and education policy.

b. CG TRADOC is the supported commander for execution of the Army Leader Development Program. See the Army Leader Development Charter located on AKO at <https://www.us.army.mil/suite/folder/12376023> for additional information.

c. CG, CAC is the TRADOC lead for executing training, leadership, and education programs.

d. The Deputy Commandant, Command and General Staff College, is TRADOC lead for implementing leadership and education theory, concepts, doctrine, and programs for the total Army.

e. As the TRADOC leadership and education domain representative, TRADOC DCS, G-3/5/7, Leader Development and Education Directorate, performs staff management of leadership and education policy, program development, and execution. They also ensure a review of leadership and education documents from a HQ TRADOC perspective.

f. Proponent CDIDs review capability documents for leadership and education requirements from a force modernization proponent perspective to ensure the specifics of the requirements accurately reflect needs and then coordinate with CARD (ARCIC) for integration of the L domain requirements.

g. TRADOC conducts a quarterly leader development review. This review provides a mechanism to develop new ideas about leadership and education; to build consensus; to bring recommendations to the attention of the Army senior leaders; to assess, develop, coordinate, prepare and submit action for decision and implementation; to monitor and accommodate the effects of change; and to ensure initiatives and issues are integrated and resolved at appropriate levels.

8-7. Documenting personnel requirements

a. TRADOC DCS, G-3/5/7, Personnel Development Division of the Generating Force Training Directorate (ATTG-TRI-GP), assists proponents in developing the best personnel lifecycle policy for warfighters and the Army. It facilitates unity of effort among HQDA, TRADOC, and the reserve component in personnel transformation studies and initiatives and serves as TRADOC's honest broker for input to the personnel lifecycle decisionmaking process for the Army. Proponents determine personnel requirements (see AR 600-3 and AR 611-1) for MOCS. Proponents' CDIDs review the capability documents for the personnel domain requirements from a force modernization proponent perspective to ensure the specifics of the requirements accurately reflect needs and then coordinate with CARD (ARCIC) for integration of the P domain requirements. As the TRADOC personnel domain representative, TRADOC DCS, G-3/5/7 ensures a review of personnel documents from a HQ TRADOC perspective. Refer to table 8-1 for additional coordination and validation information.

b. Personnel development offices prepare the documentation to support personnel domain requirements, ensuring compatibility with the other domains. Personnel requirements include changes to Army personnel management and utilization regulations and policy, as well as additions, deletions, or modifications to the Army's MOCS system per AR 611-1. MOCS proposals range from proposals affecting the force and/or grade structure of existing occupational specialties to the creation of entirely new occupational specialties to accomplish a new requirement.

(1) TRADOC personnel developers forward proposed changes to management and utilization regulations and policy, as well as MOCS proposals to TRADOC DCS, G-3/5/7 for TRADOC staff analysis. TRADOC DCS, G-3/5/7 coordinates the proposal and returns it to the originating personnel developers for changes and/or corrections, or forwards it to HQDA DCS, G-1 or the U.S. Army HRC for Armywide coordination and approval.

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(2) Non-TRADOC personnel developers forward regulatory, policy, and MOCS proposals directly to HQDA DCS, G-1 and/or HRC, which then coordinates with TRADOC DCS, G-3/5/7 as part of an Armywide review.

8-8. Documenting facilities requirements

a. Activities. Proponents are responsible for analyzing and justifying facilities requirements. TRADOC DCS, G-1/4 (Engineer Directorate) assists proponents as addressed in TR 10-5. They develop requirements, cite and program those requirements IAW master planning procedures in AR 210-20. Major maintenance, renovation and repair, or OMA facilities solutions and projects are approved IAW AR 420-1. The longest lead-time facilities solution (typically 5 years from programming through construction) is through MILCON, typically MCA. MILCON programming procedures are contained in DA Pam 420-1-2. Proponents' CDIDs review the capability documents for the facilities domain requirements from a force modernization proponent perspective to ensure the specifics of the requirements contained in the document accurately reflect facility needs. TRADOC DCS, G-1/4 (Engineer Directorate), as the TRADOC facilities domain representative, ensures a review of facility documents from a HQ TRADOC perspective, with some exceptions. Exceptions include facilities sponsored, planned, and funded by IMCOM as part of installation infrastructure and Armywide training support facilities resourced under the training program evaluation group and managed under the training domain. Refer to table 8-1 for additional coordination and validation information.

b. Identifying facility requirements. Installation directors of public works or equivalents can assist in identifying facilities impacts or requirements, or the proponent can contact TRADOC DCS, G-1/4 (Engineer Directorate). They can provide assistance identifying proper funding or programming streams to address facilities requirements as laid out in TR 10-5.

c. MCA facilities solutions.

(1) TRADOC DCS, G-1/4 (Engineer Directorate) gathers and processes mission unique TRADOC MCA project requirements identified by TRADOC proponents and sites, with some exceptions. An example of an exception would be training support facilities resourced under the training program evaluation group and managed under the training domain. The TRADOC staff validates requirements and rank-orders requirements for programming. TRADOC DCS, G-1/4 coordinates programming effort within the headquarters culminating in a CG, TRADOC approved MILCON priority list for submission to the ACSIM.

(2) The Office of the Assistant Chief of Staff, Installation Management (OACSIM) executes day-to-day MILCON PPBE responsibilities. In concert with the ARSTAF, the ACSIM analyzes facilities construction requirements to determine if requests meet objectives and policies and recommends program priorities. HQDA DCS, G-3/5/7 approves Army program priorities or may submit them to Army leadership for final approval. Each project submitted for consideration has a HQDA staff proponent. A listing of facility types and HQDA proponentcy is in DA Pam 415-28.

d. OMA facilities solutions. Typically, OMA projects are self-funded at less than statutory limits. Maintenance and repair (M&R) project solutions exceeding certain limits must be documented and approval requested. OACSIM, Policy Branch (DAIM-FDF), approves M&R project requests that exceed designated limits.

Section II

Documenting materiel solutions

8-9. Documenting materiel requirements

a. The ICDTs or proponents prepare draft ICDs, CDDs, and CPDs to document materiel requirements and support the development and production of systems, family of systems (FoS), and SoS when directed by ARCIC. These documents provide the formal communication of capability needs between the user and the acquisition, T&E, and resource management communities.

b. The document formats and the review process specified in the JCIDS manual are mandatory and used throughout DOD for all acquisition programs regardless of ACAT. A new materiel proposal initially proceeds to acquisition Milestone A, B, or C, depending on the criteria specified in DODD 5000.1, DODI 5000.02, and AR 70-1. Regardless of the initial acquisition milestone, all initiatives have a corresponding validated and approved CDD and/or CPD prior to entering Milestone B or C, respectively. If an initiative requires further research and development (expenditure of 6.x funds), a CDD is normally prepared prior to entering Milestone B vice a CPD.

c. All Army requirements must be AROC validated before inclusion in other service or joint sponsored JCIDS documents. Proponents' CDIDs will review and perform quality control checks on the capability documents to ensure the requirements contained in the document accurately reflect warfighter needs to include the pertinent combatant commands. It is recommended that proponents establish a single point of contact to act as their quality control monitor for document completeness. The checklists provided in the applicable user guide and the JCIDS Staffing Guide will be utilized by proponents and TRADOC staff-level reviewers to ensure all requirements for the documents are met.

d. As the Army DOTMLPF integration lead, ARCIC will review materiel documents to ensure they reflect RIO characteristics (including C-BA considerations) prior to validation and forwarding to HQDA. Specifically, proponents are required to submit their documents to the ARCIC gatekeeper for final quality control checks and ARCIC validation staffing. ARCIC Functional Divisions coordinate adjudication of comments from ARCIC validation staffing (initiated by the gatekeeper) with the proponent, coordinate and obtain ARCIC validation of the document, and submit validated documents back to the ARCIC JCIDS gatekeeper for final quality control checks, final staffing, validation, and forwarding to HQDA.

8-10. Initial capabilities document

a. The ICD documents the requirement to resolve a specific capability gap or a set of capability gaps for a given timeframe as identified in the CBA. It describes one or more capability gaps, identifies potential nonmateriel approaches and recommends pursuing a materiel approach to address those gaps. More guidance, uses, and details on the purpose and functions of the ICD are found in [CJCSI 3170.01G and the JCIDS Manual](#). The JCIDS manual identifies the mandatory ICD format, appendices, and instructions for its preparation and is the authoritative source for ICDs. The goal is to limit the main body of the ICD to 7 - 10 pages in length. An ICD Writer's Guide is located on AKO at <https://www.us.army.mil/suite/folder/12376023> and contains Army specific requirements that must be included in the ICD.

b. The ICD defines the capability gaps using the lexicon established for the JCAs, the relevant ROMO, and the timeframe under consideration. It guides the MDD; the follow-on AoA or other analysis, as required; the update of the DOD Enterprise Architecture; the development of the solution architecture; the technology development strategy; the T&E strategy; and the Milestone A acquisition decision.

c. An ICD is generated, validated, and approved to define and review the options for a new capability in a joint context and to ensure that all DOTMLPF-RIO and policy alternatives are adequately considered, even if the proposed program is proceeding directly to Milestone B or C. For those exceptional cases where ACAT II and below proposed programs may be proceeding directly to Milestone B or C, the ICDDT or proponent may request a waiver to the requirement for an ICD through ARCIC and HQDA DCS, G-3/5/7 from the Joint Staff J-8. The waiver request provides justification for not writing an ICD. Upon approval of the waiver, the ICDDT or proponent can proceed with submitting CDDs or CPDs for approval.

d. An ICD is not the basis for the start of a new program. A new program is not established until Milestone B, when a CDD representing a new program, an Acquisition Strategy, and an Acquisition Program Baseline are approved by the MDA. Use the ICD Writer's Guide to assist in the preparation of an ICD (see a. above for the URL).

e. ICDs are not required when the mission need is identified via the JCTD, qualified prototype projects, quick reaction technology projects, lessons learned, IPL, joint IED defeat initiatives, or JUON/ONS processes. Also, mission-validated prototypes with formal MUAs do not require an ICD.

f. The ICDDT or proponent prepares the ICD in collaboration with HQDA DCS, G-3/5/7, HQDA DCS, G-8, ASA(ALT), ARCIC, and FCB working groups. U.S. Army Test and Evaluation Command (ATEC) will advise on the testability of chosen measures of effectiveness/performance so that the system's performance measured in operational testing can be linked to the CBA. As stated previously, the JCIDS Manual provides the mandatory ICD format, appendices, and instructions for its preparation.

g. The ICD must be accompanied by a C-BA.

h. All ICDs will be validated by Dir, ARCIC.

8-11. Capability development document

a. The CDD is prepared during the technology development phase and is validated and approved before Milestone B. The primary objective of the CDD is to specify the operational performance attributes of the system that delivers the capabilities required to address the gaps identified in the ICD. The development of the CDD is guided by integrated architectures, the ICD, the AoA (unless waived by the MDA), and the technology development strategy. The proponent will begin putting together a CDD after the MDD decision and continuously update the document as information from requirements, AoAs, and other information is available to finalize the document.

b. The CDD specifies the attributes of a system in development. These attributes provide or contribute to the operational capabilities that are inserted into the performance section of the acquisition strategy and the acquisition program baseline. All CDD KPPs (and KSAs supporting the sustainment KPP) are inserted verbatim into the acquisition program baseline. Measures of effectiveness and suitability, developed for the initial TEMP at Milestone B, are based on the performance attributes and KPPs identified in the CDD. Verify KPP and/or KSA development guidance with the ARCIC JCIDS gatekeeper.

c. The key documents and requirements associated with the CDD are identified in DODI 5000.02 and the JCIDS Manual. Army requirements for the CDD (notably those found in paragraphs 14 and 16) are specified in the TRADOC [CDD Writer's Guide](#). **The procedures outlined in the CDD Writer's Guide for paragraphs 14 and 16 are prescriptive and must be utilized while drafting those paragraphs.** Variations to the JCIDS established format must be approved by ARCIC and HQDA DCS, G-3/5/7 prior to staffing. The goal is to limit the main body of the CDD to 20 pages in length.

d. When the sponsor of a JCTD, qualified prototype project, or quick-reaction technology project determines that the demonstration is complete but additional development is required before fielding, a CDD is developed to guide the development process. The MUA/final demonstration report is used to support the development of the CDD. The CDD with the supporting MUA/final demonstration report is then submitted for staffing and approval prior to the Milestone B decision.

e. The ICDDT or proponent applies lessons learned during the technology development phase, plus any other appropriate risk reduction activities, MUAs, JCTD, qualified prototype projects, quick-reaction technology projects, market research, experimentation, T&E, capability and schedule tradeoffs, and affordability and supportability analysis in the development of the CDD.

f. Condition-based maintenance plus (CBM+), as described in DODI 4151.22; common logistics operating environment (CLOE), directed by ASA(ALT); and chemical, biological, radiological, and nuclear (CBRN) survivability, as described in DODI 3150.09 will be considered during development of all CDDs.

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g. The ICDDT or proponent prepares the CDD in collaboration with HQDA DCS, G-3/5/7, HQDA DCS, G-8, ASA(ALT), ARCIC, and FCB working groups. The ICDDT or proponent also collaborates with proponents of other or related CDDs and/or CPDs that are required in FoS or SoS solutions, particularly those generated from a common ICD. In some of these cases, it may be appropriate to develop annexes for the CDD. The annexes would describe excursions from the CDD to meet other proponent's specific capability gaps. The annexes do not repeat information already contained in the CDD but only describe the changes.

h. The CDD will include a C-BA (in appendix D) that incorporates people, time, and money linked to operational value. Per HQDA guidance, an unfunded requirement, new or expanded program proposal submitted to the Secretary of the Army, CSA, Under Secretary of the Army or VCSA will be accompanied by a thorough C-BA which will result in a strong "value proposition" – a clear statement that the benefits more than justify the costs and required tradeoffs (U.S. Army Cost-Benefit Analysis Guide, 12 Jan 2010).

8-12. Capability production document

a. The CPD is prepared during the EMD phase and is validated and approved before Milestone C. The CPD reflects operational requirements, informed by EMD results, and details the performance expected of the production system.

b. The CPD refines the threshold and objective values for performance attributes and KPPs that were validated in the CDD. Each production threshold listed in the CPD depicts the minimum performance that the PM is expected to deliver for the current increment based on the system design. The refinement of performance attributes and KPPs is the most significant difference between the CDD and the CPD and is discussed further in the TRADOC [CPD Writer's Guide](#). Verify KPP and/or KSA development guidance with the ARCIC JCIDS gatekeeper.

c. The key documents and requirements associated with the CPD are identified in DODI 5000.02, and the JCIDS Manual. The JCIDS Manual is the authoritative source for the CPD. Army specific requirements for the CPD (notably those found in paragraphs 14 and 16) are specified in the TRADOC [CPD Writer's Guide](#). **The procedures outlined in the CPD Writer's Guide for paragraphs 14 and 16 are prescriptive and must be utilized while drafting those paragraphs.** Variations to the JCIDS established format must be approved by ARCIC and HQDA DCS, G-3/5/7 prior to staffing. The goal is to limit the main body of the CPD to 15 pages in length.

d. When the sponsor of a JCTD, qualified prototype project, or quick-reaction technology project determines that the demonstration is complete and the capability is ready for immediate fielding for other than limited quantities, a CPD is developed to support approval for production and fielding. The MUA/final demonstration is used to support the development of the CPD. The CPD with the supporting MUA/final demonstration is then submitted for staffing and approval prior to the Milestone C decision. A CPD may also be based on commercial off-the-shelf or government off-the-shelf sources if the capability solution is sufficient to meet the identified

gaps, it does not require additional development prior to fielding, and it is not being implemented as part of a broader DCR/DICR.

e. A proponent may request a waiver to use an approved CDD in lieu of a CPD to support a Milestone C in those cases where the CDD accurately reflects the performance of the system to be delivered at initial production. The proponent submits the waiver request through ARCIC for validation. Once validated, it is loaded in CAMS for HQDA G-3/5/7 assessment of the waiver request. If supported by the ARSTAF, the waiver is AROC validated after appropriate review/staffing. If a CDD was designated Independent, Joint Information, or Joint Integration, HQDA is the approval authority for the waiver request. If the joint potential designator (JPD) is JROC & JCB interest, it is loaded in KMDS as an FCB draft. The J8 gatekeeper assigns the waiver request to the lead FCB for review and recommendation to approve/disapprove the request. The Joint Staff's Vice Director J8 (DJ8) is normally the approval authority for the waiver.

f. The proponent applies lessons learned during the EMD phase, lessons learned from previous increments, risk reduction activities, MUAs, experimentation, T&E, M&S, capability and schedule tradeoffs and affordability analysis in the delivery of the CPD capabilities. The previously defined KPPs may be refined (with a rationale provided) and should be tailored to the proposed system to be procured (such as, range, probability of kill, platform survivability, and timing of the need).

g. CBM+, as described in DODI 4151.22; CLOE, directed by ASA(ALT); and CBRN survivability, as described in DODI 3150.09 will be considered during development of all CPDs.

h. The proponent prepares the CPD in collaboration with HQDA DCS, G-3/5/7, HQDA DCS, G-8, ASA(ALT), ARCIC, and FCB working groups. Continuous collaboration with the systems acquisition PM is essential. The ICDT or proponent also collaborates with proponents of other related CDDs and/or CPDs that are required as part of FoS and SoS solutions, particularly those generated from a common ICD.

i. The CPD will include a C-BA in appendix D.

8-13. Staffing, validation, and approval

a. ARCIC reviews JCIDS capability documents (DCR, DICR, ICD, CDD, and CPD) submitted by the ICDT or proponents to determine whether they affect the joint force, to ensure they are integrated and synchronized across the Army, and to ensure they fit with joint and Army priorities, to include the needs expressed by the pertinent combatant commands. The ICDTs and proponents must address the three topics above in each submission. ARCIC reviews each document upon initial submission regardless of ACAT or proposed ACAT, previous designation or previous JPD decisions (in the case of a CDD or CPD). A TRADOC JCIDS Document Staffing Guide located on AKO at <https://www.us.army.mil/suite/folder/12376023> can assist users in the mechanics of the overall staffing process.

b. The assignment of the JPD by the Joint Staff gatekeeper (Vice Director, J-8) determines how capability documents are staffed, validated, and approved. The JPD designation specifies

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the JCIDS validation, approval, and interoperability expectations. ARCIC recommends the potential JPD when an ICD is reviewed within TRADOC and uses this recommendation to staff the capability document with the appropriate organizations. When the document gets to the Joint Staff, the contents of the proposed document help the Joint Staff gatekeeper assign a JPD of JROC Interest, joint capabilities board (JCB) Interest, Joint Integration, Joint Information, or Independent. The Joint Staff gatekeeper then assigns the document to a lead FCB for further assessment and may designate other FCBs to support the process or return the document to the submitter if Independent.

c. Proponents preparing capability documents for HQDA submission conduct two staffings. The first staffing, or worldwide staffing, is performed by the sponsor. Once the sponsor resolves all comments, documents are sent to the ARCIC JCIDS gatekeeper for validation staffing. During validation staffing, ARCIC (or TRADOC staff) action officers review the documents for integration and synchronization with any other interdependent requirements and ensure they are in compliance with all joint, Army, and TRADOC JCIDS documentation requirements. Upon completion of validation staffing, capability documents are TRADOC validated by Dir, ARCIC or the designated representative before proceeding back through the ARCIC JCIDS gatekeeper and to HQDA for validation. This staffing requirement includes ACAT I/IA/II and below programs where the capabilities have a significant impact on joint warfighting; have a potentially significant impact across services; or have interoperability considerations in allied and coalition operations. For a SAP review, the relevant information is articulated to the extent possible within an unclassified document, along with an overview of the projected process to develop the capability, an overview of TRADOC agencies' roles and responsibilities and the cycle of the projected process. Use the criteria in the JCIDS Document Staffing Guide as a checklist to meet the requirements for the capability document briefings.

d. The TRADOC standard for preparing the AROC/JROC briefing is the JROC Administrative Guide available via SIPRNET at URL https://www.intelink.sgov.gov/wiki/Joint_Requirements_Oversight_Council_Admin_Guide. This prescriptive guide applies regardless of the capability documents' recommended JPD or acquisition category. The briefing must be tailored to the audience (such as, request AROC validation, request JROC approval, etc.). DCRs are also included in this validation requirement.

e. All CDDs and CPDs submitted for ARCIC validation must be accompanied by a strategic capabilities development framework chart (also known as SF). See guidance earlier in this chapter for additional SF information and the [ARCIC Strategic Framework Guide](#) (located on AKO at <https://www.us.army.mil/suite/folder/12376023>). The SF will facilitate timely analytically-based, resource-informed decisions from senior leaders and the Army staff. The information contained in the SF is derived from the CBA, and updated by other analytical efforts that occur after the ICD is approved. All SF submissions must be RIO and contain an analysis of available or programmed alternatives. This information will mature in terms of precision as the program matures through the various JCIDS documents.

f. Dir, ARCIC has delegated the validation authority to the Dirs of RID, A2MCD, and FFID for potential Joint Integration, Joint Information, and Independent CDDs and CPDs. Dir,

ARCIC will personally validate potential JROC interest, JCB interest, and special interest CDDs and CPDs and all ICDs regardless of JPD.

g. The ICDT or proponent forwards the draft capability document, C-BA, briefing, and SF (in the case of a CDD or CPD) to the ARCIC JCIDS gatekeeper for ARCIC validation and follow-on Army and joint staffing. Following comment adjudication and ARCIC validation, the ARCIC gatekeeper loads the capability document into CAMS for APRB review, 1-star staffing, and AROC validation. Once AROC validated, HQDA G-3/5/7 loads the capability document into KMDS for joint staffing and JROC approval if appropriate. After joint staffing the document is returned to the ARSTAF for final approval. The CSA has delegated signature authority to finalize JCIDS documents to the DCS, G-3/5/7. The DCS, G-3/5/7 approval memo assigns a Catalog of Approved Requirements Documents System reference number to each capability document after approval and prior to publication and distribution.

h. The validation and approval authority is dependent upon the JPD assigned by the Joint Staff gatekeeper during staffing. The specific validation and approval authorities are shown below:

- (1) JROC for programs designated JROC Interest.
- (2) JCB for programs designated JCB Interest.
- (3) HQDA for programs designated Joint Integration, Joint Information, or Independent.

Section III

Critical Supporting Documents for Milestone B

This section addresses documents which the force modernization proponent will initiate, prepare, coordinate with the materiel developer, and/or finalize to support the proposed materiel solution.

8-14. Basis for Milestone B

Approval of the CDD becomes one of the key factors in the final decision by the MDA to initiate a development program at Milestone B and supports performance trades by the program manager (ICW the CAPDEV) during the EMD phase.

8-15. Milestone B supporting documents

The documents that support Milestone B and the CDD include: the system training plan (STRAP); operational mode summary/mission profile (OMS/MP); basis of issue (BOI) guidance; the COIC; AoA, test and evaluation master plan (TEMP); PD and the system threat assessment report (STAR). Although these documents support CDD development, they are not mandatory appendices to the CDD.

8-16. Pre-Milestone B condition-based maintenance plus and common logistics operating environment

CBM+, as described in DODI 4151.22; and the CLOE, as directed by ASA(ALT), will be considered during development of all CDDs.

8-17. Pre-Milestone B AoA

If significant changes have occurred to the system and the MDA requires a new or updated AoA for the Milestone B decision review, the AoA will be updated after the CDD is approved (refer to [paragraph 7-6](#) for more information on AoAs).

8-18. System training plan

The STRAP addresses how we train warfighters to use the new or modified system. It is a document that supports the development and acquisition of a system. The proponent CAPDEV working group preparing a capability document uses information found in the STRAP to outline training requirements in the "other DOTMLPF and policy considerations" paragraph. It is a living document that is updated as requirements materialize and is used to support CDD and CPD development. The STRAP is summarized with the CDD with respect to training strategy, required TADSS at the institution and unit, and the other significant elements. The STRAP will include a description of training products, doctrine products, and associated resources needed to develop the training products and train the system.

8-19. Operational mode summary/mission profile

The OMS/MP is derived from a CONOPS and supports JCIDS documents (CDD/CPD development) requiring a sustainment KPP. It provides a detailed operational understanding of expected peacetime and wartime usage and requirements of the materiel system expressed in a structured and quantitative format. It supports the materiel developers', the testers', and AMSAA's efforts to field an operationally effective system. The proponent develops an OMS/MP describing the expected missions, units (active, reserve, and institutional training base) or mix of units, peacetime and wartime uses (traditional, irregular, catastrophic and disruptive), geographical environments (for example, climate, terrain, etc.), and support and maintenance plan. The OMS/MP is forwarded to TRADOC ARCIC G-3/5/7 for retention and use as rationale and support for the applicable JCIDS document. A guide for the development of OMS/MPs can be found on the ARCIC AKO Policy site at <https://www.us.army.mil/suite/folder/12376023>.

8-20. Basis of issue guidance

As supporting information to the CDD, BOI considerations need to be started at this point in the process. Although information may be fairly lean at this point, the BOI considerations are integral to determining overall program costs and affordability (and some of this analysis is required at Milestone B). The BOI guidance is the proponent recommendation for which units receive the system (active, reserve, and institutional training base), what quantities of systems per unit, and the TRADOC center and/or school where the institutional training will take place. It supports development of the BOIP feeder data by the materiel developer. Appropriate representation from the USAFMSA documentation team and FDD **must** be included during the development of BOI guidance or at any other meetings where BOI concerns arise. Upon receipt of an approved capability document, the materiel developer prepares the BOIP feeder data, which in turn, feeds the BOIP document, which is developed by USAFMSA (see AR 71-32 for more on the BOIP). The relatively general BOI information is later refined during CPD development. BOIs should be limited to one page or less.

8-21. Critical operational issues and criteria

Developed by the proponent, COIC are those key operational concerns, with bottom line standards of performance that, if satisfied, signify the system is operationally ready to proceed beyond the full rate production (FRP) decision review. They are prepared and approved for inclusion in the initial TEMP for program initiation at Milestone B. They focus and support milestone decisions and reduce the multitude of operational considerations to a few operationally significant and relevant mission focused issues and criteria. COIC apply to all systems (irrespective of ACAT level) and all acquisition strategies during acquisition and developmental modification. COIC for ACAT I and II systems, as well as joint or OSD oversight programs are TRADOC validated by the ARCIC directorate GO/SES that manages that specific functional area for the Dir, ARCIC (unless specifically waived by that GO). The COIC are then used in the TEMP. COIC for ACAT III programs which are not OSD or joint oversight programs are TRADOC validated by the appropriate functional proponent representative to the T&E working integrated process team. See AR 73-1 for more information on COIC.

8-22. Test and evaluation master plan

The TEMP is a materiel developer document that the proponent provides input to in the form of the COIC. The TEMP summarizes the program schedule, test management strategy and structure, and the required resources to address and assess the adequacy to achieve a system requirement. It is the basic planning document for all system life cycle T&E. The acquisition and T&E communities use the TEMP to generate detailed T&E plans and to ascertain the schedule and resource requirements associated with a given system. While documenting the T&E strategy, the TEMP provides the road map for integrating M&S, testing, evaluation plans, schedules, and resource requirements necessary to accomplish the T&E program. Copies of the approved ICD or CDD and the validated STAR accompany the TEMP when it is submitted for HQDA approval. The TEMPs for ACAT I, ACAT II, and joint or OSD oversight programs are signed off by the ARCIC directorate GO/SES that manages that specific functional area for Dir, ARCIC. The signature validates that the TEMP accurately reflects the CAPDEV identified requirements. TEMPs for ACAT III programs are validated by the appropriate functional proponent representative to the T&E working integrated process team.

8-23. System threat assessment report

a. The STAR summarizes the approved threat assessment provided to capability and materiel developers for all ACAT I and II systems and information systems. It is not normally required for ACAT III systems, but may be prepared upon request for special interest programs. The STAR provides an assessment of potential threat capabilities as to their ability to neutralize or degrade a specific U.S. system. It provides a more refined and specific threat assessment than the ITEA because it is focused on the system under development.

b. The STAR contains an integrated assessment of the OE, projected enemy capabilities (doctrine, tactics, hardware, organization, and forces) at initial operational capability plus 10 years, to limit, neutralize, or destroy the system. It explicitly identifies critical intelligence parameters. The STAR also describes the system, characteristics, and its operational use such that the threat community can analyze the system to determine potential weakness. The proponent is responsible for writing the operational description and operational use materiel.

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c. The STAR is a dynamic document updated at each milestone decision review and every 2 years thereafter while the program is under development. It will be approved and validated in support of ASARC/Defense Acquisition Board (DAB) review. It is the primary threat reference to be used in preparation of threat portions of a CDD, CPD, integrated program summary, AoA, TEMP, and threat test support package (TTSP). TRADOC centers and schools with threat managers and TRADOC DCS, G-2 (TRISA) for centers and schools without threat managers, prepare initial STARs. The STAR accompanies the CDD for the Milestone B decision. For more information on the STAR, see AR 381-11.

(1) TRADOC DCS, G-2 prepares or reviews, then HQDA DCS, G-2 approves, and **DIA** validates the STAR for all ACAT ID programs at Milestone B.

(2) TRADOC DCS, G-2 prepares or reviews, then HQDA DCS, G-2 validates the STAR for all other ACAT I programs at Milestone B. The STAR is updated at Milestone C.

(3) TRADOC DCS, G-2 prepares or reviews and forwards the STAR for ACAT II programs to HQDA DCS, G-2 for review and approval, unless specifically waived.

(4) STAR waivers may be granted for ACAT III programs considered as Army or DOD special interest programs. If required, TRADOC DCS, G-2 prepares or reviews and validates the STAR for all ACAT III programs at Milestone B.

8-24. Post Milestone B decision activities

Immediately after the Milestone B decision, other activities and documents must be completed to implement this decision. A good example of this would be the development of a PD to modify or establish doctrine to support this new/modified system or capability. Refer to paragraphs earlier in this chapter, and applicable domain specific regulatory guidance to review nonmateriel DOTMLPF required activities and documentation for the system or capability.

Section IV

Critical Supporting Documents for Milestone C

8-25. Basis for Milestone C

The approved CPD becomes the basis for the MDA decision to approve low rate initial production (LRIP) of the system at Milestone C.

8-26. Milestone C supporting documents

The documents supporting Milestone C and the CPD include: the AoA, STRAP, OMS/MP, BOIP, STAR, TTSP, and the reliability failure definition and scoring criteria (FDSC). Although these documents support CPD development, they are not mandatory appendices to the CPD.

8-27. Pre-Milestone C CBM+ and CLOE

CBM+, as described in DODI 4151.22; and the CLOE, as directed by ASA(ALT), are also considered during development of all CDDs.

8-28. Pre-Milestone C AoA

The Milestone C AoA may support BOIP development, especially when affordability issues impact quantities. If significant changes have occurred to the system and the MDA requires a new or updated AoA for the Milestone C decision review, the AoA is updated after the CPD is approved (refer to paragraph that discusses the AoA earlier in the document, paragraph 7-6).

8-29. Updated STRAP

The CAPDEV updates the STRAP as specified in TR 350-70.

8-30. Updated OMS/MP

If an OMS/MP exists as a supporting document of the CDD, the proponent updates the OMS/MP for the CPD as required. The OMS/MP is developed from the CONOPS summary contained in the CDD and updated in the CPD. If no predecessor CDD exists, the proponent develops an OMS/MP to support the CPD.

8-31. Basis of issue plan

This document builds on information contained in the capability documents. Appropriate representation from the USAFMSA documentation team and FDD **must** be included during the development of BOI plans or at any other meetings where BOI concerns arise. Upon receipt of an approved capability document, the materiel developer prepares the BOIP feeder data. When the BOI guidance information is included in the BOIP, it is expanded to include all the elements necessary to provide an organization fully capable of accomplishing its doctrinal mission. The approved organizational design captures the personnel and equipment requirements as accurately and completely as possible. The BOIP describes in detail a new item, its capabilities, the component items of the equipment, where the item is used, and identifies the associated support items of equipment and personnel. The BOIPs include personnel changes caused by the introduction of new items into the Army inventory and addresses the military occupational specialty needed to operate and maintain the equipment. If possible, BOIs should consist of one page or less. USAFMSA, or the proponent ICW USAFMSA, produces the BOIP. See AR 71-32 for more information on the BOIP.

8-32. Updated STAR

An updated STAR accompanies the CPD for the Milestone C decision. The updated STAR is validated and approved in support of ASARC or DAB review. See AR 381-11, for more information on the STAR.

8-33. Threat test support package

The TTSP is the only threat test document that identifies threat portrayal in the test of a new system. It is derived from the STAR, other approved intelligence products, and the threat database from the scenario represented in the test. For the test to have a valid/approved threat portrayal during the test, a TTSP is required (see AR 381-11 and TR 381-1). A TTSP is prepared to support developmental test, operational test, live fire T&E, and experimentation. Threat managers at the TRADOC centers and schools prepare TTSPs in support of tests by their respective center and school. TRADOC DCS, G-2 approves TTSPs for TRADOC. The document approval process includes HQDA DCS, G-2 and potentially others, dependent upon the ACAT and OSD oversight of the new system. The TTSP has three parts. Part I is the threat test requirement, an analytical effort to identify the necessary threat portrayal during the test to

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support the evaluation. Part II is threat test planning and documentation that prescribes what and how threat is portrayed during test trials and vignettes. Part III is threat test execution and reporting that documents what occurred during the test and provides a final threat assessment of the threat portrayal during test trials and vignettes, as appropriate to the TTSP prescription.

8-34. Reliability failure definition and scoring criteria

The reliability FDSC details essential functions and failure definitions associated with reliability requirements. Furthermore, it supports the T&E process by establishing a framework for classifying and changing reliability and maintainability related test events. Both AR 70-1 and AR 71-9 outline the combat developer/CAPDEV responsibility for defining or providing the FDSC to support the reliability requirement and T&E. The FDSC is a living document that is updated as the system matures. As a minimum, it is reviewed and updated as needed prior to each phase of testing. While it supports the reliability and maintainability requirements in a CPD, it is focused at supporting the T&E process. It does not accompany the CPD being processed for approval.

8-35. Post Milestone C decision activities

Immediately after the Milestone C decision, other activities and documents must be completed to implement this decision. A good example of this would be the development of a PD to modify or establish doctrine to support this new/modified system or capability. Another good example is the COIC. During systems acquisition, the initial system will have a set of COIC applicable to the FRP decision review. Each follow-on increment, if an evolutionary acquisition strategy is pursued, will have a set of COIC. As before, the COIC for ACAT I and II systems, as well as joint or OSD oversight programs are TRADOC validated by the ARCIC directorate GO/SES that manages that specific functional area for the Dir, ARCIC (unless specifically waived by that GO). COIC for ACAT III programs which are not OSD or joint oversight programs are updated and approved by the appropriate functional proponent representative to the T&E working integrated process team. A breach of a criterion is reason to delay entry into full-rate production unless other evidence of acceptable system operational effectiveness and suitability is provided. Refer to paragraphs earlier in this chapter, and applicable domain specific regulatory guidance to review nonmateriel DOTMLPF required activities and documentation for the system or capability.

Chapter 9

Supporting JCIDS and Acquisition Activities

9-1. Focus

a. This chapter outlines those documents required by the materiel developer to develop systems to meet the joint commander or land force commander's needs. The family of JCIDS writer's guides, posted on the ARCIC G-3/5/7 policy site, should be referenced when assembling these documents. Figure 9-1 illustrates the relationship between the JCIDS and acquisition processes and their supporting documents. DODD 5000.01, DODI 5000.02 as supplemented by the [Defense Acquisition Guidebook](#), AR 70-1, and DA PAM 70-3 provide specific information and guidance on these documents.

b. The JCIDS process is closely linked to the acquisition process. The documentation developed during the JCIDS process provides the formal communication of capability needs between the operator and the acquisition, T&E, and resource management communities. The document formats and review processes specified in the JCIDS Manual are mandatory and will be used throughout DOD for all acquisition programs regardless of ACAT.

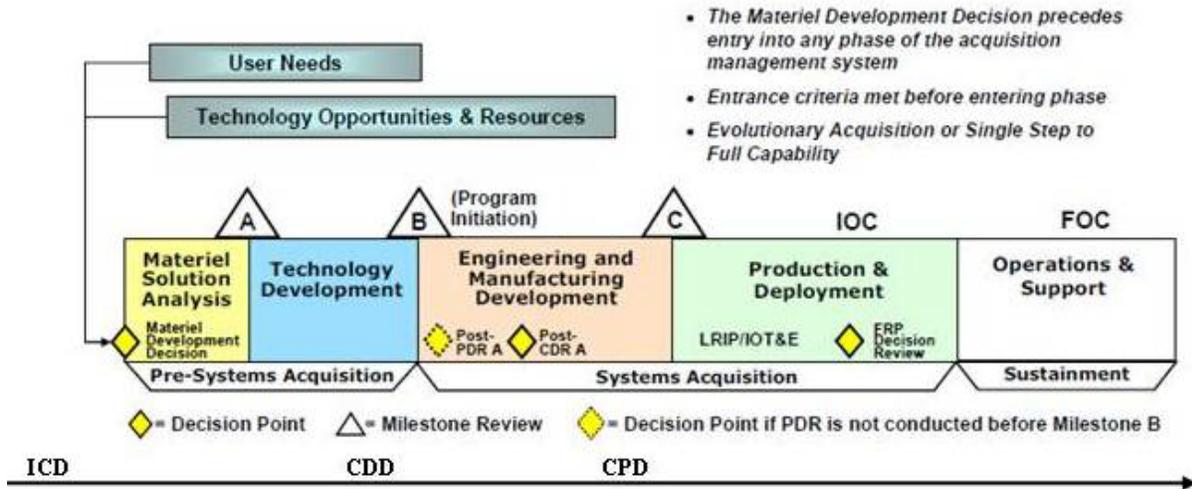
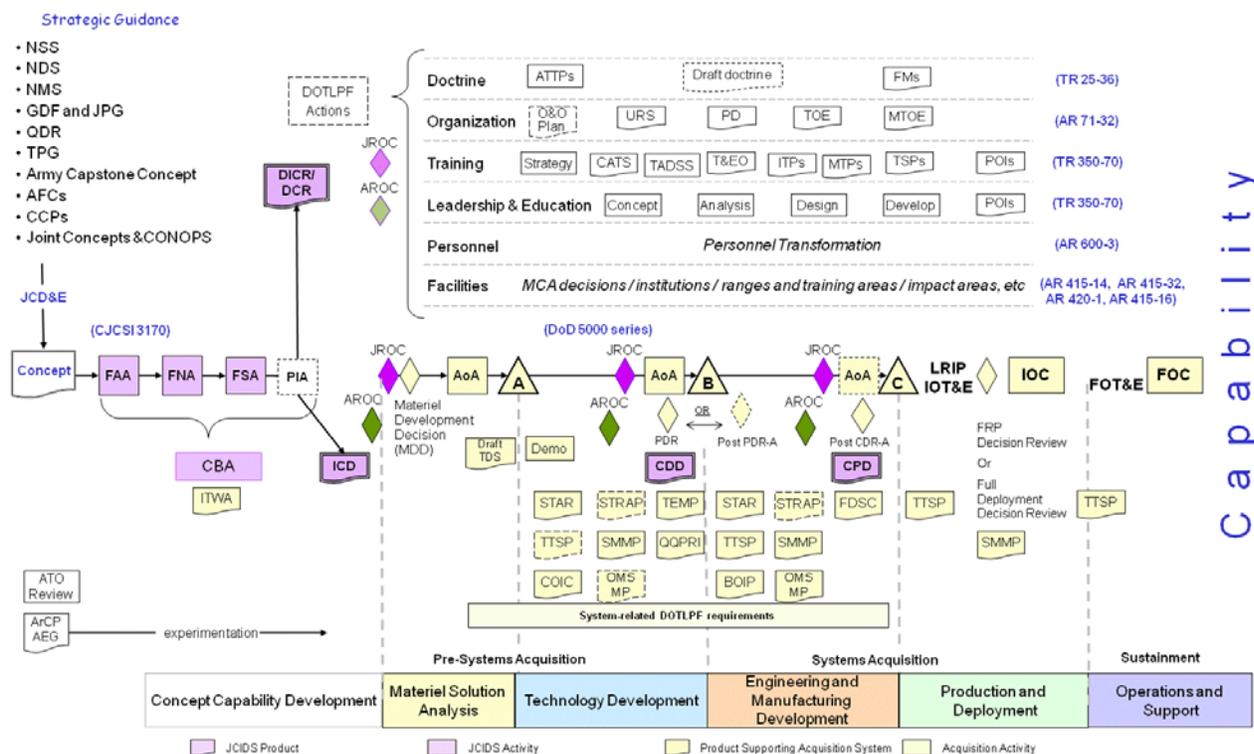


Figure 9-1. Relationship of the Defense Acquisition Management System to JCIDS

9-2. The Defense Acquisition Management System

a. The Defense Acquisition Management System consists of a series of management decisions made in DOD and the Army as the development of a materiel system progresses from a stated materiel approach to a fielded or sustained system. It is the management process by which DOD provides effective, affordable, and timely systems to users. It exists to manage the nation's significant investment in technology, programs, and product support necessary to achieve the NSS and support the U.S. Armed Forces. The acquisition process is structured in logical phases separated by major DPs called milestones. It is initiated by the MDD, with decision reviews occurring at various other times (figure 9-2). Entry into the acquisition process can occur at any point, consistent with phase-specific entrance criteria, statutory requirements, and approval of the MDA.

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ATO	Army technology objective	MTP	master training plan
CATS	combined arms training strategy	O&O Plan	organization and operations plan
LRIP	low rate initial production	POI	program of instruction
FM	field manual	QQPRI	qualitative and quantitative personnel requirements information
ATTPs	Army Tactics, Techniques and Procedures	SMMP	system manpower and personnel integration management plan
FOT&E	follow-on test and evaluation	AEG	Army Experimentation Guidance
ITP	individual training plan	T&EO	test and evaluation operations
JPG	joint planning guidance	TSP	training support plan
STAR	system threat assessment report	COIC	critical operational issues and criteria
IOT&E	initial operational test & evaluation	FRP	full rate production

Figure 9-2. JCIDS and the Defense Acquisition Management System

(1) The materiel acquisition process is divided into three distinct activities (presystems acquisition, systems acquisition, and sustainment). The three activities are subdivided into five phases: MSA; technology development (TD); EMD; production and deployment; and operations and support. Detailed information on the rest of the acquisition system can be found in the references listed in [paragraph 9-1](#).

(2) The MDA uses three major Milestones; A, B, and C to monitor the progress of a system from its inception to its fielding.

(3) All acquisition programs use the defense acquisition management framework and apply the terms of reference as specified in the acquisition management process. Dollar thresholds for the different ACATs and the appropriate MDA are outlined in AR 70-1.

b. Proponent CAPDEVs, ICW ARCIC, initiate proposals for new program initiations. Once the VCSA approves and authorizes a proposed system for the Army, it will go through the acquisition management process and the ASA(ALT), as the Army Acquisition Executive (AAE), becomes responsible for approving all requests to initiate new Army managed acquisition programs, and validating higher level programs.

c. A new program will not be initiated without the specific written approval from the MDA.

(1) For those programs that the Army has oversight authority, the MDA is the AAE or a PEO of general officer grade or civilian equivalent to whom the AAE has delegated that authority.

(2) For DOD or Joint Staff interest programs, the MDA is the Defense Acquisition Executive.

(3) PEOs/PMs initiating a new program must submit their request supported by an authorization, an ICD, and proposed AoA study guidance for MDA approval.

d. There are numerous milestone reviews and decision points within the Defense Acquisition Management System. Each review results in a decision to initiate, continue, modify, or terminate a project or program. The review associated with each decision point typically addresses program progress, risk, affordability, supportability, program tradeoffs, acquisition strategy updates, and the development of exit criteria for the next phase or effort. The type and number of decision points are tailored to program needs.

e. At each acquisition process review the decision body (that is, AROC, CSB, etc.) re-examines materiel development efforts to ensure: the concept is still applicable, new lessons learned do not drive document changes, requirements (including KPPs/KSAs) remain valid, test results were reviewed and explained, adequate analysis and cost-benefit data is provided, and joint interoperability and integration with other systems is considered.

Section I

Pre-Milestone A

9-3. The Materiel Solution Analysis Phase

a. The materiel solution analysis phase begins with the MDD. The following activities occur during this phase and are executed by force modernization proponents working in conjunction with the TCMs and the materiel developer.

b. MDD requirements. The MDD review is the formal entry point into the acquisition process and shall be mandatory for all programs. In the Army, the organization that completes the CBA and subsequent ICD is usually the force modernization proponent responsible for producing a presentation that outlines for the Milestone Decision Authority the following:

(1) The ICD.

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(2) The preliminary concept of operations.

(3) A description of the needed capability.

(4) The operational risk.

(5) The basis for determining that nonmateriel approaches will not sufficiently mitigate the capability gap.

c. When all required information is submitted, the MDA approves the AoA study guidance; determines the acquisition phase of entry; identifies the initial review milestone; and designates the lead for the MSA.

d. The analysis of alternatives (AoA). This analysis, a DODI 5000.02 process, informs milestone decision reviews. In preparation for the Milestone A decision, the AoA is conducted after the ICD is validated by Dir, ARCIC, and directed as part of the MDD.

(1) The AoA recommends the most operationally effective and affordable solution from among materiel systems that provide similar capabilities. The AoA considers the sensitivity of each alternative to possible changes in key assumptions or variables. It analyzes the cost and operational effectiveness of materiel systems, employed IAW operational concepts, and integrated architectures, under operational conditions, to accomplish operational missions. In today's budget environment, available funding is often a key constraint and must be traded off against performance to determine how much capability can be delivered with the dollars available. Decisionmakers use the AoA to choose the most effective systems and combinations of systems necessary to provide a required capability for a given cost. By treating cost as an independent variable, analysts can relate cost to risk in ways that are useful and meaningful to decisionmakers as they seek to balance needs with resources. The analysts develop recommendations about how much of a capability to acquire, where investments in new capabilities will produce the most improvement in capability and the affordability and capabilities of various force mixes. If an AoA determines that none of the proposed solutions can affordably provide required capabilities, leaders must consider revisiting decisions about materiel approaches or making new ones.

(2) The focus of the AoA at the Milestone A decision is to refine the selected approach documented in the approved ICD. The AoA assesses the critical technologies associated with these concepts, including technology maturity, technical risk, and, if necessary, technology maturation and demonstration needs. To achieve the best possible system solution, emphasis is placed on innovation and competition. The results of the AoA provide the basis for the TDS, to be approved by the MDA at Milestone A.

Section II Milestone A

9-4. Basis for Milestone A

a. The approved ICD becomes the basis for an MDD to enter the MSA phase. The purpose of this phase is to assess potential materiel solutions to satisfy the capability needed. The ICD along with the results of the MSA phase activities become the basis for the Milestone A decision.

b. The MS A decision depends upon completion of the AoA, a proposed materiel solution, and full funding for the TDS phase activity.

c. The TDS Phase. The TDS documents the rationale for adopting an evolutionary strategy (for most programs) or a single step to full capability (for example, common supply items or commercial off-the-shelf items). The TDS is reviewed and updated upon completion of each developmental increment. Updates shall be approved to support follow-on increments. The ASA(ALT) has the lead for the TDS, with input from ARCIC and the proponent.

d. For evolutionary acquisition, the TDS includes a preliminary description of how the program is divided into developmental increments (if applicable). It also describes an appropriate limitation on the number of prototype units that may be produced and deployed during technology development, and how these units are supported. The TDS provides 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 program.

Section III Milestone B

9-5. Basis for Milestone B

Approval of the CDD becomes one of the key factors in the final decision by the MDA to initiate a development program at Milestone B and supports performance trades by the program manager (ICW the CAPDEV) during the EMD phase.

9-6. Pre-Milestone B AoA

If significant changes have occurred to the system and the MDA requires a new or updated AoA for the Milestone B decision review, the AoA will be updated after the CDD is approved as a precursor to the decision review (refer to [paragraph 9-3.d](#) for specifics on the AoA). If the MDA does not require the CDD be approved for the Milestone B decision review, the CDD can be updated after the decision review.

9-7. Post Milestone B decision activities

Immediately after the Milestone B decision, other activities and documents must be completed to implement this decision. These are the responsibility of both the materiel developer and the CAPDEV. A good example of this would be the development of a PD to modify or establish doctrine to support this new/modified system or capability. Refer to [chapter 8](#) and applicable

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domain specific regulatory guidance to review nonmateriel DOTMLPF required activities and documentation for the system or capability.

Section IV Milestone C

9-8. Basis for Milestone C

The approved CPD is the prime basis for the MDA decision to enter the Production and Deployment Phase.

9-9. Pre-Milestone C AoA

The AoA previously conducted in support of Milestone A and/or B may require updating for a Milestone C decision. The pre-Milestone C AoA may support BOIP development, especially when affordability issues impact quantities.

9-10. Threat test support package

See [paragraph 8-33](#) for information on the TTSP.

9-11. Reliability failure definition and scoring criteria (FDSC)

See [paragraph 8-34](#) for information on the FDSC.

9-12. Post Milestone C decision activities

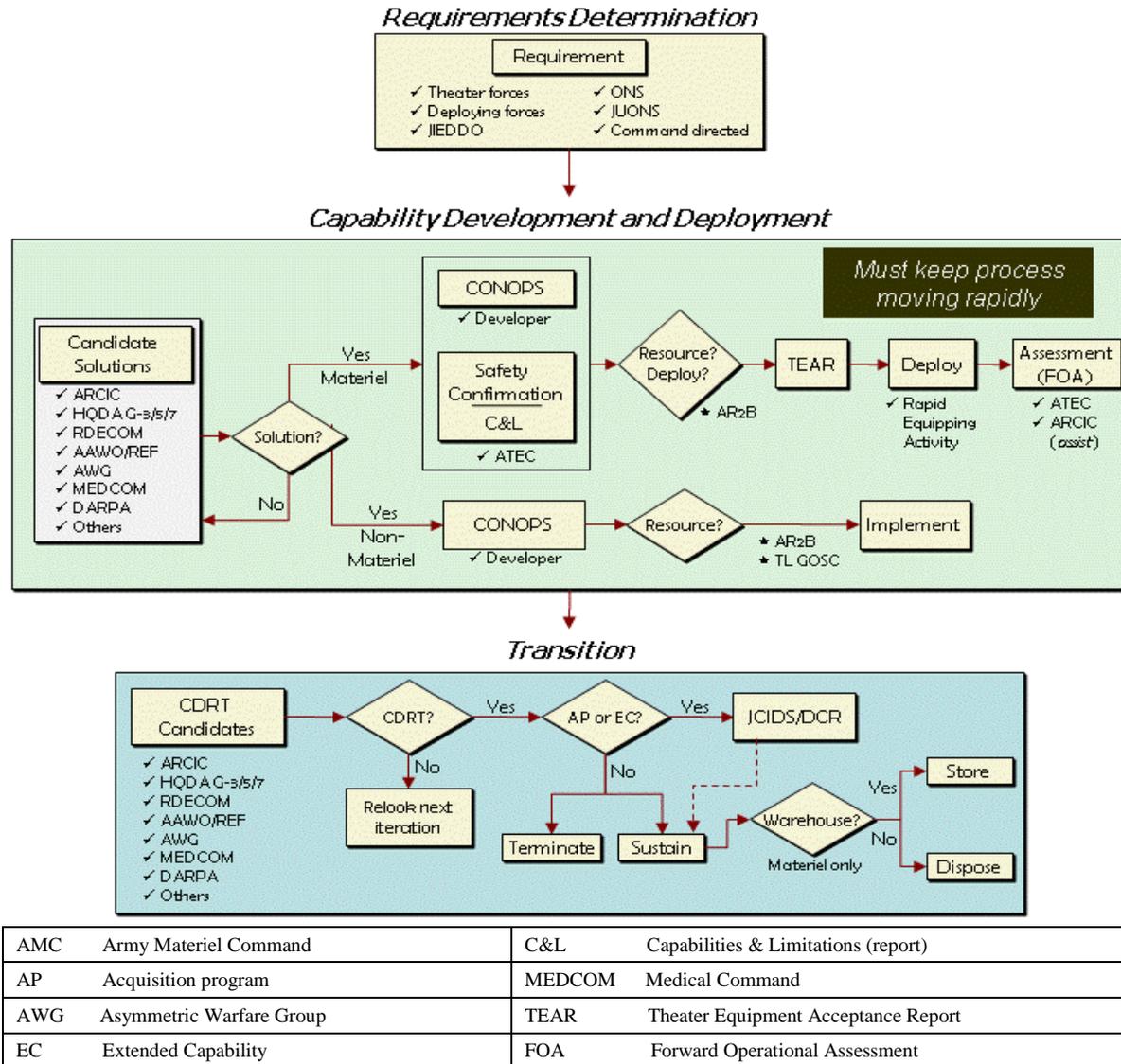
Immediately after the Milestone C decision, other activities and documents must be completed to implement this decision. A good example of this would be the development of a PD to modify or establish doctrine to support this new/modified system or capability. Refer to chapter 8 and applicable domain specific regulatory guidance to review nonmateriel DOTMLPF required activities and documentation for the system or capability.

Chapter 10 Accelerated Capabilities Development

10-1. Accelerated development

a. TRADOC assists in all areas associated with ACD and leads in three activities: CONOPS and DOTMLPF development; pre-deployment and post-deployment capability assessments; and way ahead determination for rapidly equipped capabilities using the CDRT process. ARCIC is the TRADOC lead for the process, with ACD as the primary agent. This chapter supports responsibilities and roles of TRADOC delineated in AR 71-9.

b. Figure 10-1 depicts the elements of ACD and TRADOC's role in this process. DOD, HQDA, and TRADOC all conduct portions of the process.



CDRT Candidates

- ✓ ARCIC
- ✓ HQDA G-3/5/7
- ✓ RDECOM
- ✓ AAWO/REF
- ✓ AWG
- ✓ MEDCOM
- ✓ DARPA
- ✓ Others

CDRT?

Yes → AP or EC?

No → Relook next iteration

Yes → JCIDS/DCR

Yes → Warehouse? (Material only) → Store / Dispose

No → Terminate / Sustain

Figure 10-1. ACD

c. Accelerated development generally consists of three phases: identification of a capability requirement and candidate solutions; solution development, assessment, and deployment; and a program and employment decision. A more in-depth discussion of each phase is below:

(1) Requirements and solutions. ONS and JUONS are the primary source of requirements for ACD. HQDA DCS, G-3/5/7 validates ONS (the Joint Capabilities Board validates JUONS with final approval by the Joint Staff J-8) and various Army agencies develop candidate solutions to address the operational need.

(2) Develop, assess, and deploy. Responding to the documented accelerated capability requirement, the developing or procuring agency develops or purchases the candidate solution. The ATEC evaluates the solution to ensure it is safe for warfighters, prior to the responsible agency providing the initial capability, producing at a minimum a safety confirmation. Once that

is completed, the developing/procuring agency deploys the selected solution. The ATEC may conduct a very limited predeployment assessment, putting the findings in a capabilities and limitations report. On a selected basis either ATEC (via a forward area assessment) or TRADOC may conduct a post-deployment assessment to ascertain operational usefulness. A post deployment assessment usually takes place 3 to 6 months after equipping the deployed force. In addition, these assessments are used as the basis for supporting future development as a formal acquisition program, if appropriate.

(3) Program and employment decision. ARCIC uses all available assessments as inputs to determine a path forward for a selected rapidly equipped capability, using the CDRT process to make a recommendation on the options explored.

10-2. Capabilities development for rapid transition

a. The Army views CDRT as a key means for determining the future disposition for rapidly equipped capabilities. Figure 10-2 below illustrates the CDRT process. ARCIC conducts the CDRT initiative to identify promising capabilities, determine operational support for identified capabilities, and make a recommendation to senior Army leadership for future action. The CDRT process takes the assessment input and recommendations from operational Army units to select qualified high-value and combat-proven materiel capabilities for advanced placement within the JCIDS process. In addition, the CDRT process identifies other DOTMLPF solutions as enduring, providing additional justification for action in the respective DOTMLPF domains.

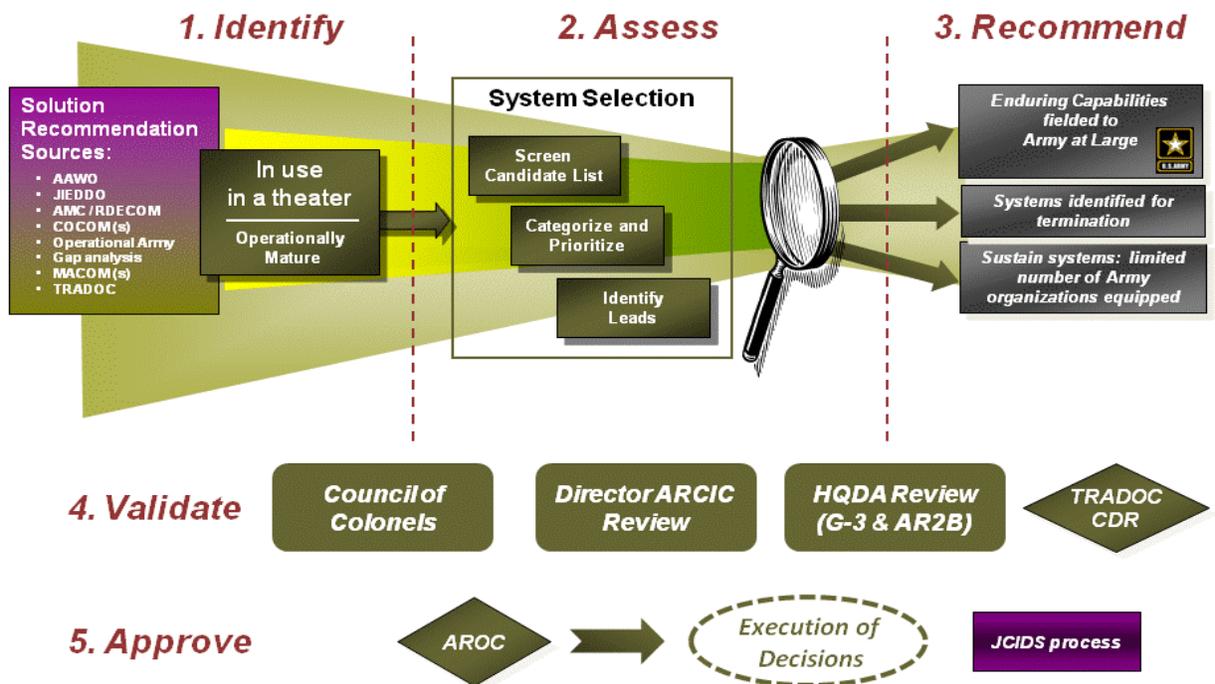


Figure 10-2. Capabilities development for rapid transition process

b. CDRT process.

(1) In conjunction with JIEDDO, AAWO, REF office, and HQDA DCS, G-3/5/7 (DAMO-CI), the AC Div develops a list of CDRT candidates. To qualify as a candidate for consideration, a capability must meet the following criteria: be in use in an operational theater for at least 120 days; be operationally mature; fill a validated current force need; and be applicable as an enduring element of the future force. Materiel solutions must also be capable of production without major modification; not be an existing acquisition program; and have undergone an operational assessment.

(2) ARCIC AC Div distributes the initial CDRT candidate list for review to the Generating Force and the Army Staff. The list contains information about the system and/or DOTMLPF capabilities, to include the proposed lead for each system or domain solution. Each organization verifies the information, ensuring the appropriate system lead assignment, correct system nomenclature and description, and program status verification. During this review, these organizations also recommend additional systems for consideration. Once the input is received and assessed, the division develops a final candidate list.

(3) ARCIC AC Div staffs the final list to the operational Army for review and evaluation as to its disposition (acquisition program, sustain in theater, termination, or in the case of a nonmateriel capability, enduring or nonenduring). The division also staffs the final list with the Generating Force for comment. The result is a recommended list of candidates for acquisition, sustain, terminate, or enduring consideration. A CDRT COC co-chaired by HQDA DCS, G-3/5/7 (DAMO-CIC) and the Chief, Accelerated Capabilities Division reviews and revises the list as appropriate. Other members of the council include, as a minimum, representatives from the Army staff (G-2; G-4; G-6; G-8; and Office of the Surgeon General), AAWO, REF, ATEC, AMC, ASA(ALT), FORSCOM, and TRADOC G-3/5/7. A lead identified during the staffing process provides an information briefing to the council for each capability or system recommended to become enduring, with a recommendation as to the appropriate category for its future. The council votes on the candidates within each category and forwards their recommendations through the senior Army leadership to the AROC for VCSA approval.

(4) ARCIC functional divisions aligned with force operating capabilities providing capability development oversight for JCIDS documents participate in this process by reviewing the different iterations of the candidate lists.

(5) The respective subject matter expertise resides at a CoE, and it is a CDID that develop the JCIDS documentation. These capabilities development SMEs, on a system-by-system basis, assume the role of lead for a CDRT candidate, develop a position (advocate or contest) and present that position to the CDRT CoC to inform decisionmaking. For those candidates approved by the AROC to become acquisition programs, the lead takes ownership and capabilities development responsibilities for integrating the capability into the current and future force.

(6) Should the CDRT council of colonels recommend a system as a final candidate for transition to an acquisition program, the TRADOC lead prepares a detailed system description chart and conducts an abbreviated DOTMLPF assessment ICW the program/project manager and

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HQDA G-8; TRADOC G-3/5/7; Accelerated Capabilities Division; and ARCIC functional divisions. Should the AROC/VCSA select a recommended system to become an acquisition program, the TRADOC lead prepares appropriate JCIDS documents. DOTMLPF-RIO capabilities selected as enduring are developed IAW the appropriate process for that capability (such as the FDU for organizational capabilities).

10-3. Operational needs statements and the TRADOC review process

a. TRADOC plays an integral part in the ONS process, specifically in two areas; determining the cross DOTMLPF impact of a particular ONS prior to approval and determining the impact of an approved ONS on capability development activities.

b. When directed by HQDA G-3/5/7, TRADOC reviews an ONS and conducts a hasty DOTMLPF analysis for implications to current or future DOTMLPF or policy if an ONS is executed. The warfighting function or force operating capability determines the lead, and requires a written response to the HQDA regional security officer as directed in the HQDA tasking. Actions could include identifying possible capabilities development solution sets and ensuring ONS systems have training and sustainment support. In some cases, schools and centers support this effort with training teams that conduct limited new equipment training and may establish contingency training venues to support deploying forces.

c. TRADOC WFF or force operating capability CoEs review all ONS for implications to current and future DOTMLPF or policy if an ONS is executed. CoEs monitor ONS, attempt to identify trends and recurring shortcomings, and incorporate current force operations feedback into the CNA annual assessment. CoEs review these ONS to ensure sufficiency shortages are not symptomatic of problems associated with current force organization design, doctrine, and training, as well as identifying new capabilities the Army does not have. ONS to increase quantities of standard Army type equipment above modified table of organization and equipment (MTOE) or table of distribution and allowances authorizations for specific identified organizations, and ONS for standard Army type equipment not currently on the unit's MTOE or table of distribution and allowances may be symptoms of needed change. The latter type of ONSs are of significant interest to CAPDEVs as they may generate new requirements that proponents must consider in future force developments.

Appendix A References

**Important note: It is the responsibility of the user of this TRADOC Regulation to ensure they are using the latest version of any publication listed in this Appendix. Check for the latest version of the references before using them to apply to guidance and policy contained in this document.*

ARs, DA Pams, field manuals (FM), and DA forms are available at the Army Publishing Directorate Homepage at <http://www.apd.army.mil>.

ARCIC/TRADOC guides (e.g., DCR, ICD, CDD, CPD, etc) are available at <https://www.us.army.mil/suite/kc/5232873>.

CJCSIs are available at the CJCS Directives Electronic Library Homepage http://www.dtic.mil/cjcs_directives/.

DOD Issuances are available at the DOD Issuances, Official Department of Defense Website for DOD Issuances Homepage <http://www.dtic.mil/whs/directives/>.

JROCMs and the JROC Administrative Guide issued by the JROC are available on the SIPRNet KMDS website <https://jrockmnds.js.smil.mil/guestjrcz/gbase.guesthome> or the Joint Staff J-8 Wiki site available on the SIPRNet at <http://www.intelink.sgov.gov/wiki/>.

TRADOC publications and forms are available at TRADOC Publications at <http://www.tradoc.army.mil/publications.htm>.

Section I Required Publications

Army VCSA Memo (Cost-Benefit Analysis to Support Army Enterprise Decision Making, December 2009)
<https://www.us.army.mil/suite/doc/20801893>

[AR 70-1](#)

Army Acquisition Policy

[AR 71-9](#)

Warfighting Capabilities Determination

[AR 381-11](#)

Intelligence Support to Capabilities Development

Capstone Concept for Joint Operations (CCJO), latest version
<http://www.dtic.mil/futurejointwarfare/>

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[CJCSI 3010.02B](#)

Joint Operations Concepts Development Process (JOpsC-DP)

[CJCSI 3170.01G](#)

Joint Capabilities Integration and Development System

[CJCSI 3180.01](#)

Joint Requirements Oversight Council (JROC) Programmatic Processes for Joint Experimentation and Joint Resource Change Recommendations

[CJCSI 3312.01A](#)

Joint Military Intelligence Requirements Certification

[CJCSI 3470.01](#)

Rapid Validation and Resourcing of Joint Urgent Operational Needs (JUONs) in the Year of Execution

[CJCSI 6212.01E](#)

Interoperability and Supportability of Information Technology and National Security Systems

[DAG](#)

Defense Acquisition Guidebook

[Department of the Army General Order 2006-04](#)

Redesignation of the United States Army Training and Doctrine Command Futures Center as the Army Capabilities Integration Center

[DA Pam 70-3](#)

Army Acquisition Procedures

[DA Pam 73-1](#)

Test and Evaluation in Support of System Acquisition

[DODI 3150.09](#)

The Chemical, Biological, Radiological, and Nuclear (CBRN) Survivability Policy

[DOD 4120.24M](#)

Defense Standardization Program Policies and Procedures

[DODI 4151.22](#)

Condition Based Maintenance Plus (CBM⁺) for Materiel Maintenance

[DODD 5000.1](#)

The Defense Acquisition System

[DODI 5000.02](#)

Operation of the Defense Acquisition System

[DODAF, Volume I](#)

Department of Defense Architecture Framework, Volume I

[DODAF, Volume II](#)

Department of Defense Architecture Framework, Volume II

[DODAF, Volume III](#)

Department of Defense Architecture Framework, Volume III

[Joint Requirements Oversight Council Memorandum 130-08](#)

Assignment of Joint Potential Designators and Coordination by Combatant Commands on Capabilities Documents

[Joint Requirements Oversight Council Memorandum 053-07](#)

Joint Requirements Oversight Council and Joint Capabilities Board Forum Attendance Procedures

[Joint Requirements Oversight Council Memorandum 074-07](#)

System Training as a Selective Key Performance Parameter Process Action Plan

[Joint Requirements Oversight Council Memorandum 261-06](#)

Cost Performance and Interdependency Chart Implementing Directive

[Manual for the Operation of the Joint Capabilities Integration and Development System](#)

[National Security Space Acquisition Policy 03-01](#)

Guidance for DOD Space System Acquisition Process

[TR 10-5](#)

Organization and Functions, U.S. Army Training and Doctrine Command

[TR 350-70](#)

Systems Approach to Training Management, Processes, and Products

[TR 381-1](#)

Threat Management

[TP 350-70-8](#)

Total Army School System Training Requirements Analysis System

[TP 525-3-0](#)

The Army Capstone Concept -- Operational Adaptability: Operating under Conditions of Uncertainty and Complexity in an Era of Persistent Conflict

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[TP 525-66](#)

Force Operating Capabilities

[TRADOC CBA Guide](#)

TRADOC Capabilities-based assessment Guide

U.S. Army Cost Benefit Analysis Guide

<http://asafm.army.mil/Documents/OfficeDocuments/CostEconomics/guidances//cba-gd.doc>

Section II

Related Publications

40 United States Code, Section 11313

Performance and Results-Based Management

The Army Campaign Plan

ARCIC Campaign Plan

Army Architecture Data Management Plan

Army S&T Master Plan

The TRADOC Campaign Plan

AR 5-5

Army Studies and Analyses

AR 5-11

Management of Army Models and Simulations

AR 5-12

Army Management of the Electromagnetic Spectrum

AR 5-22

The Army Proponent System

AR 11-33

Army Lessons Learned Program: System Development and Application

AR 25-1

Army Knowledge Management and Information Technology Management

AR 25-2

Information Assurance

AR 25-30
The Army Publishing Program

AR 25-55
The Department of the Army Freedom of Information Act Program

AR 70-75
Survivability of Army Personnel and Materiel

AR 71-9
Warfighting Capabilities Determination

AR 71-11
Total Army Analysis

AR 71-32
Force Development and Documentation – Consolidated Policies

AR 73-1
Test and Evaluation Policy

AR 210-20
Real Property Master Planning for Army Installations

AR 350-1
Army Training and Education

AR 350-10
Management of Army Individual Training Requirements and Resources

AR 350-38
Training Device Policies and Management

AR 360-1
The Army Public Affairs Program

AR 380-5
Department of the Army Information Security Program

AR 381-11
Intelligence Support to Capability Development

AR 380-381
Special Access Programs (SAPS) and Sensitive Activities

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AR 415-15
Army Military Construction Program Development and Execution

AR 415-28
Real Property Category Codes

AR 420-1
Army Facilities Management

AR 420-10
Management of Installation Directorates of Public Works

AR 530-1
Operations Security (OPSEC)

AR 600-3
The Army Personnel Proponent System

AR 611-1
Military Occupational Classification Structure Development and Implementation

AR 602-2
Manpower and Personnel Integration (MANPRINT) in the System Acquisition Process

CJCSM 3500.04
Universal Joint Task Manual

CJCSI 5120.02A
The Joint Doctrine Development System

DA Pam 25-40
Army Publishing: Action Officers Guide

DA Pam 415-15
Army Military Construction Program Development and Execution

DA Pam 415-28
Guide to Army Real Property Category Codes

DODAF 2.0
Architectural Framework

DIAI 5000.002
Intelligence Threat Support for Major Defense Acquisition Programs

DODD 5134.9
Missile Defense Agency

DODI 5200.39
Critical Program Information (CPI) Protection within the Department of Defense

FM 5-19
Composite Risk Management

FM 7-15
The Army Universal Task List

FM 7.0
Training the Force

FM 7-1
Battle Focused Training

Joint Pub 1-02
DOD Dictionary of Military and Associated Terms

Public Law 104-106, Section 5123
Performance and Results-Based Management

TR 10-5-2
Army Capabilities Integration Center

TR 25-30
Preparation, Production, and Processing of Armywide Doctrinal and Training Literature

TR 25-35
Preparing and Publishing U.S. Army Training and Doctrine Command (TRADOC)
Administrative Publications

TR 25-36
The TRADOC Doctrinal Literature Program

TR 71-4
TRADOC Standard Scenarios for Combat Developments

TR 71-12
TRADOC System Management

TR 350-32
Training Effectiveness Analysis (TEA)

TRADOC Reg 71-20

TR 350-70

Systems Approach to Training Management, Processes, and Products

TR 385-2

U.S. Army Training and Doctrine Command Safety Program

TP 350-70 series

TP 525-2-1

The United States Army Functional Concept for See 2015-2024

TP 525-3-1

The United States Army's Operating Concept 2016-2028

TP 525-3-2

The United States Army Concept for Tactical Maneuver 2015-2024

TP 525-3-3

The United States Army Functional Concept for Battle Command 2015-2024

TP 525-3-4

The United States Army Functional Concept for Strike 2015-2024

TP 525-3-5

The United States Army Functional Concept for Protect 2015-2024

TP 525-3-6

The United States Army Functional Concept for Move 2015-2024

TP 525-3-7

The United States Army Concept for the Human Dimension in Full Spectrum Operations (2015-2024)

TP 525-4-1

The United States Army Functional Concept for Sustain 2015-2024

TRAC-TD-05-011

Constraints, Limitations, and Assumptions Guide

TRAC-TD-05-012

JCIDS Code of Best Practices (COBP)

Section III

Prescribed Forms

There are no entries in this section.

Section IV
Referenced Forms

DD Form 1391
FY __ Military Construction Project Data

DA Form 1045
Army Ideas for Excellence Program (AIEP) Proposal

DA Form 2028
Recommended changes to Publications and Blank Forms

Appendix B
Requirements and Criteria for Capability Document Briefings

CRITERIA	Reviewed & Validated by Designated ARCIC Directors. (RID / A2MCD)	Reviewed & Validated by Dir ARCIC
JROC and JCB Interest JPD CDDs and CPDs (all ACAT I, selected ACAT II and below programs reviewed by the JCB, and special interest programs) and all ICDs regardless of JPD.		Y
All other JPDs	Y	
Tripwire Program cost breach to the JROC		Y
Nunn-McCurdy cost breach through JROC to SECDEF and Congress		Y
<p>Mandatory requirements:</p> <ol style="list-style-type: none"> 1. Draft capability documents must be compliant with Manual for the Operation of the JCIDS templates. 2. Briefings must be prepared per the JROC Administrative Guide (to include any Army Staff specific information requirements). 3. All CDD, CPD, and ONS documents must be accompanied by SFS. 4. The proponent commandant or senior leader must review and approve all capability documents, SFS, and briefings prior to submission to ARCIC. 5. Submission of capability documents to the ARCIC initiates the validation process: <ul style="list-style-type: none"> • The ARCIC gatekeeper notifies the appropriate ARCIC functional division(s) of document’s arrival, and an ARCIC AO is identified. • The ARCIC AO will notify the responsible GO-level directorate of the document’s arrival. • The ARCIC AO coordinates and provides the required read ahead to the ARCIC Deputy Dir or Dir as required. <p>Note: For TV-1 and/or TV-2 requirements, the proponent must register the program name and publish the views on DOD Information Technology Standards Registry (DISR) online.</p> <ol style="list-style-type: none"> 6. The appropriate ARCIC Dir reviews and validates the document and briefing based on the criteria illustrated above. <ul style="list-style-type: none"> • Briefings to Dir, ARCIC will be electronic and consist of only the briefing requirements stipulated in the JROC Admin Guide. • The format for briefings to other directorates is also the JROC Admin Guide plus any other requirements deemed appropriate by the general officer being briefed. • Ensure briefings describe: why we need the system/thing, what value added it brings and why, resources necessary (including people, time, and money-what’s its total rough order of magnitude (ROM) cost). Must also describe the system or capability gaps it solves. • Must have some level of analysis supported by some level of wargaming, or modeling, or experimentation/real world exercise. • When do we need it and why; what comprises Fist Unit Equipped and why. • What quantities are needed and why (NOT Army Acquisition Objective of entire Army every time). • What is the BOIP-FD—incremental set of capabilities 7. The ARCIC JCIDS gatekeeper enters the validated document, briefing, and memo (PDF file) into CAMS. 		
<p>Within the JROC Administrative Guide specific focus areas include:</p> <ul style="list-style-type: none"> • All cost criteria and factors in ROM \$. • Technology assessment demonstrating the feasibility of the proposed solution. • Interoperability issues addressed. <ul style="list-style-type: none"> • Is this a Tripwire program? <ul style="list-style-type: none"> - 10% cost growth flag on JROC Interest programs from <u>Current Baseline</u>. - 25 % cost growth flag on all JROC Interest programs from <u>Original Baseline</u>. - 15% cost growth flag on information system programs from <u>Original Baseline</u>. <p>If so, address information requirements in the JROC Admin Guide Enclosure for Tripwire programs</p> <ul style="list-style-type: none"> • Is this a Nunn-McCurdy Breach program? <ul style="list-style-type: none"> - The congressional Nunn-McCurdy criteria require Notification and a System Acquisition Report when Unit Cost Breach reaches over 30% (significant) over the Original Baseline Estimate. - If so, address information requirements in JROC Admin Guide Enclosure for Nunn-McCurdy Breach programs. <p>Capability Analysis must address:</p> <ul style="list-style-type: none"> • How well this capability meets identified current and/or future gaps. • Other joint and Army capabilities explored and why they do not provide a timely or sufficient solution to the requirement. • The value added to the echelon receiving this solution. 		

Appendix C

Responsibilities Within Levels of Integration

This appendix addresses the responsibilities of CAPDEVs at various levels in the Army to perform capabilities integration of Army requirements. This list was vetted through ARCIC, CAC, school commandants, CoEs (and CDIDs), and major subordinate organizations (MSOs). This list was reviewed during the CIEF forum, approved by Dir, ARCIC and the CAC Commander, and validated by MSOs for implementation.

Level 1

WFF & Special Concepts

ARCIC

- Develops ACF
- Develops Army capstone and operating concepts
- Deconflicts and pulls together AFCs across WFFs
- Develops and vets AWFCs in collaboration with CoEs
- Creates CoL
- Integrates the CoE ILPs into a coherent, synergist CoL

Major subordinate organization (MSO) lead for TRADOC core functions listed in TR 10-5

- Assists in development of concepts from unit training, training support, and leader development perspective
- Leads development of training infrastructure and leader development strategy
- Leads development of learning strategy
- Integrates training infrastructure strategy required capabilities into the appropriate WFF functional concept
- Provides SMEs as necessary
- Participates in experiments

Lead CoE/force modernization proponent: WFF lead and/or Army force modernization proponent

- Provides SME input for development of capstone and operating concepts
- Reviews other AFCs and provides CoE SME input to ensure accuracy & sufficiency of CoE specific topic areas -- Assists other lead CoEs with SMEs to help develop functional concepts
- Leads team of SMEs to create the warfighting functional concept or other concepts for assigned functions – including dependent required capabilities from other associated functions and/or portfolios.
- Develops concepts across DOTMLPF for assigned functional areas
- Leads investigations/learning activities for assigned AWFCs
- Develops ILPs for proponentencies and AWFCs assigned to the CoE

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Level 2

Requirements (Capabilities) Determination

Integration of CBAs, ICDs, and CDD/CPD development

ARCIC

- Develops ArCP to direct capability developments activities
- Ensures capability development requirements are consistent with priorities established during CBAs
- Provides staff management of Level 2 processes and products
 - Facilitates coordination and dissemination
 - Assists and coordinates proponent's efforts
 - Analyzes, monitors, assesses, and develops recommendations for CG, TRADOC

MSO lead for TRADOC core functions listed in TR 10-5

- Assists force modernization proponents in the integration of doctrine, training, training support, and leader development within their proponent assigned WFF

Lead CoE/force modernization proponent: WFF lead and/or Army force modernization proponent

- Leads ICDT; conducts CBA and all other related organizational and functional assessments
- ICW ARCIC CDLD, identifies required capabilities -- Identifies gaps and identifies redundant overlaps in capability supporting concepts
- Provides recommendations for DOTMLPF requirements directly supporting concepts based on relative priority of validated gaps and solutions from CBA
- Identifies capability relationships, dependencies/interdependencies, and redundancies
- Provides recommendations for trades and divestitures of concept related capabilities based upon unnecessary redundancy given new solution recommendations or efficiencies gained in satisfying requirements given the new concepts or changes in required capabilities
- Recommends guidance and priorities ICW ArCP for concept-related requirements development efforts by force modernization proponents.
- Writes, staffs, and adjudicates requirements documentation for DOTMLPF solutions for designated lead & force modernization proponent areas within the Army
- Endorses all concept-related capabilities documents developed by force modernization proponents
- Develops operational architectures for assigned organizations
- Recommends guidance and endorses the operational architecture for solutions which directly enable the assigned concept and/or capabilities.
- Leads CoE effort to evaluate resource and benefit implications with other stakeholders as required (cost-benefit analyses)
- Develops organizational designs and determines impacts of other organizational and functional developments on assigned organizations
- Coordinates with other CDIDs, force modernization proponents, other services, and joint HQs as needed to prioritize, integrate, and synchronize concept requirements

- ICW ARCIC, provides Army input to joint developments
- Integrates proponent missions assigned to CoE commander in AR 5-22
- Reviews development proposals for compliance with concept requirements

Level 3

Integration across functions and/or DOTMLPF domains

ARCIC

- Optimizes required capabilities, gaps, and DOTMLPF requirements across functional areas
- Assesses alternative means of achieving required capabilities given specific solutions from other functional areas (for example, AWFC)
- Verifies capabilities provide the most urgent warfighting needs within available resources (RIO)
- Ensures redundancies and trades are identified and risk expressed
- Validates the integration of functional requirements across all functions and DOTMLPF domains
- Synchronizes planned milestones with other related activities to ensure capabilities arrive as needed across time
- Synchronizes functional requirements with joint initiatives
- Coordinates/synchronizes capabilities development across DOTMLPF & across all functional areas ICW Army force modernization proponents across the Army, joint and other service development efforts
- Deconflicts required capabilities, gaps lists, and solutions across all functions and organizations
- Prioritizes capability gaps, solutions, and capability development efforts across the Army
- Develops incremental capability packages for selected brigades which recommend modernization fielding priorities based on realities in funding, delivery of solutions, and timing of ARFORGEN rotations
- Synchronizes execution of capabilities development activities
- Provides the architecture developmental environment and validates operational architecture products
- Submits requirements to HQDA for approval and implementation
- Capability packages
 - Develops and evaluates incremental capability packages for selected brigades which recommend modernization fielding priorities based on realities in funding, delivery of solutions, and timing of ARFORGEN rotations
 - Incorporates capability set solutions into capability packages as appropriate
 - Trains, evaluates, and tests incremental capability packages with support from force modernization proponent throughout process

MSO lead for TRADOC core functions listed in TR 10-5

- Identifies, ICW force modernization proponents, proposed doctrine, training, and leadership & education (DTL) requirements
- Conducts feasibility assessment of CoE proposed solutions (DTL)
- Leads integration of T domain
- Leads integration of D domain

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- Leads integration of L domain
- Assists in development of comprehensive lessons learned
- Ensures integration of training, doctrine, and leader development across the Army

Lead CoE/force modernization proponent:

- WFF lead and/or Army force modernization proponent
 - Assists in cross-functional assessments (for example, CNA)
 - Assists in development of One Gap List, unified prioritized DOTMLPF solutions list and potential trades across functions and organizations
 - Conducts assessments of assigned organizations (for example, organization baseline)
 - Assists in identification of trades for requirements directly enabling functional capabilities
 - Capability packages
 - Assists with identification of potential solutions in support of capability packages
 - Identifies and develops associated DOTMLPF solutions for each capability set.
-

Glossary

**Section I
Abbreviations**

A2MCD	Assessment, Architecture & Mission Command Directorate
AAE	Army Acquisition Executive
AAWO	Army Asymmetric Warfare Office
ACAT	acquisition category
ACC	Army Capstone Concept
ACD	accelerated capabilities development
AC Div	Accelerated Capabilities Division (ARCIC)
ACOM	Army command
ACF	Army Concept Framework
ACP	Army Campaign Plan
ACR	advanced concepts and requirements
ACSIM	Assistant Chief of Staff for Installation Management
AEG	Army Experimentation Guidance
AESIS	Army Experiment and Study Information System
AFC	Army functional concepts
AIEP	Army Ideas for Excellence Program
AIMD	Architecture Integration and Management Division (ARCIC)
AKO	Army Knowledge Online
AMC	Army Materiel Command
AMSAA	Army Materiel Systems Analysis Activity
AoA	analysis of alternatives
AOC	Army operating concepts
APRB	Army Requirements Oversight Council Process Review Board
AR	Army regulation
ARCIC	Army Capabilities Integration Center
ArCP	ARCIC Campaign Plan
ARFORGEN	Army force generation
AROC	Army Requirements Oversight Council
ARSTAF	Army staff
ARTPC	Army Research and Technology Protection Center
ASA(ALT)	Assistant Secretary of the Army for Acquisition, Logistics and Technology
ASARC	Army Systems Acquisition Review Council
ASCC	Army service component command
ATEC	U.S. Army Test and Evaluation Command
ATO	Army technology objective
ATTP	Army tactics, techniques and procedures
AUTL	Army Universal Task List
AW	asymmetric warfare
AWFC	Army Warfighting Challenge
BCT	brigade combat team

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BCTM	Brigade Combat Team Modernization
BLCSE	battle lab collaborative simulation environment
BoG	Board of Governors
BOI	basis of issue
BOIP	basis of issue plan
CAC	U.S. Army Combined Arms Center
CADIE	Capability Architecture Development and Integration Environment
CAMS	Capabilities and Army Requirements Oversight Council Management System
CAPDEV	capability developer
CAPE	cost assessment and program evaluation
CARD	Capabilities Assessment and RAM Division
CASCOM	U.S. Army Combined Arms Support Command
C-BA	cost-benefit analysis
CBA	capabilities-based assessment
CBM+	condition based maintenance plus
CBRN	chemical, biological, radiological, and nuclear
CCDR	Combatant Commander
CCJO	capstone concept for joint operations
CCP	concept capability plan
CDD	capability development document
CDE	concept development and experimentation
CDID	Capability Developments Integration Directorate
CDL	Concept development and learning
CDLD	Concept Development and Learning Directorate (ARCIC)
CDRT	capability development for rapid transition
CG	commanding general
CI	capabilities integration
CIEF	Capabilities Integration Enterprise Forum
CIO	chief information officer
CJCS	Chairman, Joint Chief of Staff
CJCSI	Chairman, Joint Chief of Staff Instruction
CJCSM	Chairman, Joint Chief of Staff Manual
CLA	constraints, limitations, and assumptions
CLOE	common logistics operating environment
CNA	capabilities needs analysis
COBP	codes of best practices
COC	council of colonels
CoE	center of excellence
COE	common operating environment
COIC	critical operational issues and criteria
CoL	Campaign of Learning
CONOPS	concept of operations
CoP	community of practice
CPD	capability production document
CPI	critical program information

CSA	Chief of Staff, Army
CSB	Configuration Steering Board
DA	Department of the Army
DAB	Defense Acquisition Board
DARPA	Defense Advanced Research Projects Agency
DASA(C&E)	Deputy Assistant Secretary of the Army for Cost and Economics
DCG	deputy commanding general
DCR	joint DOTMLPF doctrine, organization, training, materiel, leadership and education, personnel, and facilities change recommendation
DCS	Deputy Chief of Staff
DIA	Defense Intelligence Agency
DIR	director
DICR	Army DOTMLPF integrated capabilities recommendation
DISR	DOD Information Technology Standards Registry
DOD	Department of Defense
DODAF	Department of Defense architecture framework
DODD	Department of Defense directive
DODI	Department of Defense instruction
DOTmLPF	doctrine, organization, training, materiel, leadership and education, personnel, and facilities (as they pertain to mostly non-materiel domain solutions in the Army)
DOTMLPF	doctrine, organization, training, materiel, leadership and education, personnel, and facilities
DOTMLPF-RIO	resource-informed, integration-focused, and outcome-based solutions which address doctrine, organization, training, materiel, leadership and education, personnel, and facilities gaps.
DPS	defense planning scenarios
DTL	Doctrine, Training, Leadership & Education
ECOP	equipment common operating picture
EMD	engineering and manufacturing development
ETAP	experiment to action plan
FAA	functional area analysis
FCB	functional capabilities board
FDD	Force Design Directorate (ARCIC)
FDSC	failure definition and scoring criteria
FDU	force design update
FFID	Future Force Integration Directorate (ARCIC)
FM	field manual
FNA	functional needs analysis
FORSCOM	U.S. Army Forces Command
FoS	family of systems
FRP	full rate production
FSA	functional solution analysis
FSO	full-spectrum operations
G-1/4	personnel, infrastructure, and logistics

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G-2	intelligence
G-3/5/7	plans, operations, and training
G-6	command, control, communications and computers
G-8	resource management
GDF	Guidance for the Development of Forces
GOSC	general officer steering committee
HQ	headquarters
HQDA	Headquarters, Department of the Army
HRC	U.S. Army Human Resources Command
IA	information assurance
IAW	in accordance with
ICD	initial capabilities document
ICDT	integrated capabilities development team
ICW	in coordination with
ILP	Integrated Learning Plan
IED	improvised explosive device
INMA	ideas for non-materiel approaches
IPL	integrated priority list
ISS	Interim Solution Strategy
ITEA	initial threat environment assessment
JAED	Joint and Army Experimentation Division (ARCIC)
JAMSD	Joint and Army Models & Simulation Division (ARCIC)
JCA	joint capability area
JCAMS	JCA Management System
JCB	joint capabilities board
JCD	joint capabilities document
JCD&E	Joint Concept Development and Experimentation
JCIDS	Joint Capabilities Integration and Development System
JCTD	joint capabilities technology demonstration
JIEDDO	Joint Improvised Explosive Device Defeat Organization
JIIM	joint, interagency, intergovernmental, and multinational
JOpsC	joint operations concepts
JPD	joint potential designator
JROC	joint requirements oversight council
JUON	joint urgent operational need
KMDS	knowledge management decision support
KPP	key performance parameter
KSA	key system attribute
LOO	line(s) of operation
LRIP	low rate initial production
M&R	maintenance and repair
M&S	modeling and simulation
MANPRINT	manpower and personnel integration
MCA	military construction, Army
MDA	milestone decision authority
MDD	materiel development decision

MILCON	military construction
MOCS	military occupational classification and structure
MOS	military occupational specialty
MSA	materiel solution analysis
MSAWG	M&S Advisory Working Group
MSO	major subordinate organization
MTOE	modified table of organization and equipment
MUA	military utility assessment
NDS	National Defense Strategy
NMS	National Military Strategy
NSS	National Security Strategy
OACSIM	Office of the Assistant Chief of Staff, Installation Management
OBA	Organizational-Based Assessment
OCR	office of coordinating responsibility
OE	operational environment
OMA	operations and maintenance, Army
OMS/MP	operational mode summary/mission profile
ONS	operational needs statement
OPR	office of primary responsibility
OSD	Office of the Secretary of Defense
PBR	program budget review
PD	program directive
PEO	program executive officer
PIA	post independent analysis
PM	program manager
PME	professional military education
POM	program objective memorandum
PPBE	planning, programming, budgeting, and execution
QDR	Quadrennial Defense Review
QFR	Quarterly Futures Review
RAM	Reliability, Availability, and Maintainability
RDECOM	U.S. Army Research, Development, and Engineering Command
REF	Rapid Equipping Force
RFP	requests for proposals
RID	Requirements Integration Directorate (ARCIC).
RIO	resource-informed, integration-focused, outcome-based
ROM	rough order of magnitude
ROMO	range of military operations
RSA	recommended doctrine, organization, training, materiel, leadership and education, personnel, and facilities resource-informed, integration-focused, outcome-based solution approaches
S&AD	Studies and Analysis Division (ARCIC)
S&T	science and technology
SAG	senior advisory group
SAP	special access program
SF	strategic framework

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SMDC	U.S. Army Space and Missile Defense Command
SME	subject matter expert
SoS	system of systems
STAR	system threat assessment report
STRAP	system training plan
T&E	test and evaluation
TAA	total army analysis
TADSS	training aids, devices, simulators, and simulations
TCM	TRADOC capability managers
TCP	TRADOC Campaign Plan
TD	Technology Development
TDS	technology development strategy
TEMP	test and evaluation master plan
TL	training, leadership and education
TLP	training, leadership and education, and personnel
TOE	table of organization and equipment
TR	TRADOC regulation
TRAC	TRADOC Analysis Center
TRADOC	U.S. Army Training and Doctrine Command
TRAS	Training Requirements Analysis System
TTP	tactics, techniques and procedures
TTSP	threat test support package, training test support package
UCP	Unified Command Plan
UJTL	Universal Joint Task List
USAFMSA	U.S. Army Force Management Support Agency
USAWC	U.S. Army War College
USJFCOM	U.S. Joint Forces Command
VCSA	Vice Chief of Staff of the Army
WFF	warfighting function
WfN	warfighter needs analysis
WFO	warfighter outcomes

Section II

Terms

acquisition category (ACAT)

Categories established to facilitate decentralized decisionmaking and execution and compliance with statutorily imposed requirements. The ACAT determines the level of review, validation authority, and applicable procedures. DODI 5000.2 and AR 70-1 provide the specific definition for each ACAT.

advanced concept technology demonstration

An advanced concept technology demonstration is a demonstration of the military utility of a significant new technology and an assessment to establish clearly its operational utility and system integrity. Advanced concept technology demonstrations are being replaced by JCTDs,

but work done on finalized advanced concept technology demonstrations can still be leveraged if relevant. See CJCSI 3170.01G.

affordability

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

analysis of alternatives (AoA)

An AoA is the evaluation of the performance, operational effectiveness, operational suitability, and estimated costs of alternative systems to meet a mission capability. It 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 CDD. See CJCSI 3170.01G.

approval

The formal or official sanction of the identified capability described in the capability documentation. Approval also certifies that the documentation has been subject to the uniform process established by the DOD 5000 series. See CJCSI 3170.01G.

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.

ARCIC Campaign Plan (ArCP)

ARCIC publishes the ARCIC Campaign Plan (ArCP) to implement a campaign plan that manages and governs capability developments and helps balance resources between supporting the current fight and developing the Modular 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, modular 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.

ARCIC gatekeeper

Also known as the ARCIC JCIDS gatekeeper or TRADOC 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 the

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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 CAMS database for AROC/JROC validation and approval. The ARCIC gatekeeper is the gatekeeper for TRADOC and can be contacted at monr.arcicgatekeeper@us.army.mil.

Army Campaign Plan (ACP)

The ACP is the operational expression of the Army's strategy. It directs planning and execution of Army operations and transformation within the context of ongoing strategic commitments, and it integrates a broad range of transformation initiatives and institutional processes which accomplish the Army mission and achieve the Army Vision. It holds the Army accountable.

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 ROMO against adversaries in the expected 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 DOTMLPF 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-DARPA Senior Advisory Group (SAG)

Army-Defense Advanced Research Projects Agency (DARPA) Senior Advisory Group Chartered by CSA to advise CSA and Directors of DARPA and ARCIC, providing assessments and recommendations related to how the Army transforms capabilities across DOTMLPF. Examines paths to the future Army for relevance to the Army's present and potential capabilities and looks at advanced technology, particularly DARPA projects. Meets quarterly and out-briefs CSA semiannually.

Army Experiment and Study Information System (AESIS)

AESIS provides a virtually distributed interlibrary, with a web-enabled, enterprise-level search capability accessible to the entire analytic community (DOD, Army, industry, and academia). Analytic products stored in an organized way on AESIS will:

- a. Leverage the collective knowledge and improve collaboration within the analytic community.
- b. Improve the speed and effectiveness of literature reviews.
- c. Enable efficient commitment and management of analytic resources.
- d. Focus research studies, experiments, and analyses on the most important questions.
- e. Increase productivity and reduce duplicate work.

Army Force Generation (ARFORGEN) process

ARFORGEN is a force management process, leveraging modular unit designs and operational cycles, to provide a sustained deployment posture of operationally ready units in predictable patterns while retaining the capability to surge combat power for major combat operations. The necessary manning, equipping, resourcing and training processes are synchronized to generate ready forces from all components thus achieving a sustained or surge deployment capability to satisfy the requirements regional combatant commanders will place on the Army.

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 ACC, and the AOC. As an integrated suite of concepts, the AFCs describe the full range of land combat functions across the 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 CBA.

Army gatekeeper

Army gatekeeper assigned to HQDA DCS, G-3/5/7 (DAMO-CIC) is the POC for the HQDA DCS, G-3/5/7 to oversee and manage all documents submitted to the AROC and JROC staffing processes; the Army gatekeeper has one primary and one alternate POC in CAMS for staffing execution, usually to a staff action control officer but it is by the directorate's or agency's call. TRADOC ARCIC has a gatekeeper to function as above on its behalf. See AR 71-9.

Army Geospatial Governance Board

The Army Geospatial Governance Board is a HQDA guidance body to address Army Geospatial-Enterprise issues (with associated geospatial-intelligence concerns) impacting current and future force. The long-term objective is to administer and facilitate the development of a net-enabled Army geospatial enterprise with a distributed database coupled with an enabling information architecture based on enforceable policies and procedures, interoperable software, open standards, open data formats, and approved algorithms. Such a geospatial enterprise allows actionable geospatial information to be posted, processed, and used as needed vertically and horizontally, from peer to peer, and bi-directionally from national to the soldier level. The board will hear issues and recommendations on the state and status of the Army Geospatial Enterprise and provide advice and recommendations as appropriate.

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 CBA.

Army Requirements and Resourcing Board

The Army requirements and resourcing board is the mechanism (forum) for validating, prioritizing, and resourcing critical operational needs (ONSs and equipment sourcing document) for rapid senior leadership decisionmaking (accelerated fielding solutions) in

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support of a named operation. It identifies solutions in the year of execution and/or budget year that require possible resource realignment.

Army Requirements Oversight Council (AROC)

An advisory council that advises the CSA in the assessment and prioritization of capabilities integrated across the DOTMLPF. The AROC is the Army's approval authority for force modernization required capabilities. The council validates JCIDS documents prior to JROC consideration. This encompasses all JCIDS efforts including Army annexes to joint and other service documents, and those documents where an Army proponent has been designated as a joint combat developer/CAPDEV (CAPDEV). See AR 71-9.

Army Science and Technology Master Plan

The Army Science and Technology Master Plan is published biennially, and with its associated websites, is the single source document describing the Army S&T program strategy, major technology objectives, research goals, as well as roles and relationships between S&T and strategic partners. The S&T program is shaped collaboratively through close partnerships with warfighting customers, related S&T developers across the DOD, other federal agencies, industry, academia, and international partners.

Army Systems Acquisition Review Council (ASARC)

The ASARC is the Army's senior-level review body for all ACAT I and ACAT II systems and command, control, communications and computers information technology programs. The ASARC is chaired by the ASA(ALT). It is convened at formal milestones to determine a program's readiness to enter the next phase in the materiel acquisition cycle. The ASARC makes recommendations to the AAE on those programs for which the AAE is the MDA.

AROC Process Review Board (APRB)

The APRB serves as the AROC intermediate review body. It ensures topics are suitably developed IAW AROC objectives and determine the required method of presentation for approval of the submission. The APRB is co-chaired by Colonel/GS-15 representatives of HQDA DCS, G-3/5/7 (Warfighting Capabilities Division); HQDA DCS, G-8 (Force Development), and the ARCIC. It is comprised of Colonel/GS-15 representatives of the AROC principals.

assist

TRADOC organizations or staff elements a higher headquarters directs to provide augmentation or other support to a lead for a function, task, or role (TR 10-5).

asymmetric warfare (AW)

Asymmetric warfare focuses whatever may be one side's advantage against their opponent's lack of ability to see or defend against actions of that nature.

ATTP

The acronym stands for Army tactics, techniques and procedures. ATTPs were established 27 May 2010 by the Administrative Assistant to the Secretary of the Army as an official departmental publishing medium in the doctrine and training category, with approval authority

granted to Commander, CAC (See policy memo "Establishment of Army Tactics, Techniques, and Procedures (ATTP) as an Official Departmental Publishing Medium", dated 27 May 2010). ATTP manuals will more accurately describe those tactics, techniques, and procedures used in daily operations; they will contain tactics, techniques and procedures for specific branches, proponents, sections, cells, and detachments. Field manuals (FMs) will continue to describe the fundamental principles for operations. ATTP will use the same format as FMs and adhere to all doctrinal terms, symbols, graphics, and concepts.

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.

capabilities-based assessment (CBA)

The CBA is the JCIDS analysis process. It includes three phases: the FAA, the FNA, and the FSA. The results of the CBA are used to develop an ICD. See the JCIDS Manual.

Capabilities and Army Requirements Oversight Council Management System (CAMS)

CAMS is a tool used to automate the catalog of approved requirements document system.

capabilities determination

See capabilities development.

capabilities development

Identifying, assessing, and documenting changes in DOTMLPF that collectively produce the force capabilities and attributes prescribed in approved concepts, CONOPS, or other authoritative sources.

capabilities development for rapid transition

A process used to determine the future disposition for rapidly equipped capabilities. ARCIC conducts the CDRT initiative to identify promising capabilities, determine operational support for identified capabilities, and make a recommendation to senior Army leadership for future action. The result of the CDRT determination is a recommendation to convert the capability to an acquisition program, sustain it in theater, termination of the capability or, in the case of a non-materiel capability, make it enduring or nonenduring. See Chapter 10.

capability

A capability is the ability to achieve a desired effect under specified standards and conditions through combinations of means and ways to perform a set of tasks. It is defined by an

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operational user and expressed in broad operational terms in the format of a joint capabilities document (JCD), ICD, DICR, or a DCR. In the case of materiel proposals, the definition will progressively evolve to DOTMLPF performance attributes identified in the CDD and the CPD. A DICR will be the document used for Army managed DOTmLPF capabilities recommendations. See CJCSI 3170.01G and AR 71-9.

capability architecture development and integration environment (CADIE)

The CADIE is TRADOC's source of authoritative architecture data and the sole environment for the development of TRADOC architecture data and products, and Army components of joint and coalition architectures. It 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 netcentric data strategy for implementing the DODAF, complementing the DOD Architecture Repository System, and ensuring Army and TRADOC specific capabilities are satisfied. CADIE is managed and controlled by the ARCIC (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.

capability-based planning (CBP)

The CBP is the 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. See CJCSI 3170.01G.

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 requirements, personnel, and facilities within the context of the force development process. Also responsible for representing the end user during the full development and lifecycle process and ensures all enabling capabilities are known, affordable, budgeted, and aligned for synchronous fielding and support.

capability development document (CDD)

A CDD is the 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. The CDD may define multiple increments if there is sufficient definition of the performance attributes (key performance parameters, key system attributes, and other attributes) to allow approval of multiple increments. See the JCIDS Manual.

Capability Developments Integration Directorate (CDID)

This organization develops Center of Excellence-related concepts and requirements, and conducts experiments to validate DOTMLPF integrated combined arms capabilities that complement joint, interagency, and multinational capabilities. A CDID is organized under a CoE, except for the CAC CDID (Mission Command) who is organized under the Deputy to CG CAC.

capability documents

This is a generic term to refer collectively to ICDs, CDDs, CPDs, DCRs, and DICRs.

capability gaps

A gap is the inability to achieve a desired effect under specified standards and conditions through combinations of means and ways to perform a set of tasks. The gap may be the result of no existing capability or lack of proficiency or sufficiency in existing capability, or the need to recapitalize an existing capability. See CJCSI 3170.01G.

capability production document (CPD)

A CPD is a document that addresses the production elements specific to a single increment of an acquisition program. See the JCIDS Manual.

capstone concept

A capstone concept is a holistic future concept that is a primary reference for all other concept development. This overarching concept provides direct linkages to national and defense level planning documents. A capstone concept drives the development of subordinate concepts. For example, the CCJO drives development of joint concepts and service concepts. TP 525-3-0 drives the development of the Army operating and functional concepts.

Center of Excellence (CoE)

A designated organization, centered on TRADOC core functions, that improves combined arms solutions for joint operations, fosters DOTMLPF 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 dimensions; and presents resource-informed, outcomes-based recommendations to the TRADOC 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 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

This is a statement of adequacy provided by a responsible agency for a specific area of concern in support of the validation process. See the JCIDS Manual.

common logistics operating environment (CLOE)

CLOE is a full-spectrum approach to synchronize logistics concepts, architectures, organizations, and technologies into an integrated, netcentric logistics domain. CLOE documents the Army's logistics information infrastructure, from the weapon system up through national level. CLOE provides warfighters, logisticians, and commanders at all levels with logistics situational awareness, and increased unit combat power.

community of practice (CoP)

This is a group of organizations with a common interest in a subject area who interact to share information, processes, and products. A CoP is defined by three characteristics: the shared domain of interest, the relationships defining the community (typically networked, consisting of the organizations as nodes), and a shared set of practices for the subject area.

concept

A notion or statement of an idea – an expression of how something might be done – that can lead to an accepted procedure (CJCSI 3010.02B). 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 capability plan (CCP)

CCPs are no longer being created, only existing CCPs will continue to be managed and worked. A CCP is a plan that provides a description of how an Army commander could perform a specific operation or function 6-18 years into the future. When existing joint and Army concepts do not provide the detail required to conduct a CBA, a CCP may be developed to fill that void. It describes the application of elements of joint and Army concepts to selected mission, enemy, terrain and weather, time, troops available, and civilian conditions. It is typically more illustrative and descriptive than a concept, and more focused in its purpose. A CCP has a narrow focus to derive detailed required capabilities. Although CCPs are developed in support of the ROMO, a CCP does not attempt to address all possible contingencies or all levels of operations. CCPs include one or more illustrative vignettes for a specific operation or function. The vignettes provide the "how to" and bring to light the capabilities required for a specific operation or function. The CCP is not revised or updated once approved.

concept of operations (CONOPS)

This 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. A 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. See CJCSI 3170.01G.

condition based maintenance plus (CBM+)

CBM+ is the application and integration of appropriate processes, technologies, and knowledge based capabilities to improve the reliability and maintenance effectiveness of DOD systems and components. At its core, CBM+ is maintenance performed on evidence of need provided by reliability centered maintenance analysis and other enabling processes and technologies. CBM+ uses a systems engineering approach to collect data, enable analysis, and support the decision-making processes for system acquisition, sustainment, and operations. See DODI 4151.22.

configuration steering board (CSB)

These boards will be established by each military department for every current and future ACAT I program in development. The CSBs will be chaired by the Army Acquisition Executive (AAE). CSBs must have a representative of the appropriate capabilities community as discussions will concern potential cuts or reductions in performance requirements. Those de-scoping options include those that will reduce program costs or moderate requirements. Final decisions on de-scope option implementation will be coordinated with the Joint Staff and the appropriate military department officials responsible for the requirements.

constraints, limitations, and assumptions (CLA)

CLA provide the framework for both the study team and the study sponsor to understand the conditions under which a study's results are applicable. Although commonly misrepresented or used interchangeably, these three terms are distinctly different in meaning and use in the context of a study. Constraints, limitations, and assumptions bound (scope) a study effort by identifying what must (or must not) and can (or cannot) be accomplished; frame the study space and set the stage for the study team's methodology development; serve as a "contract" between the study sponsor and the study team; and provide a basis for the sponsor to reconcile the study results with how the study was done.

constructive simulation

A simulation that involves simulated people operating in simulated systems. Real people stimulate (make inputs) to such simulations, but are not involved in determining the outcomes.

cost and operational value analysis

Informed by operational and fiscal requirements, and used to conduct benefits estimation. Potential military benefit of the program. Develop cost-benefit and value added analysis throughout development. This analysis is done prior to determining the cost and operational effectiveness for each domain of DOTMLPF in the AoA for each materiel solution submitted for approval.

cost-benefit analysis (C-BA)

As defined by HQDA G-8 C-BA policy memorandum: 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 nonfinancial or nonquantifiable 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. See the U.S. Army Cost Benefit Analysis Guide, <http://asafm.army.mil/offices/LinksDocsOffice.aspx?OfficeCode=1400>. TRADOC

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complements and supports DA guidance with two policy memorandums. The first memo is signed by the TRADOC DCG for the use of C-BAs within TRADOC in general. The second memo is specific to capability documents and is signed by the DCG, Futures/Dir, ARCIC. The latter addresses the use of C-BA for capabilities development and how to apply it (See the AKO Policy site for the memorandums: <https://www.us.army.mil/suite/files/5234025>).

critical operational issues and criteria (COIC)

Key operational concerns (issues) of the decisionmaker, with bottom line standards of performance (criteria) that if satisfied, signify the system is operationally ready to proceed beyond the FRP decision review. The COIC 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 decisionmakers/authorities. COIC are few in number, reflecting total operational system concern and employing higher order measures.

critical program information (CPI)

Elements or components of a research, development, and acquisition program that, if compromised, could cause significant degradation in mission effectiveness; shorten the expected combat-effective life of the system; reduce technological advantage; significantly alter program direction; or enable an adversary to defeat, counter, copy, or reverse engineer the technology or capability. CPI includes: technology that would reduce the U.S. technological advantage if it came under foreign control, information about applications, capabilities, processes, and end-items as well as elements or components critical to a military system or network mission effectiveness.

CPI information shall be identified early in the research, technology development and acquisition processes, but no later than when a DOD agency or military component demonstrates an application for the technology in an operational setting, in support of a transition agreement with a presystems acquisition or acquisition program, or in exceptional cases, at the discretion of the laboratory/technical director. Presystems acquisition and acquisition programs shall review their programs for CPI when technologies are transitioned from research and development or inherited from another program, during the technology development phase, throughout program progression, and as directed by the MDA.

data

A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by humans or by automatic means (as it pertains to modeling and simulation).

doctrine requirements

This is a validated need to implement actions in the doctrine process to develop a new, or revise an existing doctrine principle and/or ATTP publication.

DOD enterprise architecture

This is group of descriptions that provide context and rules for accomplishing the mission of DOD. These descriptions are developed and maintained at DOD, capability area, and component

levels and collectively define the people, processes, and technology required in the "current" and "target" environments; and the roadmap for transition to the target environment.

DOTMLPF 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. A DCR is a tool used to apprise the Joint Staff of a recommendation for a major DOTMLPF change that impacts across the DOD, and will create a need for the Joint Staff and DOD to take some actions to reprogram or obtain resources to implement the DCR's recommendation. See the JCIDS Manual.

DOTMLPF Integrated Capabilities Recommendation (DICR)

This is a recommendation for changes to existing Army resources when such changes are not associated with a new defense acquisition program. It is a tool used to apprise the Army Staff of a recommendation for a major DOTMLPF change. See AR 71-9.

DOTMLPF-RIO

These are resource-informed, integration-focused, and outcome-based solutions which address doctrine, organization, training, materiel, leadership and education, personnel, and facilities gaps. It also includes the mandatory exploration of alternate CONOPS and policy changes.

endorsement

This is a statement of adequacy, and any limitations, provided by a responsible agency for a specific area of concern in support of the validation process. See the JCIDS Manual.

equipment common operating picture (ECOP)

ECOP is a web-based application that provides current policy information, libraries of approved equipment lists, and a means to request critical equipment all in one tool. Commanders, operations officers, and logisticians can access the application on the classified Internet to review MTOEs, Mission Essential Equipment Lists and initiate ONSs requests for special equipment not on their MTOE or an approved Mission Essential Equipment List.

evolutionary acquisition

This 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. See CJCSI 3170.01G.

experimentation

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 DOTMLPF to achieve significant advances in current and future capabilities. Experiments aid in validating the feasibility of future requirements determination efforts. TRAC's Definitions for Analysts, TRAC-TD-05-010, dated May 2005 defines experimentation as: The use of an event or series of events designed to investigate concepts or prototypes.

experiment to action plans (ETAP)

An ETAP summarizes the experiment insights and findings, and assigns OPRs to ensure the insight or finding is acted upon in the appropriate manner. The ETAP also includes recommended refinements to the questions architecture, concepts, and experimentation plans.

family of systems (FoS)

This is 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. See CJCSI 3170.01G.

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. See AR 5-22.

force operating capability

FOCs are groupings of advanced warfighting capabilities and required by the Army to fulfill future modular force concepts, described in relevant operational measurable terms, embedded in the future joint OE. See TP 525-66.

functional area

A functional area is a broad scope of related joint warfighting skills and attributes that may span the ROMO. Specific skill groupings that make up the functional areas are approved by the JROC. See CJCSI 3170.01G.

functional capabilities board (FCB)

A permanently established body that is responsible for the organization, analysis, and prioritization of joint warfighting capabilities within an assigned functional area. See CJCSI 3170.01G.

functional capabilities board working group

The FCB working groups are the analytic support for the FCBs. They perform the review and assessment of JCIDS documents, work with the sponsors to resolve issues, and make recommendations to the FCB. See CJCSI 3170.01G.

gaming

A family of applications comprised of many different applications, genres, and programs. Gaming technologies provide necessary immersion capabilities for familiarizing and training soldiers in various tactical scenarios and environments (as it pertains to modeling and simulation).

Guidance for the Development of Forces (GDF)

The GDF is a key strategic planning document, drafted biennially. It is designed to guide the development of war and contingency plans. Previously called Strategic Planning Guidance, the GDF considers a 20-year view of the security environment to inform the construction of the Pentagon's spending plan. The GDF also replaces a handful of guidance documents previously issued on a 2-year cycle, including the Transformation Planning Guidance, the Posture Guidance, the Science and Technology Strategic Guidance and several others.

increment

This is 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. See CJCSI 3170.01G.

initial capabilities document (ICD)

An ICD documents the need for a materiel or nonmateriel approach or an approach that is a combination of materiel and nonmateriel to satisfy a specific capability gap(s). It defines the capability gap(s) in terms of the functional area, the relevant ROMO, desired effects, time, and DOTMLPF and policy implications and constraints. The ICD summarizes the results of the DOTMLPF and policy analysis and the DOTMLPF-RIO approaches (materiel and nonmateriel) that may deliver the required capability. The outcome of an ICD could be one or more DCRs, DICRs, or CDDs. See the JCIDS Manual and AR 71-9. All ICDs are validated by the Dir, ARCIC.

integrated architecture

This is an architecture consisting of multiple views or perspectives (operational view, systems view, and technical standards view) that facilitates integration and promotes interoperability across capabilities and among related integrated architectures. See CJCSI 3170.01G.

integrated capabilities development team (ICDT)

An integrated team of key stakeholders and SMEs from multiple disciplines chartered by Dir, ARCIC to initiate the JCIDS process through conduct of the CBA to identify capability gaps in a functional area, identify nonmateriel and/or materiel approaches to resolve or mitigate those gaps, and develop an ICD and/or a DCR or DICR, when directed.

Integrated Learning Plan (ILP)

Provides Army, Joint, Interagency, Intergovernmental, and Multinational learning activities that inform Army Warfighting Challenges.

integration

The process of comprehensive analysis, design, and assessment of requirements, concepts, and resources to combine and arrange DOTMLPF requirements and solutions to unify and improve warfighting capabilities.

Level 1 integration – This is a shared process where ARCIC, ICW 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.

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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, DOTMLPF, 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 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 construct

The construct is comprised of the 3 levels of integration. The three levels of integration are: Level 1-integrate warfighting concepts, Level 2-integrate requirements, and Level 3-synchronize DOTMLPF capabilities developments.

Interim Solution Strategy (ISS)

Presents action plans, a way ahead, and decisions points for actions addressing Army warfighting challenges, which can include initiating JCIDS actions across DOTMLPF; POM and TAA submissions to HQDA; context and input to capability package development; input to the CNA and OBA; S&T program input and warfighting future operating capability revisions; and feedback to concept developers for concept revisions.

JCA Management System (JCAMS)

The JCAMS is a web-based, authoritative database that includes JCA data elements inclusive of JCA numbers, titles, definitions, and business rules. JCAMS displays the JCA taxonomy, and provides linkages to related capability-based DOD data (located at URL: <http://jcams.penbaymedia.com/>).

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. See CJCSI 3170.01G.

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. See CJCSI 3170.01G.

joint capability technology demonstration (JCTD)

This is a demonstration of the military utility of a significant new technology and an assessment to clearly establish operational utility and system integrity. See CJCSI 3170.01G.

joint operations concepts (JOpsC)

The JOpsC is a family of joint future concepts consisting of the CCJO and joint concepts. They are a visualization of future operations and describe how a commander, using military art and science, might employ capabilities necessary to successfully meet challenges 8 to 20 years in the future. Ideally, they will produce military capabilities that render previous ways of warfighting obsolete and may significantly change the measures of success in military operations overall. The JOpsC presents a detailed description of "how" future operations may be conducted and provides the conceptual basis for joint experimentation and CBAs. The outcomes of experimentation and CBA will underpin investment decisions leading to the development of new military capabilities beyond the Future Years Defense Program. See CJCSI 3170.01G.

joint potential designators (JPD)

A designation assigned by the Joint Staff gatekeeper to determine the JCIDS validation and approval process and the potential requirement for certifications and/or endorsements. A system can be assigned one of four designations: JROC Interest, Joint Integration, Joint Information, or Independent. See CJCSI 3170.01G.

JROC interest

This designation applies to all ACAT I/information assurance programs and ACAT II and below 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 JCDs and DCRs will be designated as JROC interest. A JPD of JROC interest may also apply to intelligence capabilities that support DOD and national intelligence requirements. A JPD of JROC interest will be presumed for all capabilities documents within the following portfolios: Battlespace Awareness, Command & Control, Logistics, and Net-Centric. They may be downgraded by recommendations from the lead FCB and JCB. Capability documents designated as JROC interest will be staffed through the JROC for validation and approval. 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 and approval.

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 FCB. Joint integration documents are validated and approved by the sponsoring component.

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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 and approved 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 and approved by the sponsoring component.

Joint Requirements Oversight Council (JROC)

An advisory council that assists the CJCS in (1) identifying and assessing the priority of joint military capabilities to meet the national military and defense strategies; (2) considering alternatives to any acquisition program that has been identified to meet military capabilities by evaluating the cost, schedule, and performance criteria of the program and of the identified alternatives; and (3) assigning joint priority among existing and future programs meeting valid capabilities, ensure that the assignment of such priorities conforms to and reflects resource levels projected by the Secretary of Defense through the joint planning guidance. See CJCSI 5123.01.

Joint Staff gatekeeper

This is the individual who makes the initial joint potential designation of JCIDS proposals. This individual will also make a determination of the lead and supporting FCBs for capability documents. The gatekeeper is supported in these functions by the FCB working group leads and the Joint Staff/J-6. The Vice Director J-8, Joint Staff, serves as the gatekeeper. See CJCSI 5123.01.

joint urgent operational need (JUON)

An urgent operational need identified by a combatant commander involved in an ongoing named operation. A JUON identifies and subsequently gains Joint Staff validation and resourcing of a solution, usually within days or weeks, to meet a specific high-priority combatant commander need. The scope of a JUON will be limited to addressing urgent operational needs that: (1) fall outside of the established service processes; and (2) most importantly, if not addressed immediately, will seriously endanger personnel or pose a major threat to ongoing operations. JUONs should not involve the development of a new technology or capability; however, the acceleration of a JCTD or minor modification of an existing system to adapt to a new or similar mission is within the scope of its validation and resourcing process. See CJCSI 3170.01G and CJCSI 3470.01.

key performance parameter (KPP)

Those attributes or characteristics of a system that are considered critical or essential to the development of an effective military capability and those attributes that make a significant contribution to the characteristics of the future joint force as defined in the CCJO. KPPs must be testable to enable feedback from T&E efforts to the requirements process. KPPs are validated by the JROC for JROC interest documents and by the Army for Joint Integration, Joint Information, or Independent documents. KPPs documented in the CDD and CPD are included verbatim in the acquisition program baseline. See the JCIDS Manual.

key system attribute (KSA)

An attribute or characteristic considered crucial in support of achieving a balanced solution/approach to a KPP or some other key performance attribute deemed necessary by the sponsor. KSAs provide decisionmakers 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 to change. See the JCIDS Manual.

Knowledge Management Decision Support (KMDS) system

The KMDS tool is used throughout the entire JCIDS process from initial submission of the document, gatekeeper review, staffing, JCB review, to JROC action and follow-up, if needed.

lead

The TRADOC organization or staff element having primary responsibility for a function, task, or role a higher headquarters assigns. Responsibility for the function, task, or role begins with initial assignment and ends with its completion. The responsibility also includes all aspects of planning, execution, and integration across all applicable DOTMLPF domains. The organization which receives assistance from another organization(s) or staff element(s), and is responsible for ensuring that the supporting organization(s) or staff element(s) understands the assistance required (see TR 10-5). Specifically, lead has three areas of responsibility: 1) Develop, coordinate, and recommend command policy; 2) Develop, coordinate, and recommend command guidance; and 3) Develop, coordinate, and recommend taskings to execute specific missions and tasks or provide specific support.

learning objectives (LOs)

Learning objectives are an approved, prioritized list of topics recommended for experimental venues and are used to guide the 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 not harvested; they are focused and specifically generated – some to address top-down outcomes, and some to address Center of Excellences' critical LOs to enable creativity and innovation. Also, the phrase "learning demand" reflects that we have to know more than just the question – we have to know why we're asking it, what's informed, what's been done before, and so forth to get to the right venue and adequately address the learning demand.

live simulation

A simulation involving real people operating real systems (as it pertains to modeling and simulation).

Manpower and Personnel Integration (MANPRINT)

The comprehensive technical effort to identify and integrate all relevant information and considerations regarding the full range of manpower, personnel capabilities, training, human factors engineering, system safety, health hazards, and Soldier survivability into the system development and acquisition process to improve Soldier performance, total system performance, and reduce the cost of ownership to an affordable level throughout the system's entire lifecycle.

materiel solution

Correction of a deficiency, satisfaction of a capability gap, or incorporation of new technology that results in the development, acquisition, procurement, or fielding of a new item (including ships, tanks, self-propelled weapons, aircraft, and others, and related software, spares, repair parts, and support equipment, but excluding real property, installations, and utilities) necessary to equip, operate, maintain, and support military activities without disruption as to its application for administrative or combat purposes. In the case of FoS and SoS approaches, an individual materiel solution may not fully satisfy a necessary capability gap on its own. See CJCSI 3170.01G.

Milestone A

This is the first major decision point that separates the phases of an acquisition program or system. At this decision review point or milestone, the designated MDA reviews the draft TDS and determines whether a proposed system will proceed from the MSA phase to the technology development phase. Most proposed systems will go through a Milestone A review. Only a few proceed directly from the MSA phase to a Milestone B decision review for entry into the EMD phase. See DODI 5000.02 and AR 70-1.

Milestone B

This is the second major decision point that separates the phases of an acquisition program or system. At this decision review point or milestone, the designated MDA determines whether a proposed system will proceed from the technology development phase to the EMD phase. The project shall exit technology development when an affordable program or increment of militarily-useful capability has been identified, the technology and manufacturing processes for that program or increment have been assessed and demonstrated in a relevant environment, manufacturing risks have been identified and a system or increment can be developed for production within a short timeframe (normally less than 5 years), or when the MDA decides to terminate the effort. Milestone B decision follows the completion of technology development phase. In an evolutionary acquisition program, the development of each increment shall begin with a Milestone B. This is considered the point of program initiation for the Army where a system is now considered an approved program. See DODI 5000.02 and AR 70-1.

Milestone C

This is the third major decision point that separates the phases of an acquisition program or system. At this decision review point or milestone, the designated MDA determines whether a proposed system will proceed from the EMD phase to the production and deployment phase. Milestone C is the decision point at which permission is sought to produce the specified LRIP quantities. If no LRIP is required of the system under review, Milestone C may then serve as the FRP decision review. See DODI 5000.02 and AR 70-1.

milestone decision authority (MDA)

The individual designated IAW criteria established by the USD(AT&L) or by the Assistant Secretary of Defense (Networks and Information Integration) for automation information systems acquisition programs, to approve entry of an acquisition program into the next phase of the acquisition process. See DODI 5000.02.

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. See CJCSI 3170.01G.

modeling and simulation (M&S)

A model is a mathematical, logical, physical, or procedural representation of some real or ideal system, and modeling is the process of developing a model. A simulation is the implementation of a model in executable form or the execution of a model over time. Taken together, "modeling and simulation" or M&S refers to the broad discipline of creating, implementing, understanding, and using models and simulations. M&S facilitates early identification and reduction of the risks associated with complex system acquisition programs; helps to better understand what kinds of system requirements and architectures are feasible and affordable given various programmatic and technological constraints; and provides insight into how to better manage system engineering efforts so as to improve the overall likelihood of a successful acquisition effort. See AR 5-11.

models

A physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process (as it pertains to modeling and simulation).

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.

nonmateriel solution (DOTmLPF)

These are changes in doctrine, organization, training, materiel, leadership and education, personnel, facilities, or policy (including all human systems integration domains) to satisfy identified functional capabilities. The materiel portion is restricted to commercial or non-

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developmental items that may be purchased commercially, or by purchasing more systems from an existing materiel program. See CJCSI 3170.01G.

non-TRADOC proponents

This is a generic term to refer collectively to the non-TRADOC force modernization proponents conducting DOTMLPF capability developments as designated by AR 5-22.

operational architecture (OA)

A description (often graphical) of the operational elements, assigned tasks, and information flows required to accomplish or support a warfighting function. It defines the type of information, the frequency of exchange, and what tasks are supported by these information exchanges.

operational environment (OE)

This is a composite of conditions, circumstances, and influences that affect employment of military forces and bear on the decisions of the unit commander. It is wide-ranging and geostrategic, encompassing geopolitics and globalization in economics, technology, and demographics, and incorporates both U.S. and threat military developments. See Joint Pub 1-02.

operational needs statement (ONS)

The ONS is the means by which combatant field commanders document and submit their urgent warfighting and training operational requirements to obtain support. 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 provides an opportunity to the field commander, outside of the acquisition and capability development communities, to initiate the requirements determination process. The ONS is not a requirements document. (AR 71-9)

post independent analysis (PIA)

An analysis conducted by the ARCIC on CBAs designated by Dir, ARCIC; Dir, RID; Dir, A2MCD; or Dir, FFID. This analysis independently reviews the CBA to ensure it was thorough and that the recommended nonmateriel and materiel approaches are reasonable possibilities to deliver the capability identified in the FAA and/or FNA. This analysis considers the compiled analyses to ensure the study team followed usual and customary analytic procedures, that the scope was sufficient, and that the findings and recommendations follow logically from the analysis. The results will be used to confirm the decision to develop an ICD and/or a DCR or DICR to initiate the process to satisfy the capability needs.

process

A series of actions or operations directed toward a particular aim or result.

proponent

Army organization or staff element designated by the HQDA DCS, G-3/5/7 that has primary responsibility for materiel or subject matter expertise in its area of interest or charged with accomplishment of one or more functions. See AR 5-22.

Quadrennial Defense Review (QDR)

The QDR assesses the threats and challenges the nation faces and rebalance DOD's strategies, capabilities, and forces to address today's conflicts and tomorrow's threats. The QDR is one of the principal means by which the tenets of the national defense strategy are translated into potentially new policies, capabilities and initiatives.

requirement

An established need justifying the timely allocation of resources to achieve a capability to accomplish approved military objectives, missions, or tasks.

requirements determination

Assess required capabilities to identify gaps and develop DOTMLPF solutions against current and programmed requirements. (per TR 10-5)

resource-informed, integration-focus, outcome-based (RIO)

Capabilities must be resource-informed so they achieve optimal warfighting capabilities at an affordable cost; integration-focused across the DOTMLPF domains and all warfighting capability areas; and portray performance outcomes that are relevant, or outcome-based to reflect the acceptance of prudent operational risk.

running estimate

An assessment of what is currently known regarding an Army Warfighting Challenge. Used to support development of Interim Solution Strategies and Interim Learning Plans.

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 DOTMLPF; and evaluating proposed concepts and changes to the Army. See TR 71-4.

simulations

A method for implementing a model over time (see definition of models). Types of simulations include: live, virtual, constructive, and gaming.

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 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. The only exception is for the sponsor of a joint capabilities document. A combatant command or FCB may be the sponsor for the JCD. In this usage, the responsibilities of the sponsor are limited to performing the capabilities-based assessment and developing the JCD for JROC validation and approval.

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. See CJCSI 3170.01G.

System MANPRINT Management Plan (SMMP)

The SMMP is required for ACAT I and II programs, and is the Army's recommended strategy and plan for tracking issues and disposition and is designed to assist the PM in meeting the requirements of DODI 5000.2, paragraph E7.1 for all programs. It serves as a planning and management tool and an audit trail to identify tasks, analyses, tradeoffs, and decisions that must be made to address MANPRINT issues during concept development, system development, and the acquisition process. Data from the SMMP (for example, MANPRINT issues and MPT constraints) shall be used in developing requirements documents, test plans, and contractual documents.

system of systems (SoS)

This is a set or arrangement of interdependent systems that are related or connected to provide a given capability. The loss of any part of the system will significantly degrade the performance or capabilities of the whole. See CJCSI 3170.01G.

system threat assessment report (STAR)

An assessment of the potential foreign threat expected to be encountered by the U.S. defense system once it is deployed in its OE. The validated STAR must be submitted to the MDA at Milestone B and C.

system training

All training methodologies (embedded, institutional, mobile training team, 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. See CJCSI 3170.01G.

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 CDD and 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 (see CDD/CPD Writers' Guides).

TRADOC Campaign Plan (TCP)

The TCP is a mechanism for integrating and synchronizing all elements of the TRADOC vision. It contains the level of detail required to synchronize TRADOC-wide transformation efforts and maximize the effectiveness and predictability of those efforts. It is designed to be commander centric and to allow maximum flexibility for innovation and initiative throughout the command by focusing our collective efforts on achieving a common goal – a campaign-capable, expeditionary, and versatile Army, strategically responsive and dominant across the spectrum of operations.

TRADOC capability manager

TRADOC managers of selected CAs and 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 integration, synchronization, and accomplishing user requirements in the materiel acquisition process. TCMs consist of two types within TRADOC: those that are functional proponents of Army functional organizations or areas which also tend to have SME/combat developer (CAPDEV) level involvement with specific materiel; and those that are strictly materiel-based.

TRADOC proponents

This is a generic term to refer collectively to the commanders of TRADOC centers and schools designated by AR 5-22 as proponents.

Training aids, devices, simulators, and simulations (TADSS)

A general term that includes combat training center and training range instrumentation, tactical engagement simulations, battle simulations, targetry, training-unique ammunition, and dummy, drill, and inert munitions. All of these are subject to the public laws and regulatory guidance governing the acquisition of materiel.

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.

Unified Command Plan

The Unified Command Plan (UCP) is the document that sets forth basic guidance to all combatant commanders. The UCP establishes combatant command missions, responsibilities, and force structure; delineates geographic areas of responsibility for geographic combatant commanders; and specifies functional responsibilities for functional combatant commanders.

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The unified command structure generated by the UCP is flexible, and changes as required to accommodate evolving U.S. national security needs. Title 10 USC 161 tasks CJCS to conduct a review of the UCP "not less often than every 2 years" and submit recommended changes to the President, through the Secretary of Defense.

User representative

This is a command or agency that has been formally designated to represent single or multiple users in the capabilities and acquisition processes. The services and the service components of the combatant commanders are normally the user representatives. There should only be one user representative for a system (See CJCSI 3170.01G). In the Army the user representative is TRADOC.

Validation

This is the review of documentation by an operational authority other than the user to confirm the operational capability. Validation is a precursor to approval. See JCIDS Manual.

Virtual Simulation

A simulation involving real people operating simulated systems. Virtual simulations inject human-in-the-loop in a central role by exercising motor control skills (for example, flying an airplane), decision skills (for example, committing fire control resources to action), or communication skills (for example, as members of a C4I team).

Warfighter Outcomes (WFO)

Standalone statements that articulate capabilities needed for the Army warfighter by fiscal year 2024 and include a clearly articulated description of capability, a rationale explaining reason for the capability, and metrics to describe achievement of the capability. Used for Science & Technology efforts.

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. (JP 1-02, DOD Dictionary of Military and Associated Terms)

Note: Wargames generally have key human-in-the-loop participants making decisions at key junctures of the simulation.

Section III

Special Abbreviations and Terms

This section contains no entries.