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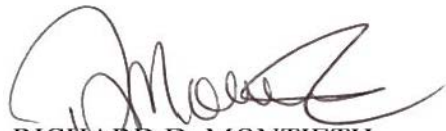
Training

SYSTEM TRAINING INTEGRATION

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History. This publication is a new U.S. Army Training and Doctrine Command (TRADOC) Pamphlet (TP).

Summary. This pamphlet provides guidance and procedures for the training and education developer (TNGDEV) to develop training strategies, concepts, and plans that lead to the identification and documentation of integrated training and training support requirements. This pamphlet addresses the Joint Capabilities Integration and Development System (JCIDS), Defense Acquisition System (DAS), analysis processes, supporting documentation, the Training Support System (TSS), the integrated training environment (ITE), training concepts and strategies, and system training plan (STRAP) development.

Applicability. This guide applies to TRADOC and organizations that execute the JCIDS process for system and non-system TSS products, and non-TRADOC organizations that execute JCIDS for system and non-system TSS products under a memorandum of agreement (MOA) or memorandum of understanding (MOU) with TRADOC.

Proponent and exception authority. Army Regulation (AR) 350-1 assigns the Commanding General (CG), TRADOC, the responsibility for Army learning (training and education) procedures contained herein. The proponent for this pamphlet is the Combined Arms Center – Training (CAC-T), Army Training Support Center (ATSC)/Training Support Analysis and

Integration Directorate (TSAID). The proponent has the authority to approve exceptions or waivers to this pamphlet consistent with controlling law and regulations, unless otherwise designated. Exceptions to policy are granted on an individual basis. The commander or senior leader of the requesting activity must endorse all waiver requests before forwarding them through higher headquarters to the policy proponent. Requests must include requestor contact information; type of request (initial, extension, modification, appeal, or cancellation); specific regulation line items requested for waiver; unit, institution, or center/school affected; proposed alternative; justification; impact; expected benefits; anticipated effective dates; and duration requested. The proponent continually seeks innovation and process improvement. Significant process improvements and global exceptions will be considered for addendum to procedures prior to the next revision.

Suggested Improvements. Send comments and suggested improvements on Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Blank Forms) through The Army Training System channels directly to CAC-T, ATSC, ATTN: ATIC-SA, Fort Eustis, Virginia 23604-5561 or electronically to usarmy.jble.tradoc.list.eustis-atsc-STIDD-OPS@mail.mil.

Distribution. This publication is available only on the TRADOC Web site <http://www.tradoc.army.mil/tpubs/>.

Summary of Change

TRADOC Pamphlet 350-70-13

Army Training and Education Development: System Training Integration

This new pamphlet, dated 27 October 2014-

- o Provides detailed guidance and procedures for system training integration (paras 1-5 and 2-3).
- o Provides guidance and procedures to ensure integration and interoperability across Training Support System products (paras 1-7, 3-14, 4-4, 5-1).
- o Provides guidance and procedures for system training plan development (para 1-8, 2-4, and ch 10).
- o Provides guidance and procedures for training key performance parameter development (para 1-8 and ch 11).
- o Provides guidance on development of Training Support System requirements for new or improved systems (para 3-15b).
- o Provides guidance and procedures for training concepts and strategies (paras 5-1a and 8-1a).

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Chapter 1

System Training Integration Introduction

1-1. Purpose

This pamphlet provides detailed guidance on systems training integration to support policies set forth in the U.S. Army Training and Doctrine Command (TRADOC) Regulation (TR) 350-70. This pamphlet is directed at training and education developers (TNGDEVs) who support TRADOC and non-TRADOC force modernization proponents in their responsibilities for capabilities development and requirement determination (Army Regulation (AR) 5-22).

1-2. References

Appendix A lists required and related publications and referenced forms.

1-3. Explanation of abbreviations and terms

Abbreviations and special terms used in this pamphlet are explained in the glossary.

1-4. Scope

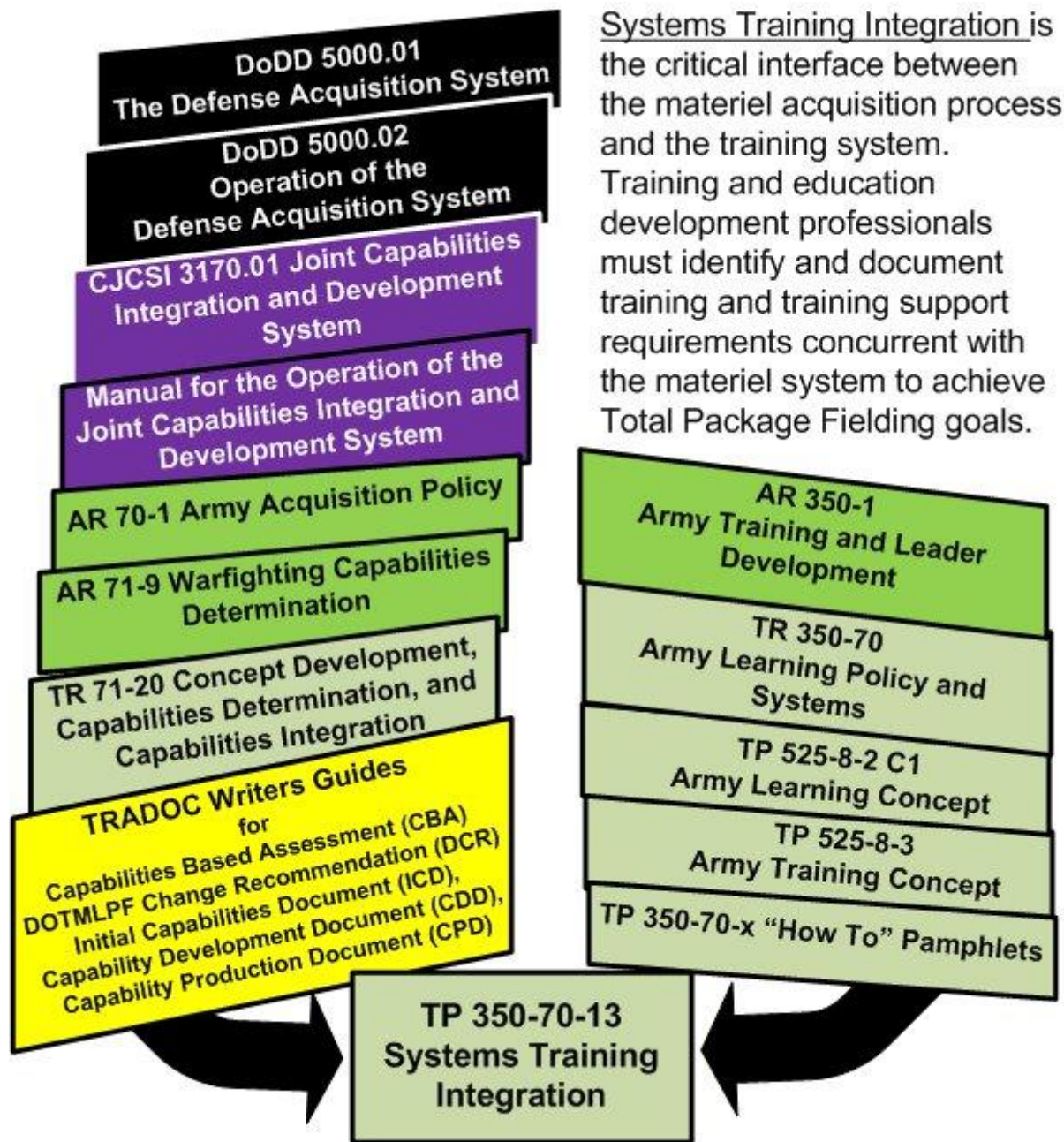
a. TRADOC Pamphlet (TP) 350-70-13 provides guidance for the TNGDEV to develop training strategies, concepts, and plans that lead to the identification and documentation of integrated training and training support requirements. These requirements are necessary to train personnel to operate and maintain the materiel system, and educate and train leaders to employ the system in operations and missions.

b. TP 350-70-13 outlines the training proponent's TNGDEV roles and actions as a key participant in the Joint Capabilities Integration and Development System (JCIDS) and Defense Acquisition System (DAS). This pamphlet also describes the relationship between systems training integration; training aids, devices, simulators and simulations (TADSS); the Training Support System (TSS); and Training Support Enterprise management processes.

1-5. Systems training integration overview

Systems training integration is the critical interface between the materiel acquisition process and the training system. Training development professionals must identify and document training and training support requirements concurrent with the materiel system to achieve total package fielding goals.

a. The goal of systems training integration is synchronized fielding of a materiel system along with all of its training subsystem components so Soldiers, leaders, and units can be trained and ready to employ the system to meet operational demands. Achieving this goal begins at the force modernization proponent level. To ease the training burden, close and continuous coordination is needed between the TNGDEVs and the other capability developers (CAPDEVs) from the early stages of the capabilities development process to ensure new systems are intuitive to use and easy to train. Close coordination continues throughout the acquisition process with the materiel developer (MATDEV). The goal of total package fielding is straightforward: to successfully synchronize the development, resourcing, and fielding of training and training support products to meet system fielding timelines.



Systems Training Integration is the critical interface between the materiel acquisition process and the training system. Training and education development professionals must identify and document training and training support requirements concurrent with the materiel system to achieve Total Package Fielding goals.

Figure 1-1. Systems training integration policy and guidance

b. Systems training integration is the bridge that links the Army’s learning system and processes with Department of Defense (DOD) and Army policy and regulations for JCIDS and DAS. This relationship is depicted in figure 1-1. Each of these three processes is represented by communities of interest that often have inconsistent priorities and timelines. Numerous studies have identified issues and made recommendations to improve systems training integration. This pamphlet addresses some of these issues by clarifying the TNGDEV responsibilities and actions. The TNGDEV plays a key role as a member of the integrated team from the earliest stages of the capabilities determination process. Throughout the acquisition process, the TNGDEV must help

to ensure that every materiel system being fielded is integrated into the existing Army TSS. For example, the TNGDEV must help ensure that required training capabilities have been integrated into all appropriate training domains (institutional, operational, and self-development), training environments (live, virtual, constructive (LVC), and gaming), new equipment fielding and training strategies, and into existing system and non-system TADSS.

c. System training requirements can be extensive. The training subsystem and its lifecycle costs can potentially exceed the initial cost of the system itself. For example, the training subsystem for the Stryker Infantry Combat Vehicle impacted over eighty courses across five schools. It also required the development of eight TADSS, as well as range, target, and instrumentation upgrades; training ammo; training support packages (TSPs); and training facilities. This single materiel subsystem is employed as part of a full set of unit equipment. It must also be integrated into the broader training support system so it is linked for training with other weapons systems, infrastructure, and mission command systems across LVC and gaming training environments. Identifying the complete range of training and training support requirements is essential to develop fully burdened lifecycle cost estimates so decision makers can make informed acquisition decisions.

d. TNGDEVs develop learning products using the analysis, design, development, implementation, and evaluation (ADDIE) process. The ADDIE process is inherently adaptive and nonlinear, but the TNGDEV will be challenged to apply it when the materiel system has not yet been designed and there is no prototype to examine. TNGDEVs can overcome this through close coordination with program managers and by evaluating like systems or reviewing the performance parameters and attributes of the new system. The TNGDEV who specializes in systems training integration requires an understanding of not only the ADDIE process, but also a thorough knowledge and understanding of JCIDS and the Army acquisition policy and processes. The TNGDEV must define training requirements and their associated costs at increasing levels of specificity for each stage of the capabilities development process. The formats and language prescribed by capabilities development and acquisition regulations must be used and complete input must be provided in time to meet acquisition milestone decisions reviews.

1-6. Army training domains overview

AR 350-1 provides comprehensive definitions of the three training domains — institutional, operational, and self-development — the TNGDEV must consider when developing a comprehensive training plan. Individuals and crews train to build the skills and knowledge essential to job and mission proficiency. Training prepares individuals, units, staffs, and leaders to conduct unified land operations anytime and anywhere, executed through decisive action. This career-long learning occurs in all three domains of Army training and involves self-assessment. Throughout their careers, Soldiers cycle between the institutional and operational domains and supplement training, education, and experience with structured, guided, and individualized self-development programs. The TNGDEV synchronizes the roles the training domains play in building force readiness and enables commanders and institutions to prepare Soldiers and leaders to perform their missions using new or updated learning products that support training and education.

1-7. Training support system (TSS) resources overview

a. The TNGDEV devises training strategies and plans for new equipment training; displaced equipment training; current and emerging doctrine; and doctrine and tactics training (DTT). For each training requirement, the TNGDEV must consider the resources necessary to conduct and deliver the training. Chapters in this pamphlet provide an overview of the categories of training support system resources that will be considered throughout the system training integration process.

b. TSS resources can be materiel and/or non-materiel. TSS resources include the integrated training environment (ITE), training products, TADSS, training facilities and land, and training services needed to train individual and collective tasks. The categories of training resources and examples are shown in figure 1-2.



Figure 1-2. Training support system resources

c. TSS resources are briefly described below and are detailed in the noted chapters. TSS resource components include:

(1) ITE. The ITE is the linkage of selected TADSS, infrastructure, mission command systems, knowledge management systems, and training for decisive action in any of its training domains (institutional, operational, and self-development). The ITE is detailed in chapter 4.

(2) TSS non-materiel training products. Chapter 5 discusses TSS non-materiel training products such as courseware, publications, and other products that are the outputs of the training developments process. They include, but are not limited to, multimedia course materials, distributed learning and self-development courses and lessons, mission training plans, videos, and other training material needed to train one or more individual or collective tasks.

(3) TADSS. TADSS is a general term that includes training aids and other training support devices such as training instrumentation, Tactical Engagement Simulation (TES), and battle simulations; targetry; training-unique ammunition such as dummy, drill, and inert munitions; and casualty assessment systems not otherwise managed through the Total Ammunition Management Information System process. TADSS are categorized as system and non-system. System TADSS, explained in chapter 6, are training tools designed for use with a system, family of systems (FoS), or item of equipment and may be stand-alone, embedded, or appended. Non-system TADSS are designed to support general military training and non-system specific training requirements and are fully discussed in chapter 7.

(4) Training facilities & land. Training facilities and land are the permanent or semi-permanent facilities, such as the ranges, maneuver training areas, classrooms, mission training complexes, combat training centers (CTCs), firing ranges, confidence courses, urban operations complexes, and land that support training. Chapter 8 describes the importance of identifying the training facilities and land needed for the TSS estimate including three primary considerations: mission support, environmental stewardship, and economic feasibility.

(5) Training services. Training services are the management, acquisition, and support services that enable the preparation, replication, distribution, and sustainment of training. Services are a key element of modern training support and requirements must be defined along with the products and facilities. Training services are a significant cost driver and must be addressed in the TSS cost estimating process as described in chapter 9.

1-8. System training plans and key performance parameters

Two other important elements of training systems integration are system training plans (STRAPs) and key performance parameters (KPPs).

a. The STRAP is the master training plan for a new or modified system or a non-system TADSS. See chapter 2 for an overview of the STRAP in relation to the capability development process, and chapter 10 for detailed STRAP development guidance.

b. KPPs are performance attributes of a system considered critical to the development of an effective military capability. KPPs are described in chapter 11.

1-9. Regulation, pamphlet and relation to other resources

The guidance in this pamphlet supports TR 350-70. Figure 1-3 below depicts the relationship between this pamphlet and other DOD, joint, Army, and TRADOC regulations, instructions, and other documents supporting integrated Army system training and training support.

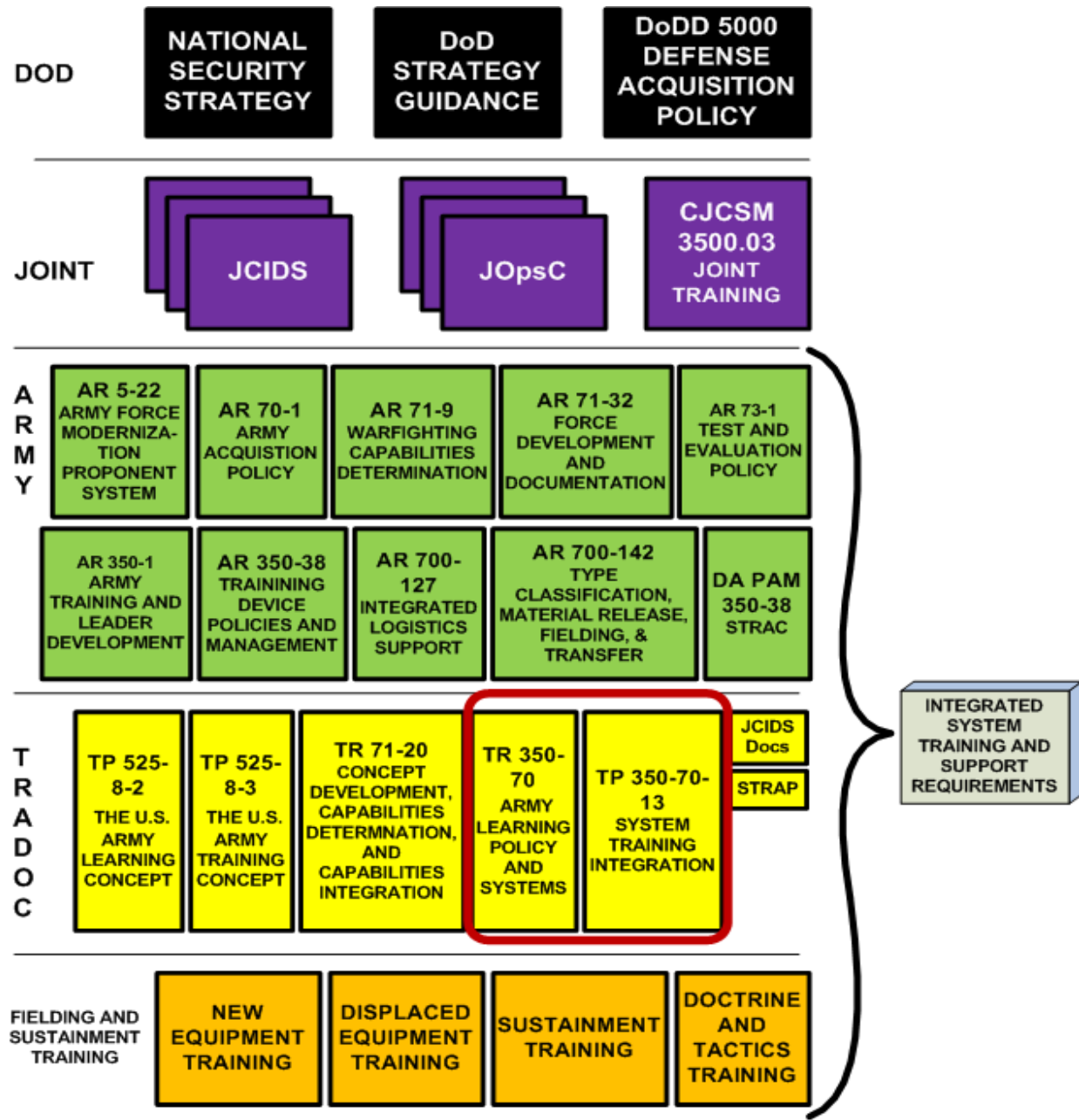


Figure 1-3. Training and training support document relationship

Chapter 2

Training Development for Army Modernization Training

2-1. Training development in support of the Joint Capabilities Integration and Development System (JCIDS)

a. JCIDS (Joint Capabilities Integration Development System); DAS; planning, programming, budgeting, and execution; and the Army's instructional system design are four key processes which must work in concert to facilitate consistent decision making to deliver timely and cost effective capabilities to the warfighter. Knowledge of the training and training support requirements that must be resourced, developed, and fielded with a materiel system is essential to make informed decisions. TNGDEVs support the processes by identifying training and training support requirements and preparing the information to support the JCIDS process and subsequent acquisition events.

b. Commanders of centers of excellence (CoEs) and school commandants must ensure individual TNGDEVs have the knowledge, skills and experience needed to competently support JCIDS development. Individual TNGDEVs that specialize in materiel systems training development should become familiar with the Total Army Analysis, JCIDS, and instructional system design (which includes the ADDIE process).

c. TNGDEVs, as a member of the force modernization proponent's capabilities development and documentation team, provide training, education and leader development expertise. TNGDEVs support the JCIDS analysis processes and develop concepts, strategies, and requirements to support the training and education of Active Army (AA) and Reserve Component (RC) Soldiers, civilians and units across the institutional, operational, and self-development training domains.

d. TNGDEVs use the Army's instructional system design process to determine requirements for a capability's training subsystem, embedded training, ammunition, TADSS, and training resources. TNGDEVs serve as the user's representative during development and acquisition of a system's training subsystem. They analyze, design, develop, and evaluate training and training products to include development of training strategies, requirements, plans, and products to support individual and collective training.

e. TNGDEVs will follow TRADOC policies and guidance, and use the TRADOC-approved automated systems to develop the training plans and learning products that support JCIDS and the acquisition processes.

2-2. Training and education developer responsibilities

a. Training proponents, in their role as TNGDEV, are responsible for:

(1) Participating in capabilities-based assessments (CBAs) and other studies as the training community representative for capability gap mitigation (discussed further in chapter 3).

(2) Preparing an initial TSS estimate during CBAs from the operational concepts and potential doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy (DOTMLPF-P) approaches to resolve capability gaps.

(3) Participating as team members in weapon system reviews for developing systems.

(4) Participating in the analysis of alternatives (AoA) and cost-benefit analyses (C-BA) to assess and record alternative training implications.

(5) Using the ADDIE process to conduct task analysis and training development for new and existing capabilities.

(6) Providing the institutional, operational, and self-development training domain strategies for new capabilities and updating existing capability strategies.

(7) Providing collective task training impacts for new and existing capabilities.

(8) Developing and coordinating individual/collective task training requirements and impacts for new and existing capabilities with affected proponent schools and CoEs.

(9) Preparing training and training resource information for JCIDS capability documents.

(10) Preparing the STRAP for a new capabilities document by staffing for approval by the CoE Commanding General (CG), and posting the approved STRAP in the Central Army Registry (CAR).

(11) Preparing requirements for system TADSS and placing into JCIDS documents for resourcing and incorporation into training plans.

(12) Preparing integration requirements for the capability to fit into an existing non-system TADSS environment.

(13) Planning and developing the DTT for the new capabilities.

(14) Providing training information to other CAPDEVs when new training capabilities affect the tables of organization and equipment or tables of distribution and allowances.

(15) Working with doctrine developers to ensure the training aspects of new systems are captured appropriately in doctrinal and technical publications.

(16) Planning, preparing, and drafting training standards and training circulars (TCs) to support new capabilities, when required. The training proponent CoE approves these doctrinal publications.

(17) Representing the commandant or commander during the technical manual verification and validation process.

- (18) Providing training input for new capability development.
- (19) Participating in the TSS review to provide information on new capability programs and the impact of developing TADSS.
- (20) Providing data to integrate new system training capabilities into combined arms training strategies (CATS) for units.
- (21) Providing funding and manpower estimates to support TNGDEV workloads.
- (22) Providing training-related information to support the qualitative and quantitative personnel requirements information, in accordance with AR 71-32.
- (23) Providing training-related information to support the materiel fielding plan.
- (24) Preparing and coordinating the training test support package (TTSP).
- (25) Preparing the test training certification plan (TTCP) and coordinating for approval.
- (26) Supporting the preparation, conduct, and evaluation of operational (initial and follow-on), developmental, limited user, customer, and first-article testing and evaluation.
- (27) Coordinating to solve training issues developed in manpower and personnel integration (MANPRINT).
- (28) Providing training information to support the system MANPRINT management plan.
- (29) Providing the CoE director of training with information to support submission of course administrative data to TRADOC.
- (30) Providing the director of training with information to support the individual training plan (ITP) for affected military occupational specialties (MOSs).
- (31) Providing training information to support logistics support analysis and level of repair analysis per AR 700-127.
- (32) Providing training-related input to the basis of issue/basis of issue plan/distribution plans.
- (33) Providing training information and support for preparation of the life-cycle management plan for new capabilities and training systems.
- (34) Providing information for development of the new equipment training (NET) plan and coordinating with MATDEV for approval through the commandant or CoE commander.

(35) Participating as team members to support the new materiel introductory brief to gaining units.

(36) Ensuring coordination, per AR 350-1, for training support to NET.

(37) Providing coordination and execution, per AR 350-1, table 6-2, for training support for doctrine and tactics training.

(38) Serving as the user's representative during development and acquisition of a system's training sub-system.

(39) Assessing training and training support needs to accompany equipment fielding to include CoE institutional training requirements.

(40) Coordinating unit training and unit training support via a DTT team, as a part of NET.

(41) Preparing and participating in TADSS validation/certification and approval. The TNGDEV may be required to prepare an evaluation outline with appropriate metrics for testing.

(42) Submitting requests for device numbers for new TADSS from the Combined Arms Center-Training (CAC-T), Army Training Support Center (ATSC).

(43) Providing input to the revision of Department of the Army Pamphlet (DA Pam) 350-9, and TP 350-9 for new TADSS.

(44) Supports the CAPDEV by developing, preparing, and coordinating approval of non-system TADSS STRAP in accordance with this pamphlet, AR-350-38 and the JCIDS process.

(45) Providing input to the Test & Evaluation Master Plan and respective CoE.

(46) Providing the director of training with information to support the submission of Program of Instruction (POI) including timelines in order to support submission into the Structured Manning Decision Review (SMDR).

(47) Working with threat manager to obtain threat and operational environment reference materials and to validate accuracy of threat and operational environment content within training products.

b. The TNGDEV serves as the Army representative in joint program training working groups. When required, the TNGDEV will coordinate participation with all affected Army training community representatives, and TRADOC capability managers (TCMs) during joint training working groups.

c. TNGDEVs will coordinate with Standards in Training Commission personnel to document new capability weapons and training ammunition impacts.

d. TNGDEVs, in conjunction with MATDEVs, plan and conduct a post-fielding training effectiveness analysis (PFTEA). PFTEAs are conducted approximately 12 months after initial operational capability to evaluate the system's trainability and TSP. PFTEAs are used as lessons learned mechanisms to modify or reinforce ongoing NET, DTT, institutional, and sustainment training programs. PFTEAs are conducted by various methods to capture the best possible sample of personnel and unit experiences.

e. TNGDEVs will coordinate with the Capabilities Development and Integration Directorate staff, TCM and MATDEV to ensure program manager (PM)-developed analysis data and learning products conform to established training and education development standards outlined in the TP 350-70 publication series. Coordinate for distributed learning (DL) products and self-development products to support NET and coordinate with appropriate centers and schools for sustainment of DL products.

f. When required, TNGDEVs will prepare and coordinate requirements for facilities that support system training devices and simulations. Plans include space; utilities; heating, ventilating, and air conditioning; training land; and infrastructure support requirements. Individual installations will submit the Department of Defense Form 1391 (Fiscal Year Military Construction Project Data) as required for construction.

2-3. System training integration development analysis

a. TNGDEVs will conduct and participate in force modernization proponent capability development teams and integrated product development teams as part of the JCIDS process in accordance with TR 71-20. TNGDEV involvement specifically supports planning for Army modernization training in accordance with AR 350-1. The Defense Acquisition Guidebook provides guidance for conducting analyses in support of the JCIDS process. Training and education analysis supports:

- (1) Documenting capability gaps and performance trends that support materiel and non-materiel solutions.
- (2) Risk assessment and mitigation.
- (3) Prioritization of training and educational gaps.
- (4) Doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) assessments for solutions or alternatives.
- (5) Evaluation of operational effectiveness, suitability, reliability.
- (6) AoA/C-BA.
- (7) Input to JCIDS documents.

b. TNGDEVs can conduct the following analyses:

- (1) Needs analysis.
- (2) Outcomes analysis.
- (3) Target audience analysis.
- (4) Mission analysis.
- (5) Collective task analysis.
- (6) Job/topic analysis.
- (7) Individual task analysis.
- (8) Individual task/topic management.
- (9) Resource analysis.

c. As required by system acquisition, the TNGDEV will prepare a TSS estimate during the CBA, in support of the initial capabilities document (ICD) and/or Joint DOTMLPF-P Change Recommendation (DCR)/Army DOTMLPF integrated capabilities recommendations (DICR). The approval authority for the TSS estimate is the director of capabilities development at the center or school.

2-4. System training plan (STRAP) overview

a. The STRAP is the master training plan for a new or modified materiel system or a non-system TADSS. It outlines the total training concept, strategy, and TSS requirements for integrating the materiel system or family-of-systems into the operational, institutional, and self-development training domains. A STRAP serves as the blueprint, triggering, and synchronizing mechanism for a program's detailed training plan development. The STRAP starts the planning process for new and revised course or lesson development and provides details to support programming and budgeting of the materiel system training requirements (provides training input for the system C-BA). It contains the comprehensive background, justification, and details for all training and training support requirements.

b. Responsibilities. The force modernization proponent is responsible for determining and integrating DOTMLPF requirements for their particular function or branch (see AR 5-22). The training proponents, in their role as TNGDEVs, are responsible for STRAP development.

(1) CAC-T, TSAID, Ft. Eustis, VA, administers and manages policy for STRAP development and staffing, as well as administers and manages the automated STRAP Writing Tool (SWT).

(2) CoE CGs are the approval authority for STRAPs developed by their respective training developers. The CoE CG's "approval" signifies that the STRAP contains the appropriate content and is complete to the greatest extent possible at each increment of the capabilities development and material development processes. To be clear, "approved" does not mean "final."

(3) In accordance with AR 350-38, the CoE is responsible to develop, coordinate, approve, store, and provide access to STRAPs for subsequent submission to the Army Capabilities Integration Center (ARCIC) for inclusion with the parent materiel system's supporting documentation. Once approved, the STRAP becomes a supporting document to the capability development document (CDD)/capability production document (CPD) and will be available to reviewers during proponent worldwide and validation staffing to justify and support the capability training requirements.

(4) The force modernization proponent should engage the TNGDEVs for each functional area needed to provide input to the STRAP (see AR 5-22 for identification of the force modernization proponents and their designated areas assigned by the Deputy Chief of Staff (DCS), G-3/5/7 and TP 350-70-16 for training proponent and functional area appointments). TNGDEV involvement must begin early in the JCIDS process, preferably during the CBA and subsequent analyses. Early involvement provides the TNGDEV with the background and familiarity needed to develop relevant training plans to mitigate capability gaps involving training deficiencies. In addition, early involvement provides the TNGDEV an opportunity to meet key players and make contacts that may be helpful during post-ICD STRAP preparation.

c. According to the "balanced fielding" tenet of Army acquisition (see AR 70-1), as well as policy regarding development and fielding of training devices, acquisition of the training system will have the same priority as the supported (parent) system or equipment. It should be developed concurrently with the supported system and will be available when the supported system is fielded. Systems will not be fielded without training subsystems unless part of a rapid fielding process.

d. JCIDS capability documents and STRAPs are worked concurrently. The force modernization proponent capability development team will use information contained in the STRAP to develop the training KPP, attributes, considerations, safety assurance, training and leader development, and TSS resourcing requirements that must be articulated in the CDD and CPD. This information summarizes the essential training and training support requirements that must be resourced along with the material system. Institutional training requirements should also be outlined in the Other DOTMLPF and Policy Considerations paragraph. This provides foundational justification for submitting requirements using the Training Requirements Analysis System process.

e. The STRAP is not considered a requirements document, and, by itself, does not yield resources for training. However, specific training requirements outlined in the CoE-approved STRAP must be summarized in the CDD/CPD and funded by the PM in order to achieve total package fielding goals. Only the training requirements documented in the appropriate paragraphs within the CDD/CPD are considered for resourcing by the PM. Chapter 10 details how to prepare, coordinate, and staff a STRAP using the automated SWT.

f. TNGDEVs prepare and coordinate a STRAP waiver for capabilities that require very little or no training or training support (for example, commercial test, measurement, and diagnostic equipment with an accompanying instruction booklet). The CoE CG is the approval authority for STRAP waivers. An approved STRAP waiver certifies that no formal military/civilian training or training support resources are necessary for the program or applicable program increment.

g. To ensure training implications for all program increments are properly assessed, the TNGDEV updates the STRAP or STRAP waiver to add the specific increment requirements as necessary. The CoE CG approves the STRAP update at each subsequent increment of the capabilities development and acquisition processes. The CoE-approved STRAP or approved STRAP waiver are supporting documents for each CDD/CPD. The STRAP may be included when the proponent conducts worldwide/validation staffing. Minimally, the approved STRAP or waiver and subsequent updates are posted to the CAR at <http://www.adtdl.army.mil/> so they are available as needed during CDD/CPD staffing.

2-5. New equipment training (NET)

Requirements for NET and DTT are established in the program capability document and supporting STRAP.

a. New systems fielding. NET accomplishes the transfer of knowledge on the operation and maintenance associated with the fielding of new, improved, or displaced equipment from the MATDEV to the tester, trainer, supporter, and user. The proponent must:

- (1) Develop the NET strategy for inclusion in the STRAP to support Milestone (MS) B.
- (2) Approve the new equipment training plan.

b. The TNGDEV works in conjunction with the MATDEV to accomplish NET. NET is the MATDEV responsibility. The MATDEV must use the approved STRAP to initiate a NET plan. It involves operator and maintenance training only, conducted by the MATDEV's NET team. NET should include all TADSS for the system.

c. The MATDEV will provide instructor and key personnel training in accordance with AR 350-1, paragraph 6-19, as specified in the STRAP and coordinated with the various organizations involved.

d. The TNGDEV will provide the proponent school approved operational test readiness statement to the appropriate test agency or office as required.

e. The TTSP is an integral part of the NET strategy and provides for all aspects of training during developmental and operational testing events. Lessons learned from these events are used to support fielding NET to operational units. The TNGDEV will submit the TTSP to the appropriate test agency or office as required for initial or final documents. The schedule for submission is coordinated with the test agency or office.

f. The TNGDEV will support the verification and validation events for technical manuals and supporting documentation in coordination with the MATDEV.

g. The TNGDEV will provide training support for NET and displaced equipment training (DET) by designing, identifying, and approving requirements, per AR 350-1, Rapid Action Revision Issue Date: 4 August 2011, table 6-1, for:

- (1) Soldier's Manuals/CATS revision or creation.
- (2) Weapon training strategy.
- (3) Training ammunition.
- (4) Ranges and targets required in coordination with appropriate commands.
- (5) Training facilities required in coordination with the appropriate commands.
- (6) Instructor/facilitator training and validation.
- (7) Training support packages.
- (8) Maneuver training strategy.
- (9) Coordination with MATDEV for operating tempo.
- (10) Coordination for non-system TADSS.
- (11) Support to the MATDEV for system TADSS.

h. The TNGDEV will provide training support for sustainment (following NET) by designing and identifying requirements, per AR 350-1, table 6-2, for:

- (1) Soldier's manual revision or creation.
- (2) Weapons training strategy.
- (3) Ammunition for training.
- (4) Maneuver training strategy.
- (5) Coordination with MATDEV for operating tempo.
- (6) Coordination for non-system TADSS.
- (7) Support to the MATDEV for system TADSS.

- (8) Integration in CTC instrumentation system.
- (9) Integration into the combined arms tactical trainer system.
- (10) CATS.
- (11) Institutional training domain POI weapon training strategies.
- (12) Institutional training domain POI ammunition.
- (13) Institutional training domain POI.

i. New systems institutional training. Institutional training on new systems is implemented in Army centers and schools to provide trained replacements to units to operate and support new systems. Proponents must ensure institutional training starts in sufficient time to provide trained replacements for the first units equipped with the system. This should be at the first unit equipped (FUE) date but not later than 1 year after the FUE date unless the system fielding schedule justifies starting institutional training at a later date (see AR 350-1).

2-6. Doctrine and tactics training (DTT)

Policy for DTT is contained in AR 350-1.

a. DTT is formal instruction, training, and guidance for operators through senior commanders on how to employ the new system's capabilities. The TNGDEV develops the strategy to accomplish DTT. DTT provides the principle employment concept, and the how-to-fight tactics, techniques, and procedures presented through battle drills, simulations, situational training exercises and interoperability training. The doctrinal training strategy provides training when required and feasible prior to, or following NET/ DET, and it ends before sustainment training. This training is not part of a stand-alone strategy, but an integral part of the overall training strategy/package and the CATS. The proponent will conduct analysis to determine whether DTT is required. If required, the proponent must:

- (1) Develop the initial DTT strategy for inclusion in the STRAP.
- (2) Have a mature DTT strategy available to train test support Soldiers and units.

b. TRADOC is responsible for conducting DTT, as part of the overall Army modernization training program. The command has a fixed allocation of NET and DTT instructor manpower authorizations to support Army modernization training. CoEs and separate schools submit an annual projection of NET/ DTT instructor requirements, based on the projected fielding schedule for each new system in the upcoming year. The TRADOC G-8 allocates the approved number of DTT instructor authorizations to each CoE and school for the specified execution year. The NET/DTT instructors will be allocated to first-priority capability requirements, followed by the second-priority capabilities, and so forth, until all instructor allocations are exhausted. This is a

temporary manpower allocation that will change based on the annual NET/fielding plan for each new system.

2-7. Non-system training devices (NSTDs)

a. NSTDs are designed and intended to support general military training and non-system-specific training requirements. The Basic Electronics Maintenance Trainer, Homestation Instrumentation Training System, and the Laser Marksmanship Training System are examples of NSTDs. Headquarters, Department of the Army (HQDA) G-37 Military Operations-Training (DAMO-TR) resources both fielding and sustainment of NSTDs.

b. The JCIDS process is used to document requirements for new or improved NSTDs in accordance with AR 350-38. As such, the training proponents, in their role as TNGDEV, support the responsible TCM by preparing the STRAP and training requirements information that supports NSTD JCIDS documents (see TR 71-12). If the TNGDEV is also serving as the NSTD CAPDEV, and will be preparing and processing NSTD JCIDS documents, the TNGDEV should assemble a team of training subject matter experts to serve as training requirement advisors and STRAP developers. This may ensure all system requirements are considered and articulated in the NSTD capability development documents.

2-8. Training test support package (TTSP) and test training certification plan (TTCP)

a. The TTSP is prepared by the proponent TNGDEV and the trainer, and represents the individual, collective, and unit training for the system when initially fielded. The TTSP consists of materials used by the TNGDEV/trainer to train test participants and by the evaluator in evaluating training on a new system. This includes training of doctrine and tactics for the system and maintenance on the system. It focuses on the performance of specific individual and collective tasks during operational testing of a new system. DA Pam 73-1 provides detailed guidance on test and evaluation in support of systems acquisition.

b. The TNGDEV is responsible for preparing, staffing, and submitting the TTSP and TTCP to the test agency. The TTSP outlines the methods and procedures to evaluate and certify individual and collective training in support of initial operational test and evaluation and other operational test events.

c. Proponent institutions develop, approve, and provide the TTSP to the Army operational tester for use in the evaluation of new system training. The TTSP outlines the method and procedures to evaluate and certify individual and collective pre-assessment training (who, where, and how training is to be certified). TNGDEVs prepare initial and final TTSP submissions and obtain approval from the commander/commandant or his/her designated O-6 representative. The TTSP includes the training for system operation, current and emerging doctrine, and maintenance. Both an initial and final TTSP are required.

d. Initial TTSP submissions should be provided to the test agency 18 months (540 days) before test as specified in outline assessment plan. The initial TTSP consists of the approved STRAP, the TTCP, training data requirements (instructional material to be revised before beginning training), and test resource support (ammunition, manpower, etc.).

e. Final TTSP submissions should be provided to the test agency at least 60 days before test player training or as specified in outline assessment plan. Final TTSP preparation follows instructor/facilitator and key personnel training materials and receipt of the NET TSP from the materiel contractor. The TTSP is revised before each operational test unless the institution determines that the TTSP is not required. The final TTSP consists of the following:

- (1) Training schedule.
- (2) POI for each affected MOS, special skill identifier, and Army occupational code, for all ranks (officer, warrant officer, and enlisted).
- (3) List of training devices and embedded training components.
- (4) Ammunition, targets, and ranges for training.
- (5) Target audience description.
- (6) Draft Soldier training publications or changes.
- (7) Lesson plans.
- (8) Critical task list.
- (9) Field manuals (FM) or changes to FMs (when not provided with the Doctrine and Organization Test Package).
- (10) Risk assessment validated by the responsible safety director that identifies hazards and control measures.

f. The final version of the TTSP is submitted following the receipt of approved training material.

g. The TTCP outlines and describes the method and procedures for evaluating and certifying individual and collective pretest training (who, where, and how training is to be certified). The TTCP is approved by the proponent school director of training or CoE commander.

2-9. Displaced equipment training (DET) and education development

a. Displaced equipment and its software, while not new to the Army, are new to the receiving unit. DET provides training to the receiving unit personnel on how to operate, maintain, and employ the displaced or cascaded equipment.

b. Because displaced equipment has established schools for operators and maintainers, units receiving displaced equipment may not need extensive training and may not need extensive formalized planning for that training. This determination will be made by the TNGDEV, in coordination with the gaining command and the PM of the displaced system. Where extensive training is anticipated, the training proponent may utilize the same methodology for developing a STRAP to coordinate the training strategies and plan. Unless the updated STRAP requires additional resources or TADSS support, the updated STRAP does not require CoE CG approval.

c. When the displaced equipment affects an institutional course or courses, the training proponent will coordinate with the POI managers to ensure they update all learning products affected by the new equipment. Include new equipment training in ongoing resource models to capture costs for courses. The proponent will submit the new POI to TRADOC TOMA for review and validation.

d. Training proponents and TNGDEVs will ensure that DL products and self-development products are properly developed and in place during the displaced equipment fielding.

2-10. Systems training integration/Army Modernization Training support to testing and evaluation

a. TNGDEVs will represent the commandant or CoE commander for training issues involving system testing and evaluation. A description of tests and evaluations is provided in AR 73-1 and DA PAM 73-1. Tests include:

- (1) Developmental tests.
- (2) Operational tests.
- (3) Limited user tests.
- (4) Customer tests.
- (5) First article tests.
- (6) Initial operational test and evaluation.
- (7) Follow-on operational test and evaluations.

b. TNGDEVs will work closely with other proponents and CoEs to prepare training plans to support the logistics demonstrations. They will ensure the operator, unit, and maintainer plans are appropriate for the MOS and skill levels available within the logistic support schemes. TNGDEV duties in support of testing include:

(1) Representing the commandant/proponent during operational test readiness review meetings (I-III).

(2) Preparing and submitting the approved operational test readiness statement to the operational test command or test agency at operational test readiness review meeting III or appropriate test event.

(3) Directly or indirectly supporting the test and/or evaluation command as the system and proponent subject matter expert.

(4) Directly or indirectly assisting the data analysis group in the scoring of reliability and maintainability during appropriate test events.

(5) Validating and verifying the conduct of Warfighter Test Player training.

(6) Providing training information to support the system safety assessment and safety release statements.

Chapter 3

System Training Concept and Strategy Development

3-1. Overview

The system training concept and strategy describes what, how, when, and where Soldiers' skills, knowledge, and attributes are acquired. Determining a training concept and strategy are key events in the process of identifying what training support capabilities will be required to support a new capability. The output from the tasks described in this chapter complete the training concept and strategy paragraphs for the STRAP. Figure 3-1 gives a graphical overview of the relationship between JCIDS processes and the TNGDEV's involvement. See appendix B for a sample system training concept and strategy document.

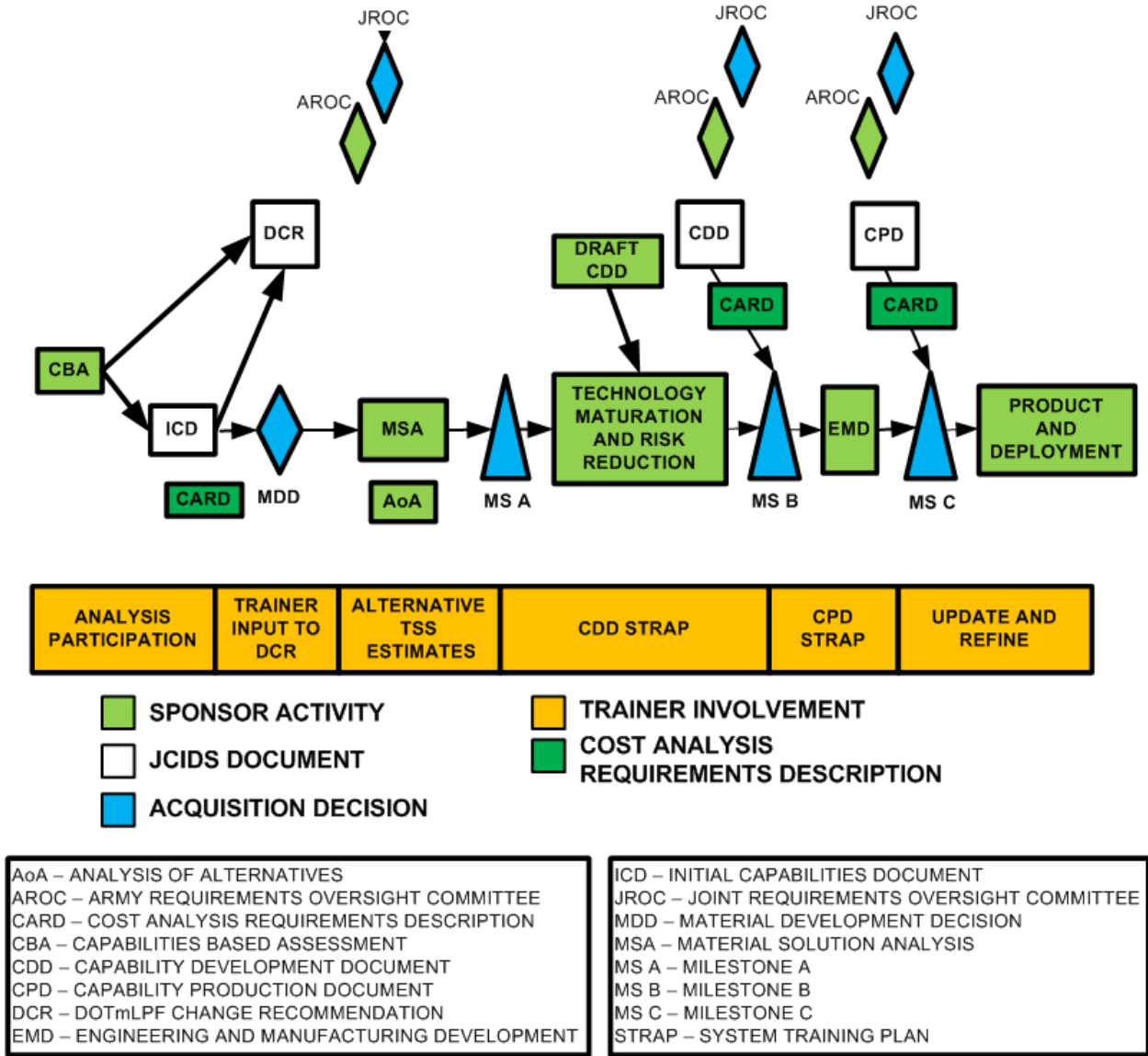


Figure 3-1. JCIDS process training developer involvement

Section I
System Training Concept Formulation

3-2. Introduction

a. Introducing new equipment to solve military capability gaps typically affects training for many proponents and MOSs. For example, the introduction of a new tank or helicopter minimally involves training operator, maintenance, support, and supply personnel as well as commanders and staffs to effectively support and employ the new system. System training concept formulation begins by considering the training impacts on all affected proponents, MOSs and officer specialties. Figure 3-2 provides a partial example of the personnel necessary

to operate, maintain, support and employ the Apache Longbow. The training concept for a new capability must consider all affected personnel in all affected MOSs and branches.

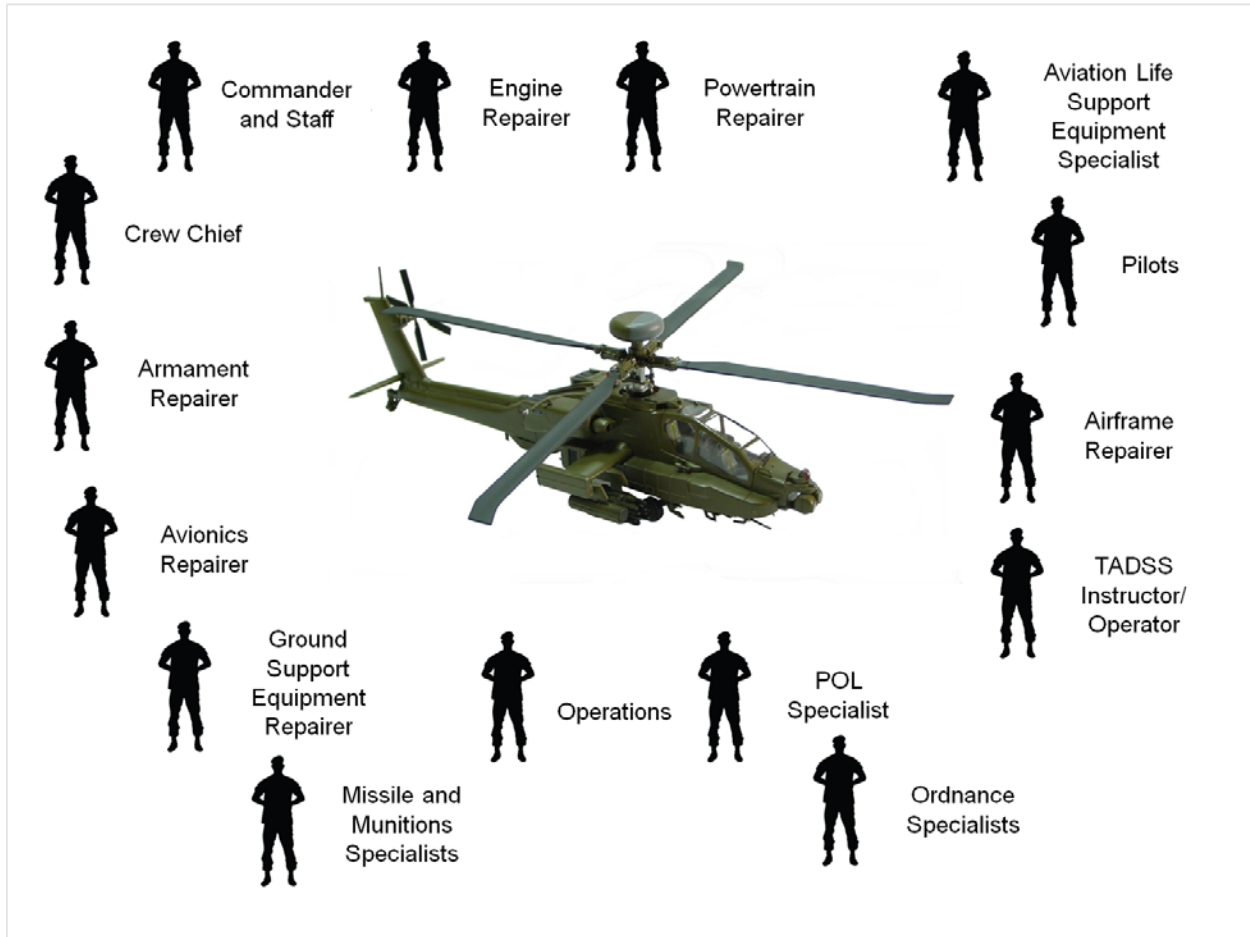


Figure 3-2. Example of personnel impacted by the introduction of new equipment

b. Concept formulation is the process that develops and documents the initial training concept (the what) for the emerging operational capability. Additionally, it begins the task of identifying required training support capabilities for the Army.

c. In the past, TNGDEVs waited until there was a determination on what system would be developed and what characteristics would be included in the system. The current JCIDS process dictates that TNGDEVs provide the training concept, plan, and resourcing requirements as part of the required capability being developed and not wait for a system to emerge. The desired training and training support requirements must be contained in the CDD and CPD in order to receive resourcing and influence system design.

d. System training concept description. The training concept:

- (1) Describes the underlying philosophy and rationale for the training strategy.

(2) Describes Soldiers' skills, knowledge, and attributes required to achieve a militarily useful warfighting capability.

(3) Describes how operator, maintainer, and leader training will be executed institutionally, operationally, and for Soldier self-development.

(4) Describes how operator, maintainer, and leader development training will be integrated into existing MOS producing and professional development courses.

(5) Supports the integration of joint, interagency, intergovernmental, and multinational training requirements and shared capabilities.

(6) Supports identification of required training and training support capabilities for the Army, both AA and RC.

(7) Supports the LVC and gaming integrated training philosophy.

3-3. System training concept development

a. The TNGDEV prepares the training concept for the new operational capabilities being identified during JCIDS analyses. The concept, using the principles for Army training defined in Army Doctrine Publication (ADP) 7-0 as a foundation, addresses training and training support capabilities for each training domain and location.

b. Training concept development description. Training concept development is a qualitative process that uses the best military judgment and subject matter expertise of TNGDEVs, MATDEVs, and proponent subject matter experts. Ideally, training concept formulation begins during the JCIDS capability gap analyses and continues through initial capability definition and solution alternative analysis. The initial concept is focused on both the Soldier's training needs and training support system capabilities. The objective of this effort is to ensure that total package fielding of the training and training support products are available at the right times and places to support the fielding and sustainment of an effective war fighting capability.

c. Institutional training integration. Introduction of new army capabilities frequently does not require the creation of new institutional courses or MOSs. Many new systems are simply improved variations of existing equipment that require similar operator and support skill sets. As a result, institutional training for new equipment may involve only the integration of selected tasks into existing MOS or additional skill identifier POIs.

d. Training concept development process. Each output identified in the training concept development process provides information the TNGDEV uses during analysis of alternatives, as well as to prepare DICRs, DCRs, STRAPs, CDDs, and CPDs. Tasks performed in training concept formation include:

- (1) Determining task functional areas.
- (2) Determining assumptions.
- (3) Determining constraints.
- (4) Determining site and location.
- (5) Determining the training strategy.
- (6) Assessing environmental factors.
- (7) Preparing the long-range training strategy.
- (8) Drafting the training concept in the STRAP, CDD, CPD, and/or the DICR/DCR.
- (9) Assessing hazards and identifying control measures.

3-4. Determining responsibility for materiel systems training development

a. AR 5-22 designates force modernization proponents to execute force management relative to DOTMLPF-P for their particular function or branch. AR 350-1 outlines responsibilities of a functional proponent and a training proponent. TRADOC Pamphlet 350-70-16 aligns training and education functional areas with current training proponent responsibilities.

b. The force modernization proponent will generally have the lead for overall development and will exercise supervisory management of the materiel system and the DOTMLPF-P capabilities associated with that materiel, to include training development. However, the training proponents that are responsible for the tasks supporting the material system should be involved in the overall training development process.

c. The force modernization proponent's TNGDEV will need to categorize potential job tasks associated with the materiel system, in relation to the functional area and their responsible training proponent. This process helps to determine the scope of the training concept and enables the development of initial training support resource estimates. The TNGDEV will use this information to prepare the training portion of the DICR or DCR, and the STRAP. These, in turn, support development of the program JCIDS capability documents.

3-5. Determining assumptions

a. Assumptions are suppositions about current or future situations that are considered to be true in the absence of fact. In developing the training concept and later the training strategy, assumptions will be derived from similar systems, experience, previous analyses, experiments, studies conducted during concept development and experimentation, training effectiveness analysis and quality assurance program assessments.

b. Assumptions should include consideration of:

- (1) Training prerequisites.
- (2) Similarity to existing systems.
- (3) Training infrastructure and facilities.
- (4) Involvement with other organizations.
- (5) Changes to MOS structure.
- (6) Changes to CATS.
- (7) Changes to training regulations, pamphlets and circulars.
- (8) Potential changes to existing POIs, lessons and applicable courses, which may trigger the need to update learning products within the Combined Arms Center (CAC)-approved automated system.
- (9) Adequate resourcing to develop, field and sustain the training subsystem.
- (10) Available training populations at all training domain locations.

c. Examples of assumptions include:

- (1) Training programs for enlisted Soldiers and officers will integrate the new system's peculiar tasks; skills and knowledge; and tactics, techniques, and procedures (TTPs) into existing institutional courses as appropriate.
- (2) The system manufacturer will provide operator and maintainer publications and task lists to support analysis, operational testing, and fielding peculiar to each subsystem. The TRADOC supporting proponent for each subsystem will review instructional materials produced by the manufacturer for content and utility.
- (3) The PM will resource all necessary TADSS, training equipment, NET team requirements to include resources to support DTT team requirements to support operational testing, FUE, and all subsequent NET.
- (4) Maximum use of advanced instructional technologies will be made to provide embedded training (ET), distributed learning, and interactive multimedia training products as required.

3-6. Determining training constraints

a. Constraints impact the training concept and must be considered in the design, operation, and maintenance of the training capability. Additionally, constraints related to MANPRINT must be identified and the potential impact explained.

b. Constraints to training are considered and applied during the preliminary analysis process. These constraints may be the key factors influencing the selection (or eventual rejection) of a specific type of training support capability.

c. The initial estimate of training constraints should consider one or more of the following areas:

- (1) Budgetary restrictions.
- (2) Training equipment/TADSS availability.
- (3) Allowable course growth and length.
- (4) Equipment density.
- (5) Total number of personnel to be trained.
- (6) Student throughput limitations.
- (7) Special unit and command-unique requirements.
- (8) Training facility requirements (special shelters, ranges, and so forth).
- (9) Safety hazards and restrictions.
- (10) Noise abatement requirements.
- (11) Environmental requirements.
- (12) Support services (contractor support).

(13) Commander's guidance; for example, the training environment must approximate the operational environment.

d. Examples of constraints that affect the training concept are provided in table 3-1.

Table 3-1
Examples of constraints that affect the training concept

Type	Example
General	Measures of system performance must account for the impact of Soldier availability, remedial training and task performance time.
Human Factors	Soldier/machine interface problems. Hardware and software design does not permit the crew to detect equipment faults.
Training	Availability of TADSS and other essential training assets in time to support system fielding and are fielded concurrently with the system.
Environmental	Restricted metal compound in an operational round. Training area restrictions due to endangered species.

3-7. Determining site and location

a. The TNGDEV should conduct a preliminary analysis to determine where training will occur. Site and location analysis must include consideration of the Army's reserve components.

b. After identifying task functional areas, initially at the mission, job, and collective level, the TNGDEV recommends where training will take place, such as institution, CTC, home station, or when deployed. This recommendation consists of a series of analyses that review the training implications of the emerging capabilities and the estimated training resources. The emphasis is on determining where a task, by skill level, can best be initially trained and later sustained.

c. When determining location, classifying units by type assists in defining strategy variables. Consider the unit type (combat, sustainment) and component (active, reserve).

Note: Selection of training sites is essential for estimating the training support requirements needed to support the training concept. An estimate of the tasks to be trained in the institutions, CTCs, home stations, or when deployed can be based on those locations found to be effective in training similar capabilities and past systems.

3-8. How to develop domain training concepts

Determining the domain training concepts consists of conducting an analysis to identify the institutional, operational, and self-development training concepts, the training architecture requirements, and the target audience. With the acquisition and employment of a new system, new tasks may be introduced into a duty position; current processes may be significantly changed; existing job responsibilities may be redefined, shifted, or eliminated; and/or entirely new positions may be required. It is vital to consider the total training impact of new systems on individuals, training institutions, ranges and operational units as a whole.

a. When developing the initial institutional training concept, the TNGDEV must consider the following guidance found in ADP 7-0, TP 525-8-2 wC1 (6 JUN 2011), TP 525-8-3 and TP 350-70-9.

(1) The institution provides the framework to develop future leadership characteristics.

(2) Institutional training/education enhances military knowledge, individual potential, initiative, and competence in warfighting skills.

(3) Institutional training has three components that should be addressed in developing the institutional training concept: initial military training, professional military education and functional training.

(a) Initial military training provides the basic skills, knowledge, and task proficiency to become a Soldier and subsequently to succeed as a member of Army units, contribute to unit mission accomplishment, and survive on the battlefield. Initial military training is the foundation training given to all personnel upon entering the Army. Initial military training consists of initial entry training for enlisted soldiers, (basic combat training, one station unit training, advanced individual training), Basic Officer Leaders Course B, Warrant Officer Basic Course, Advanced Initial Training Platoon Sergeant Course, Drill Sergeant School, and associated commander and/or cadre training conducted at centers and schools.

(b) Professional military education for officer, warrant officer, and noncommissioned officer (NCO) training/education is a continuous, career-long learning process that integrates structured programs of instruction. Therefore, professional military education is progressive and sequential, provides a doctrinal foundation, and builds on previous training/education and operational experiences. Professional military education provides hands-on technical, tactical, and leader training focused to ensure leaders are prepared for success in their next assignment and for higher-level responsibility. Professional military education is both resident, at the institution, and non-resident, via DL at home station.

(c) Functional training is designed to qualify leaders, Soldiers, and Department of the Army (DA) Civilians for assignment to duty positions that require specific functional skills and knowledge.

b. The goal of operational domain training is to develop and sustain the capability to deploy rapidly, and to fight and win as part of a combined arms team in a variety of operational and organizational environments. As such, Soldier and leader training and performance development continue in the unit or operational assignment. Using the foundation provided by institutional training and NET or DET, training in organizations and units completes job training and hones individual and team skills and knowledge.

c. The self-development domain is continuous career-long learning, essential in both institutional and operational assignments. TNGDEVs must keep in mind that institutional, organizational, and operational training alone cannot provide the insight, intuition, imagination,

and judgment needed in combat. Initial self-development is structured, narrowly focused, and guided by the proponent's design, fulfilled by the TNGDEV.

3-9. Determining target audience description

a. The target audience (also target population) consists of the persons for whom the instructional or training materials are designed. Using the ADDIE model, the TNGDEV prepares the target audience description to define who gets trained. The description is necessary to ensure training products meet user needs.

b. During target audience analyses, the TNGDEV prepares a general description of the audience to be trained. Samples from existing systems with similar populations are used in evaluating needs. During the AoA and after MS A when the system becomes more apparent, the TNGDEV will refine the target audience description.

c. The target audience description defines the quantity and qualifications of the personnel to be trained. These are the jobholders who perform all the tasks associated with the specific job. They will employ, operate, maintain, and support a system or equipment, perform mission critical tasks, and lead the unit. The target audience description defines the range of individual qualifications and all relevant physical, mental, physiological, biographical, and motivational dimensions.

d. The following list of target audience description (profile) criteria may be useful when completing JCIDS documents and the supporting STRAPs:

- (1) Grade/skill level (based on proponency).
- (2) Specialty (based on proponency).
- (3) Prerequisite training (will be determined as capabilities mature and a system definition is developed).
- (4) Reading grade level (use Army estimate and documentation requirement).
- (5) Battery test scores (will be determined as capabilities mature and a system definition becomes available).
- (6) Civilian education level.
- (7) Average age (from population sample and HQDA G-1 accession demographics).
- (8) Time in service, grade, and duty position.
- (9) Related experiences (determined as capabilities mature and system definition is better defined).

- e. Figure 3-3 provides an example target audience description.

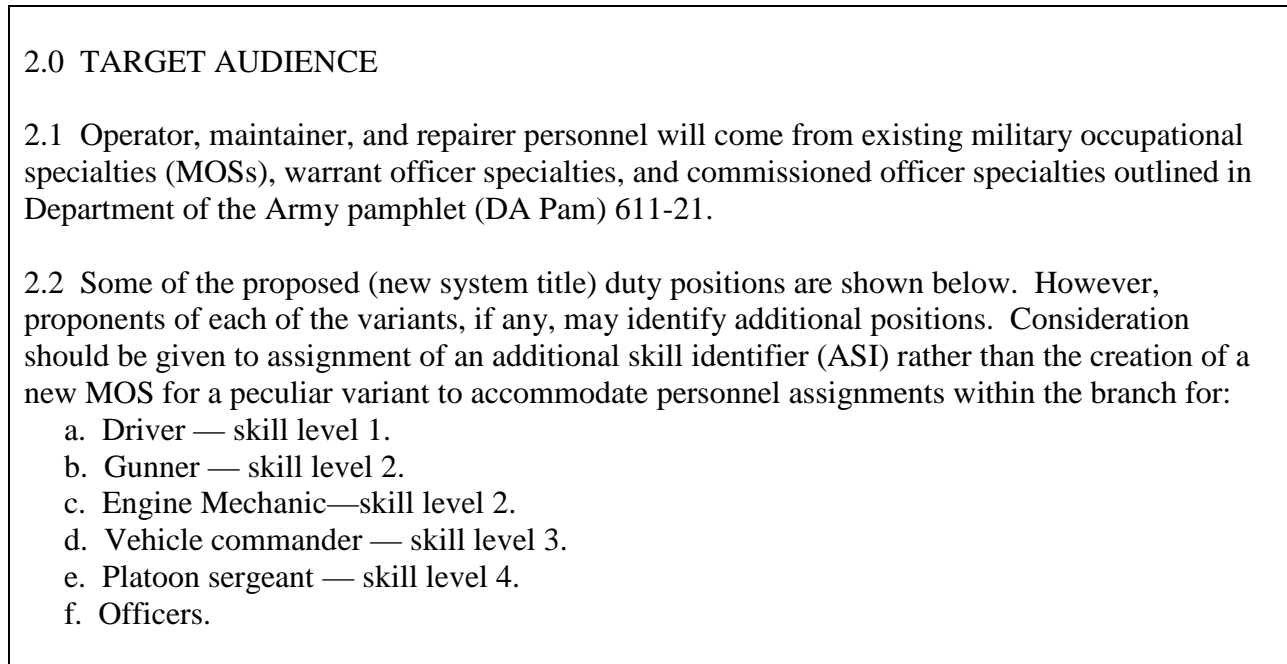


Figure 3-3. Example target audience description

3-10. Assessing environmental factors

a. The TNGDEV must identify and integrate task performance safety and environmental considerations throughout concept formulation. Environmental factors and damaging maneuver effects impact how and where tasks will be trained. They must be assessed during the training concept and strategy development process.

b. The TNGDEV must consider the use of virtual, constructive or gaming simulation at crawl, walk, and run levels for task training that is too expensive, dangerous, or ecologically/environmentally unsound to conduct live. The training environments at all potential training locations are examined to ascertain circumstances that may affect the ability to conduct live training.

(1) Live training is executed in field conditions using real people operating real equipment.

(2) Virtual training involves real people operating simulated systems. Virtual simulations inject humans-in-the-loop in a central role by exercising motor control skills, decision skills, or communication skills.

(3) Constructive training includes models and simulations that involve simulated people operating simulated systems. Real people stimulate (make inputs to) such simulations, but the system determines the outcomes.

(4) Gaming is 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).

c. The TNGDEV considers environmental factors during concept formulation within the institutional, operational, and self-development domains to select the proper blend of training environments and training support capabilities.

3-11. Drafting the training concept

a. The training concept provides the underlying philosophy and rationale for the training strategy required to support the capabilities determined during JCIDS analysis (including upgrades to the current force). It provides an executive summary of the general concept of how operator, maintainer, and DTT will be executed for institutional training, NET, and unit sustainment training. It must note any differences in AA/RC delivery or format. The concept supports the proponent's long-range training strategy and the applicable impact on the CATS. The concept must also address joint forces training if applicable.

b. The training concept has the following recommended structure:

- (1) A general statement of the overarching training concept.
- (2) An institutional training concept, including inter-service training requirements.
- (3) An operational training concept; including NET/DET and joint, interagency, intergovernmental, and multinational considerations; where appropriate.
- (4) A self-development training concept.
- (5) A training support concept, such as the use of LVC and gaming environments, integrated training environment, and training support products and services.

c. The goal of the training concept and strategy is to develop proficient operators, maintainers, support personnel, leaders and staff to effectively employ system's capabilities in the operational environment. The system's training programs will be designed to reduce operational tempo and live firing expense, while sustaining acceptable proficiency standards and unit readiness. Key components of the system training strategy are:

(1) Institutional training. Institutional training will depend upon task analysis data to determine media/method/site selection and consist of a POI and training for crews, maintainers, support personnel, leaders and staff. Institutional training for new systems may involve the

addition of selected tasks to existing MOS producing courses, or entirely new MOSs and courses. Institutional training will progress from initial entry through professional development for officers, warrant officers, and enlisted personnel. Institutional training programs will be based on a mix of delivery methods and include TADSS, (i.e. part-task trainers, simulations, simulators), and ET where applicable. The proponent for each of the affected MOSs will develop comprehensive institutional training strategies for their specialties.

(2) Operational training. Operational training will build and sustain individual and crew skill proficiency through daily operational training, crew drills, situational training exercises, and field training exercises. It will be supported by a combination of ET and stand-alone TADSS. Where feasible, ET is the preferred method to conduct training for operator and maintainer requirements at home station or while deployed. The proponent for each affected MOS or system variant will develop a more detailed unit training strategy.

(3) Self-development training. Institutional and operational system training will be augmented with self-development training. Self development will be continuous and occur in both institutional and operational assignments. Successful self development requires a team effort. Self development starts with an assessment of individual strengths, weaknesses, potential, and developmental needs. Leaders assess subordinates' strengths and weaknesses and devise courses of action for improvement.

(4) Individual training. Individual training prepares the soldier to perform specified duties or tasks related to an assigned duty position or subsequent duty positions and skill level. It is the training which officers and NCOs (leader training) or Soldiers (Soldier training) receive in schools, units, or by self study. This training prepares the individual to perform specified duties or tasks related to the assigned or next higher specialty code or skill level and duty position.

(5) Collective training. Collective training involves more than one Soldier and supports the unit mission. It includes training at home station, training at CTCs, training while deployed, and unified action training exercises. Collective training must develop or sustain the unit's capability to deploy rapidly and accomplish any mission across the spectrum of conflict.

(6) Training support requirements. Training support requirements for institutional training are intended to support specific task training for specific MOSs or POIs. Institutional training frequently includes specialized TADSS and training support devices not intended for the operational and self-development domains. Recognizing and addressing the differences in training support requirements at each of the training domains lends credibility to a well-conceived training concept.

d. Training concept development checks. In preparing your training concept, remember to:

- (1) Address the AA, U.S. Army Reserve, and Army National Guard needs and differences.
- (2) Include institutional, operational, and self-development considerations.
- (3) Consider the impact on existing CATS.

- (4) Consider impact on institutional, home station, CTC, and deployed training.
- (5) Address embedded training capabilities.
- (6) Address training for operators, maintainers, support personnel, leaders, and staff.
- (7) Address cross-proponency impacts especially when dealing with a system of systems (SoS) or FoS capability.
- (8) Address LVC and gaming training environments.
- (9) Address the future training environment and delivery platforms, such as laptops, tablets, and smartphones that support the Army Learning Model tenet of delivering training to the Soldier at the point of need.

Note: The output from this effort is documented in JCIDS documents and supporting STRAPs.

Section II

System Training Strategy Formulation

Section I of this chapter discussed the formulation of a training concept (what to train). This section will discuss maturing the training concept into a system training strategy and supporting capabilities (how to train and support that training).

3-12. System training strategy defined

a. The system training strategy is a description of the methods and resources required to implement a training concept. It lays out the who, what, where, when, why, how, and projected cost of the training. The development of a system training strategy includes refining the training site(s) and initial media selected to train each critical task. The system training strategy addresses the role of TSS products and architectures in support of the task functional areas discussed in section I of this chapter.

b. As the JCIDS process progresses through concept refinement and AoA, the TNGDEV gathers additional information on the emerging system and TSS capabilities. This information is used to refine the TSS capabilities needed to support the system or SoS training program. This process consists of the following activities:

- (1) Analyzing the target audience description and training environment.
- (2) Updating the initial TSS staff estimate to include system specific capabilities.
- (3) Refining the broad TSS/TADSS training strategy within the overall training program.

(4) Outlining the overarching and supporting TSS/TADSS strategies. (Macro TSS/TADSS strategy addresses the relationship of all the system devices supporting a training program or task to one another. Micro TSS/TADSS strategy addresses how to use each device).

(5) Comparing these with the CATS and determine if existing CATS need to be modified or a future CATS needs to be developed.

(6) Determining the TSS product capabilities and requirements, especially TADSS and ET, for the system.

(7) Documenting the information gathered to date on ET and TSS requirements in the system STRAP and CDD.

(8) Updating the STRAP with the overarching and supporting TSS strategies.

3-13. Preparing the system training strategy

a. The information generated during concept development is inserted into the budgetary process by the development of a long-range training strategy, part of the CATS formulation process described in TP 350-70-1.

b. The long-range training strategy evolves from the training concept. The long-range training strategy is a long-range estimation of to whom, how, when, and where training will be provided. It also identifies training resource estimates for the program objective memorandum. Long-range training strategies are developed and updated after needs analysis determines training requirements exist. Long-range plans document future training requirements, such as individual training plans.

c. The short-range training strategy involves determination of who, how, when and where tasks will be trained. The time period includes the execution period plus the two budget years. Short-range training strategies are developed following the critical individual task analysis. They are supported by updated long-range plans (e.g., ITP) and development/update of short-range training plans/models.

3-14. Developing a long-range TSS estimate.

a. The ability to plan, execute, and assess training requires the full employment of the capabilities provided by the interrelated and interdependent components of the Army's training support system. Though individually important, these components derive their strength and value from their combined effects. The TSS estimate is the training support professional's assessment of what is needed to support the training concept and strategy developed.

b. During JCIDS analyses, the TSS estimate is the initial estimate of TSS's ability to solve or partially mitigate capability gaps. It is important to note the initial training support estimates are developed during CBAs from the operational concepts and potential doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P)

approaches to resolve capability gaps. The initial TSS estimate will normally be a system view (a view of the existing training support systems internal and external capabilities) as well as a performance view (a view focused on correcting an operational gap through a training approach). The initial TSS estimate is built on the premise that the training environment must approximate the operational environment. Consider the integrated training environment as appropriate to enhance training, improve realism, and save resources where practical (ADP 7-0).

c. TSS resources support training for NET, DET, DTT, sustainment training, unit modernization, deployment, and proponent training and can be either materiel or non-materiel. TSS resources are needed to train the individual, crew, and collective tasks to support new systems. Two major TSS resource distinctions generally exist: TSS resources specifically intended to support tasks associated with the new capability, and those that are used to train generic, non-system specific tasks. The distinction is important because TSS resources intended to train tasks specifically for a new capability are considered part of the program and are developed by the system PM and funded by the HQDA G-8 (Equipping Program Evaluation Group). TSS resources used to train tasks not related to the new system are not part of the program, are considered costs outside the program, and are funded by other sources.

d. The training proponent TNGDEV, CAPDEV, and MATDEV work together closely and continuously to ensure that the system and the associated training support resources are funded, developed, and fielded in time to support the new capability at all required training locations.

e. The preliminary steps for developing an initial estimate of TSS resources are listed in table 3-2. The steps are performed in conjunction with TR 350-70 and the supporting TP 350-70 series pamphlets. A detailed discussion of TSS resource identification is provided in the following chapters.

Table 3-2
Determining system training support resource requirements

Step	Action
1	Review force modernization and branch training strategies.
2	Review system training concept and strategy for this and similar systems.
3	Review Core Logistics Analysis (CLA)/task data for this system. If CLA requirements /task data is not available, review the data for similar systems or enlist the aid of subject matter experts for similar systems to discuss proposed tasks to be trained.
4	Determine the proposed list of tasks to be trained. The list should include operator, maintainer, support & service personnel, and leader tasks
5	Identify all affected MOS(s) based on task list.
6	Identify task type (individual, crew, collective).
7	Identify a proposed training domain for each MOS/task (institutional, operational, or self-development).
8	Estimate TSS resource requirements for each MOS/task/domain.
9	Determine RC training domain requirements (institutional, operational, and self-development).
10	Create a TSS product cost estimate.
11	Document results.

f. Once a system is identified during concept refinement and the AoA, the TNGDEV updates the TSS estimate to address system specific training requirements. Throughout the JCIDS process, the TSS estimate supports the development of the STRAP which supports development of the CDD, CPD, and materiel fielding plan.

g. The TSS estimate includes integrated training architectures and standards as well as TSS products, services and facilities.

3-15. How to develop a system training strategy

a. Refine the target audience analysis. During conduct of training concept formulation and JCIDS analyses, a preliminary target audience description for the capability was identified and an initial determination of task training sites made. The TNGDEV now conducts a more in-depth analysis of that target population to verify the initial estimate and to update information for the STRAP and other ongoing analyses.

b. Update the training environment analysis. The initial training environment determination is examined to ascertain special circumstances that may affect the training media recommendations, particularly TSS product and architectures, including ET capabilities. As the system or SoS matures, it is necessary to update information prior to determining the final TSS strategy. During training concept formulation, the focus was on defining how the training environment can approximate the operational environment. In determining system-specific TSS requirements and strategies, the following factors are considered:

- (1) Type and location of using units.
- (2) Command-unique considerations.
- (3) Geographic impact.
- (4) Mission requirements.
- (5) Terrain and weather effects.

c. Determine a broad system training strategy. After re-examining the target audience, density, and constraints from the previous steps, the TNGDEV has a better understanding of what TSS architectures, products, and ET capabilities will be required to execute the training concept. The TNGDEV can now outline the use of the TSS architectures and products in a hierarchy of training from prerequisite tasks through more advanced tasks. This becomes the outline for the system-specific overarching training strategy. Additionally, the TNGDEV considers the tasks to be trained that require the use of system TADSS. This becomes the outline for the supporting TADSS strategies.

d. Determine an overarching training strategy. In determining overarching (macro) TSS/TADSS strategies, the TNGDEV must consider the findings from all preceding steps in the process. Specifically, he must consider:

(1) Task functional areas. Determining task functional areas is a critical step in the training concept formulation phase that is used to determine the number of overarching strategies required for the system training. Each functional area that has more than one TSS product requirement for training will require a training architecture. The architecture will show the level of integration and the hierarchy of use for each TSS product.

(2) Training sites. The sites selected for training now become critical in relation to development of specific supporting strategies for each TSS product capability, especially TADSS, and in determining whether overarching strategies will require modifications between training sites. Consideration must be given to outside the continental United States sites and correlating the RC training strategy with RC training sites.

(3) The target audience and training environment collective effect on the strategies.

(a) The target audience influences the overarching strategy in determining prerequisite skills and knowledge before a hierarchy of training can be determined.

(b) The training environment impacts the supporting strategy in that the application of TADSS in one environment may not suffice in other environments. In similar fashion, environment may play a part in the modification of overarching strategies.

(c) System training strategy output. Based on the outline of the training strategies, the TNGDEV can solidify requirements for TSS products emphasizing TADSS and ET where applicable. Requirements are updated and documented in the training strategy and used to prepare the training and training support sections of the system CDD and CPD and the supporting STRAP.

e. Finalize the TADSS strategy. Up to this point in the process of developing TSS product requirements, the TNGDEV has analyzed the tasks relating to the new system and has determined which tasks are best trained using ET capabilities, TADSS, or other TSS products. These findings are documented in a manner that will lead to the determination of the hierarchy of TADSS use. The TNGDEV uses the micro-TADSS strategy sub-process discussed below to arrive at the final TADSS strategies.

(1) Document task data. Task data is documented in TRADOC-approved automated development system. The TNGDEV preparing the system training strategy can use any approved method of documentation that provides a logical record of the decisions that led to the strategy selection. The following information matrices provide a recommended method of documenting the task data to provide an audit trail for the rationale used to develop the system training strategy documented in the STRAP.

(2) Document unit mission and structure. The unit's designed mission and structure can be obtained from the joint and Army concepts, the operational and organizational plan concept of operations, and the tables of organization and equipment, when developed.

(3) Relate missions to collective tasks. The U.S. Army trains to accomplish its missions and provide joint warfighting capabilities. It is important to know what level of mastery is required for each collective task associated with each mission. TP 350-70-1 provides the most current information for developing a mission-to-task matrix and relating collective tasks to individual tasks.

(4) Validate personnel data. A personnel data assessment is required for TSS strategy development documents. The assessment verifies the number of tasks, MOS, and skill level of the personnel required and/or authorized to perform the unit's missions. The MOSs need to show the tasks they are required to perform at each level. This information is initially documented in a task summary. An example of a task summary for the PATRIOT firing battery is shown in figure 3-4.

Task Summary	
MOS 16T Skill Level 1	89 Tasks
MOS 16T Skill Level 2/4	34 Tasks
MOS 24T Skill Level 1	241 Tasks
MOS 24T Skill Level 2/5	54 Tasks
Total Tasks	418 Tasks
MOS – military occupational specialty	

Figure 3-4. Example task summary

(5) Relate tasks for MOS/skill level to functional areas. The total tasks for each MOS and skill level are then placed in the functional areas under which they belong. This documentation will assist in the logical ordering of the tasks for the overarching system training strategy. Figure 3-5 is an example of a task functional area.

Task Functional Area			
<u>MOS/ Functional Area</u>	<u># Tables</u>	<u>MOS/ Functional Area</u>	<u># Tasks</u>
16T		16T	
Tactics	8	Tactics	16
Operations	64	Operations	16
Maintenance	17	Maintenance	2
24T		24T	
Tactics	0	Tactics	0
Operations	79	Operations	20
Maintenance	162	Maintenance	34
MOS – Military occupational specialty			

Figure 3-5. Example MOS/skill level tasks placed in functional area

(6) Relate tasks to TADSS. The TNGDEV makes a final assessment to determine which tasks are trained by each of the TSS products that the TNGDEV has identified for the system training program. One method of documenting this is with a matrix like the one shown in figure 3-6.

SOLDIER TASKS		Product Line-TADSS			
		1	2	3	
	PREPARE GUIDED MISSILE TRANSPORTER FOR MISSILE RELOAD				
	RELOAD A GUIDED MISSILE	X			
	OFFLOAD MISSILE CANISTERS	X			
	PREPARE GUIDED MISSILE TRANSPORTER FOR TRANSPORT	X			
	ESTABLISH, ENTER, OR LEAVE A RADIO NET				
	DRIVE WITH BLACKOUT LIGHTS	X	X		
	CONVERT AZIMUTHS		X		
	IDENTIFY TOPO SYMBOLS, COLOR, AND MARGIN INFO		X	X	
	CAMOUFLAGE SELF AND EQUIPMENT			X	
	DRIVE IN MOTOR MARCH OR CONVOY				
	PERFORM QUARTERLY PMCS ON LAUNCHER STATION			X	
	PERFORM OPERATOR/CREW PMCS ON LAUNCHER STATION			X	
	PERFORM SEMIAUTOMATIC BITE TEST ON LAUNCHER STATION				
Legend Product Line – TADSS 1: Driver's trainer 2: Embedded trainer (operator) 3: System maintenance panel trainer Acronym Key PMCS – Preventive maintenance checks and services TADSS – Training aids, devices, simulators, and simulations					

Figure 3-6. Task to TADSS matrix

f. Finalize the system training strategy. Using the information gained from this process and the previous analyses, the TNGDEV finalizes and documents the system training strategies. The task-to-TSS product matrix, when used with skills and knowledge requirements, shows all training tasks that are supported by each TSS product and provides indications of interrelationships and hierarchy.

Note: The TSS products used to train functional task areas are the basis for the overarching system training strategy. The training that is to be conducted using the TSS product is developed using a hierarchy of training from one TADSS to another to support a logical learning process.

g. Support the TSS strategies. Determining a logical learning process for training tasks associated with the individual TSS product informs the development of supporting (other related) TSS product strategies. These strategies are modified depending on specific requirements created by environmental factors or other considerations related to the type of unit or training site location.

h. Determine TSS/TADSS and ET requirements. Determining TSS and ET requirements is discussed in detail in this chapter. In the process, this determination is made so the CDD/CPD with a training-related KPP (if deemed appropriate) and STRAP can be prepared.

3-16. System training strategy development summary

a. Initiating event. Use the micro-TADSS strategy sub-process when:

- (1) Conducting a JCIDS analyses when directed by ARCIC.
 - (2) Preparing a training strategy for a new materiel solution to a capability gap, and/or improved or displaced equipment.
- b. Conditions. Given:
- (1) Joint and Army concepts.
 - (2) Assignment to a force modernization proponent analysis or capabilities development team as a TNGDEV.
 - (3) The ADDIE process, TR 350-70, and the TP 350-70 series.
 - (4) The JCIDS process, Chairman, Joint Chiefs of Staff Instruction (CJCSI) 3170, TR 71-20, and the JCIDS manual.
 - (5) TRADOC user, writing, and staffing guides.
- c. Procedure checklist. Use the steps in table 3-3 when developing a system training strategy.

Table 3-3
System training strategy development

Step	Action
1	Review the operational tasks, conditions, and standards developed during the JCIDS CBA.
2	Review the training concept for the institutional, operational, and self-development domains.
3	Develop an initial target audience description based on the training concept formulation and ADDIE analyses. A preliminary target audience description defines the quantity and qualifications of the personnel to be trained.
4	Determine a potential training location and site estimate.
5	Determine training assumptions and constraints.
6	Develop an initial TSS estimate by conducting an analysis to: <ul style="list-style-type: none"> - Identify initial training information infrastructure capabilities. - Identify TADSS strategies and capabilities (including ET capabilities). - Identify initial training support package capabilities and requirements. - Identify training facilities and land capabilities requirements. - Identify training service capabilities and requirements.
7	Review ITE concepts and integrated architecture(s) (IA).
8	Participate in development of CATS, or modification of existing CATS.
9	Prepare and staff: <ul style="list-style-type: none"> - Training and training support input to the ICD, CDD, CPD, and/or DICR or DCR. - The STRAP. - TTSP.

3-17. Conduct a job hazard analysis (risk assessment)

The risk management process as defined in ATP 5-19 satisfies the requirement for a job hazard analysis. A thorough risk assessment will:

- a. Be reviewed and validated by the responsible safety director.
 - b. Identify potential system hazards.
 - c. Develop training and personal protective equipment requirements to mitigate identified hazards to lower residual risk involved to an acceptable level.
-

Chapter 4

Integrated Training Environment (ITE)

4-1. Integrated training environment overview

a. The ITE is an intrinsic part of Army training strategies. The Army relies on a creative mix of LVC training and gaming to deliver realistic training. This mix is central to how the Army designs, manages and uses training support products, services and facilities to ensure commanders have the means to execute and assess their training. This is accomplished by setting the conditions for the efficient use of integrated and stand-alone LVC and gaming environments, which support the commander's training strategy. LVC training is a broad categorization that covers the degree to which a training event uses TADSS. The Army's goal is to integrate all new essential TADSS with existing joint and Army TADSS to create one seamless ITE. In addition to the integrating hardware, software, and networking, the ITE also includes ranges, training land, mission training complexes, and simulation facilities.

b. The ITE is simply the technical integration of training enablers, tools, and TADSS available to support individual and multi-echelon collective training within all of the Army's training domains and training environments as appropriate. This is especially true at the battalion level and below. Virtual, constructive, and gaming training are used to supplement, enhance, and complement live training. They can help raise the entry level of proficiency for live training and reduce time needed to prepare training. They can also provide a variety of training environments, allowing multiple scenarios to be replicated under different conditions. Based on training objectives and available resources such as time, ammunition, simulations, and range availability, commanders determine the right mix and frequency of LVC and gaming training to ensure organizations use allocated resources efficiently and effectively.

(1) Live. Live training is executed using assigned equipment, real people operating real systems. Live training may be enhanced by TADSS and tactical engagement simulation to further simulate combat conditions. Live training can operate in a stand-alone environment or be integrated with virtual and constructive environments as part of the ITE. Live training will be capable of stimulating current and future mission command systems at home station and capable of being networked with the CTCs when appropriate.

(2) Virtual. Virtual environment is a three-dimensional computer generated environment and displays geo-specific or geo-typical terrain. The environment is interactive allowing participants to act, move, and navigate in the environment. Usually, a stereoscopic display provides the participant with a perception of depth, and a 360-degree total field view. The environment uses physics-based models and atmospheric effects to increase the sense of immersion. The environment is a real time simulation, in which the user can interact through multiple senses. The environment provides realistic characteristics, form, fit, and function of simulated equipment, aircraft, vehicles, personnel, and objects. Virtual training can be full or semi-immersive, depending on the level of fidelity provided by the simulation. Virtual training is used to exercise motor control, decision making, and communication skills. Sometimes called human-in-the-loop training, it involves real people interfacing with simulated virtual systems, equipment, vehicle, or personnel. Virtual simulations/simulators are designed to train individual, crew and collective training tasks at institutions and battalion level and below. Virtual simulations can train selected echelon-above-brigade enablers (e.g., joint close air support). Virtual training will be capable of stimulating current and future mission command systems at home station which further enhances its role within the ITE. Virtual simulators will eventually be capable of being networked with the CTCs.

(3) Constructive. The constructive training uses computer models, tools, interfaces, and simulations to exercise mission command and staff functions. It involves simulated people and equipment in computer-generated environments operating simulated systems. Real people stimulate (make inputs to) such simulations, but are not involved in determining the outcomes. Constructive training will be capable of stimulating current and future mission command systems at home station and capable of being networked with the CTCs and/or regional simulation centers. It is a critical component of expanding the operational environment when used as part of the ITE. Constructive training can be conducted by units from platoon through echelons above corps and in joint or combined operations.

(4) Gaming. Army gaming is the use of commercial and government off-the-shelf products and technology in the form of multiple types of interactive computer-based applications. They are low cost, low overhead, and establish "good enough" conditions for individual, leader, and unit level training, education, and mission rehearsal, emphasizing the development and application of cognitive skills. Army gaming's spectrum of condition-setting applications range from avatars/personas representing real people operating simulated systems, to real people managing simulated people (individuals and/or formations), and real people engaging with simulated people and objects to achieve a specific purpose, all in a semi-immersive gaming environment. Where appropriate, Army gaming and its attendant gaming environment facilitate after action reviews (AARs), mission planning, connectivity to mission command systems, interoperability with other TADSS, and the ITE. Examples of Army games are first person shooter/thinker, turn-based and real-time strategy, and construction management applications.

4-2. ITE capabilities overview

a. The Army's objective is to integrate all of the essential TADSS with both joint and Army mission command systems, and ultimately with joint TADSS, to create one seamless ITE. The resulting ITE is the linkage of selected TADSS, infrastructure, mission command systems, knowledge management systems, and a training framework to approximate the conditions of the operational environment for training and education of unified land operations in any of its training domains (operational, institutional, and self-development). The ITE includes the integrated architecture (IA) and training infrastructure which replicates an operational environment anytime and anywhere, thereby enabling all commanders to train for unified land operations using the Army's TADSS in both the operational and institutional training domains in conjunction with the Army mission command systems and joint mission command systems.

b. The IA component of the ITE provides the technical how-to that governs information exchange between and among all of the respective TADSS and mission command systems. It includes the protocols, specifications, standards, interfaces, databases, and hardware and software requirements to allow the construction of networks, which enable the collection, retrieval, and exchange of information.

c. The training infrastructure component of the ITE is the physical enabler for the IA and includes facilities, power, communications assets, training support, personnel and equipment, and the management structure.. The training infrastructure is the hardware, software, and communications systems that conform to both joint and Army architectures and standards, as required by the Network Enterprise Center that enable the development, storage, retrieval, delivery, and management of TSS products and information for use by individuals, units, and institutions world-wide.

d. The following paragraphs discuss the recommended analytical steps to identify ITE capabilities that support the implementation of training and training support strategies.

4-3. Integrated architecture(s) (IA)

Architectures and standards are the means of assuring commonality and an integrated and new equipment-ready training capability. Architectures and standards are the cornerstone of the TSS by ensuring the horizontal and vertical integration of the TSS core components and external enablers.

4-4. TSS architectures and standards defined

a. The TSS architectures and standards provide the means to ensure integration and interoperability across TSS products that support training/education, and leader development. Whereas the force modernization proponent capability development team prepares the architecture framework within which the operational system must operate, the TNGDEV prepares the architecture framework for the new system's TSS. For example, a new tank must possess the ability to move, shoot, and communicate with other tactical systems throughout the operational environment. Tactical voice and data systems must link and exchange data with existing systems, internet and global communications. Architectures and standards describe

required linkages between systems and data exchange requirements. Architectures and standards also describe the required linkages and data exchange requirements among components of the TSS as well. For example, the training plan for a new capability requires development and fielding of simulators to support individual and collective task training in the operation environment. In order to participate in LVC and gaming combined arms training events, the new simulator must be compatible with, and linkable to the ITE. Once linked, the simulator must be capable of transmitting, receiving, and processing certain data. Architectures describe the structure of TSS components, their relationship, the principles and guidelines governing their design and evolution over time. For the TNGDEV, they are the framework that describes the training mission and systems, specifies interfaces and interrelationships between the various TSS product parts, and facilitates coordination and synchronization of training support with internal and external interfaces.

b. The U.S. DOD, Chief Information Officer is the primary authority for the policy and oversight of information resources management, to include matters related to information technology, network defense, and network operations. This responsibility includes the development of governance and rules for information-exchange architectures. The DOD Architecture Framework (DODAF) is the Chief Information Officer's overarching, comprehensive framework and conceptual model for enabling the development of architectures to facilitate decision making across the DOD. The DODAF organizes the models into the following viewpoints:

(1) The [All Viewpoint](#) (AV) describes the overarching aspects of architecture context that relate to all viewpoints.

(2) The [Capability Viewpoint](#) (CV) articulates the capability requirements, the delivery timing, and the deployed capability.

(3) The [Data and Information Viewpoint](#) (DIV) articulates the data relationships and alignment structures in the architecture content for the capability and operational requirements, system engineering processes, and systems and services.

(4) The [Operational Viewpoint](#) (OV) includes the operational scenarios, activities, and requirements that support capabilities.

(5) The [Project Viewpoint](#) (PV) describes the relationships between operational and capability requirements and the various projects being implemented. The project viewpoint also details dependencies among capability and operational requirements, system engineering processes, systems design, and services design within the Defense Acquisition System process.

(6) The [Services Viewpoint](#) (SvcV) is the design for solutions articulating the performers, activities, services, and their exchanges, providing for or supporting operational and capability functions.

(7) The [Standards Viewpoint](#) (StdV) articulates the applicable operational, business, technical, and industry policies, standards, guidance, constraints, and forecasts that apply to capability and operational requirements, system engineering processes, and systems and services.

(8) The [Systems Viewpoint](#) (SV), for legacy support, is the design for solutions articulating the systems, their composition, interconnectivity, and context providing for or supporting operational and capability functions.

c. Appendix C provides a more detailed description of each viewpoint the TNGDEV may be required to address.

d. Integration is the process of ensuring that all required components of a system, function or mission, organization, and SoS or FoS come together and begin to behave as one to achieve a desired outcome. It means that architecture components are linked (both horizontally and vertically), are totally compatible, and are relevant to all associated architectures. This linkage is usually among systems, organizations, and functions. The TSS architectures and standards integrate the TSS products and other components in a like manner. This integration is important in ensuring the TSS overcomes the stove-piped approach of the past and components are operationalized as a SoS.

4-5. TSS architectures and standards

a. TSS architectures are framed and produced through a collaborative approach and focus on what is needed in the way of information sets required to create an operationally relevant training environment.

b. TSS architectural components include information sets/data, architecture view products, and services. Table 4-1 describes the TSS architectural components.

Table 4-1
TSS architectural components

Component	Description
Information sets/data	Information sets are groupings of data designed to answer specific questions. They may answer simple, straightforward questions or may be produced to address much more complex queries that require in-depth analysis. Information sets can also be derived from different databases and grouped together to guide, shape, and inform decision making.
Products	The DODAF outlines and describes the models to support the process as laid out in current JCIDS manual. As appropriate, these products must be nested within joint integrated architectures, such as test and training enabled architecture. TRADOC is a participant in this process, responsible for development, validation, and integration of the warfighting aspects of all operational areas.
Services	Services range from architecting data analysis to a database repository and activity-based modeling. These activities are further described in the TRADOC Architecture Management Plan. Selected services are integrated within the architecture development process and support concept exploration, experimentation, warfighting capabilities analysis, and DA and joint level integration/validation requirements throughout JCIDS analyses.

4-6. Developing architectures and standards

a. Architectures, like concepts, flow from the highest levels in DOD to the lowest level in the Army, and horizontally across functional areas and operating systems. The architecture development process is a systematic and standardized way of informing, shaping, and translating concepts into capabilities in the form of systems, functions, and organizations.

b. Architecture development roles and responsibilities of proponent TNGDEVs are to:

(1) Develop training architecture viewpoints per the guidance provided DODAF and TR 71-20.

(2) Utilize architecture information to shape, inform, and guide training concept and strategy development, STRAPs, CDD, CPD, DICR, and training exercises.

(3) Coordinate with the force modernization proponents, TCMs and PMs to ensure that training requirements, ITE and platform/system command, control, communications, computers, & intelligence resources and ET are adequately defined.

(4) Ensure that system training products and ITE capabilities are included and utilized in the development of doctrine, TTPs, training documentation, and the TSS estimate, as deemed appropriate.

(5) Coordinate action officer-level proponent specific issues with other TRADOC CoEs, appropriate Army Commands, Army Service Component Commands and/or Direct Report Unit(s)/unified/joint, Army National Guard, and U.S. Army Reserve Command functional counterparts.

c. The high-level, 6-step architecture development process provides guidance to the architect and architectural description development team and emphasizes the guiding principles. The process is data-centric rather than product-centric. This data-centric approach ensures concordance between views in the architectural description while ensuring that all essential data relationships are captured to support a wide variety of analysis tasks. The views created as a result of the architecture development process provide visual renderings of the underlying architectural data and convey information of interest from the architectural description needed by specific user communities or decision makers. The six steps are:

(1) Determine the intended use of the architecture.

(2) Determine the scope of the architecture.

(3) Determine the data required to support architecture development.

(4) Collect, organize, correlate, and store architectural data.

(5) Conduct analyses in support of architecture objectives.

(6) Document results in accordance with decision maker needs.

d. Figure 4-1 depicts the 6-step architecture development process.

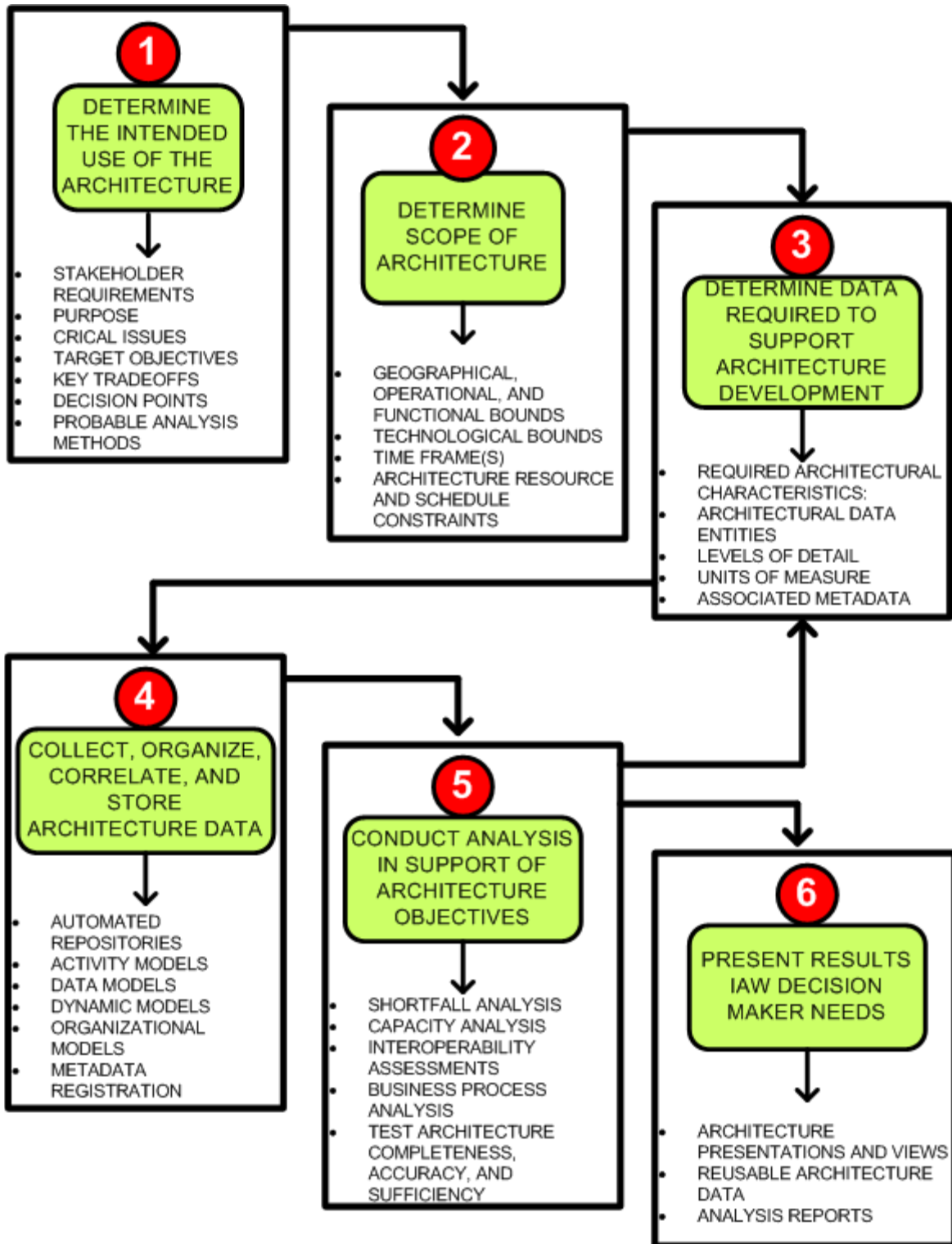


Figure 4-1. Six-step architecture development process

e. The architecture description provides the architecture requirements to be developed during the technology maturation and risk reduction phase of the program to support the training concept and strategy for the new system. It describes the architecture process and the viewpoints of the training architecture. It does this for the proposed sets of combat systems and training subsystems to be developed and procured.

f. Example. The training strategy for the new capability requires ITE-enabled, embedded, full-task trainer and tactical engagement simulation capability for participation in LVC, gaming, and live instrumented exercises. ET is expected to be a software-intensive capability distributed within the system. It is imperative that the combat system and subsystems be developed to fully support this training architecture, therefore, ET is identified as a KPP:

(1) Training consideration: (Training support/training interoperability) The new capability must have an embedded individual and collective training capability that supports LVC and gaming training environments.

(2) Rationale: ITE-enabled, embedded, full-task trainer and tactical engagement simulation capability provide leaders with a readily available system for training and assessing combat critical skills of Soldiers, and provide the capability to train and assess crew/sections, dismounted Soldiers, and multi-echelon combined arms skills in all operational environments.

4-7. Training infrastructure

a. Training infrastructure consists of hardware, software, and communications systems. These provide for the local and global network infrastructures to facilitate management, dissemination, delivery, and archival of training support information. Training infrastructure-enabling capabilities are shown in table 4-2.

Table 4-2
Training infrastructure enabling capabilities

Capability	Description
Development capabilities	Capabilities that allow for the creation of TSS products and information. Examples include: <ul style="list-style-type: none"> - Scenario development tools - Training Development Capability - Training and Education Developer Toolbox - CATS - MilGaming - Common Framework of Scenarios Registry
Storage, retrieval, and delivery capabilities	Capabilities that allow for the collection and organization of, and provide access to, digital TSS products and information. Examples include: <ul style="list-style-type: none"> - Army Training Network - CAR - DL repositories - Center for Army Lessons Learned repository - Video teletraining - Army Learning Management System - Enterprise Lifelong Learning Centers - Defense Connect Online -Global Simulation Capability
Management capabilities	Capabilities are the information systems that allow for the management of digital TSS products and information. Examples include: <ul style="list-style-type: none"> - Unit training management configuration - CATS - MilGaming - Common Framework of Scenarios - Digital Training Management System (DTMS) - Learning Management System - Distributed Learning System - Resident Individual Training Management System - Individual Training Resource Management System - Materiel Army-wide Tracking System - Reception Battalion Automated Support System

b. In addition to the capabilities discussed in table 4-2, other Army capabilities exist that are critical to TSS integration and functionality. While they are not part of the TSS training infrastructure, coordination with respective programs is necessary to ensure collaboration is enabled and TSS needs are fulfilled. Examples include:

- (1) Army Knowledge Online.
- (2) Warrior information network, tactical.
- (3) Joint training information management system.
- (4) Mission command systems.
- (5) Commercial communications providers.
- (6) Global information grid (GIG).
- (7) Resident Individual Training Management System.

4-8. Training infrastructure analysis

a. Determining the right training data to collect is critical to ensuring training relevance and credibility.

b. Training infrastructure analyses are key questions about training capabilities and activities that are critical to the operational effectiveness of the TSS. Training infrastructure analysis focuses the data collection requirements, scope, and metrics of the analysis.

c. Training infrastructure essential elements.

(1) Essential elements for the training infrastructure include what training support capabilities are required to implement the training concept and system training strategy in the areas of development; management; storage, retrieval, and delivery; and external enablers. These are further described in table 4-3.

Table 4-3
Example training infrastructure estimate matrix

Area/capability	Subsets/capability	Institutional (AA/RC)	Operational (AA/RC)	Self-development (AA/RC)
Training development	<ul style="list-style-type: none"> - Course - Scenario 	ADDIE scenario development tools	ADDIE	<ul style="list-style-type: none"> - ADDIE - Logistics management information system
Management	<ul style="list-style-type: none"> - Learning - Materiel - Distributed learning - Unit training - Knowledge - Training requirements/acquisition - Student - Courseware - Training support - Joint support 	<ul style="list-style-type: none"> - Army Training Requirements and Resources System - Reception Battalion Automated Support System - Materiel Army-wide Tracking System - Training simulations - Training Development Capability - Foundry Program 	<ul style="list-style-type: none"> - ADDIE - DTMS - Foundry Platforms 	<ul style="list-style-type: none"> - Army Training Requirements and Resources System - Materiel Army-wide Tracking System
Storage, retrieval, and delivery	<ul style="list-style-type: none"> - Distributed learning - Home station - CTCs - Institution - LVC and gaming - Reference 	<ul style="list-style-type: none"> - After action review system - Army Learning Management System - MilGaming - Common Framework of Scenarios Registry 	<ul style="list-style-type: none"> - After action review system - DTMS - Army Training Network - CATS - MilGaming - Common Framework of Scenarios Registry 	<ul style="list-style-type: none"> - After action review system
External enablers	<ul style="list-style-type: none"> - ITE - Army Knowledge Online - Joint, interagency, intergovernmental, and multinational - Commercial 	<ul style="list-style-type: none"> - Army Knowledge Online - Tactical net - Internet 		

(2) Associated variables. In addition to the essential elements shown in the matrix above, additional variables that affect the training infrastructure need to be analyzed. A sample is included in table 4-4.

Table 4-4
Example training infrastructure variable estimate matrix

Area/capability	Subsets/capability	Institutional (AA/RC)	Operational (AA/RC)	Self-development (AA/RC)
Built in (embedded)	- ET - TADSS - TSPs	Reach	- Reach - Mission command	Reach
Integration	- Effect on other TSS products - Effect on external enablers	- GIG - ITE	- GIG - ITE	- GIG - ITE

d. Example. If the space shuttle is the system, then launch control, tracking stations, and communications networks are the capabilities needed to support the system. These capabilities must be in place to launch the shuttle. The same is true of the TSS. The TSS capabilities must be in place before system training can occur.

Note: The DOD required information exchange requirements developed for the CDD should include training data. Information exchange requirements serve to identify training information infrastructure capability requirements.

4-9. Training infrastructure analysis procedure summary

The following information serves as a checklist for conducting training infrastructure analysis and developing a training infrastructure estimate. Follow the steps in table 4-5 to identify training infrastructure capabilities.

Table 4-5
Identify training infrastructure capabilities

Step	Action
1	Review joint and Army concepts and capabilities.
2	Review training concepts and system training strategies.
3	Review the concept training IA (operational, system, and technical views that are available).
4	Identify user information needs: development, management, storage, retrieval, and delivery.
5	Identify information exchange capabilities.
6	Determine communications capabilities.
7	Review and compare with existing training architectures and capabilities, identify gaps, excesses, non-effective redundancies.
8	Document analysis results and inform JCIDS analyses and ADDIE design processes.
9	Provide training infrastructure input to STRAPs and capability documents (CDD/CPD).

Chapter 5

Training Support System (TSS) Training Products

5-1. TSS training products overview

a. TSS training products enable the implementation of materiel system training concepts and strategies. In addition to the TSS training products needed to conduct training on or for a materiel system in the institutional, operational and self-development domains, TSS training products are also required for NET, DET, and DTT.

b. Training proponents, in their role as TNGDEV, work in coordination with the Capabilities, Development and Integration Directorate staff, MATDEVs, and CAPDEVs, and are responsible for identifying TSS training product requirements and the means that provide those capabilities. This analysis is part of the ADDIE process. This collaboration ensures the simultaneous development of the materiel system along with the development, acquisition and fielding of its associated TADSS in a total package fielding process.

c. TSS training products can be either materiel or non-materiel. They include, but are not limited to, course materials, publications, TADSS, and other training material needed to train one or more individual and collective tasks.

(1) Non-materiel TSS training products consist of courseware, publications, and other products that are produced as outputs of the training analysis processes described in TR 350-70 and the TP 350-70 series pamphlets.

(2) TSS products categorized as materiel (equipment, apparatus, and supplies) are developed and acquired using the JCIDS and DAS processes.

(3) The remainder of this chapter is focused on TSS non-materiel training products. Subsequent chapters will focus on TSS materiel training products, specifically system and non-system TADSS.

5-2. Components of the TSS non-materiel training product categories

a. The TSS non-materiel training product categories include:

(1) Courseware.

(2) Courses.

(3) Training publications.

(4) TSPs.

b. Table 5-1 describes the TSS non-materiel training support product components.

**Table 5-1
TSS non-materiel product components**

Component	Description
Courseware	<p>Courseware is an actual instructional package (including content and technique) loaded in a computer, training device, or other instructional delivery system. Examples include:</p> <ul style="list-style-type: none"> - Interactive courseware - Interactive multimedia instruction (IMI) - Web-based instruction - DL products
Courses	<p>Courses are a complete series of instructional units (phases, modules, and lessons) identified by common title and number consisting of curriculum inclusive of critical tasks or educational requirements to qualify a jobholder for a specific job or function (MOS/ Army occupational code) skill level, skill qualification identifier, additional skill identifier, language identifier code, or skill identifier within the Total Army. Examples include:</p> <ul style="list-style-type: none"> - Functional courses - Officer Education System courses - Warrant Officer Education System courses - Noncommissioned Officer Education System courses - Initial military training courses - Specialty courses - Army correspondence courses - Civilian education courses
Training publications	<p>Training publications are the narrative material, available in printed and/or electronic formats, used by the Army for training individuals or units. The term "training publications" is an overall term which includes training literature, both official and unofficial. Training literature is that body of writings published for the primary purpose of informing all concerned as to doctrine TTPs adopted for training individuals and units of the Army. Examples include:</p> <ul style="list-style-type: none"> - Soldier training publications - TCs - CATS - Standing operating procedures - Interactive electronic technical manuals
TSPs	<p>TSPs provide the training materials and instructions needed to plan, prepare, and execute training. A TSP is a complete package of integrated training products, materials, and information necessary to train one or more critical tasks. It may be very simple or complex. Its contents will vary depending on the training site and user.</p> <ul style="list-style-type: none"> - A TSP for individual training is a complete package of integrated training products and materials necessary to train one or more individual critical tasks. - A Warfighter TSP for collective training provides a complete, detailed, exportable package integrating training products, materials, and information necessary to support operating force training. WTSPs provide the actual details for securing the materials, training venues, and other necessary resources identified in each Unit CATS training event supporting the HQDA-approved mission essential task lists for designated units. - A TSP for modernization programs provides materials needed to train critical individual or collective tasks associated with operations and maintenance of new, improved, or cascading materiel systems, including NET.

5-3. Non-materiel training products analysis

Essential elements for non-materiel training products analysis are discussed below. They include what non-materiel training products are required to support the system training concept and strategy (AA/RC). Non-materiel training products analysis procedures are listed in table 5-2. The steps are intended to be performed in conjunction with the analysis and design phases described in TR 350-70 and supporting TP 350-70 series publications.

**Table 5-2
TSS non-materiel training product analysis steps**

Step	Action
1	Review associated system training concepts and strategies.
2	Review the associated system training concept IA (operational, system, and technical views that are available).
3	Identify needs for each MOS and affected units.
4	Identify information exchange requirements for each training product.
5	Collect and collate required information from previous systems and use both qualitative and quantitative analysis methods to initiate and mature the training products estimate.
6	Review and compare with existing CATS and training architectures and standards to identify gaps, excesses, and non-effective redundancies.
7	Conduct a crosswalk for each training domain (institutional, operational, and self-development) and each Army component (AA/RC).
8	Crosswalk training product requirements with other TSS products.
9	Document results in the STRAP, system and/or non-system TADSS JCIDS documents.

**Chapter 6
Training Aids, Devices, Simulators, and Simulations (TADSS) Capabilities**

6-1. TADSS capabilities overview

a. TADSS is a general term that includes training instrumentation; TES; battle simulations; targetry; training-unique ammunition; dummy, drill, and inert munitions not managed through Total Ammunition Management Information System; casualty assessment systems; training aids; and other training support devices and simulators. TNGDEVs consider trade-offs of training resources (such as actual equipment and ammunition) in order to identify cost-effective training alternatives. TADSS are frequently used as cost effective alternatives to support the training strategy for each training domain. They are chosen based on the ADDIE media-selection processes outlined in TR 350-70. Once chosen, TADSS training and resourcing requirements are delineated in applicable sections of the STRAP and JCIDS capability documents. All of these are subject to the public laws and regulatory guidance governing the acquisition of materiel. TADSS are categorized as system and non-system. Per AR 350-38:

(1) System TADSS are designed for use with a system, FoS, or item of equipment, including subassemblies and components. They may be stand-alone, embedded, or appended. Using system-embedded TADSS is the preferred approach where practical and cost effective.

System TADSS are funded by the HQDA DCS, G8, and procured and supported by the system's program executive officer/PM and are considered an essential component of a system's Total Package Fielding requirement. System specific simulators, maintenance part-task trainers, and TES are examples of system TADSS. Interoperability between system TADSS and the ITE is the responsibility of the developing system PM.

(2) Nonsystem TADSS are designed to support general military training and nonsystem-specific training requirements. The TSS resources both fielding and sustainment of non-system TADSS. Non-system TADSS will be more thoroughly covered in chapter 7.

b. TADSS capabilities enable the implementation of the system training concept, system training plan and supporting training strategy. TADSS products are one of the largest TSS product components with the greatest integration requirement across all other product and external enablers (horizontal integration) and within the product (vertical integration). TADSS are designed and intended to train individual and/or collective tasks associated with a system, FoS, or item of equipment, including subassemblies and components that support individual, crew, collective, or combined arms training tasks. They may be stand-alone, embedded, or appended.

c. The TSS estimate for TADSS includes both system TADSS and non-system TADSS. The system PM is also required to concurrently modify or upgrade existing system and non-system TADSS, to include ET and training instrumentation, impacted by new and/or incremental modifications or upgrades to materiel systems. TADSS are categorized as materiel and require the preparation of JCIDS documentation in accordance with established JCIDS instructions and regulations.

6-2. TADSS components

Figure 6-1 provides examples of TSS TADSS. The TNGDEV reviews each TADSS component's ability to satisfy the training requirements of the system training concept and strategy. Table 6-1 provides examples of TADSS components.

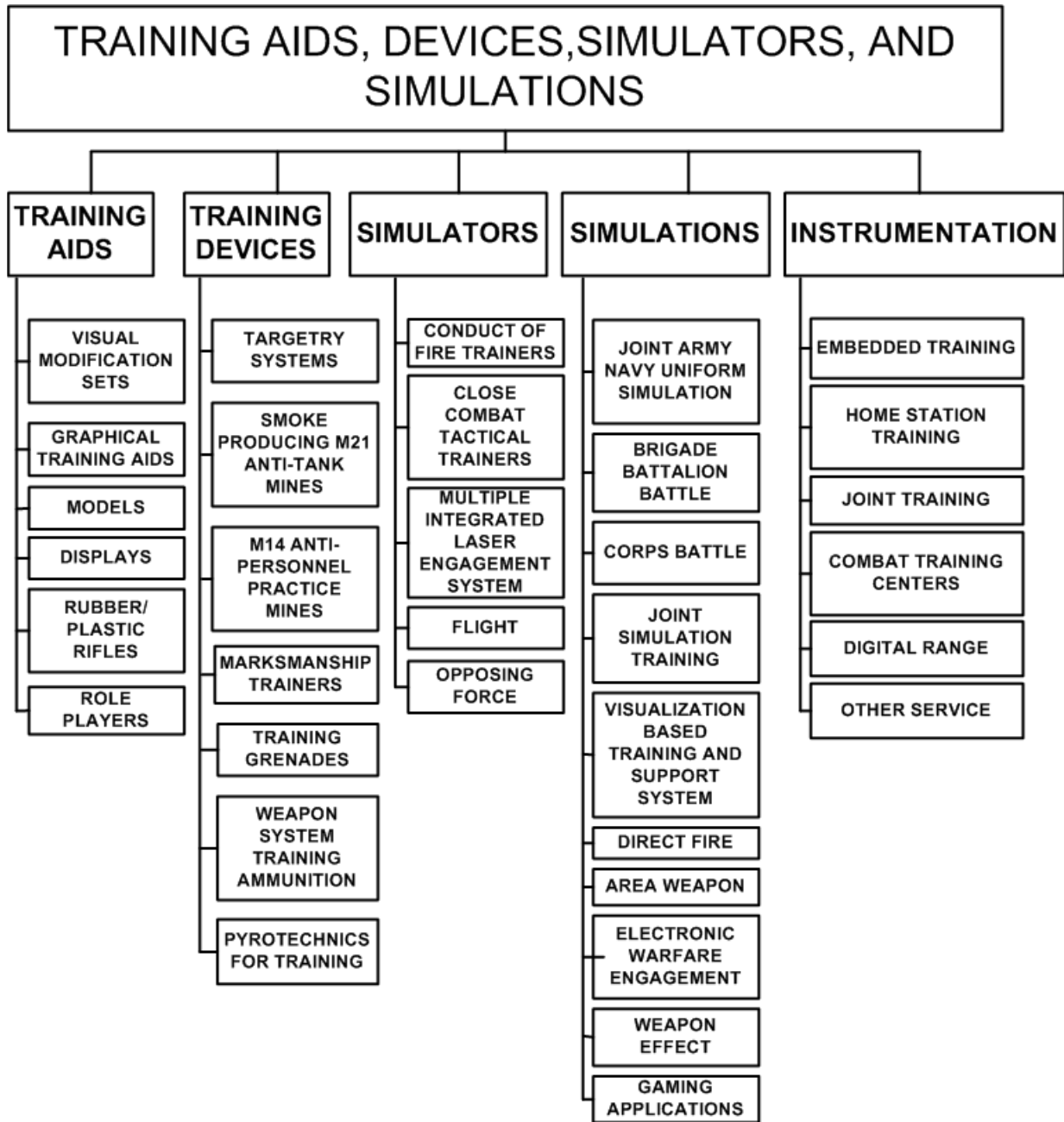


Figure 6-1. TADSS Examples

Table 6-1
TADSS components

Category	Description
Training aids	<p>Training aids are instructional aids that enable trainers to conduct and sustain task-based training in lieu of using extensive printed material or equipment. Examples include:</p> <ul style="list-style-type: none"> - Visual modification sets - Graphic training aids - Models (inert munitions) - Displays (opposing force small arms) - Role players
Training devices	<p>Training devices are three-dimensional objects and associated computer software developed, fabricated, stand-alone, embedded, appended, and procured specifically for improving the learning process. They are categorized as both standard or nonstandard devices and usually support the live training environment. Examples include:</p> <ul style="list-style-type: none"> - Targetry systems - Smoke producing M21 antitank mines - M14 anti-personnel practice mines - Marksmanship trainers - Training grenades - Weapon system training ammunition (not including live ammunition) - Pyrotechnics for training
Simulators	<p>Simulators are devices, computer programs, or systems that perform simulation. For training, they are devices that duplicate the essential features of a task situation and provide for direct practice. They are also physical models, mock-ups, or simulations of a weapons system, set of weapons systems, or piece of equipment which endeavors to replicate some major aspect of the equipment's operation that usually supports the virtual environment. Examples include:</p> <ul style="list-style-type: none"> - Conduct of fire trainers - Close combat tactical trainer - Multiple Integrated Laser Engagement System - Flight simulators - Vessel bridge simulator - Army operator driver trainer - Opposing force simulators - Tank Weapon Gunnery Simulation System

Table 6-1
TADSS components, continued

Category	Description
Simulations	<p>Simulations are a method for implementing a model(s) over time, including any representation or imitation of reality, to include environment, facilities, equipment, mechanical and maneuver operations, motion, role-playing, leadership, and so forth. They are the representation of salient features, operations, or environment of a system, subsystem, or scenario that support the training environment. Examples include:</p> <ul style="list-style-type: none"> - Warfighter's Simulation - Joint Land Component Constructive Training Capability - One Semi-Automated Force - Command and staff training simulation - Joint simulation training - Visualization-based training and support system - Indirect fire simulation - Direct fire simulation - Area weapon simulation - Electronic warfare engagement simulation - Weapon effect simulations - Gaming applications
Instrumentation	<p>Instrumentation is a system which supports training through digital, audio, video, and hard copy data capture; exercise monitoring and control; after-action review (AAR) preparation and presentation; and take-home package preparation and presentation. Examples include:</p> <ul style="list-style-type: none"> - ET instrumentation - Home station training instrumentation - Joint training instrumentation - CTC instrumentation - Digital range instrumentation - Other service instrumentation

6-3. Embedded training (ET)

a. The training support capability for an operational system is required to be embedded in the system itself when practical (unless, by design, the system architecture employs technologies that use a remote content server, such as on a Wide Area Network or “cloud” technologies). While ET is by definition a TADSS, its importance requires special consideration in the TSS estimate. DOD and Army policy state that ET will be used whenever practical to meet system training needs.

b. ET is defined as a function hosted in hardware and/or software, integrated into the overall equipment configuration. ET supports training, assessment, and control of exercises on the operational equipment with auxiliary equipment and data sources as necessary. A good example of ET would be the built-in ability to participate in instrumented CTC or home-station training exercises without installing add-on Tactical Engagement Simulation System or Multiple Integrated Laser Engagement System equipment on vehicles or aircraft.

c. ET, when activated, can start a training session or overlay the system's normal operational mode to enter a training and assessment mode. ET can provide the capabilities shown in table 6-2 as part of the operational system.

Table 6-2
ET capabilities

Capability	Description
Overall	<ul style="list-style-type: none"> - Provide a system or FoS a synthetic operational environment. - Present training to individuals, crews and teams, units, unit leaders, and staffs. - Enable training individual through collective task in the institutional and operational domains and all environments, to any audience at any level.
Simulation/ stimulation data	<ul style="list-style-type: none"> - Simulate operational data not available from actual data sources. - Receive operational data from actual data sources. - Integrate simulated and actual data. - Present data to the operator(s), maintainer(s), leader(s), and other user(s) by means of their normal operational equipment. - Require operator(s), maintainer(s), leader(s), and other user(s) to perform their job tasks and duties in response to data presented.
Specific	<ul style="list-style-type: none"> - Able to simulate faults and errors to allow training in degraded modes of operation. - Able to tailor training based on user(s)' needs, performance, and choice as appropriate. This includes the capability for leaders to tailor training exercises to meet units' needs. - Able to control an exercise and inject data into an exercise.
Interconnectivity	<ul style="list-style-type: none"> - Provide training interoperability with joint, coalition, allied, non-DOD and other external agencies operating in the GIG in accordance with DOD-accepted standards and protocols. - Interface with on-board communication systems to reach to remote distributed repositories. - Interface with range instrumentation to transport data.
Training feedback	<ul style="list-style-type: none"> - Assess the performance of the operator(s), maintainer(s), leader(s), and other user(s). - Collect and record the performance of the operator(s), maintainer(s), leader(s), and other user(s). - Provide feedback on the performance of the operator(s), maintainer(s), leader(s), and other user(s). - Aggregate performance records (for individuals, crews, units, and unit leader) over time.

d. ET functions can be assembled into three distinctive groups: synthetic environment ET, multimedia ET, and training management. See table 6-3 for more information.

Table 6-3
ET functional groups

Group	Function
Synthetic environment	ET includes those functions involved with LVC and gaming simulation training and making the training environment approximate the operational environment.
Multimedia	ET includes functions related to delivery of IMI courseware.
Training management	ET includes functions involved with planning training, course information, and student records. Both synthetic environment and multimedia ET functional groups interface with and make use of the services provided by training management training information infrastructure.

e. It is important to note that help screens, wizards, and electronic performance support systems which are associated with the software applications they support, are not ET.

6-4. TADSS analysis

a. The TADSS estimate must address the components that make up TADSS. While all may not be applicable, they should be scrutinized to verify nothing is overlooked. Additionally, the TADSS estimate must be cross walked with the other products, architectures, standards, and external enablers.

b. The analysis for TADSS includes what training support capabilities are required to support the training concept and system training strategy in certain areas. Table 6-4 provides examples.

Table 6-4
TADSS examples

Area	Description
Interactive reality	<ul style="list-style-type: none"> - Three-dimensional operational environment view - Augmented reality - Operational environment awareness - Combat environment dynamics - Virtual observers - Virtual sand tables - Virtual trainer/tutor - Virtual wingman
Simulators	<ul style="list-style-type: none"> - Close combat tactical trainer - Aviation combined arms tactical trainer - Conduct of fire trainers - Multiple Integrated Laser Engagement System - Opposing force

Table 6-4
TADSS examples, continued

Area	Description
Target Engagement Simulation (TES)	<ul style="list-style-type: none"> - Area weapons - Direct fire - Electronic warfare engagement - Indirect fire - Weapons effect
Training ammunition	<ul style="list-style-type: none"> - Standards in Training Commission - Inert munitions
Training devices	<ul style="list-style-type: none"> - Communications - Engagement skills and gunnery - Flight crew - Maintenance - Mock-ups - Weapons crew trainers
Training aids	<ul style="list-style-type: none"> - Graphic training aids - Medical - Opposing force display - Rubber weapons and mines - Visual modification sets - Virtual information products
Instrumentation	<ul style="list-style-type: none"> - CTC/home station/deployed - ET - Joint
Wargames and simulations	<ul style="list-style-type: none"> - Joint Land Component Constructive Training Capability - One Semi-Automated Force - Gaming Applications - Command and staff - Joint Training Confederation - Army Training Confederation
Targetry systems	<ul style="list-style-type: none"> - Ground to ground - Ground to air - Air to ground - Air to air
Throughput requirements/basis of issue plan	<ul style="list-style-type: none"> - Number of Soldiers to be trained - Number of iterations per year - Number of Soldiers per TADSS - Number of locations; for example, operational (home station, CTCs, deployed locations) institution, and self-development. - Combatant commander operational needs
Integration	<ul style="list-style-type: none"> - Effect within the ITE and on other TSS products - Effect on external enablers
Resources	Life-cycle cost estimates as data becomes available

6-5. TADSS analysis procedure summary

TSS procedures described in table 6-5 are performed in conjunction with TR 350-70 analysis and design phases. The procedures to identify system TADSS requirements are discussed in this pamphlet and in the TP 350-70 series.

**Table 6-5
TSS procedures**

Step	Action
1	Review applicable joint and Army concepts and capabilities.
2	Review associated training concepts and system training strategies.
3	Review the training concept IA (operational, system, and technical views that are available).
4	Identify user information needs for each TADSS essential element of analysis.
5	Identify information exchange requirement for each essential element of analysis.
6	Collect and collate required data and information from previous studies and research and use both qualitative and quantitative analysis methods to initiate and mature the estimate.
7	Review and compare with existing CATS and training architectures and standards to identify gaps, excesses, and non-effective redundancies.
8	Conduct a crosswalk for each training domain (institutional, operational, and self-development) and each Army component (AA/RC).
9	Document results in non-system TADSS or system capability documents and supporting STRAPs.

6-6. ET analysis summary

Follow the steps in table 6-6 to identify ET capabilities.

**Table 6-6
Steps to identify ET capabilities**

Step	Action
1	Select ET during ADDIE design (TR 350-70, TP 350-37).
2	Identify performance requirements for the associated system training strategy that can be embedded.
3	Determine functional requirements for: - Planning training - Executing training - Providing training feedback
4	Conduct a domain crosswalk to identify total Army, both AA and RC, system support requirements in the institutional, operational, and self-development domains.
5	Determine input/output (data requirements)/information exchange requirements.
6	Determine failure contingencies.
7	Use analysis results to inform the STRAP, JCIDS, DAS, and planning, programming, budgeting, and execution.

Chapter 7

Non-System Training Aids, Devices, Simulators and Simulations (TADSS)

7-1. Overview

a. Non-system TADSS are items designed to support general military training and non-system-specific training requirements. System TADSS are developed, budgeted and procured within the new capability program. Non-system TADSS, like weapon or equipment systems, are developed and procured under the acquisition guidance and policies outlined in AR 70-1, AR 71-9, and AR 350-38. Non-system TADSS are funded and procured as stand-alone programs. They require their own JCIDS capability documents supported by STRAPs. A coordinated effort is essential between the TNGDEV, the CAPDEV and the MATDEV throughout the non-system TADSS development and acquisition process. This ensures the fielded non-system TADSS provides a training-effective solution to the remedy identified training deficiency or gap.

b. According to AR 71-9 policy, TADSS (both system and non-system) have the same JCIDS and DAS documentation requirements and approval authorities as other materiel programs.

c. The process for documenting non-system TADSS capabilities begins with recognition that a TADSS is a cost- and training-effective solution for a stated training strategy. The need can be determined by:

- (1) The TNGDEV conducts ADDIE evaluations or analysis.
- (2) A Soldier, unit, agency, or command identifies training needs with supporting analysis.
- (3) Data generated during post-fielding studies, lessons learned, and other training studies.
- (4) Command guidance.
- (5) Training exercises.

d. Special case. As stated previously, a capability requirement can be identified by other than the ARCIC or school proponent, such as a combatant commander. The document transmitting the need is an operational needs statement prepared by operational and functional commanders. The operational need requirement is forwarded through HQDA G-3/5/7 and CAC-T (ATSC ATIC-DS) to the force modernization proponent for initiation of the acquisition process. If the operational needs statement specifies a non-systems solution, the force modernization proponent responsible for the requirement's functional area addressed in the operational needs statement will validate the requirement and forward the operational needs statement to the non-systems CAPDEV to prepare an ICD and CDD or CPD to support new procurement, additional procurement or further development as required.

e. The CATS is the basis for an integrated training program that supports institutional, operational, and self-development training requirements and standards. Once a TSS estimate is prepared, the TNGDEV must ensure that the TADSS training strategy and other TSS product line capabilities are incorporated into the proponent's CATS minimum essential requirements for training. All TADSS requirements should be included in CATS.

Note: Like the system TADSS, the non-system TADSS includes a training concept, training strategy for using the TADSS, and a TSS estimate as described in chapter 3.

Section I

Develop Non-System TADSS

7-2. Non-system TADSS JCIDS document development and staffing

a. All non-system TADSS JCIDS capability documents are developed and processed in accordance with CJCSI 3170, AR 350-38, TR 71-20 and the ARCIC JCIDS writer and staffing guides. The process for developing, procuring and fielding non-systems TADSS is the same process used for procuring any other materiel solution. The process begins at the training proponent where a needs assessment and an AoA is conducted to determine existing gaps and possible solutions. When the analysis determines that a new NSTD is required to fill a training gap, the CAPDEV (TCMs Live, Range, Virtual and Gaming, or Constructive), supported by the appropriate training proponent's TNGDEV and the MATDEV, develops, coordinates and staffs the draft ICD. This ensures DOTMLPF integration within the responsible force modernization proponent organization and all other stakeholders.

b. After internal comments are satisfied and the commander/commandant has validated the content, the NSTD ICD is processed to the ATSC-TSAID document manager and training domain gatekeeper (ATSC-TSAID) for initial Army world-wide staffing. After world-wide staffing has been completed and comments resolved, the proponent forwards the NSTD ICD through the ATSC-TSAID document manager for final review, and CAC-T validation. After validation by CAC-T the NSTD ICD is sent back to the responsible proponent with guidance to forward the document through ARCIC for validation to HQDA DCS, G 3/5/7 and the Army Requirements Oversight Council (AROC) for approval. The training proponent TNGDEV must maintain communications with ATSC-TSAID and ARCIC throughout the staffing process to ensure all valid comments are incorporated into the document prior to AROC submission.

Note: Depending on complexity, the NSTD ICD may require a review and briefing to ARCIC leadership. This is especially important since ARCIC is a core member of the AROC.

c. Once approved at the AROC level, the Joint Requirements Oversight Council (JROC) gatekeeper will determine if the program has joint interest. If it does, a joint staffing designator will be assigned and the program will move through the joint process to be reviewed by the JROC. If it does not, the program will be managed by the Army with no further requirement to be reviewed by the joint staff. Once approved at the appropriate level, ARCIC will provide instructions to distribute the ICD to the training proponent, other agencies and services as required. Training proponents are required to retain record copies of their approved non-system

TADSS ICDs. A copy of the ICD as well as all approved JCIDS NSTD capability documents will be archived to the CAR at <http://www.adtdl.army.mil/>.

d. Unlike system TADSS and other system-related TSS products, NSTDs are funded by HQDA G3/5/7 (DAMO-TRS) Training-Program Evaluation Group. For non-system simulators or simulations, a CATS-based priority list developed by the training domain Council of Colonels for the Training-General Officer Steering Committee (T-GOSC) is used by HQDA G-37 (DAMO-TR) to plan, program, and budget funds for non-system TADSS and products.

e. The training integrated product team (IPT) conducts continuous and collaborative surveillance of non-system TADSS documentation. Formal meetings, development work groups, and in-progress reviews may be held if required. The proponent's TNGDEV and the MATDEV serve as chair and vice chair for the non-system TADSS training IPT. The training IPT defines the overall acquisition strategy, establishes program milestones, prepares the draft CDD/CPD and STRAP (if not waived), and tasks appropriate members to initiate supporting efforts and documentation to complete the CDD/CPD package. This includes, but is not limited to, the following:

(1) Conducting the AoA and technology maturation and risk reduction: training proponent's TNGDEV, CAPDEV and MATDEV (see AoA planning discussion above).

(2) Initiating the basis of issue plan feeder data and distribution plans: TNGDEV, CAPDEV and MATDEV.

(3) Developing the system MANPRINT management plan: TNGDEV as part of the MANPRINT working group.

(4) Refining the CDD: CAPDEV with support from the appropriate training proponents' TNGDEV and the MATDEV.

(5) Conducting PFTEA: training proponent.

(6) Preparing and refining the operational mode summary/mission profile: CAPDEV, assisted by MATDEV and training proponent as required.

(7) Developing the test and evaluation master plan: MATDEV supported by the CAPDEV.

(8) Developing reliability, availability, and maintainability data: CAPDEV with the MATDEV and the training proponent as required. (At this point in the process, reliability, availability, and maintainability data will consist of the parameters required in the CDD and the operational mode summary/mission profile.)

(9) Preparing the draft CDD based on the results of the AoA and forwarding copies to all attendees and other interested agencies and appropriate Army Commands, Army Service Component Commands, and/or Direct Reporting Units: CAPDEV with support from the training proponent and the MATDEV.

f. While the content of the document and maturity of the effort have changed, the process for coordinating the draft CDD/CPD is the same as described for the ICD.

g. After world-wide staffing is completed, the CDD/CPD package with the associated mandatory appendixes (in accordance with the Manual for the Operation of the JCIDS and the ARCIC CDD/CPD writer's guides) is forwarded to CAC-T/ATSC (ATIC-D) for validation processing. ATSC-TSAID will conduct the Training Device Requirements Review Committee (TDRRC) and recommend approval or disapproval of the non-system TADSS CDD/CPD.

h. The completed non-system TADSS CDD/CPD is referred to the TDRRC for final review and recommendation for approval. The TDRRC ensures that the CDD/CPD and its supporting documentation meet all regulatory requirements, is administratively correct, the requirement supports a valid training need, and is affordable.

Section II

The Training Device Requirement Review Committee (TDRRC)

7-3. TDRRC overview

The TDRRC was established to conduct a final review by the training community to ensure non-system TADSS capability documents are adequate for validation and approval processing. TDRRC will be conducted for all new non-system TADSS requirements. Previously approved non-system TADSS requirements undergoing revision or refresh need not be processed for TDRRC review.

7-4. TDRRC defined

The TDRRC serves as the user representative for review, validation, and processing of all non-system TADSS capability documents. The committee ensures that documents are complete, and clearly state the rationale and type of non-system TADSS and related TSS product lines the Army needs to support training and enhance combat proficiency. The committee reviews the completed CDD or CPD package and recommends validation of non-system TADSS JCIDS documents to the Commander, CAC. The TDRRC also reviews post-Milestone C system TADSS being developed under the non-system TADSS process in accordance with AR 350-38.

7-5. TDRRC membership

The director, ATSC-TSAID serves as the permanent chairperson of the TDRRC. Permanent committee membership consists of representatives from the following organizations:

a. CAC-T: TRADOC capability manager (TCM)-ITE, TCM-live, TCM-virtual & gaming, TCM-constructive, TCM-range, TMD, and ATSC (TCM-Army Training Information System, TCM-The Army Distributed Learning Program, TSAID)

b. Headquarters TRADOC: DCS,G-2, and ARCIC

c. HQDA, DCS G-3/5/7 (DAMO-TRS) (information only)

d. Program Executive Office for Army Simulation, Training, and Instrumentation (PEO-STRI) (information only)

Note: While not sitting TDRRC members, DAMO-TRS and PEO-STRI or other MATDEV will receive a copy of TDRRC proceedings to provide information on programs being processed.

7-6. TDRRC purpose

The TDRRC reviews proposed non-system TADSS JCIDS capability documents, and when required, system TADSS being developed through NSTD process, to ensure:

a. Required supporting documents are included (in accordance with TR 71-20), complete, and comply with regulatory policy.

b. An adequate relationship exists between the ICD, the threat, the CATS, operational and training deficiencies, the TSS estimate, and the essential characteristics of the proposed TADSS.

c. Documentation clearly reflects how the TADSS provides an affordable increment of militarily useful, logistically supportable, technically mature, and operationally relevant training support capability. Elements considered include, but are not limited to:

(1) TADSS Type: operational (CTC, home station, unit, and deployed), institutional, and/or self-development.

(2) Compatibility with existing or future training enablers, architectures, environments, and instrumentation systems.

(3) Estimated number of personnel (instructors/facilitators/operators/maintainers) to use or support the TADSS.

(4) Prescriptive training requirements and established scoring criteria.

(5) Integrated training environment considerations.

(6) Follow-on contractor logistics support requirements.

(7) Instructor/operator requirements.

(8) Ammunition trade-offs (if applicable).

(9) Simulation support.

(10) Task list.

(11) MANPRINT requirements

(12) Transportability.

- (13) Operational environment/joint operational environment considerations.
 - (14) Facility, storage, and maintenance requirements.
 - (15) Performance characteristics.
 - (16) Application to other services.
 - (17) Testing requirements/milestones.
 - (18) Cost assessment. C-BA.
 - (19) Combatant commander and appropriate Army Command, Army Service Component Command, and/or Direct Report Unit requirements.
 - (20) Degree of risk.
 - (21) Prediction of training/cost effectiveness.
 - (22) Reliability, availability, and maintainability data and reliability failure definition and scoring criteria.
 - (23) Basis of issue plans, distribution plans, and unit set fielding.
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Chapter 8

Training Facilities and Land Capabilities

8-1. Training facilities and land capabilities overview

a. Training facilities and land capabilities support the implementation of new system training concepts and strategies. An important consideration when determining the TSS capabilities for a new system is the use of training facilities and land. TSS products, processes, and services may be used, maintained, or stored in training facilities. Live training will require sufficient space to replicate or simulate the operational environment. Training facilities and land are long lead-time procurements. Identifying and initiating training land and facilities requirements should be accomplished as early as possible in the planning cycles. Figure 8-1 provides considerations for the TNGDEV to identify training facilities and land resources needed for the TSS.

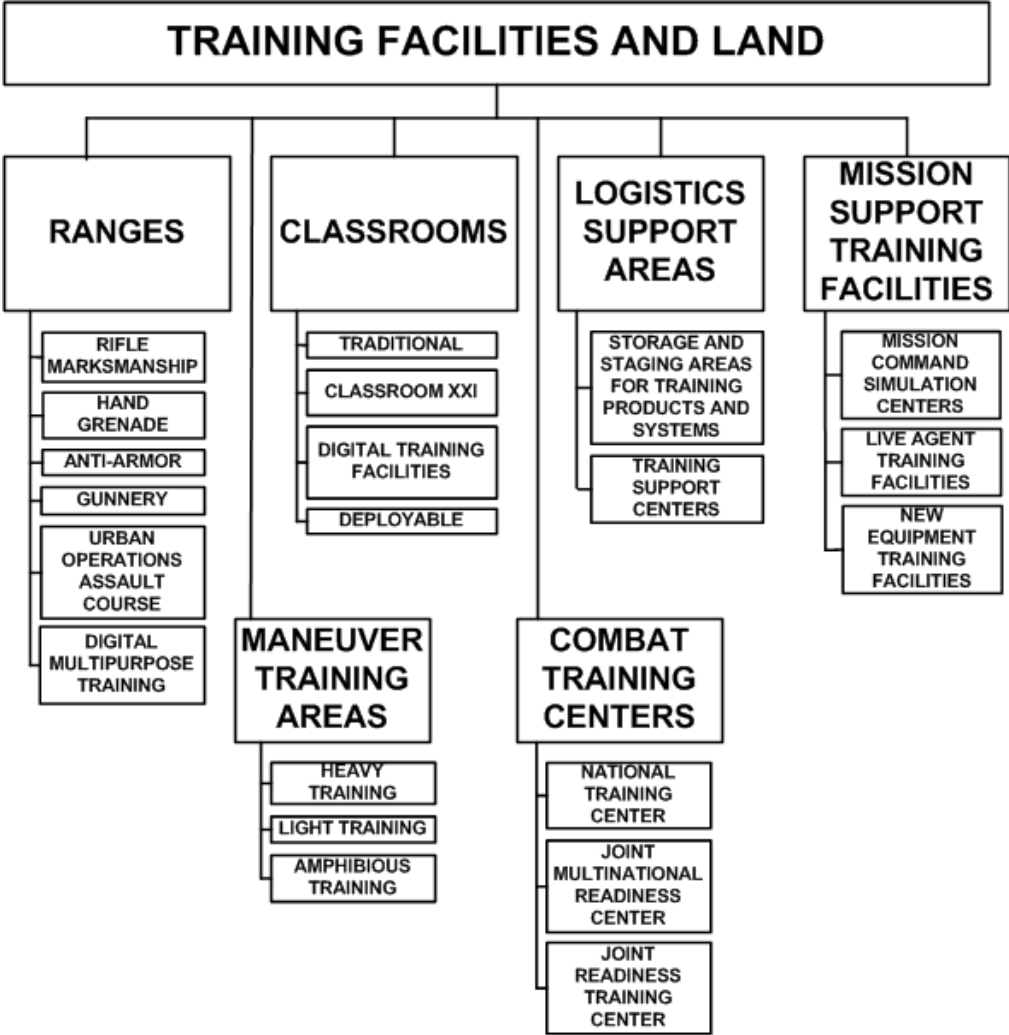


Figure 8-1. Training facilities and land

b. Training facilities and land components that should be analyzed to determine TSS capabilities and requirements are described in table 8-1.

Table 8-1
Training facilities and land components

Component	Description
Regional collective training capabilities	Regional training sites that consolidate critical TSS enablers for units to achieve ForceGen proficiency levels. These include AA and RC training sites and the full complement of TSS enablers at designated training sites, both CONUS and outside the continental United States. The R Regional collective training capabilities encompass all of the types of facilities and training land components listed in this table.
Ranges	Ranges are areas that are reserved and normally equipped for practice in weapons delivery and/or shooting at targets. Ranges include airspace as well as the impact areas where munitions are fired. Examples include: <ul style="list-style-type: none"> - Rifle marksmanship ranges - Hand grenade ranges - Anti-armor ranges - Gunnery ranges - Urban operations assault course - Multipurpose training ranges
Maneuver training areas	Maneuver training areas are those areas designated for impact and detonation of all ordnance or those areas required for land-intensive training at the installation. Training land also includes the airspace necessary for network deployment and maneuver training. Examples include: <ul style="list-style-type: none"> - Heavy force training areas - Light force training areas - Amphibious training areas Refer to TRADOC Circular 25-1, Training Land for information about Army maneuver/training areas.
Classrooms	Classrooms are facilities that support the full range of training, from individual training to group instruction. Examples include: <ul style="list-style-type: none"> - Traditional classrooms (student-centric, multimedia, web-enabled classrooms) - Digital training facilities - Deployable classrooms - Special use or dedicated laboratories
CTC	CTCs are facilities that provide realistic joint and combined arms training, according to Army and joint doctrine, approximating actual combat. There are three primary training centers: <ul style="list-style-type: none"> - Joint Multinational Readiness Center - Joint Readiness Training Center - National Training Center

Table 8-1
Training facilities and land components, continued

Component	Description
Training support centers	Training support centers are facilities used for distribution, redistribution, shipping, loan, and issue of training devices. Examples include: - Warehouse and administrative space - Virtual training device facilities
Mission Training Complex	Mission Training Complexes are facilities that have the capability to conduct training on digital mission command systems and connect to all training environments, to all domains, to all levels, and to any training audience. Examples include: - Mission training centers - Virtual training centers

8-2. Training facilities and land requirements analysis

a. Determining the training facilities, land requirements, and impacts of new system training concepts and training strategies requires knowledge and vision along with professional judgment. All required expertise might not be available within the proponent or reviewing staff organizations. Obtaining the support of installation or garrison directors of public works and Army Corps of Engineers district experts is needed to successfully complete this portion of the TSS estimate.

b. Analyze TSS training facilities and land for training support capabilities required to implement the training concept and system training strategy in the areas noted in table 8-2.

Table 8-2
Training facilities and land analysis

Area	Description
Ranges	<p><u>Digital multipurpose range complex</u>: Each complex is used to train and test armor, infantry, aviation, unstabilized platforms and convoy live fire crews, sections, squads, and platoons on skills necessary to detect, identify, engage, and defeat stationary and moving infantry and armor targets in a tactical array. They also support machine guns (with addition of breach walls/windows) and dismounted infantry squad/platoon tactical live-fire operations either independently of, or simultaneously with, supporting vehicles. Company combined arms live-fire exercises may also be conducted on this facility. This complex also accommodates training with subcaliber and/or laser training devices. A convoy live fire route will be included with use of the crossover roads.</p> <p><u>Digital multipurpose training range</u>: Each range is used to train and test crews and dismounted infantry squads on the skills necessary to detect, identify, engage, and defeat stationary and moving infantry and armor targets in a tactical array. They are designed to satisfy the training and qualification requirements for the crews and sections of armor, infantry, aviation; unstabilized platforms; and convoy live fire. They also support machine guns (with addition of breach walls/windows) and dismounted infantry squad tactical live-fire operations either independently of, or simultaneously with, supporting vehicles. In addition to live fire, they can also be used for training with subcaliber and/or laser training devices.</p> <p><u>Examples include</u>:</p> <ul style="list-style-type: none"> - Combat pistol qualification course rifle/machine gun zero range - Modified record fire - Multipurpose-machine gun transition range - 40 millimeter grenade launcher/Mark (MK)-19 range - Sniper field fire - Hand grenade qualification course - Mortar range - Field artillery indirect range - Digital multipurpose training range - Entry control point live fire range - Combined arms collective training facility - Urban assault course - Breech facility - Shoot house - Infantry squad battle course - Infantry platoon battle course - Convoy live fire range

Table 8-2
Training facilities and land analysis, continued

Area	Description
Maneuver training areas	<ul style="list-style-type: none"> - Assembly - Bivouac - Amphibious - Heavy force - Light force - Landing strips - Drop zones
Classrooms	<ul style="list-style-type: none"> - Basic - Billeting - Distributed learning - CTC - Deployable campus sets - Unit - Virtual - Digital - Live agent training - Classified
CTCs	<ul style="list-style-type: none"> - National Training Center - Joint Readiness Training Center - Joint Multinational Readiness Center
Training support centers	<ul style="list-style-type: none"> - Facility size based on approved amount of TADSS to be warehoused, number of staff to house, quantity of virtual TADSS installed - Deployment staging - Secure/classified storage - TADSS warehousing/storage - Administrative area for training support center staff to include instructor operators - Customer service area - Installed TADSS: engagement skills trainer, HMMWV Egress Assistance Trainer, Javelin trainer - Maintenance contractor repair area - Hazardous materials storage
Training and test	<ul style="list-style-type: none"> - Experimentation - Demonstration - Destructive testing
Mission Training Complex	<ul style="list-style-type: none"> - Mission training complex facilities - Contractor support training facilities - Mission support training facilities - Regional simulation centers and hubs

c. In addition to determining what is needed or needs to be modified, it is also necessary to determine the quantity and space. See table 8-3 for additional estimating factors.

Table 8-3
Additional estimating factors

Measure	Description
Operations	<ul style="list-style-type: none"> - Operational facilities, such as command centers and range control - Peacetime/mobilization operating tempo - Physical security
Maintenance and transportation	<ul style="list-style-type: none"> - Cranes, hoists, and lifting devices for transportation or movement - Clearance - Tests and diagnostics - Maintainer - Facility lessons learned from testing - Unique requirements (loading ramps, tarps, temporary shelters)
Supply and storage	<ul style="list-style-type: none"> - System - Supplies - Spare parts - Fuel - Petroleum, oil, and/or lubricants - Ammo and explosives
Communications	<ul style="list-style-type: none"> - Telephone and computer - Communications security - Vehicle - External (fiber optic cable) (installation information infrastructure, an external TSS enabler) - Global Simulation Network
Utilities	Electrical, water, sewer, and/or steam
Special considerations	<ul style="list-style-type: none"> - Theater - Outside the continental United States
Environment	<ul style="list-style-type: none"> - Chemical, biological, radiological, and nuclear - Environmental controls - Encroachment: noise, frequency, signals, and water - Hazardous materiel - Endangered species considerations
Safety	<ul style="list-style-type: none"> - Risk assessment - Hazard identification - Personal protective equipment - Training controls and measures
Size/throughput	Requires standards (see AR 210-20, TR 71-20, and Technical Instruction 800-1)

8-3. Training facilities and land analysis procedure summary

AR 210-20, AR 210-21, TC 25-1, and TC 25-8 provide detailed guidance for developing training facility and range estimates. TNGDEVs are encouraged to consult with their local facility engineers for facility estimates and TCM-live for range estimates. Table 8-4 provides steps for conducting an evaluation and analysis to determine new system training facility and land requirements.

Table 8-4
Steps for analysis of training facilities and land

Step	Action
1	Determine projected range and maneuver training area capabilities.
2	Determine projected classroom capabilities.
3	Determine projected CTC capabilities.
4	Determine projected Mission Command Training Center capabilities.
5	Determine projected utilities, storage, warehousing, and maintenance requirements.
6	Assess environmental concerns.
7	Assess safety risks and hazards associated with facilities and land.
8	Determine communication and communications security needs for each training domain.
9	Crosswalk capability need with other TSS products to verify impacts are addressed.
10	Document results in a STRAP, capability document (CDD/CPD), or DCR.

Chapter 9
Training Services

9-1. Training services overview

a. Training services are a key element of modern training support. The management and sustainment of TSS products are affected by and affect training support services. Training services are a cost driver and must be addressed in the TSS estimating process. Training services, shown in figure 9-1, enable the preparation, replication, distribution, and sustainment of training.

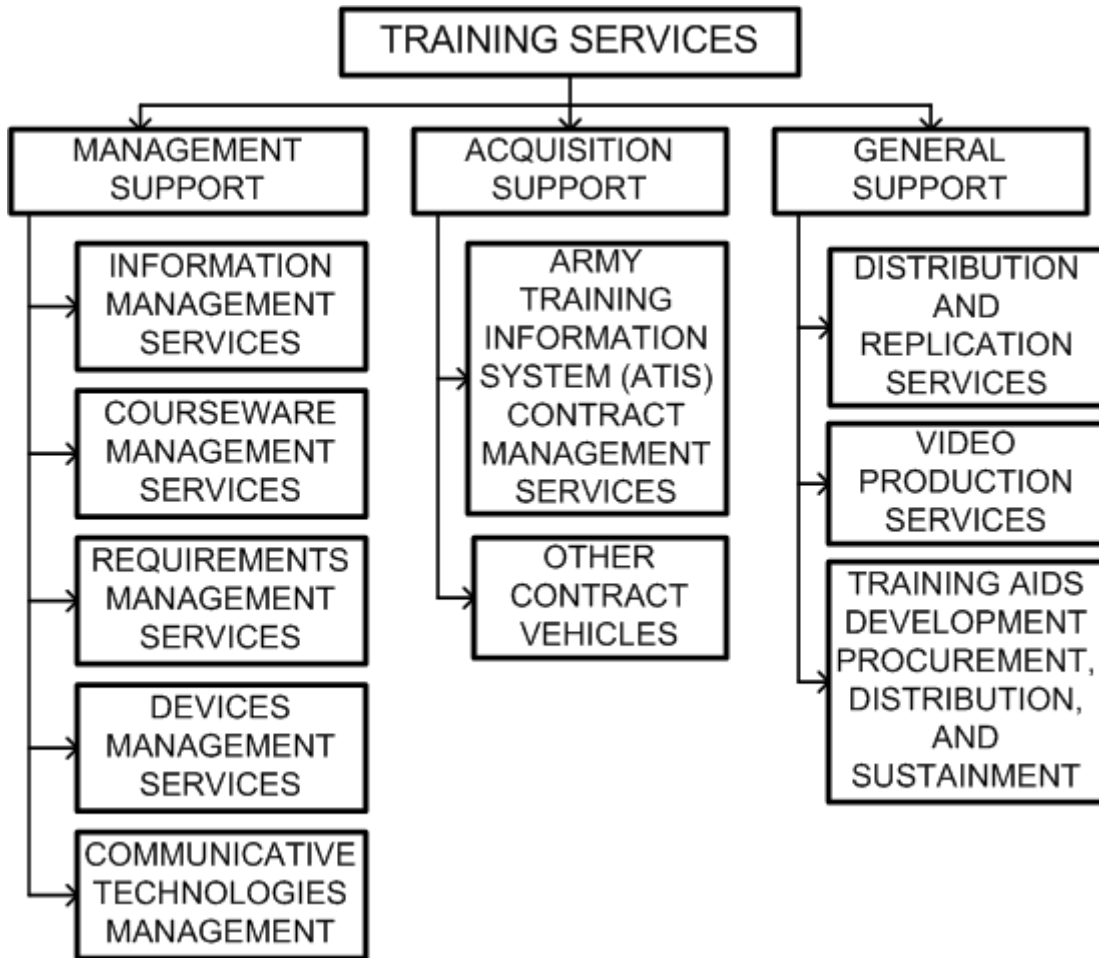


Figure 9-1. Training services

b. Training services have three components: management support, acquisition support, and general support. The training services components are described in table 9-1.

Table 9-1
Training services components

Component	Description
Management support services	<p>Management support services are those efforts that support or contribute to improved program management and sustainment for training programs include:</p> <p>Information management services</p> <ul style="list-style-type: none"> - Army Training Information Management Program - Library and information repository services <p>Courseware management services</p> <ul style="list-style-type: none"> - Army Correspondence Course Program management - The Army Training System course management - Reserve component courseware configuration management - Intermediate level education management - Multimedia courseware management - Distributed learning management <p>Requirement management service</p> <ul style="list-style-type: none"> - Training ammunition requirements as detailed by Standards in Training Commission - TADSS requirement documentation - Range modernization and standardization requirements - Training mission area requirements <p>Devices management services</p> <ul style="list-style-type: none"> - Fielded devices inventory/sustainment and management - Training Support -Materiel Army-wide Tracking System (TS-MATS) - TES management - Targetry support program <p>Communicative technologies management</p> <ul style="list-style-type: none"> - Department of the Army multimedia/visual information production and distribution program management - Electronic multimedia information capability management - Visual information/training support center management - Video teletraining program management
Acquisition support services	<p>Acquisition support services are those efforts that support or contribute to improving contracting processes for training products and services. Examples include:</p> <ul style="list-style-type: none"> - The Army Distributed Learning Program contract services - Other contract vehicles
General support services	<p>General support services are those efforts that support or contribute to the improved conduct of training that are not included in the management or acquisitions support services. Examples include:</p> <ul style="list-style-type: none"> - Distribution and replication services - Video production services - Training aids development, procurement, distribution, and sustainment

9-2. Training services analysis

TSS services estimate covers numerous variables. The focus of the estimate should be on the services needed to implement the training concept and strategies. The analysis for TSS services include what training support capabilities are required to implement the training concept and system training strategy in the areas shown in table 9-2.

**Table 9-2
Training services concept and strategy areas**

Area	Description
Communicative technology	<ul style="list-style-type: none"> - Defense visual information services - Defense interactive training information system - Department of the Army multimedia/visual information production and distribution - Electronic multimedia imaging center - Satellite Education Network
Courseware management	<ul style="list-style-type: none"> - DL - The Army Training System course - Army correspondence course - Printing and distribution - Reserve component configured courseware - Staff and faculty
Requirements/acquisition services	<ul style="list-style-type: none"> - Army recruiting information support services - capabilities needs analysis support - Capabilities development and integration support - NET support - Capability document development support
Training scenario	<ul style="list-style-type: none"> - LVC & gaming - Development - Data interchange - Configuration management <p>Scenarios developed in accordance with TRADOC Common Scenarios</p>
Device management	<ul style="list-style-type: none"> - Army-wide device automated management - Tactical engagement simulation - Targetry support - Instrumentation
General	<ul style="list-style-type: none"> - Customer assistance - Doctrine development - Research support - Student support - Standards in weapons training - Training analysis support - Staff support - Presentation support - Liaison - Data processing

9-3. Training services analysis procedure summary

Table 9-3 provides steps for conducting an evaluation and analysis to determine new system training services requirements.

Table 9-3
Steps to identify services needed to implement the training strategy

Step	Action
1	Identify information management services capabilities and requirements.
2	Identify courseware management service capabilities and requirements.
3	Determine requirement management capabilities and requirements.
4	Determine communicative technology management capabilities.
5	Determine device management service capabilities and requirements.
6	Identify acquisition support service capabilities and requirements.
7	Determine general support services capabilities and requirements.
8	Determine risk mitigation controls and requirements.

Chapter 10

System Training Plan (STRAP)

10-1. STRAP Development Process

a. STRAP development is a critical element of the capabilities development process supporting materiel acquisition. Each force modernization proponent and the supporting training proponents must conduct a needs analysis to determine if a new system requires NET/DET, DTT, institutional training, and/or unit training.

b. TNGDEVs chair the integrated product team for development of the STRAP. Where possible, the CAPDEV and MATDEV shall become co-chairs for this work group. The MATDEV provides many of the training products required for new material systems to the TNGDEV for review and evaluation. Collaboration within the force modernization proponent capability development team helps to ensure the training considerations are established, planned for, developed early in the program, and adequately resourced to fully support training throughout the program's life cycle.

(1) Early in the JCIDS process, the TNGDEV prepares a TSS estimate during the CBA for input to the ICD and/or DCR/DICR. The TSS estimate provides information for the STRAP, which is then concurrently developed along with the capability documents (the CDD and/or CPD).

(2) STRAPs are developed and approved incrementally during the JCIDS process. As a new system is being developed, or an existing system is designated for an approved change in operational concept, or a system undergoes a hardware change resulting from a modification or upgrade, it may require an updated STRAP. Training proponents use the ADDIE process to determine whether an updated STRAP is required.

(3) If the TNGDEV determines a STRAP will be required, prepare it using the SWT (see appendix B).

(4) If a STRAP will not be required (for example, for systems requiring no training or training support, such as commercial test, measurement, and diagnostic equipment with accompanying instruction booklet), the CoE CG has the authority to approve the STRAP waiver.

10-2. The STRAP writing tool (SWT)

a. Training proponent TNGDEVs will use the SWT to develop, staff, and process STRAPs for approval. The SWT is a web-based program that provides streamlined efficiency in STRAP initiation, development, coordination, and approval processing. The SWT's embedded electronic performance support system and training tool, as well as its collaborative features, help TNGDEVs create a thoroughly coordinated, high quality document. The SWT facilitates rapid STRAP development by allowing collaboration amongst authors. An unlimited number of authors can edit the document at the same time, and the system stores their work as different version numbers. Comments and recommendations for developing STRAPs may also be submitted in the SWT. The SWT provides an outline for all sections of the STRAP which contributes to standardization. The first five sections of the STRAP are mandatory, the remaining sections are optional, but aid TNGDEVs thorough consideration of the training implications within the three training domains. Annexes A and B are required entries. Annex C automatically populates during the staffing process, which centralizes comments in one location and links them back to the STRAP content, rather than having to cross reference comments within multiple DA Form 2028s.

b. Proponent TNGDEVs preparing new STRAPs must self-register and request initiation of a document on the SWT website: <https://swt.army.mil/swt/login.jsp>. Common access card login is required. TNGDEVs interested in receiving formal SWT training may contact the SWT administrator listed on the login page.

10-3. STRAP coordination, staffing and approval

a. As noted above, annex C of the STRAP automatically populates as comments are received during the STRAP staffing process using SWT. It is the responsibility of the training proponent to staff and coordinate the STRAP with all supporting and affected proponents, schools and commands.

(1) Mandatory coordination will include as a minimum the following: all affected other proponents, user commands, HQDA G-37 (DAMO-TR), Installation Management Command, PEO-STRI, HQDA G2, AMC, HRC, PEO-EIS, TRADOC Safety Office, TRADOC G-1/4, TRADOC G-2, and TRADOC G-3/5/7, and CAC (CAC-T TMD, ATSC-TSAID and the TCM-live/virtual/constructive/gaming/ITE).

(2) Coordinate with the following offices: TCM Army Training Information Systems, and TCM-The Army Distributed Learning Program for training environment requirement considerations, PEO-STRI for TADSS life cycle cost estimates, local facility engineers or Installation Management Command offices for facility and infrastructure estimates.

(3) Reviewing organizations will be required to self-register and provide comments using the SWT. Staffing is facilitated by selecting the required activity in SWT.

b. The STRAP approval authority is the CoE CG. As stated in paragraph 2-4, the CoE CG's "approval" signifies that the STRAP contains the appropriate content and is complete to the greatest extent possible at each increment of the capabilities development and material development processes. As the STRAP is refined, updated and more coordinated detail added, a subsequent approval by the CoE CG will be needed. Proponents will post each updated version of the STRAP and its associated approval memorandum to the CAR at <http://www.adtdl.army.mil/> within 5 days of approval. CoEs will approve the STRAP or STRAP waiver prior to submitting CDD and CPD staffing packets to ARCIC for proponent worldwide staffing release.

(1) The CAC-T training-domain gatekeeper will non-concur with JCIDS documents undergoing staffing that do not have an approved STRAP or waiver available and posted on the CAR.

(2) During ARCIC validation staffing, if an approved STRAP is not available with the CDD/CPD, it triggers a "critical non-concurrence" by the - CAC-T CG, and that non-concurrence will be sent to the ARCIC for adjudication.

10-4. STRAP content

a. STRAPs contain separate, but related training plans for the institutional, operational, and self-development domains. Developing the institutional training plan for a new system typically involves the integration of select tasks for the new-system into existing MOS or additional skill identifier-producing courses. Institutional training is usually conducted in a structured classroom environment equipped with supporting TADSS and training equipment. The facilities, TADSS, and training equipment available at institutions are for institutional training, and for obvious reasons are not available or justifiable in the operational or self-development domains. As a result, the operational and self-development sections of the STRAP are intended to train tasks specific to the new system rather than the critical system tasks selected for institutional training. The TNGDEV must consider the training objectives for each training domain when preparing STRAPs and develop plans specific to each.

b. The main paragraphs for the STRAP are indicated in Table 10-1. The actual STRAP outline, provided in the SWT, divides each main paragraph into numerous subparagraphs. The subparagraphs are intended to present thought-provoking TSS elements that may be required for each training domain. Some elements may not apply, however elements needed to support the domain training strategy must be addressed.

**Table 10-1
STRAP Outline**

Paragraph	Title
1.0	System Description
2.0	Target Audience
3.0	Assumptions
4.0	Training Constraints
5.0	System Training Concept
6.0	Institutional Training Domain
7.0	Operational Training Domain
8.0	Self-Development Training Domain
Annex A	Milestones
Annex B	References
Annex C	Coordination

c. Resource requirements. The final entry in paragraphs 6, 7, and 8 are the resource estimates for the training, training support, and TADSS required at the institutional, operational, and self-development domains. The importance of developing reasonable resource estimates for training cannot be overemphasized. When added to all other program costs, the training resource estimates are vital to determining the total cost of the program. The training domain resource estimates developed for the STRAP are added to the program affordability determinations in paragraph 16 of the CDD and CPD. STRAP resource estimates are also used to inform the mandatory program C-BA. The Army Cost Analysis Manual provides detailed guidance for preparing cost estimates. Table 10-2 is an example of estimated costs for the institutional training domain across multiple fiscal years (FYs). Institutional training locations include the sponsoring proponent's location as well as other affected proponent schools and reserve component training centers. Similar cost estimates are prepared for the operational and self-development domain paragraphs (7 & 8) of the STRAP.

Table 10-2
Institutional training & training support costs example

XX SYSTEM Training & Training Support Cost							
	FY12	FY13	FY14	FY15	FY16	FY17	FY18
Total NET Cost	\$140,000	\$140,000	\$140,000	\$140,000	\$120,000	\$90,000	\$45,000
NET Team (NETT) Instructors	\$260,000	\$260,000	\$260,000	\$260,000	\$260,000	\$110,000	\$65,000
Travel	\$55,000	\$33,696	\$33,696	\$33,696	\$33,696	\$22,600	\$105,000
Service/supplies	\$2,672	\$1,872	\$1,872	\$1,872	\$1,872	\$1,200	\$200
Training Equipment	\$66,000	\$2,600	\$2,600	\$2,600	\$2,600	\$2,600	\$2,600
Courseware Development	\$520,000	\$520,000	\$250,000	\$25,000	\$25,000	\$12,500	\$7,500
Training Development	\$330,000	\$175,000	\$130,000	\$130,000	\$75,000	\$45,000	\$12,500
Training & Education Developers	\$250,000	\$250,000	\$122,000	\$75,000	\$33,600	\$33,600	\$33,600
Travel	\$125,000	\$125,000	\$110,000	\$75,000	\$36,500	\$29,500	\$9,200
Operations	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$12,450	\$6,250
PFTEA		\$7,500	\$6,200				
GRAND TOTAL	\$1,773,672	\$1,540,668	\$1,081,368	\$768,168	\$613,268	\$359,450	\$286,850

Chapter 11

Training as a Key Performance Parameter

11-1 Overview

a. KPPs are performance attributes considered critical to the development of an effective military capability. Training not planned and integrated early has the potential to be one of the top cost drivers over a program's life cycle. Training may be considered as a KPP for all systems under development where one of the major components of the system capability is dependent on operators, maintainers, and leaders to be properly trained to fully utilize the capability of the system. When required or when appropriate, the proponent/capability sponsor may direct the use of the training KPP to ensure that training requirements are properly addressed from the beginning of the acquisition process, in parallel with the planning and material development, and updated throughout the program's acquisition life-cycle. The training KPP will be written by the TNGDEV in coordination with the CAPDEV. The TNGDEV uses information documented in the STRAP to provide appropriate input for capabilities documents to ensure that training

requirements are properly documented and developed along with the system being developed. Training requirements and considerations are also documented in the DOTmLPPF-P section of capabilities documents.

b. KPPs are expressed in the "Development KPPs, KSAs, and Additional Performance Attributes" paragraph of the JCIDS CDD or the "Production KPPs, KSAs, and Additional Performance Attributes" paragraph of the CPD using a threshold/objective format, or as initial minimums for information systems, and are included verbatim in the acquisition program baseline. They are measurable, testable, and quantifiable in a practical and timely manner to support follow-on decision making. The threshold value for an attribute is the minimum acceptable value considered achievable within the available cost, schedule, and technology at low-to-moderate risk. Performance below the threshold value is not operationally effective or suitable or may not provide an improvement over current capabilities. Additional information on developing and documenting training KPPs can be found in TR 71-20.

11-2 Training KPP Attributes

a. The principal attributes of training are proficiency level, time to train, training retention, training support, and training interoperability.

(1) Proficiency level. Operators/maintainers/leaders perform tasks to standard x% of the time after training.

(2) Time to train. Operators/maintainers/leaders require no more than x [time in hours or days] to train to use the system capabilities properly.

(3) Training retention. Refresher training is required no more frequently than x [time interval] to maintain proficiency.

(4) Training support. Training requires appropriate resources to support effective training; specifically, x [defined in appropriate measurable terms such as amount of land, quantity of ammunition, amount of fuel/repair parts, cost of simulators/simulations, number of training support personnel or instructors, bandwidth or satellite time, etc.].

(5) Training interoperability. System specific training capabilities are able to interoperate with and support collective training with existing LVC and gaming training environments, or instrumentation systems such as CTC instrumentation systems, throughout the system lifecycle.

b. The training KPP attributes are expressed in terms of threshold and objectives values for time/schedule, resources/cost, and performance. Detailed guidance for the development of KPPs is available on the Defense Acquisition University (DAU) website: <https://learn.dau/mil>. Suggested metrics for training KPPs, taken from the JCIDS Manual (19 January 2012), are shown in table 11-1. Examples of training KPPs are in table 11-2.

Table 11-1
Suggested training KPP metrics

Training KPP Categories	Metrics for training performance
Time/Schedule	<ul style="list-style-type: none"> - Time required achieving initial capability on a system task (to standard) - Time required to sustain proficiency on a system task (to standard) <ul style="list-style-type: none"> Time until skill proficiency is lost (skill decay) Frequency of training events to sustain proficiency - Relative time required to achieve/sustain task proficiency in terms of hours, days, or weeks - Ability to deliver training capabilities on schedule <ul style="list-style-type: none"> Before initial fielding requirements Before initial institutional requirements
Resources/Cost	<ul style="list-style-type: none"> - Land resources required to conduct training - Ammunition resources required to conduct training - Fuel/parts required to conduct training (in peacetime) - Facilities required to conduct training - Instructors required to conduct training - Support personnel required to conduct training - Bandwidth and satellite time required to conduct training - Training Aids, Devices, Simulators, and Simulations required to conduct training
Performance	<ul style="list-style-type: none"> - Objective defined as best performance achievable by training audience population with unlimited time and resources - Threshold defined as best performance desired from training audience population with time constrained (consider 1 hour/1 day/1 week intervals) - Interoperability with: <ul style="list-style-type: none"> Live, virtual and constructive training environments Combat Training Center (CTC) instrumentation systems - Degree of embedded training capability versus appended/standalone training capabilities - Deployment/transportability of training capabilities - Flexibility/realism of training capability to adapt to changed training conditions: <ul style="list-style-type: none"> Weather/temperature/humidity Urban/suburban/rural Terrain (mountain, desert, woodland, coastal, swamp, etc.) - Leadership and education. Leaders at all levels of employment are capable of utilizing the system to its full design capability in all contingencies.

**Table 11-2
Training KPP Examples**

Key Performance Parameter	Threshold (T)	Objective (O)
System must have an embedded individual and collective training capability in LVC training environments	85% of individual, crew, and leader and 85% collective tasks trainable in LVC training environments	100% of individual, crew, leader, and collective tasks trainable in LVC training environments
System training capability must effectively simulate weapons effects	Simulate the accuracy, range, and damage-producing effects of system's major weapons	Simulate the accuracy, range and damage-producing capabilities of 100% weapons on platform
System crew proficiency sustainment	<ul style="list-style-type: none"> - Crewmember proficiency on 100% of critical and 70% of supporting individual tasks maintained in quarterly week-long training periods - Crew proficiency maintained on 100% of critical and 80% of supporting collective tasks in semiannual week-long training periods - No more than 10% proficiency degradation on all critical individual and collective tasks within 3 months of sustainment training completion 	<ul style="list-style-type: none"> - Crewmember proficiency on all individual tasks maintained in quarterly week-long training periods - 100% crew proficiency maintained in semiannual week-long training periods - 0% proficiency degradation on all critical individual and collective tasks within 3 months of sustainment training completion

Appendix A

References

ARs, DA Pams, FMs, and DA forms are available at www.apd.army.mil. TRADOC publications and forms are available at <http://www.tradoc.army.mil/publications.htm>.

Section I

Required publications

AR 70-1

Army Acquisition Policy

AR 71-9

Warfighting Capabilities Determination

AR 350-1

Army Training and Leader Development

AR 350-38

Policies and Management for Training Aids, Devices, Simulators, and Simulations

Manual for the Operation of the Joint Capabilities Integration and Development System

(Available at <https://acc.dau.mil/communitybrowser.aspx?id=267116>.)

DOD Directive 5000.1

The Defense Acquisition System

DOD Instruction 5000.02

Operation of the Defense Acquisition System

TP 350-9

TRADOC Training Devices for Army wide Use

TP 350-37

Objective Force Embedded Training (OFET) Users' Functional Description

TP 525-3-0

The Army Capstone Concept

TP 525-8-2 w/C1

The U.S. Army Learning Concept for 2015

TP 525-8-3

The U.S. Army Training Concept 2012-2020

TR 71-20

Concept Development, Capabilities Determination, and Capabilities Integration

TR 350-70

Army Learning Policy and Systems

Section II

Related Publications

A related publication is a source of additional information. The user does not have to read a related reference to understand this publication.

2010 Army Modernization Strategy — Annex B

Act of 3 August 1993, Public Law 103-62, Volume 103, Part 1, U.S. Statute at Large, p. 285
Government Performance and Results Act of 1993 (Available at <http://www.gpo.gov/fdsys>.)

ADP 3-0

Unified Land Operations

ADP 5-0

The Operations Process

ADP 6-0 w/C1

Mission Command

ADP 7-0

Training Units and Developing Leaders

ADRP 3-0

Unified Land Operations

ADRP 7-0

Training Units and Developing Leaders

AR 5-11

Management of Army Models and Simulations

AR 5-22

The Army Force Modernization Proponent System

AR 71-32

Force Development and Documentation

AR 73-1

Test and Evaluation Policy

AR 210-20

Real Property Master Planning for Army Installations

AR 210-21

Army Ranges and Training Land Program

AR 415-16

Army Facilities Components System

AR 420-1

Army Facilities Management

AR 600-3

The Army Personnel Development System

AR 611series

Personnel Selection and Classification

AR 700-127

Integrated Logistics Support

AR 700-142

Type Classification, Materiel Release, Fielding, and Transfer

ATTP 5-0.1

Command and Staff Officer Guide

CJCSI 3137.01 series

The Functional Capabilities Board Process (Available at http://www.dtic.mil/cjcs_directives/cjcs/instructions.htm.)

CJCSI 3470.01 series

Rapid Validation and Resourcing of Joint Urgent Operational Needs (JUONs) in the Year of Execution (Available at http://www.dtic.mil/cjcs_directives/cjcs/instructions.htm.)

CJCSI 5123.01 series

Charter of the Joint Requirements Oversight Council (Available at http://www.dtic.mil/cjcs_directives/cjcs/instructions.htm.)

CJCSI 6212.01F

Net Ready Key Performance Parameter (NR KPP), (Available at http://www.dtic.mil/cjcs_directives/cjcs/instructions.htm.)

Capstone Concept For Joint Operations

(Available at <http://www.dtic.mil/futurejointwarfare/references.htm>.)

Chairman, Joint Chiefs of Staff Manual (CJCSM) 3500.04C

Universal Joint Task List (UJTL) (Available at http://www.dtic.mil/cjcs_directives/cjcs/manuals.htm.)

DA Pam 73-1

Test and Evaluation in Support of Systems Acquisition

DA Pam 350-9

Index and Description of Army Training Devices

DA Pam 350-38

Standards in Training Commission

DA Pam 350-40

Army Modernization Training Plans for New and Displaced Equipment

DA Pam 415-28

Real Property Category Codes

Defense Acquisition Guidebook

(Available at: <https://dap.dau.mil/policy/Pages/overview.aspx>.)

DOD Architecture Framework Version 2.02,

<http://cio-nii.defense.gov/sites/dodaf20/>

DOD Directive 7045.20

Capability Portfolio Management

FM 7-15

The Army Universal Task List

The National Military Strategy of the United States of America

(Available at <http://www.dtic.mil/futurejointwarfare/references.htm>.)

National Security Strategy

(Available at <http://www.dtic.mil/futurejointwarfare/references.htm>.)

Public Law 235-61, Volume 496, U.S. Statute at Large, page 5 (as amended)

National Security Act of 1947, July 26, 1947

TC 25-1

Training Land

TC 25-8

Training Ranges

Technical Instruction 800-1

Design Criteria (Available at http://www.wbdg.org/ccb/ARMYCOE/COETI/ti800_01.pdf.)

TP 350-70-1

Training Development in Support of the Operational Domain

TP 350-70-6

Systems Approach to Training: Analysis

TP 525 series

Military Operations

TP 525-66

Military Operations Force Operating Capabilities

TR 25-36 w/CH1

The TRADOC Doctrine Publication Program

TR 71-12

U.S. Army Training and Doctrine Command Capability Management

TR 71-20

Concept Development, Capabilities Determination, and Capabilities Integration

TRAC-TD-05-010

TRADOC Analysis Center (TRAC)'s Definitions for Analysts

40 USC 1401(3)

Clinger/Cohen Act of 1996

Section III

Prescribed Forms

This section contains no entries.

Section IV

Referenced Forms

Department of Defense Form 1391

FY Military Construction Project Data

Appendix B

Sample Documents

B-1. STRAP outline

1.0	.....	System Description
2.0	.....	Target Audience
3.0	.....	Assumptions
4.0	.....	Training Constraints
5.0	.....	System Training Concept
5.1	.....	New Equipment Training Concept (NET)
5.2	.....	Displaced Equipment Training (DET)
5.3	.....	Doctrine and Tactics Training (DTT)
5.4	.....	Training Test Support Package (TTSP)
6.0	.....	Institutional Training Domain
6.1	.....	Institutional Training Concept and Strategy
6.1.1	.....	Product Lines
6.1.1.1	.....	Training Information Infrastructure
6.1.1.1.1	.....	Hardware, Software, and Communications Systems
6.1.1.1.2	.....	Storage, Retrieval, and Delivery
6.1.1.1.3	.....	Management Capabilities
6.1.1.1.4	.....	Other Enabling Capabilities
6.1.1.2	.....	Training Products
6.1.1.2.1	.....	Courseware
6.1.1.2.2	.....	Courses
6.1.1.2.3	.....	Training Publications
6.1.1.2.4	.....	Training Support Package (TSP)
6.1.1.3	.....	TADSS
6.1.1.3.1	.....	Training Aids
6.1.1.3.2	.....	Training Devices
6.1.1.3.3	.....	Simulators
6.1.1.3.4	.....	Simulations
6.1.1.3.5	.....	Instrumentation
6.1.1.4	.....	Training Facilities and Land
6.1.1.4.1	.....	Ranges
6.1.1.4.2	.....	Maneuver Training Areas and Home Station Training Areas
6.1.1.4.3	.....	Classrooms
6.1.1.4.4	.....	CTCs
6.1.1.4.5	.....	Logistics Support Areas
6.1.1.4.6	.....	Mission Training Complex
6.1.1.5	.....	Training Services
6.1.1.5.1	.....	Management Support Services
6.1.1.5.2	.....	Acquisition Support Services
6.1.1.5.3	.....	General Support Services
6.1.2	.....	Architectures and Standards Component
6.1.2.1	.....	Operational View (OV)

- 6.1.2.2Systems View (SV)
- 6.1.2.3Technical View
- 6.1.3Management, Evaluation, and Resource (MER) Processes Component
 - 6.1.3.1Management
 - 6.1.3.1.1Strategic Planning
 - 6.1.3.1.2Concept Development and Experimentation
 - 6.1.3.1.3Research and Studies
 - 6.1.3.1.4Policy and Guidance
 - 6.1.3.1.5Requirements Generation
 - 6.1.3.1.6Synchronization
 - 6.1.3.1.7Joint Training Support
 - 6.1.3.2Evaluation
 - 6.1.3.2.1Quality Assurance
 - 6.1.3.2.2Assessments
 - 6.1.3.2.3Customer Feedback
 - 6.1.3.2.4Lessons Learned/After-Action Reviews (AARs)
 - 6.1.3.3Resource
- 7.0Operational Training Domain
- 7.1Operational Training Concept and Strategy
 - 7.1.1Product Lines
 - 7.1.1.1Training Information Infrastructure
 - 7.1.1.1.1Hardware, Software, and Communications Systems
 - 7.1.1.1.2Storage, Retrieval, and Delivery
 - 7.1.1.1.3Management Capabilities
 - 7.1.1.1.4Other Enabling Capabilities
 - 7.1.1.2Training Products
 - 7.1.1.2.1Courseware
 - 7.1.1.2.2Courses
 - 7.1.1.2.3Training Publications
 - 7.1.1.2.4TSP
 - 7.1.1.3TADSS
 - 7.1.1.3.1Training Aids
 - 7.1.1.3.2Training Devices
 - 7.1.1.3.3Simulators
 - 7.1.1.3.4Simulations
 - 7.1.1.3.5Instrumentation
 - 7.1.1.4Training Facilities and Land
 - 7.1.1.4.1Ranges
 - 7.1.1.4.2Maneuver Training Areas and Home Station Training Areas
 - 7.1.1.4.3Classrooms
 - 7.1.1.4.4CTCs
 - 7.1.1.4.5Logistics Support Areas
 - 7.1.1.4.6Mission Training Complex
 - 7.1.1.5Training Services
 - 7.1.1.5.1Management Support Services
 - 7.1.1.5.2Acquisition Support Services

- 7.1.1.5.3General Support Services
- 7.1.2Architectures and Standards Component
 - 7.1.2.1Operational View (OV)
 - 7.1.2.2Systems View (SV)
 - 7.1.2.3Technical View
- 7.1.3Management, Evaluation, and Resource (MER) Processes Component
 - 7.1.3.1Management
 - 7.1.3.1.1Strategic Planning
 - 7.1.3.1.2Concept Development and Experimentation
 - 7.1.3.1.3Research and Studies
 - 7.1.3.1.4Policy and Guidance
 - 7.1.3.1.5Requirements Generation
 - 7.1.3.1.6Synchronization
 - 7.1.3.1.7Joint Training Support
 - 7.1.3.2Evaluation
 - 7.1.3.2.1Quality Assurance
 - 7.1.3.2.2Assessments
 - 7.1.3.2.3Customer Feedback
 - 7.1.3.2.4Lessons Learned/After-Action Reviews (AARs)
 - 7.1.3.3Resource Processes
- 8.0Self-Development Training Domain
 - 8.1Self-Development Training Concept and Strategy
 - 8.1.1Product Lines
 - 8.1.1.1Training Information Infrastructure
 - 8.1.1.1.1Hardware, Software, and Communications Systems
 - 8.1.1.1.2Storage, Retrieval, and Delivery
 - 8.1.1.1.3Management Capabilities
 - 8.1.1.1.4Other Enabling Capabilities
 - 8.1.1.2Training Products
 - 8.1.1.2.1Courseware
 - 8.1.1.2.2Courses
 - 8.1.1.2.3Training Publications
 - 8.1.1.2.4Training Support Package (TSP)
 - 8.1.1.3Training Aids, Devices, Simulators and Simulations (TADSS)
 - 8.1.1.3.1Training Aids
 - 8.1.1.3.2Training Devices
 - 8.1.1.3.3Simulators
 - 8.1.1.3.4Simulations
 - 8.1.1.3.5Instrumentation
 - 8.1.1.4Training Facilities and Land
 - 8.1.1.4.1Ranges
 - 8.1.1.4.2Maneuver Training Areas and Home Station Training Areas
 - 8.1.1.4.3Classrooms
 - 8.1.1.4.4CTCs
 - 8.1.1.4.5Logistics Support Areas
 - 8.1.1.4.6Mission Training Complex

- 8.1.1.5Training Services
 - 8.1.1.5.1Management Support Services
 - 8.1.1.5.2Acquisition Support Services
 - 8.1.1.5.3General Support Services
- 8.1.2Architectures and Standards Component
 - 8.1.2.1Operational View (OV)
 - 8.1.2.2Systems View (SV)
 - 8.1.2.3Technical View
- 8.1.3Management, Evaluation, and Resource (MER) Processes Component
 - 8.1.3.1Management
 - 8.1.3.1.1Strategic Planning
 - 8.1.3.1.2Concept Development and Experimentation
 - 8.1.3.1.3Research and Studies
 - 8.1.3.1.4Policy and Guidance
 - 8.1.3.1.5Requirements Generation
 - 8.1.3.1.6Synchronization
 - 8.1.3.1.7Joint Training Support
 - 8.1.3.2Evaluation
 - 8.1.3.2.1Quality Assurance
 - 8.1.3.2.2Assessments
 - 8.1.3.2.3Customer Feedback
 - 8.1.3.2.4Lessons Learned/After-Action Reviews (AARs)
 - 8.1.3.3Resource Processes
- Annex A Training Development Milestone Schedule
- Annex B References
- Annex C Coordination

Table B-1
STRAP Annex A: Training Development Milestone Schedule, Sheet A

TRAINING DEVELOPMENT MILESTONE SCHEDULE - SHEET A		PAGE OF PAGES	REQUIREMENTS CONTROL SYMBOL	
SYSTEM	ACAT	OFFICE SYMBOL		AS OF DATE
POINTS OF CONTACT		NAME	OFFICE SYMBOL	TELEPHONE
MATERIEL COMMAND				
FORCE MOD PROPONENT				
TCM				
CPTDEV:				
TNGDEV:				
ARCIC:				
SUPPORTING PROPONENTS:				
ATSC:				
ITEM	DATE	RESPONSIBLE AGENCY/POC		TELEPHONE
ICD:				
SMMP:				
CDD:				
CPD:				
LCSP:				
TEMP:				
TTSP:				
QQPRI:				
BOIP:				
NETP:				
COMMENTS:				

Note: The following table is optional; however, it is useful for populating SHEET B above and provides greater detail for each milestone. If not used, delete from this section before submitting for staffing.

**Table B-3
Optional Milestone Job Aid for Sheet B**

TRAINING PACKAGE ELEMENT/PRODUCT	Milestone:	Date
Individual Training Plan (Per each ITP)	1. Initial Individual Training Plan (ITP) submitted.	
	2. Annotated task list submitted.	
	3. Course administrative data submitted.	
	4. Training Program Worksheet submitted.	
	5. ITP submitted.	
	6. POI submitted.	
	7. Digitized copy archived.	
	8. Resident course start date (no later than 12 months after FUE).	
TRAINING PACKAGE ELEMENT/PRODUCT	Milestone:	Date
Army Correspondence Course Program (Only as a DL portion of a The Army Training System course)	1. Requirement identified and submitted for approval.	
	2. Requirement approved by Headquarters TRADOC.	
	3. Development initiated.	
	4. Advance breakdown sheet submitted.	
	5. Digitized camera-ready copy submitted.	
	6. Subcourse material ready for replication/distribution.	
TRAINING PACKAGE ELEMENT/PRODUCT	Milestone:	Date
Field Manuals (FMs)	1. Requirements identified.	
	2. Draft FM changes validated.	
	3. FM outlines approved.	
	4. FM coordinating draft completed.	
	5. Print/digitization request initiated.	
	6. Approved digitized camera-ready copy submitted.	
	7. Replication/distribution completed.	

**Table B-3
Optional Milestone Job Aid for Sheet B, continued**

TRAINING PACKAGE ELEMENT/PRODUCT	Milestone:	Date
Interactive Multimedia Instruction (IMI)/Distributed learning	1. Requirements identified and submitted for approval.	
	2. Requirements approved by ATSC and TRADOC.	
	3. Resources identified.	
	4. Courseware developed and validated.	
	5. Master materials to ATSC for replication and distribution.	
	6. Replication/distribution completed.	
	(Conducted in-house, by contract, Training Development and Analysis Activity, TRADOC Analysis Center, or Program Manager (PM))	
TRAINING PACKAGE ELEMENT/PRODUCT	Milestone:	Date
Army Visual Information Production and Distribution Program (DAVIPDP)	1. High risk tasks and jobs identified.	
	2. Storyboards validated.	
	3. DAVIPDP requirements submitted to ATSC.	
	4. Requirements approved by DA.	
	5. Production initiated.	
	6. Replication/distribution completed.	
TRAINING PACKAGE ELEMENT/PRODUCT	Milestone:	Date
Training Aids, Devices, Simulators, and Simulations (TADSS)	1. High risk, hard-to-train tasks identified.	
	2. Need for TADSS identified.	
	3. TADSS concept validated.	
	4. TADSS incorporated into the STRAP (part of the CATS).	
	5. Analytical justification using the training effectiveness analysis provided.	
	6. CDD/CPD developed, if required.	
	7. TADSS effectiveness validated.	
	8. TADSS incorporated into the ICD, CDD, CPD, STRAP	
	9. MOS-specific milestones/requirements for TADSS developed and incorporated in the integrated training strategy.	

Table B-3
Optional Milestone Job Aid for Sheet B, continued

TRAINING PACKAGE ELEMENT/PRODUCT	Milestone:	Date
Training Facilities and Land	1. Range and facility requirements identified.	
	2. Identification of construction requirements completed.	
	3. Construction requirements submitted to appropriate commands.	
	4. Requirements validated and updated.	
	5. Supporting requirements identified and availability coordinated.	
	6. Installation and other construction requirements submitted to appropriate commands.	
	7. Refined construction requirements and range criteria forwarded to appropriate commands, IMA, Chief of Engineers	
	8. Construction initiated.	
TRAINING PACKAGE ELEMENT/PRODUCT	Milestone:	Date
Training Ammunition	1. Ammunition identified.	
	2. Initial ammunition requirements validated.	
	3. Requirements included in the Capability Requirement Document	
	4. Ammunition item developed.	
	5. Validation and test completed.	
	6. Ammunition requirements identified in the ITP.	
	7. Ammunition requirements presented to Ammunition Requirements Workgroup and Council of Colonels for approval of resourcing.	
	8. Requirements included in DA Pam 350-38.	
	9. Requirements provided to installation/appropriate command manager	
	10. Production entered.	

Table B-3
Optional Milestone Job Aid for Sheet B, continued

TRAINING PACKAGE ELEMENT/PRODUCT	Milestone	Date
Training Equipment	1. NET/Institutional training tasks identified.	
	2. Need for training equipment identified.	
	3. Training equipment incorporated into the STRAP.	
	4. STRAP approved.	
	5. Training equipment requirements incorporated in system CDD/CPD & BOIP.	
	6. MOS-specific milestone requirements for training equipment approved and incorporated in the CAD/POI.	
	7. Training effectiveness validated.	
TRAINING PACKAGE ELEMENT/PRODUCT	Milestone	Date
Training Services	1. Contractor Logistic Support	
	2. Contractor NET Support	
	3. Contractor DET Support	

STRAP Annex B: References

Identify the system-specific references in the STRAP at annex B. A list of TRADOC/Army regulations is not desired. Include such references as the ICD, CDD, CPD or DCR/DICR. Other references include last generation mission needs statement, ORD, system MANPRINT management plan, early analysis reports, training effectiveness analysis, NET plan, Army Modernization Information Memorandum number, and the basis of issue plan. Most data for this annex may be extracted from TRADOC Form 569R-E (Training Development Management Information, Sheet A) (Tab 1) if the TNGDEV maintains this form.

Table B-4
STRAP Annex C: Coordination

Organization/ POC (Date)	Summary of Comments Submitted (A/S/C)			Comments Accepted/ Rejected						Rationale for Non-Acceptance — S, C
				Accepted			Rejected			
	A	S	C	A	S	C	A	S	C	

Key
Completed Review with Comments
Completed Review, No Comments
Active Review Occurring

B-2. Sample system training concept and strategy document

The following is a sample of a system training concept and strategy document.

5.0 System Training Concept (AA/RC).

5.0.1 General. Team New Cannon determined that the best training approach for the new cannon was to develop an integrated training strategy that uses several complimentary methods and media of instruction to present knowledge and skills of increasing complexity. This integrated training strategy will be capable of supporting fielding, operations, and sustainment of the system to fielding units, and meeting the training needs of the institutions. This strategy will include training requirements for operators, crew, affected functional areas above crew, unit level and direct support/general support (DS/GS) maintainers, and leader and operational unit collective training. The methods/media of instruction for operators, crew (including operator maintenance), and functional areas above crew are: classroom conference/lecture/demonstration; practical exercises with or without equipment; computer based training/computer aided instruction (CBT/CAI); Classroom XXI and distributed learning (DL); part-task training devices such as the new Cannon Desktop Trainer (CDT), the Crew Station Trainer (CST) used in the stand-alone mode to provide training on crew station functionality or used with a motion platform in the driver training mode to provide driver training, full-fidelity task training devices such as the CST, in the fully integrated mode, to provide simultaneous training on both driving the new cannon and new cannon (T) and operating the new cannon and embedded training (ET); and the actual new cannon. The methods/media of instruction considered for unit level and DS/GS maintainers are: classroom lecture/demonstration; practical exercises with and without equipment; CBT/CAI; part tasks training devices such as the new cannon maintenance trainer (Weapons Maintenance Truck) and the new cannon resupply vehicle (RSV)-tracked Maintenance Trainer; and hands-on training on the actual vehicles.

5.0.1.1 Institutional Training Strategy. Initial training is performed using the least complex of media tools, such as classroom conference/lecture/demonstration using audio-visual media available to the classroom followed by practical exercises without equipment to present essential information on each system's performance characteristics and principles of operation. This is also the preferred media that will be used to present administrative information on the course objectives, requirements and conduct.

5.0.1.2 Training Course Sequence. For the next level of training, using a variety of instructional media, our approach is to introduce training for a given task at any given time down to the lowest possible level. Once training has been introduced, we would continue to reinforce the training of assigned tasks through the use of selected instructional media of progressively higher levels of fidelity, constantly increasing the complexity associated with the task to match the capabilities of the instructional media. For example, information providing an overview of the capabilities, limitations and factors considered in deploying the new cannon would be provided during an

initial classroom session, followed by practical exercises without the use of equipment. Using CBT/CAI, this information would be reiterated, providing more detail on the considerations and procedures of operating the new cannon, and then applied during practical exercises using the CDT, the CST in stand-alone mode and the CST in the driver trainer mode. Finally, this task is fully integrated on the CST or by using ET on the objective system, with a variety of environmental conditions such as soil and crossing location characteristics, weather and visibility conditions. This integrated training approach, using the various new cannon training systems, will be applied to each level of institutional/NET/unit sustainment training for driver, gunner, commander and crew training. Using a programmed learning strategy and interactive instructional materials to lead the trainees through carefully structured learning events and activities, allowing them to master training objectives while minimizing classroom training and the need for ongoing instructor interaction. By using this approach to training, we can place a greater emphasis on laying a solid foundation in requisite tasks at the earliest possible time, utilizing the best training media that is appropriate for the task. Use of each successive training media reinforces and strengthens the foundation that was laid by earlier sessions, allowing student progression towards tasks with greater degrees of complexity associated with the conditions under which that task is to be performed. Using this approach, the task is trained in a cost-effective manner, beginning with lecture/classroom and progressing through various training media levels, ending with the CST in its full-crew integration mode. This progressive strategy will be applied to each level of institutional/NET/unit sustainment training. In this configuration, the CST primarily reinforces those tasks that have already been introduced to the student at an earlier stage in the training process, under various training conditions. In addition to reinforcing earlier training, the CST may be used as the final stage of evaluation, ensuring the training proponent that the student has completed all phases of the course satisfactorily, and is prepared to perform the task using the actual vehicle. If the final evaluation indicates a deficiency in the student's skills or knowledge, the instructional subsystem automatically analyzes the deficiency and recommends remedial training for the trainee. The trainee is then recycled back through the recommended training before retaking the evaluation with the CST. To reiterate, the Integrated Training Strategy approach, uses a combination of different training media to present information to the trainee, providing him with a forum in which he can acquire essential skills and knowledge at progressively increasing levels of difficulty.

5.1 New Equipment Training Strategy.

5.1.1 General. NET will be conducted in accordance with AR 350-1 for all AA and Reserve Component (RC) units designated by the Deputy Chief of Staff , G3/5/7 (DCS, G-3/5/7) to receive the new cannon. Planning has been initiated that will cause all fielding units, including RC units, to be transported to Fort Swampy for the conduct of new cannon NET. Completion of the new cannon NET course will be the basis for the fielding unit to award MOS XXH to each of its XXB Soldiers. Operator and Maintenance NET will be required for the new cannon and will

begin when the new cannon is introduced into the fielding unit. NET will include hardware/software training and DTT associated with the new cannon system. PM-New Cannon, the MATDEV for the new cannon, is responsible for new cannon NET. This includes overall control and responsibility for transfer of knowledge from the MATDEV to the trainer, tester, and user on system specific hardware/software and incorporation of DTT into the overall NET strategy. It also includes responsibility for programming, budgeting and funding, among other things, travel and per diem for NET team (NETT) personnel to attend instructor and key personnel (I&KP) training. PM-New Cannon will develop an interactive multimedia instruction (IMI) training support package(s) in accordance with the ADDIE process. These IMI TSPs will include all training materials necessary to conduct new equipment training and sustainment training. PM-New Cannon will be responsible for forming the NET Teams and for conducting NET for new cannon. TRADOC is responsible for developing tactics, techniques and procedures (TTP) for new cannon. These TTPs will be published initially as a separate special test for the new cannon battalion, company and platoon. The special test will be used to support pretest training for the force development test and experimentation, and IOTE and will be provided to the unit prior to pretest training. It will be revised after operational testing and provided, prior to or in conjunction with system fielding, to units receiving new cannon. PM-New Cannon will assist the TNGDEVs in acquiring the first production or procurement items and/or system and peculiar support equipment, in accordance with DCS, G-3/5/7 direction via the new cannon system distribution plan, into the training base prior to other new cannon fielding. This will ensure that institutional training is initiated in accordance with AR 350-1 (for example, within one (1) year after first unit equipped (FUE)). NET for the new cannon will not be terminated until all AA and RC units identified by DCS, G-3/5/7 to receive the new cannon have been fielded. The NETT will ensure that all NET materials are either provided or made immediately available to the gaining unit. This can be accomplished either by paper documents or through electronic means, including compact disc, read only memory, use of distributed learning and the Internet. It is envisioned that the contractor will conduct a Staff Planner Course(s) for managers, planners, and appropriate command staff members planning the acquisition and fielding of the new cannon. It is also envisioned that the contractor will conduct Technical Specialist Courses for members of proponent schools involved in the planning and establishment of resident training for the new cannon and for CAPDEVs and testers involved in the development and testing of the new cannon. In addition, the contractor will conduct the following courses: new equipment training for TRADOC instructor personnel prior to each user testing phase; instructor and key personnel training for the NETT(s) on production hardware/software, so that they can develop NET training materials; and instructor and key personnel training for TRADOC service school instructors and key personnel, on production equipment, so that training materials can be developed prior to the start of resident training. The TNGDEV, in conjunction with the CAPDEV and the MATDEV, will determine specific types of instruction, training facilities required, estimated manpower, time frame, temporary duty and

travel costs based on the NET strategy outlined in the NET plan and the approved fielding strategy/distribution plan.

5.1.2 Proposed NET Strategy.

5.1.2.1 Operator and Maintenance NET. Operator and maintenance NET will employ a mix of traditional classroom lecture, demonstration and practical exercise training; CBT/CAI and distributed learning (DL) techniques. NET will be conducted as a two-phase operation. Prior to the start of NET, PM-New Cannon will ensure that copies of all NET training materials are provided to both proponent schools to obtain approval/ concurrence with current and emerging doctrine, TTPs, methods of instruction and MOS training strategies. The NET is the beginning of training that supports the field artillery and ordnance MOS structure. This is especially critical for maintenance instruction since the maintenance skills that some career management field (CMF) 91 MOS Soldiers are trained on and that they are responsible for support maintenance on systems other than just the new cannon. Phase I will train all unit level and DS/GS maintenance on the new cannon and will be approximately two weeks long. Phase II will train operators and leaders on operating, maintaining and employing the new cannon and will be approximately four weeks long. The final lengths of these phases will be determined later as the system matures. The training during Phase II is intended to be in sufficient depth to allow award of an additional skill identifier or reclassification of MOS XXB personnel to MOS XXH, if required. Maintenance NET will provide instruction to personnel who hold MOSs in CMF 63 and are designated to repair the new cannon. Using a multi-echelon approach to training, the NETT will conduct operator and leader NET training for battalion and company officers, MOS XXH operators/supervisors, and MOS XX E Fire Direction Center/Platoon Operations Center personnel. This training will cover the minimum essential individual and collective skills necessary to properly employ and safely operate the new cannon. The NETT will also conduct DTT to crew, platoon leaders, company commanders, and G3/S3s, commanders and fire support personnel from division to battalion level. NET for battalion and below will be primarily hands-on but will probably include the use of distributed learning technologies and IMI techniques. IMI training support package (TSP), developed by the MATDEV/contractor and proponent and covering operator/maintenance training and DTT will be provided to the unit upon completion of NET to assist the unit during sustainment training. DTT for the new cannon will be provided to the following groups:

- a. Executive sessions with corps/corps commander and staff, division commander and staff and maneuver brigade commander and staff.
- b. Executive sessions with each maneuver brigade commander and staff and the supporting battalion commanders and staffs.
- c. Battalion commander and staff of new cannon units.

- d. Company commanders, platoon leaders, and section chiefs.

5.1.2.2 NET Course Sequence. AA NET will be accomplished as follows: new cannon maintenance NET for CMF 91 personnel will be conducted during the first 2 weeks of NET and will precede operator/leader and Fire Direction Center/Platoon Operations Center/battalion operations center NET. The Tactical Command/Armament and Chemical Acquisition Logistics Activity Deprocessing Team will deprocess four (4) new cannon self-propelled howitzers (SPHs), two (2) RSV-tracked and two (2) RSV-wheeled (Deprocessing involves unloading, inspecting, inventorying basic issue items, ensuring that the systems are operational and ready for issue, etc.). These four (4) sets of new cannon vehicles will be made available to the NETT to support maintenance training. The purpose of this up-front training is to ensure that the unit level and DS/GS mechanics are trained prior to the actual start of operator/leader NET. Maintenance training will be conducted using the "train-the-trainer" concept to as many maintainers as can be accepted into a maximum class size of about 24. Maintenance NET will include training on new systems for maintenance MOSs which support air conditioning, overpressure systems, NBC systems and composite armor repair. These mechanics can reinforce their training while performing actual maintenance during the NET period on the systems being fielded. The recently trained mechanics receive mentoring from contractor maintenance instructors during the entire NET period. NETT maintenance instructors will use these first four (4) new cannon systems to conduct all maintenance training. During this training the following are types of activities/actions that could be performed using tactical systems:

- a. Power packs pulled and split.
- b. Faults inserted so that mechanics see real faults.
- c. Periodic inspections performed.
- d. Parts replaced as required (PM-New Cannon funds).

As stated above, at the end of maintenance NET, these systems are to be brought up to -10/20 standards in preparation for issuing them to the gaining unit. PM-New Cannon will pay all costs associated with the -10/20 standards maintenance effort. Alternative methods will be looked at in an effort to preclude having to use tactical vehicles for maintenance NET. The NETT will return the four (4) new cannon systems to the Tactical Command/ Armament and Chemical Acquisition Logistics Activity Deprocessing Team (brought up to 10-20 standards), prior to the hand-off of these four (4) systems and the remaining 14 systems to the fielding unit. After the receiving unit has been issued its full complement of new cannons, the remainder of the NETT will arrive to conduct operator/leader and Fire Direction Center/Platoon Operations Center NET

and DTT. The training will include a mix of traditional classroom lecture, demonstration and practical exercise instruction and the use of DL, with hands-on being the predominant method of instruction. Each command being fielded with the new cannon must ensure that personnel attending NET courses meet the qualifications for award of MOS XXB or XXH, and have at least one (1) year retainability at the completion of NET. Upon NETT departure, an IMI TSP, including lesson plans, view-graphs, slides, any teaching material on electronic media, and student hand-outs will be left with the unit to further unit training. The NETT will train one (1) battalion (three (3) batteries of 24 new cannon SPHs/24 new cannon RSV-tracked/RSV-wheeled) at a time. Operator/Leader NET will train all crewmembers and selected unit leaders (officer and NCO). All training will be conducted under the control and supervision of the NETT. At completion of NET, each individual will be issued a certificate of training.

5.1.2.3 New cannon NET approach for National Guard (NG) units.

5.1.2.3.1 The new cannon NG NET strategy is based in part on the NET concept used for the XM-1 new cannon. This concept is based on and dependent on approval of three-week annual training periods by the National Guard Bureau for all NG units receiving the new cannon. The new cannon will be fielded in a manner similar to XM-1. The NET strategy requires each NG unit to send key leadership (cadre) personnel to the new cannon transition course at Fort Swampy approximately one year prior to annual training. While at Fort Swampy, the unit cadre will be issued instructional materials and software/IMI products necessary to conduct training on the same new cannon individual/crew tasks they were trained on. These instructional materials will include a structured POI, training schedule and complete TSPs for those tasks to be trained. Shortly completion of the new cannon transition course by the cadre, the fielding unit will receive new Cannon Desktop Trainers (CDT). During the intervening 8-10 months, the unit will be required to train their MOS XXB Soldiers using various CBT/CAI instructional materials and software/IMI products, via distributed learning, by NETT visits, etc. Upon completion of this training, the unit cadre will be required to certify that the individual Soldiers can perform these tasks to standard. During periodic follow-up visits during the NG unit's weekend drills, the NETT will ensure that required unit training is in compliance with the training schedule. The culmination of all these training events will be a three-week annual training during which the new cannon NETT will conduct operator and maintenance NET for the Unit at Fort Swampy. Because of somewhat reduced training time available, the workday for NG units may be longer than usual during NET. Also, depending on the level of proficiency attained during NET for a particular unit, time may not permit the conduct of a battalion live-fire exercise for these units. The length of the NET Course will be determined as the system matures.

5.1.2.3.2 Maintenance NET will be conducted concurrently with operator/leader training during the 8-10 months following the deprocessing and issue, by the Tactical Command/ Armament and Chemical Acquisition Logistics Activity Deprocessing Team, of four (4) SPHs, two (2) RSV-

tracked and two (2) RSV-wheeled to the unit. These systems will be used to conduct all maintenance training. Maintenance training will be conducted concurrently for CMF 91 MOSs using the "train-the-trainer" concept to as many maintainers as can be accepted into a maximum class size of about 24. This training will be conducted during eight weekend drills (10 hours per drill) for the MOS 91G/91H Course (80 hours) or during four weekend drills (10 hours per drill) for the MOS 91M Course (40 hours). Distributed learning (DL) will be used to the maximum extent possible during NET. PC-based maintenance trainers and/or computer based maintenance courseware will be issued to the DS/GS maintenance unit for sustainment training after the NETT departs.

5.2 Displaced Equipment Training (DET). Not applicable.

5.3 Doctrine and Tactics Training (DTT). DTT will include but is not limited to: employment considerations for the new cannon, terrain management, fire support tasks, decision aids, technical capability/limitations of the new cannon, and how to use embedded training (ET) for sustainment training.

6.0 Institutional Training Domain.

6.1 Institutional Training Concept and Strategy.

6.1.1 New cannon training, in the institution, will include programmed instruction, traditional conference, lecture, demonstration, and practical exercise instruction, small group instruction for supervisors, crewmembers and maintenance personnel and IMI (for example, CAI/CBT, interactive courseware or distributed learning applications). Both initial entry training and professional development training for officers and enlisted personnel will be conducted using a mix of conventional and interactive multimedia instruction methods. Individual initial entry training for MOS XXH Skill Level 1, on the operation of the new cannon and performance of unit level (operator) maintenance, will be conducted at the new cannon school for the AA and RC. A multipurpose individual/crew training device will be used at new cannon school to help train critical new cannon tasks related to driving, system operation and operator/unit level maintenance. A need for crew drills and training exercises that embody the "how to fight" doctrine exists and will be satisfied by use of the multipurpose operator training device previously mentioned and the embedded training functionality on-board the system. Institutional maintenance training devices will be used at the U.S. Army Ordnance Center and School (USAOC&S) to train critical unit level (organizational) and DS/GS maintenance tasks for new cannon. DTT will be incorporated into institutional training for officers, NCOs and enlisted personnel and into IMI TSPs for NET and unit sustainment training. Unit level maintenance training at USAOC&S for the AA and RC will train tasks on the inspection, troubleshooting, testing, diagnosis, adjustment, and alignment of components. Direct support (DS) maintenance

training at USAOC&S for the AA and RC will cover both unit level tasks as well as tasks exceeding unit level capabilities in these same areas. DS/GS maintenance personnel will also be trained at USAOC&S in collection, classification, and recovery of serviceable and non-serviceable vehicles, including establishing and operating battle damage assessment and repair teams.

6.1.2 U.S. Army New Cannon School, Fort Swampy. The U.S. Army New Cannon School will conduct institutional training for MOSs XXH and XXD and Army occupational codes XXA and XXE (proposed) starting with MOS XXH in 4QFY08. Appropriate courses, both officer and enlisted, will be modified or developed to include new cannon characteristics, doctrine and tactics, new cannon capabilities, operation of the new cannon, survivability, maintenance and communications. This training will support the new cannon and will be based on input from contractor produced logistics support analysis data, contractor training, results from the new cannon operational testing and subject matter experts.

6.1.2.1 New Cannon NET Transition Course. A new cannon NET transition course will be started, within one year after FUE, to train the cadre of NG units being fielded with new cannon on required individual and crew tasks. This course will also provide instruction to the unit cadre on how to use specific new cannon training materials, CBT/CAI, and the new Cannon Desktop Trainer (CDT) to train their Soldiers after returning to their unit.

6.1.2.2 Reserve Component (RC) Training. Selected NG units (for example, corps new cannon brigades, enhanced brigades and some division artillery) will receive new cannon. For those NG units officer and enlisted training will be the same as for the AC.

6.1.2.3 U.S. Army Ordnance School (USAOS), Fort Lee, VA. The USAOS will conduct institutional training for Army occupational code 91; Warrant Officer MOSs XXA, 915A and 915E and CMF 91. Institutional training will begin within one year after FUE. A consolidated training facility for advanced individual training and professional development training will be required to allow co-located training and provide maximum utilization of personnel, equipment and training devices. This training will include unit level, DS, and GS maintenance training and ordnance officer professional development training. These courses will train CMF 91 (mechanical maintenance) students and warrant officer branch 91(ordnance) students on the tasks and skills necessary to troubleshoot and perform maintenance on the new cannon system. This training will include maintenance of the SPH turret; SPH fire control system; ammunition handling components of the SPH and resupply vehicle; hull; chassis; powertrain and other subsystems. Training will be greatly enhanced through use of the new Cannon (SPH) Maintenance Trainer and RSV Maintenance Trainer. New cannon training will be incorporated into Ordnance Officer Basic and Advanced Courses and will consist of familiarization on system characteristics, capabilities and operation.

7.0 Operational Training Domain.

7.1 Operational Training Concept and Strategy. Unit training will be conducted initially through NET when a new cannon is fielded. All NET training materials will be provided to the unit so that the unit can develop its sustainment-training program. Unit sustainment training will be conducted on two levels, individual and collective, and will be progressive from initial to sustainment. Each new cannon SPH and RSV will have an on-board embedded training (ET) capability to allow sustainment training in either a garrison or field environment. The ET system will provide individual (Category A) ET and crew/team (Category B) ET capabilities. New cannon crewmembers will sustain individual training skills through weekly MOS training, on-board individual ET, crew drills, situational training exercises, command post exercises (CPXs) and field training exercises. (See Annex C, pages C-1 and C-2). Sustainment training for DS/GS maintenance personnel will be supported by providing a PC Trainer capable of running both new cannon interactive electronic technical manuals and CBT/CAI courseware lessons to maintenance units. Collective training will be conducted at section/crew, platoon, and company or battalion level. Collective training skills will be acquired and sustained through repetitious application of crew drills, situational training exercises, command post exercises, field training exercise, and similar exercises (See Annex C, pages C-3, C-4, and C-5). New cannon crews will also sustain crew skills through on-board crew level ET. Use of selectable menu-driven crew drills will allow for training at operational mode summary/mission profile level intensity, provide functional level collective training (section to battalion) and provide training on operator maintenance procedures. New cannon crews will conduct functional level training using the ET system connected to various C² nodes from platoon to battalion and training simulations to provide the ability to conduct or play in realistic training exercises. DTT will be incorporated into this training. The goal of collective training will be to develop critical teamwork skills at various echelons. In order for leaders to practice employment of the system, accurate models must be included in the various system and non-system TADSS available to them. To assist in combined arms training, new cannon will have a designed-in tactical engagement simulation (TES) subsystem that allows the new cannon to train as a fully instrumented system during force-on-force exercises at the combat training centers (CTCs). Units participating in a rotation to a CTC will have specific TES equipment installed on their vehicles upon arrival by CTC personnel and will be trained on integration of new cannon's TES capabilities with the overall system in use at the CTC, Multiple Integrated Laser Engagement System II/One Tactical Engagement Simulation System (TESS). Each new cannon tactical system will have an ET capability to allow sustainment training in either a garrison or field environment. New cannon crewmembers will use the individual level ET on-board for sustainment training. New cannon crews will conduct crew level ET using selectable menu-driven crew drills which will allow for training at battle concentration/intensity, provide functional level collective training (section to battalion) and provide training on unit level (operator) maintenance procedures. Training on unit

level maintenance will consist of troubleshooting, identification of system specific malfunctions, modular replacement, adjustments requiring specific tools, and recovery operations from the immediate battle area as identified in the maintenance allocation chart and will also include battle damage assessment and repair tasks.

8.0 Self-development Training Domain.

8.1 Self-development Training Concept and Strategy. This strategy applies to AC/RC enlisted, noncommissioned officer, warrant officer, and commissioned officer. Learning is a lifelong process. Institutional, organizational, and operational training alone cannot provide the insight, intuition, imagination, and judgment needed in combat. This requires commanders at all levels to create an environment that encourages subordinates to establish personal and professional development goals. Further refinement of those interests should occur through personal mentoring by commanders and first line leaders. Conduct of battle-focused officer and NCO professional development programs are essential to leader development. Exploiting reach-back, distributed learning, and continuing education technologies support these programs. Fort Swampy, in cooperation with PM New Cannon, will prepare IMI courseware for each skill level and warrant and officer specialties required to employ, operate and maintain the new cannon. The courseware will comply with Army training information system architecture and be distributed over the CAR at <http://www.adtdl.army.mil/>. Each phase of resident instruction will be preceded by a distributed phase to reduce TTHS costs and ensure students have acquired required entry level skills, knowledge, and attributes.

B-3. STRAP approval request memorandum

Figure B-1 provides an example of the STRAP approval request memorandum.

Office Symbol: XXXX-X

Date: XXXXXXXX

Memorandum for CoE Commanding General

Subject: Request for approval of System Training Plan (STRAP) for the
XXXXXXXXXXXXXXXXXX

Reference:

TRADOC Regulation 350-70, Army Learning Policy and Systems 6 DEC 2011 [*Note: Cite the current version.*]

1. Request approval of enclosed STRAP for the XXXXXXXX.
2. Short description and background of the system being procured. Address the staffing process and identify any issues associated with review of the subject document. Address the parent document and provide the status of where this document is within the validation/approval process.
3. Address any training, training support, facilities, TADSS, or resourcing issues that require the CoE CG's attention. Ensure training requirements addressed within the STRAP have been integrated into the parent JCIDS document CDD/CPD as deemed appropriate.
4. POC for the action, Name, Phone number, e-mail address.

Encl

Signature Block
Training Proponent Commander/Designee

Figure B-1. STRAP approval request memorandum example

B-4. STRAP approval memorandum

Figure B-2 provides an example of the STRAP approval memorandum.

Office Symbol: XXXX-X

Date: XXXXXXXXX

MEMORANDUM FOR RECORD

Subject: Approval of System Training Plan (STRAP) for the XXXXXXXXXXXXXXXX

Reference:

TRADOC Regulation 350-70, Army Learning Policy and Systems 6 DEC 2011 [*Note: Cite the current version.*]

1. I approve the subject STRAP.
2. This approval means that this version of the STRAP contains the appropriate content and is complete to the greatest extent possible for the current increment of the capabilities development and material development processes. Subsequent versions may be required for future increments.
3. The training requirements addressed within this STRAP will be integrated into the appropriate JCIDS document CDD/CPD.
3. The approved STRAP, the request for approval, and this approval memo will be loaded onto the Central Army Registry as required by AR 350-1 and TR 350-70.
4. POC for the action, Name, Phone number, e-mail address.

Encl

Approval Authority
CoE Commanding General

Figure B-2. STRAP approval memorandum example

B-5. STRAP waiver request memorandum

Figure B-3 provides an example of the STRAP waiver request memorandum.

Office Symbol: XXXX-X

Date: XXXXXXXXX

Memorandum for CoE Commanding General

Subject: Request for Waiver of System Training Plan (STRAP) for the XXXXXXXXXXXXXXXX

References:

a. TRADOC Regulation 350-70, Army Learning Policy and Systems DD Month XXXX
[Note: Cite the current version.]

1. Request approval of STRAP waiver for the XXXXXXXXX.
2. Short description of the system being procured.
3. Address the rationale and justification for this waiver and explain why a STRAP is not needed to support this capability.
 - a. No training or little training needed because of the simplicity of the system.
 - b. New system is a direct exchange/upgrade of an existing like item where training is already established with no changes needed.
 - c. New system is a non-developmental commercial item and will be fielded with existing operation and maintenance manuals.
 - d. The system will not be operated or maintained by government personnel.
 - e. Any other information to support the waiver request.
4. POC for the action, Name, Phone number, e-mail address.

Encl

Signature Block
Training Proponent Commander/Designee

Figure B-3. STRAP waiver request memorandum example

B-6. STRAP waiver approval memorandum

Figure B-4 provides an example of the STRAP waiver approval memorandum.

Office Symbol: XXXX-X

Date: XXXXXXXXX

MEMORANDUM FOR RECORD

Subject: Approved Waiver of System Training Plan (STRAP) for the XXXXXXXXXXXXXXXX

Reference:

TRADOC Regulation 350-70, Army Learning Policy and Systems 6 DEC 2011 [*Note: Cite the current version.*]

1. I approve the subject STRAP waiver.
2. I have reviewed and concur with the rationale and justification for waiving the STRAP requirement for this capability/program.
3. The request for waiver and this approval memo will be loaded onto the Central Army Registry as required by AR 350-1 and TR 350-70.
4. POC for the action, Name, Phone number, e-mail address.

Encl

Approval Authority
CoE Commanding General

Figure B-4. STRAP waiver approval memorandum example

Appendix C

Department of Defense architecture framework models

Models	Descriptions
<u>AV-1: Overview and Summary Information</u>	Describes a project's visions, goals, objectives, plans, activities, events, conditions, measures, effects (outcomes), and produced objects.
<u>AV-2: Integrated Dictionary</u>	An architectural data repository with definitions of all terms used throughout the architectural data and presentations.
<u>CV-1: Vision</u>	The overall vision for transformational endeavors, which provides a strategic context for the capabilities described and a high-level scope.
<u>CV-2: Capability Taxonomy</u>	A hierarchy of capabilities which specifies all the capabilities that are referenced throughout one or more architectural descriptions.
<u>CV-3: Capability Phasing</u>	The planned achievement of capability at different points in time or during specific periods of time. The CV-3 shows the capability phasing in terms of the activities, conditions, desired effects, rules complied with, resource consumption and production, and measures, without regard to the performer and location solutions.
<u>CV-4: Capability Dependencies</u>	The dependencies between planned capabilities and the definition of logical groupings of capabilities.
<u>CV-5: Capability to Organizational Development Mapping</u>	The fulfillment of capability requirements shows the planned capability deployment and interconnection for a particular capability phase. The CV-5 shows the planned solution for the phase in terms of performers and locations and their associated concepts.
<u>CV-6: Capability to Operational Activities Mapping</u>	A mapping between the capabilities required and the operational activities that those capabilities support.
<u>CV-7: Capability to Services Mapping</u>	A mapping between the capabilities and the services that these capabilities enable.

Appendix C

Department of Defense architecture framework models, continued

Models	Descriptions
DIV-1: Conceptual Data Model	The required high-level data concepts and their relationships.
DIV-2: Logical Data Model	The documentation of the data requirements and structural business process (activity) rules. In DODAF V1.5, this was the OV-7.
DIV-3: Physical Data Model	The physical implementation format of the Logical Data Model entities, e.g., message formats, file structures, physical schema. In DODAF V1.5, this was the SV-11.
OV-1: High-Level Operational Concept Graphic	The high-level graphical/textual description of the operational concept.
OV-2: Operational Resource Flow Description	A description of the resource flows exchanged between operational activities.
OV-3: Operational Resource Flow Matrix	A description of the resources exchanged and the relevant attributes of the exchanges.
OV-4: Organizational Relationships Chart	The organizational context, role or other relationships among organizations.
OV-5a: Operational Activity Decomposition Tree	The capabilities and activities (operational activities) organized in a hierarchal structure.
OV-5b: Operational Activity Model	The context of capabilities and activities (operational activities) and their relationships among activities, inputs, and outputs. Additional data can show cost, performers, or other pertinent information.
OV-6a: Operational Rules Model	One of three models used to describe activity (operational activity). It identifies business rules that constrain operations.
OV-6b: State Transition Description	One of three models used to describe operational activity (activity). It identifies business process (activity) responses to events (usually very short activities).
OV-6c: Event-Trace Description	One of three models used to describe activity (operational activity). It traces actions in a scenario or sequence of events.
PV-1: Project Portfolio Relationships	It describes the dependency relationships between

Appendix C

Department of Defense architecture framework models, continued

Models	Descriptions
	the organizations and projects and the organizational structures needed to manage a portfolio of projects.
PV-2: Project Timelines	A timeline perspective on programs or projects, with the key milestones and interdependencies.
PV-3: Project to Capability Mapping	A mapping of programs and projects to capabilities to show how the specific projects and program elements help to achieve a capability.
SvcV-1 Services Context Description	The identification of services, service items, and their interconnections.
SvcV-2 Services Resource Flow Description	A description of resource flows exchanged between services.
SvcV-3a Systems-Services Matrix	The relationships among or between systems and services in a given architectural description.
SvcV-3b Services-Services Matrix	The relationships among services in a given architectural description. It can be designed to show relationships of interest (e.g., service-type interfaces, planned vs. existing interfaces).
SvcV-4 Services Functionality Description	The functions performed by services and the service data flows among service functions (activities).
SvcV-5 Operational Activity to Services Traceability Matrix	A mapping of services (activities) back to operational activities (activities).
SvcV-6 Services Resource Flow Matrix	It provides details of service resource flow elements being exchanged between services and the attributes of that exchange.
SvcV-7 Services Measures Matrix	The measures (metrics) of services model elements for the appropriate time frame(s).
SvcV-8 Services Evolution Description	The planned, incremental steps toward migrating a suite of services to a more efficient suite or toward evolving current services to a future implementation.
SvcV-9 Services Technology & Skills Forecast	The emerging technologies, software/hardware products, and skills that are expected to be available in a given set of time frames and that will affect future service development.

Appendix C

Department of Defense architecture framework models, continued

Models	Descriptions
SvcV-10a Services Rules Model	One of three models used to describe service functionality. It identifies constraints that are imposed on systems functionality due to some aspect of system design or implementation.
SvcV-10b Services State Transition Description	One of three models used to describe service functionality. It identifies responses of services to events.
SvcV-10c Services Event-Trace Description	One of three models used to describe service functionality. It identifies service-specific refinements of critical sequences of events described in the operational viewpoint.
StdV-1 Standards Profile	The listing of standards that apply to solution elements.
StdV-2 Standards Forecast	The description of emerging standards and potential impact on current solution elements, within a set of time frames.
SV-1 Systems Interface Description	The identification of systems, system items, and their interconnections.
SV-2 Systems Resource Flow Description	A description of resource flows exchanged between systems.
SV-3 Systems-Systems Matrix	The relationships among systems in a given architectural description. It can be designed to show relationships of interest (e.g., system-type interfaces, planned vs. existing interfaces).
SV-4 Systems Functionality Description	The functions (activities) performed by systems and the system data flows among system functions (activities).
SV-5a Operational Activity to Systems Function Traceability Matrix	A mapping of system functions (activities) back to operational activities (activities).
SV-5b Operational Activity to Systems Traceability Matrix	A mapping of systems back to capabilities or operational activities (activities).
SV-6 Systems Resource Flow Matrix	Provides details of system resource flow elements being exchanged between systems and the attributes of that exchange.
SV-7 Systems Measures Matrix	The measures (metrics) of systems model elements for the appropriate timeframe(s).

Appendix C

Department of Defense architecture framework models, continued

Models	Descriptions
<u>SV-8 Systems Evolution Description</u>	The planned incremental steps toward migrating a suite of systems to a more efficient suite, or toward evolving a current system to a future implementation.
<u>SV-9 Systems Technology & Skills Forecast</u>	The emerging technologies, software/hardware products, and skills that are expected to be available in a given set of time frames and that will affect future system development.
<u>SV-10a Systems Rules Model</u>	One of three models used to describe system functionality. It identifies constraints that are imposed on systems functionality due to some aspect of system design or implementation.
<u>SV-10b Systems State Transition Description</u>	One of three models used to describe system functionality. It identifies responses of systems to events.
<u>SV-10c Systems Event-Trace Description</u>	One of three models used to describe system functionality. It identifies system-specific refinements of critical sequences of events described in the operational viewpoint.

Glossary

Section I

Abbreviations

AA	Active Army
AAR	after-action review
ADDIE	analysis, design, development, implementation, and evaluation
ADP	Army Doctrine Publication
AoA	analysis of alternatives
AR	Army regulation
ARCIC	Army Capabilities Integration Center
AROC	Army Requirements Oversight Council
ATSC	Army Training Support Center
AV	all viewpoint
CAC	Combined Arms Center
CAC-T	Combined Arms Center – Training
CAI	computer-aided instruction

CAPDEV	Capability developer
CAR	Central Army Registry
CATS	combined arms training strategy(ies)
CBA	capabilities-based assessment
C-BA	cost-benefit analysis
CBT	computer-based training
CDD	capability(ies) development document
CDT	cannon desktop trainer
CG	commanding general
CJCSI	Chairman, Joint Chiefs of Staff Instruction
CMF	career management field
CoE	center of excellence
CPD	capability(ies) production document
CST	crew station trainer
CTC	combat training center
CV	capability viewpoint
DA	Department of the Army
DA Pam	DA Pamphlet
DAMO-TR	Department of the Army Military Operations-Training
DAMO-TRS	Department of the Army Management Office-Training Simulations
DAS	Defense Acquisition System
DCR	DOTMLPF-P change recommendation
DCS	Deputy Chief of Staff
DET	displaced equipment training
DICR	DOTMLPF-P integrated capabilities recommendation
DIV	data and information viewpoint
DL	distributed learning
DOD	Department of Defense
DODAF	Department of Defense Architecture Framework
DOTMLPF-P	doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy
DS	direct support
DTMS	Digital Training Management System
DTT	doctrine and tactics training
ET	embedded training
FM	Field Manual
FoS	family of systems
FUE	first unit equipped
FY	fiscal year
GIG	global information grid
GS	general support
HQDA	Headquarters, Department of the Army
IA	integrated architecture
ICD	initial capabilities document
IMI	interactive multimedia instruction
ITE	integrated training environment

ITP	individual training plan
JCIDS	Joint Capabilities Integration and Development System
JROC	Joint Requirements Oversight Council
KPP	key performance parameter
LVC	live, virtual, constructive
MANPRINT	manpower and personnel integration
MATDEV	materiel developer
MS	milestone
NCO	noncommissioned officer
NET	new equipment training
NETT	NET team
NG	National Guard
NSTD	non-system training device
OV	operational viewpoint
PEO-STRI	Program Executive Office for Army Simulation, Training, and Instrumentation
PFTEA	post fielding training effectiveness analysis
PM	program manager
POC	point of contact
POI	program of instruction
PV	project viewpoint
RC	Reserve Component
RSV	resupply vehicle
SoS	system of systems
SSI	special skill identifier
StdV	standards viewpoint
STRAP	system training plan
SV	systems viewpoint
SvcV	services viewpoint
SWT	STRAP writing tool
TADSS	training aids, devices, simulators, and simulations
TC	training circular
TCM	TRADOC capability manager
TDRR	Training Device Requirements Review Committee
TES	tactical engagement simulation
TNGDEV	training and education developer
TP	TRADOC pamphlet
TR	TRADOC regulation
TRADOC	U.S. Army Training and Doctrine Command
TSAID	Training Support Analysis and Integration Directorate
TSP	training support package
TSS	Training Support System
TTCP	test training certification plan
TTP	tactics, techniques, and procedures
TTSP	training test support package
USAOC&S	U.S. Army Ordnance Center and School

Section II

Terms

Acquisition program baseline

For each program, developed and updated by the program manager and governs the activity by prescribing the cost, schedule, and performance constraints in the phase succeeding the milestone for which it was developed. The acquisition program baseline captures the user capability needs, including the KPPs, which are copied verbatim from the CDD.

Analysis

A phase in the ADDIE process required when addressing needs, outcomes, target audiences, missions, collective tasks, jobs, individual tasks, topics, and resources.

Analysis, design, development, implementation and evaluation (ADDIE)

An instructional system design model used by TNGDEVs to build learning products.

Analysis of alternatives (AoA)

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

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 JCIDS process.

Architecture

The structure of components, their relationships, and the principles and guidelines governing their design and evolution over time.

Army Requirements Oversight Council (AROC)

An advisory council that advises the Chief of Staff of the Army in the assessment and prioritization of capabilities integrated across the DOTMLPF-P. 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 capability developer.

Attribute

A quantitative or qualitative characteristic of an element or its actions.

Capabilities-based assessment (CBA)

The JCIDS analysis process. It answers several key questions for the validation authority prior to their approval: define the mission; identify capabilities required; determine the attributes and

standards of the capabilities; identify gaps; assess operational risk associated with the gaps; prioritize the gaps; identify and assess potential non-materiel solutions; provide recommendations for addressing the gaps. The CBA includes three phases: the functional area, functional needs, and functional solution analyses. The results of the CBA are used to develop an ICD. See the JCIDS Manual.

Cost-Benefit Analysis (C-BA)

Provides decision makers with facts, data, and analysis required to make informed decisions. A decision support tool that documents the predicted effect of actions under consideration to solve a problem or take advantage of an opportunity. A structured proposal that functions as a decision package for organizational decision makers. Defines a solution aimed at achieving specific Army and organizational objectives by quantifying the potential financial impacts and other business benefits such as savings and/or cost avoidance; revenue enhancements and/or cash-flow improvements; performance improvements; and the reduction or elimination of a capability gap.

Capability

The ability to achieve a desired effect under specified standards and conditions through combinations of means and ways across the DOTMLPF-P to perform a set of tasks to execute a specified course of action. It is defined by an operational user and expressed in broad operational terms in the format of an ICD or a joint DCR. In the case of materiel proposals or documents, the definition will progressively evolve to DOTMLPF-P performance attributes identified in the CDD and the CPD.

Capability Developer (CAPDEV)

The agency or individual that determines warfighting requirements to achieve future operational capabilities. The CAPDEV develops materiel requirement documents and serves as the user's representative in the materiel acquisition process. CAPDEV is the overall integrator of DOTMLPF-P and Soldier requirements and products within the context of the force development process. The CAPDEV ensures all enabling capabilities are known, affordable, budgeted, and aligned for synchronous fielding and support.

Capability development document (CDD)

A document that captures the information necessary to develop a proposed program(s), normally using an evolutionary acquisition strategy. The CDD outlines an affordable increment of militarily useful, logistically supportable, and technically mature capability. The CDD defines authoritative, measurable, and testable parameters across one or more increments of a materiel capability solution, by setting KPPs, KSAs, and additional performance attributes to allow approval of multiple increments necessary for the acquisition community to design and propose systems and to establish programmatic baselines. See the JCIDS Manual.

Capability gap

The inability to execute a specified course of action. The gap may be the result of no existing capability, lack of proficiency or sufficiency in existing capability, or the need to replace an existing capability solution to prevent a future gap.

Capability need

A capability identified through the CBA or other studies, required to be able to perform a task within specified conditions to a required level of performance.

Capability production document (CPD)

A CPD provides authoritative, testable capability requirements, in terms of KPPs, KSAs, and additional performance attributes, for the production and deployment phase of an acquisition program, and is an entrance criteria item necessary for each milestone C acquisition decision.

Capstone concept

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 Capstone Concept for Joint Operations (CCJO) drives the development of joint operating concepts, joint enabling concepts, joint integrating concepts, and service concepts. TP 525-3-0 drives the development of Army operating and functional concepts.

Center of excellence (CoE)

A designated installation, centered on TRADOC core functions, that improves combined arms solutions for joint operations, fosters DOTMLPF-P integration, accelerates the development process, and unites all aspects of institutional training to develop warfighters, leaders, and civilians who embody Army values. CoEs that support warfighting functions will have a Capabilities, Development and Integration Directorate, to focus on concept development, experimentation, and requirement determination in support of the CoE mission.

Combined Arms Training Strategy (CATS)

The Army's overarching strategies for training the force. These collective training strategies describe how the Army will train the total force to standard in the institution, unit, and through self-development, and also identifies, quantifies, and justifies the training resources required to execute the training (TP 350-70-1).

Concept

A notion or statement of an idea — an expression of how something might be done that can lead to an accepted procedure. A military concept is the description of ways for employing specific military attributes and capabilities (means) in the achievement of stated objectives (ends). An Army concept describes a problem or series of problems to be solved, assumptions, the future operational environment, the central idea, the components of the solution, the interaction of those components in solving the problem, and the required capabilities necessary to achieve desired effects and objectives.

Design

A phase in the ADDIE process used to transform analysis data into a blueprint for learning products. Design produces the details of when, where, and how outcomes must be met. Outputs from the design phase then serve as the framework for the development phase of the ADDIE process.

Development

A phase in the ADDIE process used to convert the design into resident and non-resident learning products and components, such as lesson plans, student handouts, and media.

Digital Training Management System

The DTMS is a web-based commercial off the shelf software application customized to implement the concepts in ADP 7.0, Training Units and Developing Leaders. Optimized for use at brigade level and below, DTMS provides the ability to plan, resource, and manage unit and individual training at all levels. The DTMS is used for mission essential task list (METL) development and can track DA standardized and unit METLs. The DTMS can produce after action reviews and commanders' assessments of training events. It compiles and displays a unit roll-up of training conducted through a series of customizable tabs to track weapons qualification, Army Physical Fitness Test (APFT), Army Warrior Training, AR 350-1 Common Military Training, MOS training, and deployment tasks.

DOTMLPF-P change recommendation (DCR)

A DCR documents the intent to partially or wholly address an identified capability requirement and associated capability gap with a non-materiel solution, recommending changes to existing capabilities of the Joint force in one or more of the eight DOTMLPF and policy areas. In cases where a Joint DCR is not generated from an ICD, it also serves to document the new capability requirements and associated capability gaps being addressed. See the JCIDS Manual.

DOTMLPF-P Integrated Capabilities Recommendation (DICR)

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-P change. See AR 71-9.

Embedded training (ET)

A function hosted in hardware and/or software, integrated into the overall equipment configuration. Embedded training supports training, assessment, and control of exercises on the operational equipment, with auxiliary equipment and data sources, as necessary. Embedded training, when activated, starts a training session, or overlays the system's normal operational mode, to enter a training and assessment mode.

Evaluation

A phase in the ADDIE process. Evaluation is the quality control mechanism for learning product development. It is a systematic and continuous method to appraise the quality, efficiency, and effectiveness of a program, process, procedure, or product.

Evolutionary change

The mitigation of a capability gap through the evolution or incremental improvement of an existing system. This change may be accomplished through a modification to the existing system, or by replacing the existing system with a more capable system that mitigates the identified capability need.

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-P to achieve significant advances in current and future capabilities. Experiments aid in validating the feasibility of future requirements determination efforts. TRADOC Analysis Center'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."

Family of systems (FoS)

A set of systems that provide similar capabilities through different approaches to achieve similar or complementary effects. For instance, the warfighter may need the capability to track moving targets. The FoS that provides this capability could include unmanned or manned aerial vehicles with appropriate sensors, a space-based sensor platform or a special operations capability. Each can provide the ability to track moving targets but with differing characteristics of persistence, accuracy, and timeliness.

Force modernization proponent

The HQDA principal official, commander, commandant, director, or chief of the respective center, school, institution, or agency with primary duties and responsibilities relative to DOTMLPF-P and matters related to a designated function. See AR 5-22.

Functional area analysis (FAA)

The first analytical step of the CBA in the JCIDS process. It is strictly a capabilities-based task analysis. The FAA is primarily a qualitative analysis that identifies those tasks that the force must perform, the conditions of task performance, and the required performance standards. The FAA also identifies the joint interdependencies between other service and Army capabilities.

Functional capabilities board

A permanently established body that is responsible for the organization and analysis of joint warfighting capabilities within an assigned functional area.

Functional solution analysis (FSA)

The third analytical step of the CBA in the JCIDS process. It assesses potential DOTMLPF-P and policy approaches to solving, or at least mitigating, one or more of the capability needs 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 strategic frameworks.

Gatekeeper

The individual who makes the initial joint potential designation of JCIDS documents. This individual will also make a determination of the lead and supporting functional capabilities boards for capability documents. The gatekeeper is supported in these functions by the

functional capabilities board working group leads and the Joint Staff/J-6. The Joint Staff Deputy Director for Requirements (J-8) serves as the Gatekeeper.

Implementation

A phase in the ADDIE process. The actual conduct of learning using the validated learning products created during the design and development phases.

Increment

A militarily useful and supportable operational capability that can be effectively developed, produced or acquired, deployed, and sustained. Each increment of capability will have its own set of threshold and objective values set by the user. Spiral development is an instance of an incremental development strategy where the end state is unknown. Technology is developed to a desired maturity and injected into the delivery of an increment of capability.

Information system

Any equipment, or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information, and includes computers and computer networks, ancillary equipment, software, firmware and similar procedures, services (including support services) and related resources. Notwithstanding the above, the term "IT" does not include any equipment that is acquired by a federal contractor incidental to a federal contract. The term "information systems" is used synonymously with "IT" (to include national security systems).

Initial capabilities document (ICD)

Summarizes a CBA and justifies the requirement for a materiel or non-materiel approach, or an approach that is a combination of materiel and non-materiel, to satisfy specific capability gap(s). It identifies required capabilities and defines the capability gap(s) in terms of the functional area, the relevant range of military operations, desired effects, time, and DOTMLPF-P and policy implications and constraints. The ICD summarizes the results of the DOTMLPF-P and policy analysis and the DOTMLPF-P approaches (materiel and non-materiel) that may deliver the required capability. The outcome of an ICD could be one or more joint DCRs or recommendations to pursue materiel solutions.

Integrated architecture

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.

Interoperability

Principle that systems, units, and forces shall be able to provide and accept data, information, materiel, and services to and from other systems, units, and forces and shall effectively interoperate with other U.S. forces and coalition partners. Information technology and national security systems interoperability includes both the technical exchange of information and the end-to-end operational effectiveness of that exchanged information as required for mission accomplishment.

Joint capability technology demonstration (JCTD)

A demonstration of the military utility of a significant new technology and an assessment to clearly establish operational utility and system integrity.

Joint DCR

A recommendation for changes to existing joint resources when such changes are not associated with a new defense acquisition program.

Joint force

A general term applied to a force composed of significant elements, assigned or attached, of two or more military departments operating under a single joint force commander.

Joint Requirements Oversight Council (JROC)

An advisory council to the Chairman, Joint Chiefs of Staff (CJCS) that directly and indirectly supports the CJCS role as the principal military advisor to the President, the National Security Council, the Homeland Security Council, and the Secretary of Defense. See CJCSI 5123.01.

Joint staffing designator

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

Key performance parameters (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 Capstone Concept for Joint Operations. KPPs must be testable to enable feedback from test and evaluation efforts to the requirements process. KPPs are validated by the JROC for JROC interest documents, by the JCB for JCB interest documents, and by the DOD component for joint integration, joint information, or independent documents. CDD and CPD KPPs are included verbatim in the acquisition program baseline.

Logistic support

Encompasses the logistic services, materiel, and transportation required to support continental U.S. (CONUS)-based and world-wide deployed forces.

Materiel Developer (MATDEV)

The agency or individual responsible for research, development, and production validation of a system that responds to HQDA requirements. (Program Executive Officers, Program Managers, and Class I, II, and III level managers wear the MATDEV label. However, their functions differ.)

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, and aircraft 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.

Milestone A (MS A)

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 determines whether a proposed system will proceed from the MS A phase to the technology maturation and risk reduction phase. Most proposed systems will go through a MS A review. Only a few proceed directly from the MS A phase to a MS B decision review for entry into the engineering and manufacturing development phase. See DODI 5000.02 and AR 70-1.

Milestone B (MS B)

The second major decision point that separates the phases of an acquisition program or system. At this decision review point or MS, the designated MDA determines whether a proposed system will proceed from the technology maturation and risk reduction phase to the engineering and manufacturing development phase. The project shall exit technology maturation and risk reduction 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. MS B decision follows the completion of technology maturation and risk reduction phase. In an evolutionary acquisition program, the development of each increment shall begin with MS 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 (MS C)

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 engineering and manufacturing development phase to the production and deployment phase. MS C is the decision point at which permission is sought to produce the specified low-rate initial production (LRIP) quantities. If no LRIP is required of the system under review, MS C may then serve as the FRP decision review. See DODI 5000.02 and AR 70-1.

Milestones (MSs)

Major decision points that separate the phases of an acquisition program.

Modeling and simulation (M&S)

A mathematical, logical, physical, or procedural representation of some real or ideal system, and 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.

Non-TRADOC proponents

A generic term to refer collectively to the non-TRADOC force modernization proponents conducting DOTMLPF-P capability developments as designated by AR 5-22.

Operational effectiveness

Measure of the overall ability to accomplish a mission when used by representative personnel in the environment planned or expected for operational employment of the system considering organization, current and emerging doctrine, supportability, survivability, vulnerability, and threat.

Proponent

An Army organization or staff element that has primary responsibility for materiel or subject matter expertise in its area of interest or charged with accomplishment of one or more functions.

Requirement

An established need justifying the timely allocation of resources to achieve a capability to accomplish approved military objectives, missions or tasks.

Sponsor

The DOD component, principal staff assistant, or domain owner responsible for all common documentation, periodic reporting, and funding actions required to support the capabilities development and acquisition process for a specific capability proposal.

Standard

Establishes criteria for how well the task must be performed. The standard specifies how well, completely, or accurately a process must be performed or product developed

Standards in Training Commission

A subordinate agency of the Army Training Support Center with a mission to determine the quantities and types of munitions required for Soldiers, crews, and units to attain and sustain weapon proficiency relative to readiness levels through maximum use of TADSS and subcaliber firing devices.

Sustainment

The provision of personnel, training, logistic, environment, safety and occupational health management, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or of the national objective.

Synchronization

The process of coordinating the timing of the delivery of capabilities, often involving different initiatives, to ensure the evolutionary nature of these deliveries satisfies the capabilities needed at the specified time that they are needed. Synchronization is particularly critical when the method of achieving these capabilities involves an FoS or SoS approach.

System of systems (SoS)

A set or arrangement of systems that results when independent and useful systems are integrated into a larger system that delivers unique capabilities.

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 TTP for employing the system in operations and missions.

System training plan (STRAP)

The master training plan and training tool for a new or modified system. It is prepared to support a TSS that meets the training requirements of the warfighter. It outlines the development of the total training concept, strategy, and TSS estimates for integrating the system or FoS into the operational, institutional, and self-development domains. The STRAP is an extension of the training information contained in the CDD and CPD, and provides additional training support details.

Systems view

An architecture view that identifies the kinds of systems, how to organize them, and the integration needed to achieve the desired operational capability. It also characterizes the functionality of available technology and systems.

Target population

Persons for whom the instructional or training materials are designed. Samples from this population are used in evaluating training materials during their development. Also called target audience.

Task

A clearly defined and measurable activity accomplished by individuals and organizations. It is the lowest behavioral level in a job or unit that is performed for its own sake. It must be specific; usually has a definite beginning and ending; may support or be supported by other tasks; has only one action and, therefore, is described using only one verb; generally is performed in a relatively short time (however, there may be no time limit or there may be a specific time limit);

and must be observable and measurable. The task title must contain one action verb and an object, and may contain a qualifier.

a. **Individual Task:** A clearly defined, observable, and measurable activity accomplished by an individual. It is the lowest behavioral level in a job or duty that is performed for its own sake.

b. **Collective Task:** Clearly defined, observable, and measurable activities or actions that require organized team or unit performance, leading to the accomplishment of a mission or function.

Technical view

An architecture view that describes how to tie the systems together in engineering terms. It consists of standards that define and clarify the individual systems technology and integration requirements.

Threshold value

A minimum acceptable operational value below which the utility of the system becomes questionable.

TRADOC capability manager (TCM)

TRADOC managers of selected capability areas 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 subject matter expert/combat developer (CAPDEV) level involvement with specific materiel; and those that are strictly materiel-based. The TCM manages the development of select high-priority programs and associated products and coordinates development of home station and institutional training for individuals, crews and units. Also coordinates development and fielding of training aids, devices (system and non-system), simulations and simulators for use in training in the institution, home station, and combat training centers. See TR 71-12.

TRADOC proponents

A generic term to refer collectively to the commanders of TRADOC centers and schools designated by AR 5-22 as force modernization and/or branch proponents.

Training and Education Developer (TNGDEV)

An agency or individual responsible for using the ADDIE process to develop training and education concepts, strategies, and products to support the training and education of Active Army and Reserve Component Soldiers, civilians, and units across the institutional, self-development and operational training domains.

Training concept development

A qualitative process that uses the best military judgment and subject matter expertise of TNGDEVs, MATDEVs, and proponent subject matter experts.

Training domain JCIDS gatekeeper

CAC-T responsibility for the efficient staffing and review of JCIDS capability documents within the training community that ensures training development and training support are adequately identified, integrated, and documented in the JCIDS review process.

User

An operational command or agency that receives or will receive benefit from the acquired system. Combatant commanders and their service component commands and defense agencies are the users. There may be more than one user for a system. Because the service component commands are required to organize, equip, and train forces for the combatant commanders, they are seen as users for systems. The chiefs of the services and heads of other DOD components are validation and approval authorities and are not viewed as users.

User representative

A command or agency that has been formally designated by proper authority to represent single or multiple users in the capabilities and acquisition process. 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.

Validation

The review of documentation by an operational authority other than the user to confirm the operational capability. Validation is a precursor to approval.

Section III

Special Abbreviations and Terms

This section contains no entries.