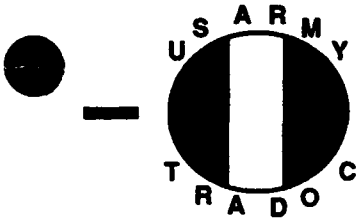

TRAINING DEVELOPERS'
PROCEDURAL GUIDE
FOR

TRAINING DEVICE REQUIREMENTS DOCUMENTATION

VOLUME I

Devices Management Directorate

U. S. ARMY TRAINING SUPPORT CENTER

June 1993

Supersedes Training Developers' Procedural Guide for Nonsystem Training Device Requirements Documentation, Dated July 1989, and System Training Device Requirements Documentation, Dated September 1989

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PREFACE

Introduction

Training developers responsible for the acquisition of training devices to support training on new systems or training programs are unique within the U.S. Army Training and Doctrine Command (TRADOC) training community. In addition to performing the normal training development functions of identifying training deficiencies, analyzing training requirements, and determining appropriate solutions to the deficiencies, these training developers must also perform duties of the combat developer in developing materiel requirement documentation and interacting with the U.S. Army Materiel Command (AMC) in the materiel acquisition process.

Purpose

This document is intended to serve two purposes:

- As a vehicle for introducing new personnel to the duties of training device development and the procedures followed within TRADOC.
- As a desktop how-to guide for frequently performed system and nonsystem training device development procedures.

Scope

The procedures in this handbook apply to Headquarters (HQ) TRADOC staff elements, TRADOC centers and schools, and TRADOC agencies associated with the training device acquisition process.

The procedures described in this handbook apply to--

- Nonsystem training devices (NSTDs) developed in support of general military training.
- System training devices (STDs) developed in support of new or system-fielded materiel.

Related Materials

This handbook was developed using the most recent U.S. Army, TRADOC, and AMC regulations and pamphlets pertaining to training developments and to the materiel acquisition process. Pertinent regulations are identified throughout the document to provide the training device developer with references to obtain additional information if desired.

Format

This handbook has been developed using a technique called information mapping, a proven method for comprehensive development and presentation of technical information. Information mapping presents information in a manner that makes learning and referencing the materials both fast and simple. The following are its main features:

- Information presented in information blocks.
- Information labeled by block.
- Consistency of format for each kind of information.
- A cross-referencing index on each information map, providing quick location of prerequisite and follow-on information.

Within this handbook, information is presented in a logical, concise manner using a collection of information maps.

Information Blocks

An information block is the smallest part of an information map. It consists of one or more sentences and/or diagrams about a fragment of subject matter and a label that describes the functions or contents of the block. Blocks are easy to identify because they are separated by horizontal lines and have their labels displayed prominently in the margin.

Information Maps

An information map is a collection of all relevant information blocks about a given subject. Most information maps in this handbook have, as the last information block, a cross-reference to other information maps containing related material.

Supersession

This handbook supersedes the *Training Developers' Procedural Guide for Nonsystem Training Device Requirements Documentation*, dated July 1989, and the *Training Developers' Procedural Guide for System Training Device Requirements Documentation*, dated September 1989.

Feedback

The Devices Management Directorate (DMD) at the U.S. Army Training Support Center is the proponent for this publication. Users are encouraged to provide comments and suggestions for improvement on DA Form 2028 to--

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NOTE

FOR QUICK REFERENCE TO THE APPROPRIATE PAGES FOR REQUIRED ACTIONS AT SPECIFIC POINTS IN THE LIFE CYCLE OF A NONSYSTEM OR SYSTEM TRAINING DEVICE, REFER TO APPENDIX A OR B RESPECTIVELY

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TABLE OF CONTENTS (con.)

CHAPTER 1

TRAINING DEVICE REQUIREMENTS

Training Device Requirements

Overview

Introduction

Rapidly evolving technology, changing AirLand Battle operations doctrine, reductions in force, and budgetary constraints constantly challenge the U.S. military's ability to train, deploy, and win.

The effective employment of these technologies is the key to combat success and is changing the way the U.S. Army plans and trains its AirLand Battle doctrine. The evolution of technology involves significantly higher costs and risks. It is readily apparent that the routine use of actual weapon systems, aircraft, medical equipment, or other system hardware is not, in many cases, the most cost-effective or safest approach for initial or skill retention training.

Training subsystems in the form of training aids, devices, simulations, and simulators (TADSS) are often the most effective means of reducing the cost of training to full system potential. Training devices reduce training costs and may also be the most effective means of solving current or potential training deficiencies. There are two categories of training devices:

System training devices (STDs) - support training for a specific weapon or equipment system. STDs are generally developed, documented, and procured concurrently with the system.

Nonsystem training devices (NSTDs) - support general military training. Training devices for systems may in some instances be developed and procured using the NSTD process; however, this does not relieve the system program executive officer (PEO) or project manager (PM) from funding the procurement of these devices to support the system.

It is the inherent responsibility of the U.S. Army Training and Doctrine Command (TRADOC) to identify training device requirements for developing and fielded systems. Training developers in coordination with the combat developers and materiel developers ensure the training subsystem is developed, procured, and fielded concurrently with the system.

Purpose

The purpose of this chapter is to provide an overview of the acquisition process for STDs and NSTDs. Discussions herein focus generally on key elements of the materiel acquisition process with specific information oriented on the subordinate training device acquisition process.

Scope

This chapter provides an overview of the following areas within the training device acquisition process.

- TADSS Program
- Materiel Acquisition
  - Requirements Generation
  - Requirements Documentation
  - Funding
  - Life Cycle Management

Specific and detailed information on all major elements of the device acquisition process is provided in the ensuing chapters of this document. The material presented herein is in compliance with the regulatory guidelines specified in the Department of Defense (DOD) Defense Acquisition Management Documentation and Reports Manual Series 5000 and Department of the Army (DA), TRADOC, and U.S. Army Materiel Command (AMC) regulations and guidelines.

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

Training support products come in a variety of configurations ranging from pocket-size job aids to full-motion aircraft simulators and embedded training capabilities. The cost of production may range from several hundred to millions of dollars. Because of the broad cost range and the magnitude of training products and subsystems, combat, materiel, and training developers must accurately identify and define the battlefield mission needs to ensure that the U.S. Army gets the best return, over time, on its training investment.

TADSS - Types of Programs

An example STD and NSTD are compared below to show significant differences.

SYSTEM TRAINING DEVICE Example: Patriot Maintenance Trainer	NONSYSTEM TRAINING DEVICE Example: Battle Staff Trainer
• Acquired by system program executive officer (PEO) or project manager (PM).	• Acquired by the Simulation, Training, and Instrumentation Command (STRICOM).
• Prioritized and funded with the system.	• Prioritized and funded within the Training Mission Area (TMA).
• Requirement is documented within the system's requirements document.	• Requirements are stated in device requirements documents.
• Procurement may be accomplished with the system or separately from the system.	• Acquisition is through procurement or in-house development/fabrication.

TADSS Program Management

Management of the TADSS requirements is the responsibility of these activities:

- Assistant Secretary of the Army for Research, Development, and Acquisition (ASARDA) - has overall Department of the Army responsibility for research, development, and acquisition activities.
  - PEOs/PMs - develop and procure TADSS for developing systems under their purview.
- Headquarters, Department of the Army (HQDA) - approves, coordinates, and prioritizes TADSS requirements, development, and acquisition.
- TRADOC - generates and documents TADSS requirements.
  - U.S. Army Training Support Center (ATSC) - is TRADOC's agent for processing these actions.

TADSS Program Management (con.)

- AMC - develops and procures NSTDs based on approved requirements.
  - U.S. Army Simulation, Training, and Instrumentation Command (STRICOM) - provides concept formulation for all training devices and development/procurement for most NSTDs.

The framework for program management is the Acquisition Milestones and Phases model within the materiel acquisition process.

Materiel Acquisition

Materiel acquisition is a complex procedure comprised of several unique processes that interact on a routine basis to ensure requirements are identified and documented properly and the appropriate solutions are developed and acquired to meet the user's requirements.

The following are the primary focuses of the materiel acquisition process:

- Requirements generation - What generates the requirement for a new materiel system or training hardware?
- Requirements documentation - How are these requirements documented to provide the decision makers, engineers, procurement specialists, trainers, and supporting staff agencies a clear understanding of what is needed and why?
- Funding - How are the necessary funds obtained to conduct comprehensive research and to develop and procure the appropriate materiel solution?
- Life cycle management - How are the development and testing of emerging materiel tracked to ensure that what is being procured does, in fact, meet the user's requirements?

This chapter provides a broad overview of how these areas are addressed in the materiel acquisition process. The succeeding chapters provide the detail necessary to support this process within DOD and DA guidelines.

Principles of Device Acquisition

These are two constant principles of device acquisition:

- TADSS are materiel systems. As such, their acquisition is governed by public law, DOD directives (5000 series), and U.S. Army Regulations.
- The following are required in the procurement of any device:
  - Approved materiel requirements document.
  - Appropriate funding.
  - Acquisition in-process review (IPR) approval at key decision points to determine if the initiative should continue, take another direction, or be terminated.

Acquisition Players

The acquisition of materiel systems and training devices for the U.S. Army requires close interaction between several organizations and personnel. The major organizations and agencies are listed below. In addition to these, coordination must be effected with other services and allied nations when developing or procuring new systems or TADSS.

- DOD. The Under Secretary of Defense for Research, Development, and Acquisition is responsible for managing the DOD Acquisition Program. The Under Secretary may appoint and direct personnel responsible for study and acquisition of materiel at various levels within DOD.
- ASARDA. The ASARDA exercises responsibility for U.S. Army materiel acquisition through the PEOs and PMs. PEOs/PMs have full-line authority to manage the funding, development, and acquisition of a new system and associated training subsystems including training devices and embedded training capabilities. A PEO or PM is assigned to each system under development.
- HQDA. HQDA has oversight of the U.S. Army's materiel and training device acquisition process. HQDA oversees the activities of AMC and TRADOC. Each U.S. Army major command (MACOM) has unique functional activities that directly interface in the materiel and training device requirements identification and acquisition arena.

Acquisition Players (con.)

- AMC. The AMC works with the PEO/PM in the materiel acquisition process. A subordinate command of AMC that is of vital interest to the training developer is STRICOM. STRICOM is responsible for the development and acquisition of NSTDs and for providing concept formulation for system TADSS. STRICOM may also develop and procure system TADSS at the request of the system PEO/PM.

- TRADOC. TRADOC develops requirements for new systems and TADSS and is the users' representative during the materiel acquisition process. Key to the TRADOC effort are the following:

  - The proponent combat developer - is responsible for identifying and defining materiel requirements and interfacing with the system PEO/PM.

  - The proponent training developer - is responsible for identifying training deficiencies and developing training programs and subsystems to correct those deficiencies. The training developer interfaces with the system PEO/PM and STRICOM.

  - ATSC - has responsibility for managing the documentation and acquisition of training devices as a primary agent for HQDA/TRADOC. To this end, interface actions routinely include the combat developer, training developer, and materiel developers.

Joint Working Groups (JWGs)

Several types of JWGs support the essential interaction process between the primary acquisition players. These JWGs may be conducted as combined or stand-alone activities. The following are JWGs and their respective chairpersons:

- Manpower and personnel integration (MANPRINT) JWG (MJWG). The proponent combat developer chairs the MJWG for a materiel system. The purpose of the MJWG is to plan for MANPRINT activities throughout the system development cycle. An outcome of the MJWG is the system MANPRINT management plan (SMMP), which will be updated throughout system development. For NSTDs the MJWG is conducted as part of the training device JWG 1 and is chaired by the proponent training developer.

Joint Working Groups (JWGs) (con.)

- System mission need statement (MNS) JWG. The proponent combat developer chairs the MNS JWG for a materiel system. The MNS JWG is convened to obtain input from major players in the preparation of the MNS.

- System operational requirements document (ORD) JWG. The proponent combat developer chairs the ORD JWG for a system. The ORD JWG it is held after staffing of the draft ORD with the purpose of finalizing the ORD for submission to the TRADOC Requirements Review Committee (RRC).

- Training device JWG. The proponent training developer chairs training device JWGs with the materiel developer as the vice chairperson. Normally at least two JWGs are conducted for TADSS. The first, in general terms, is to initiate concept formulation, and the second is to finalize requirements documentation.

- Test integration working group (TIWG). The materiel developer chairs the TIWG for materiel systems and for TADSS. Several TIWGs may be convened throughout system or TADSS development as required to prepare and update the test and evaluation master plan (TEMP) and to monitor developmental and operational testing of the system and the system TADSS.

- Training support work group (TSWG). The materiel developer chairs the TSWG. The purpose is to coordinate or resolve issues involving new equipment training plans (NETPs) for developing systems or NSTDs.

Requirements Generation

Requirements for system and nonsystem TADSS in support of the combined arms training strategy (CATS) are identified through a continuous process of threat-based analysis and evaluation of the U.S. Army's capabilities to respond to existing and emerging battle concepts and scenarios. The basis of this process consists of the capability/ deficiency criteria and the systems approach to training (SAT).

- The capability/deficiency criteria is used for comprehensive analysis, evaluation, and development of recommended solutions to existing and/or emerging issues. The focus is on the following domains:

  - Doctrine.

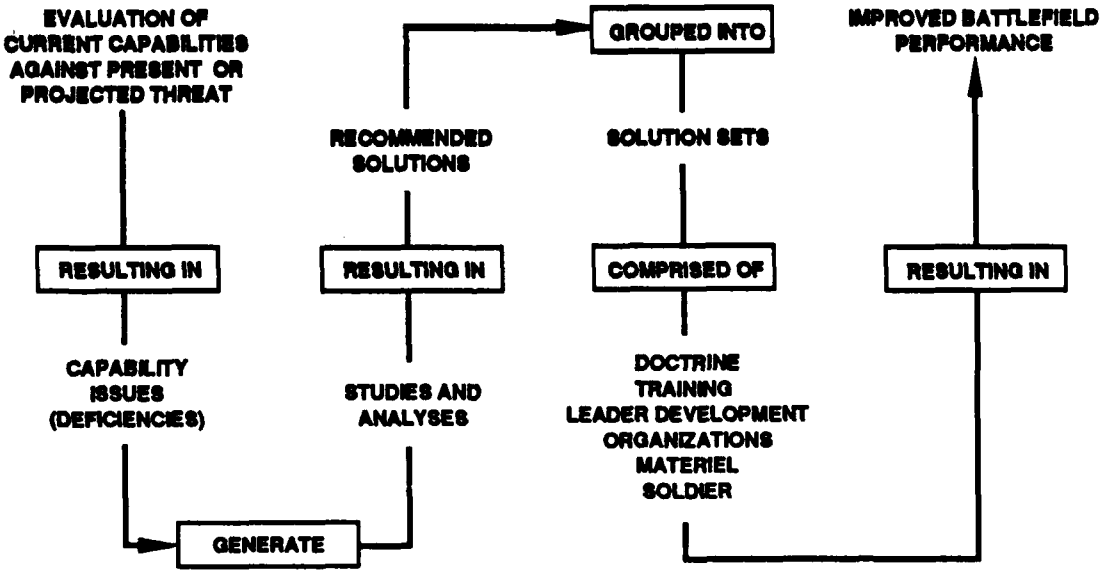
  - Training.

Requirements Generation (con.)

- Leader development.
- Organization.
- Materiel.
- Soldier.

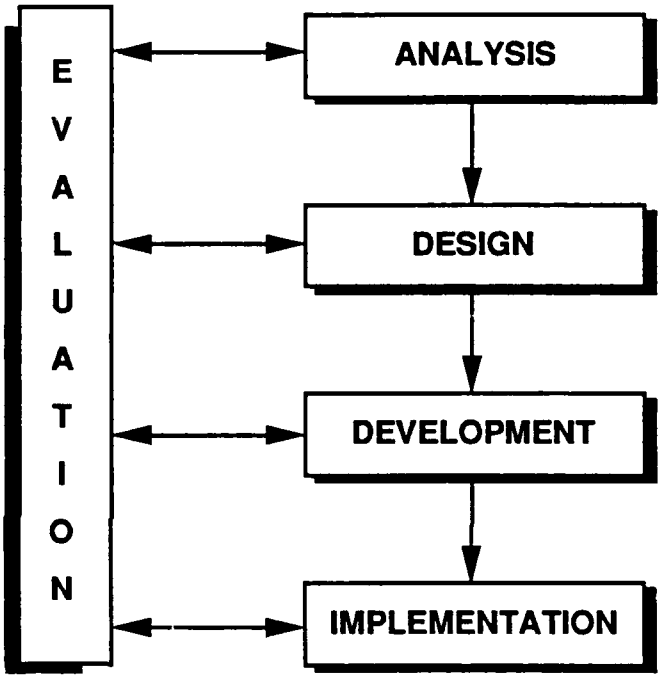
Training devices and simulators that result as recommended solutions to capability issues may fall into both the training domain and the materiel domains. However, since they are designated as materiel systems, procurement is through the materiel acquisition process except in special cases.

The requirements generation process (as shown in the next figure) is a recurring and overlapping process. As such it is affected by and inherently impacts on other programs that support the materiel acquisition process. These include the SAT process, the planning, programming, budgeting, and execution system (PPBES), and documentation of basis of issue plan and qualitative and quantitative personnel requirements information (BOIP/QQPRI). Each of these areas is addressed in ensuing information blocks and/or covered in detail in subsequent chapters.



Requirements Generation (con.)

- The SAT is a systematic process to identify current and potential performance deficiencies, both collective and individual, and resolve those deficiencies through the implementation of a selected medium such as training devices or a combination of media that may include a device application. The interrelated activities and elements of the SAT process are shown in the figure below.



Requirements Documentation

When the need for a training device has been identified, it must be documented so that all the players in the materiel acquisition process fully understand the need and the ultimate requirement. Initially, the need will be explained in relatively general terms. As analysis continues, the general description will become increasingly detailed and will include constraints, essential characteristics, and, eventually, specifications.

It is the proponent's responsibility to document both the need and the requirement for training devices. NSTDs and STDs are documented differently:

- NSTDs are documented using a MNS and an ORD.

Requirements Documentation (con.)

- STDs do not require a separate MNS and ORD since the training subsystem (which includes training devices) is documented, funded, developed, and procured with the system it supports. The need for the STD will be identified in the system MNS and in the Training Support Requirements (TSR) Annex to the system ORD.

Mission Need Statement (MNS)

The MNS is the initiating document for all acquisition actions. A MNS for a new system need defines the battlefield deficiency in operational language to provide multiple options for analysis during concept studies. Likewise a MNS for an NSTD will describe the training deficiency in terms that will permit multiple alternatives to be explored through a training effectiveness analysis (TEA). Primary responsibility for the preparation of the MNS rests with the mission area proponent. The combat developer formulates the system MNS with input from the training developer and the materiel developer. The training developer initiates the NSTD MNS, and it is supported by input from the materiel developer.

Operational Requirements Document (ORD)

The ORD, after approval, allows the U.S. Army to begin development and/or production of a materiel system and attendant training support systems or an NSTD. In either instance, the ORD contains operational parameters for the proposed end item. The proponent combat developer prepares the system ORD with inputs from the training developer and materiel developer. The NSTD ORD is the responsibility of the training developer with supporting input from the materiel developer.

Comment

Expanded and detailed information on the purposes and preparation of the nonsystem and system MNS and ORD is contained in chapters 3 and 4 respectively.

Funding

The overall fiscal management process that supports all acquisition actions is the DOD's planning, programming, and budgeting system (PPBS). The PPBS and its products provide the basis for decision makers to make informed affordability assessments and resource decisions on defense acquisition programs.

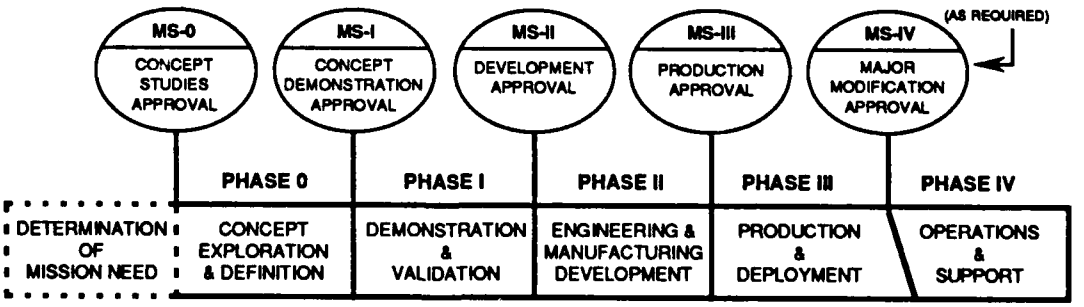
Planning, Programming, Budgeting, and Execution System (PPBES)

The DOD PPBS provides funds to the service departments; the U.S. Army uses its PPBES to execute the funding of U.S. Army-specific programs. Execution actions are continually reviewed throughout the materiel acquisition process. There are four key activities:

- Planning - covers the definition and examination of alternative strategies, analysis of changing conditions and trends, assessment of threat and technology, and evaluation of long-term implications.
- Programming - translates goals and objectives to actions, considers alternatives and trade-offs, and projects future requirements and programs.
- Budgeting - in the broad sense encompasses formulation, justification, and control phases of the budget process.
- Execution - is the expending of current fiscal year funds in the execution of the approved budget.

Life Cycle Management

The objective of life cycle management is to track and guide the developing item to ensure that materiel systems and their training subsystems or NSTDs meet user requirements. The acquisition process, based on the DOD Acquisition Milestones and Phase Model as prescribed in DODI 5000.2, *Defense Acquisition Management Policies and Procedures*, is depicted below.



Life Cycle Management (con.)

This model is the framework for managing programs that fall under most acquisition categories (ACATs). The majority of the U.S. Army's programs fall into ACATs III and IV, and the management model is tailored to meet program-specific requirements. ACATs and milestone input/decision authority are covered in ensuing information blocks. The following are the phases in the acquisition process:

- Phase 0, Concept Exploration and Definition. The purpose of this phase is to explore and identify alternative system concepts. The focus is on defining and evaluating these concepts and assessing their relative merits in preparation for a decision at milestone I.

- Phase I, Demonstration and Validation. This phase is used to verify the proposed system concept, eliminate problems, and further examine and reduce risk factors identified in phase 0. Phase I actions include but are not limited to prototype development, testing, and early operational assessment of critical systems, subsystems, and components.

- Phase II, Engineering and Manufacturing Development. The key element of this phase is the development of system-specific performance requirements and standards to delineate contract specifications. Configuration control for the design and the production processes is also established at this point.

- Phase III, Production and Deployment. Activities in this phase monitor system performance and quality from production through follow-on operational testing. Support plans are also implemented during this phase to ensure training devices and system-related resources are fielded concurrently with the system.

- Phase IV, Operations and Support. This phase is initiated after the system(s) fielding is complete. Emerging quality and safety problems are corrected, appropriate modifications are undertaken to extend system service life, and postfielding supportability reviews are conducted.

Milestone Decisions, Levels of Authority

At critical points in the development of materiel systems, the program is reviewed and decisions are made as to whether to continue, modify, or cancel the program. The appropriate level of milestone decision authority makes these decisions.

Milestone Decisions, Levels of Authority (con.)

All acquisition programs, with the exception of sensitive classified programs, fall into one of four principal categories:

- ACAT I - consists of unclassified major programs ranging from $200 million to $1 billion (1980 constant dollars) in a fiscal year. The Under Secretary for Defense Acquisition designates and approves these programs. The DOD component head or acquisition executive may be the delegated approval authority.

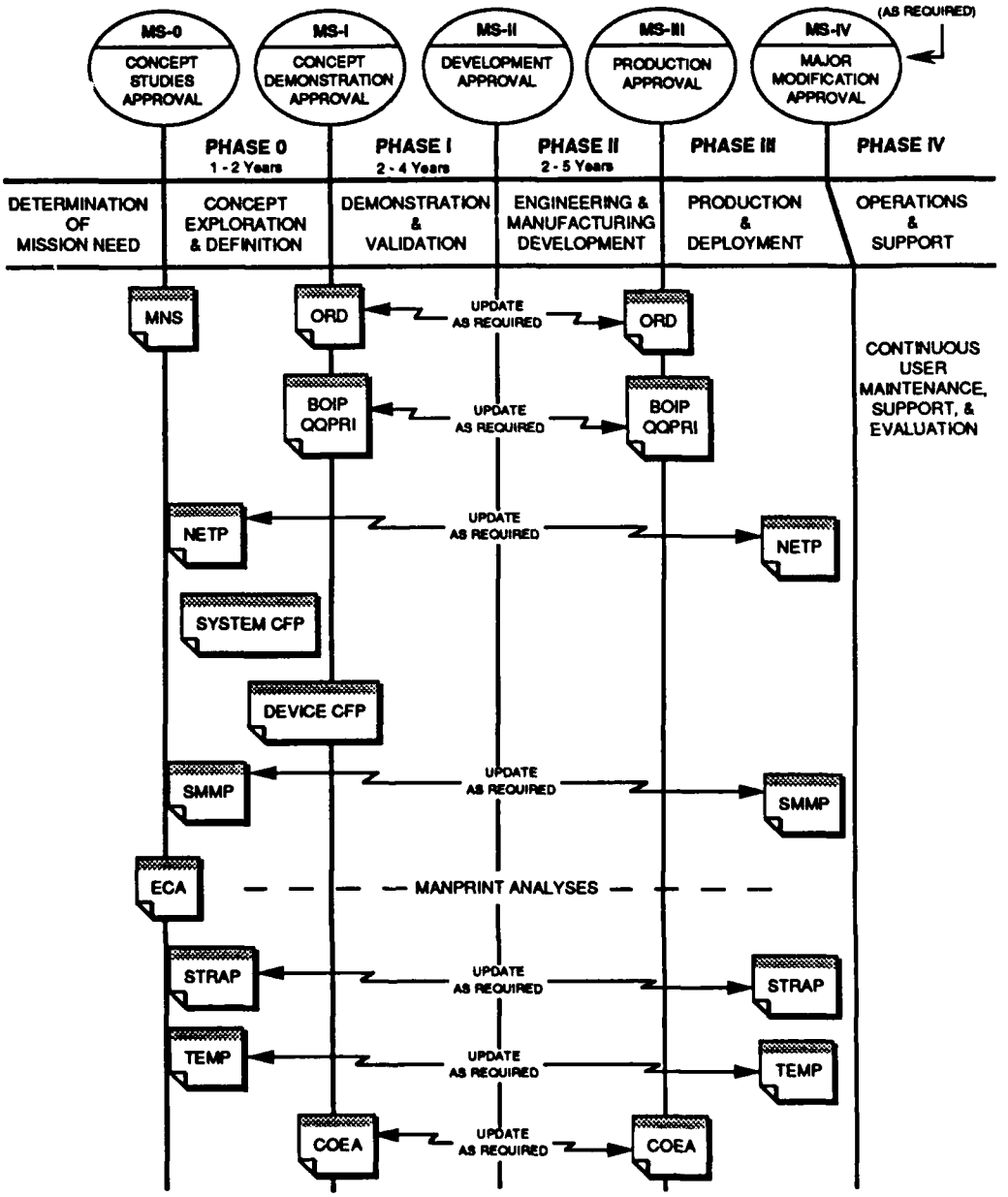
- ACAT II - encompasses major programs not meeting ACAT I criteria with an eventual projected expenditure of $75 to $300 million (1980 constant dollars) in a fiscal year. Designation and approval authority (if delegated) is the DOD component head or the DOD acquisition executive.

- ACATs III and IV - encompass all programs that do not meet the classification and cost criteria of ACATs I and II. These categories also have the distinction of assignment of approval authority to the lowest level deemed appropriate by the designating authority. The designating authority in both of these categories is the service acquisition executive.

DOD Acquisition Milestones and Phases

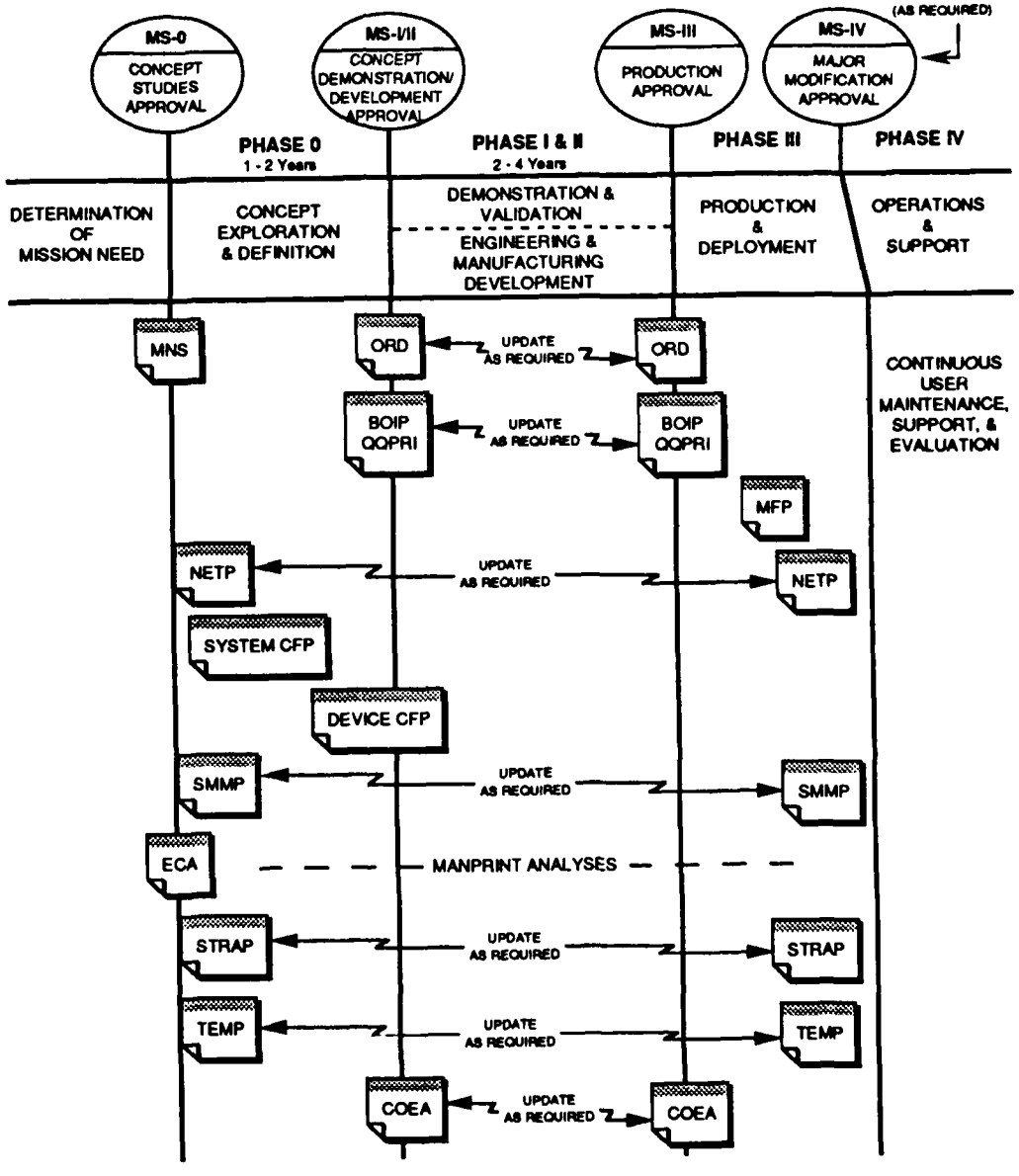
The DOD Acquisition Milestones and Phases Model from DODI 5000.2 (shown below) is normally used for full-scale development (FSD) programs for a major system acquisition.

This model consists of five phases and decision points that identify required changes and determine if the acquisition process will continue from one phase to another. The figure below is a graphic representation of the milestones, phases, time lines, and associated documentation for the FSD Acquisition Milestones and Phases Model.



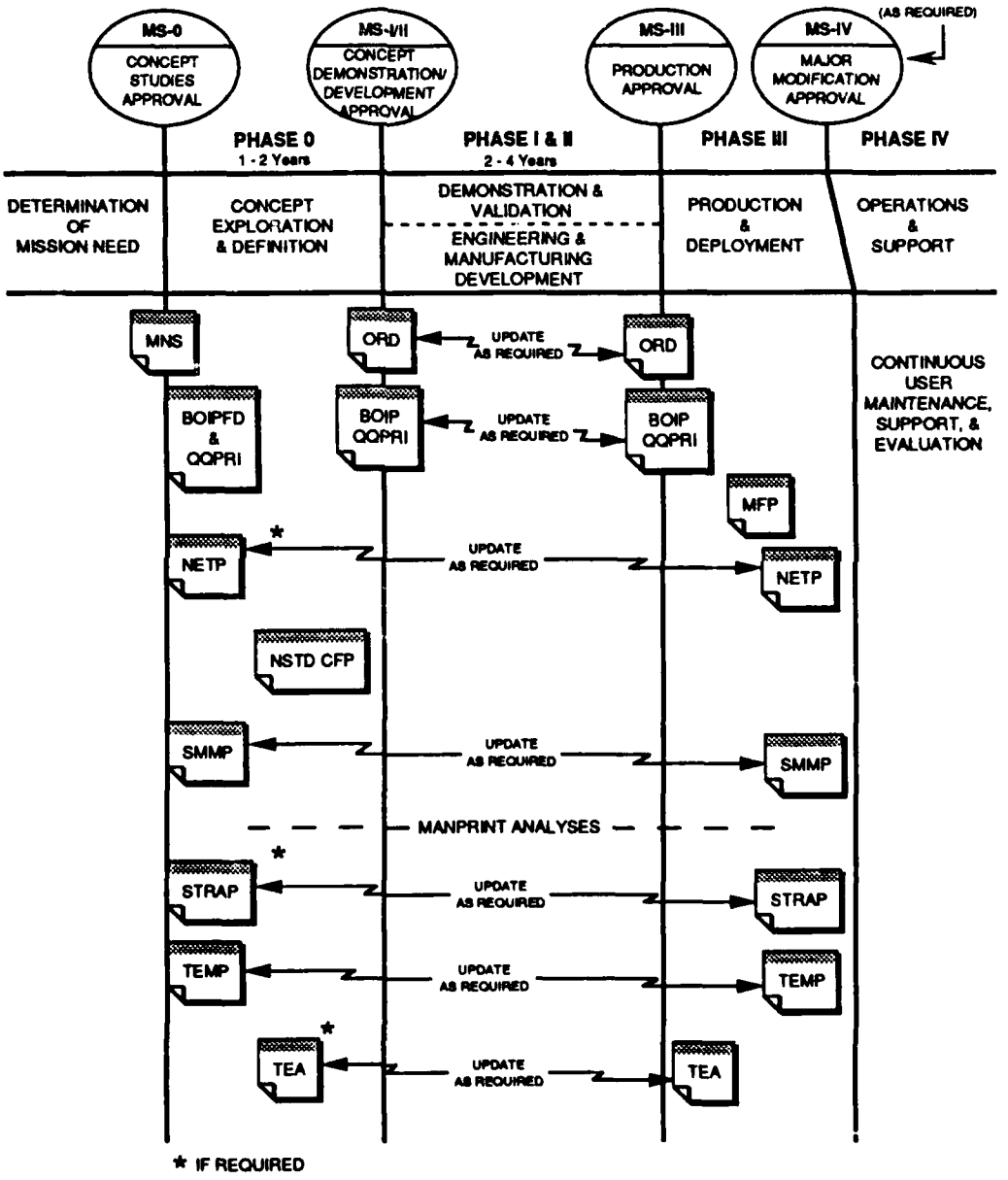
Tailored Model

The FSD Acquisition Milestones and Phases Model may be tailored to reduce the time it takes to validate an identified need consistent with reasonable and sound management practices. Although milestone I and milestone II have been combined, the same acquisition documents and activities developed and performed in the FSD model apply. An example of a tailored life cycle model (LCM) is shown below.



Nonsystem Training Device Life Cycle Model (NSTD LCM)

The NSTD LCM is a management model tailored specifically for use in the development and acquisition of NSTDs. It has combined phases I and II to set a single decision point. The phases purposely overlap to allow flexibility in the process.



Summary

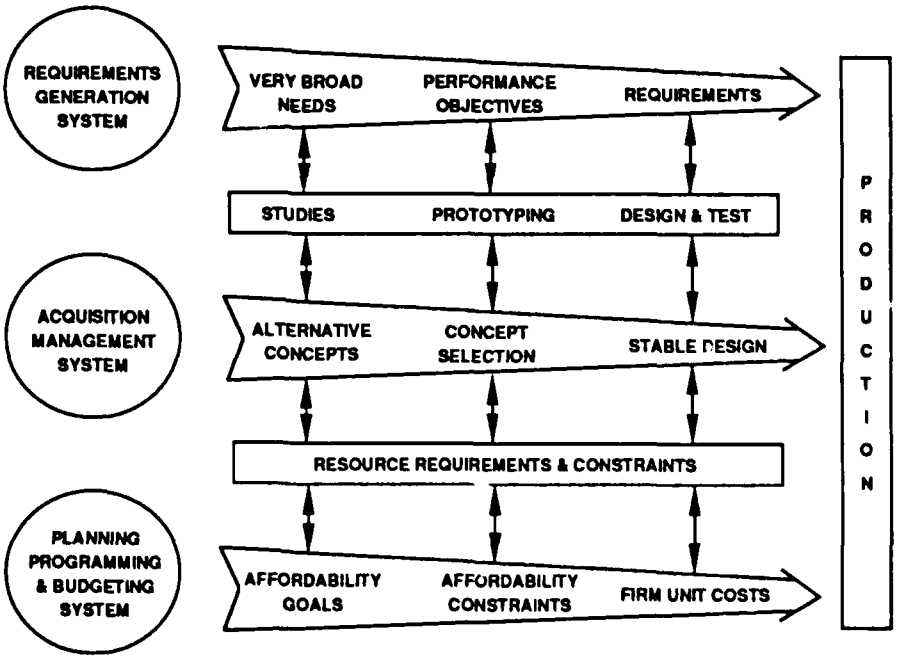
The need for new TADSS is identified to meet CATS requirements through the SAT process. These requirements will normally be general in nature and documented in a MNS. Training developers and materiel developers assess alternative means to satisfy these needs based on current and emerging technologies, risk factors, capabilities of industry, and applicable constraints.

Initial affordability decisions on new acquisition programs must be made within the limits and guidance of the PPBS, DA planning initiatives, approved long-range investment plans, and overall funding constraints.

The preliminary broad mission statements must be progressively translated into performance requirements and a stable design package that can be efficiently produced.

Cost, performance, and schedule trade-offs must be made throughout the course of the acquisition program. These trade-offs are based on the status of program execution, risk assessment, testing results, and affordability constraints within the life cycle management process.

These key interactions are depicted below.



Summary (con.)

The remainder of this procedural guide provides the detail necessary for TRADOC training developers to fulfill their responsibilities in the identification of STD and NSTD requirements, the development of appropriate documentation, and the execution of training development actions and interactions under the materiel acquisition process.

- Chapter 2, Training Device Acquisition Process, expands information on the processes and depicts the required steps. It contains a detailed explanation and discussion of the interrelationships of the training developer's activities and requirements.

- Chapter 3, Nonsystem Training Device Requirements Documentation, provides detailed information on the development of the nonsystem device requirements documentation. This chapter includes information on who completes the documentation, the sources for inputs and outputs, and other documentation or processes used to provide and/or collect information. The NSTD MNS and ORD are discussed in this chapter.

- Chapter 4, System Training Device Requirements Documentation, provides detailed information on the development of system and training subsystem requirements documentation. This chapter includes information on who completes the documentation, the sources for inputs and outputs, and other documentation or processes used to provide and/or collect information. Specific documents covered include the system MNS, ORD, and the ORD Training Support Requirements (TSR) Annex.

- Chapter 5, Supporting Documentation, details information on the development of documents during the acquisition process to support the development of the STD and NSTD. These documents include the system training plan (STRAP); BOIP/QQPRI; reliability, availability, and maintainability (RAM) data; SMMP; TEMP; and NETP.

- Chapter 6, Training Device Studies, provides detailed information on the types of studies that are required or can be performed on STDs or NSTDs, the relationships between the studies, and the training developer's role in the performance of these studies. These studies include the cost and operational effectiveness analysis (COEA), training effectiveness analysis (TEA), and the concept formulation process.

Summary (con.)

- Chapter 7, Joint Working Groups, provides information on the interaction of these elements in the course of the development of the device. Emphasis is placed on those JWGs that are specifically oriented toward training device acquisition. These working groups include Training Device JWG, MANPRINT JWG, TIWG, MNS JWG, ORD JWG, and TSWG.

- Chapter 8, Validation/Prioritization and Review/Approval Process, outlines information on those processes that are used to establish priorities and provide decision makers with essential input for continued development decisions.

- Chapter 9, Modification Management, covers information essential to the training developer to accomplish changes in documentation and acquisition requirements resulting from recommended engineering changes and product improvement requirements for all hardware, firmware, and software changes to type classified materiel.

- Appendix A, Nonsystem Training Device Life Cycle Model, provides detailed graphic representation of all of the procedures and steps required for NSTDs. Additionally, the model provides references to the location within the procedural guide for an explanation of each step.

- Appendix B, System and Training Subsystem Life Cycle Model, provides detailed graphic representation of all of the procedures and steps required for STDs. Additionally the model provides references to the location within the procedural guide for an explanation of each step.

- Appendix C, Acronyms, contains a list of the acronyms used in this procedural guide.

Pertinent Regulations and Publications

DODI 5000.2, *Defense Acquisition Management Policies and Procedures*

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

AR 70-1, *Army Acquisition Policy*

AR 71-2, *Basis of Issue Plan (BOIP) and Qualitative and Quantitative Personnel Requirements Information (QQPRI)*

AR 350-38, *Training Device Policies and Management*

Pertinent Regulations and Publications (con.)

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

TRADOC Reg 350-7, *Systems Approach to Training*

TRADOC Reg 350-32, *The TRADOC Training Effectiveness Analysis (TEA) System*

TRADOC Reg 350-40, *The Combined Arms Training Strategy*

TRADOC Reg 351-9, *Systems Training Development*

Related Pages

Appendix A, Nonsystem Training Device Life Cycle Model, pg. A-1

Appendix B, System and Training Subsystem Life Cycle Model, pg. B-1

CHAPTER 2

TRAINING DEVICE ACQUISITION PROCESS

Training Device Acquisition Process

Overview

Introduction

Training devices are developed and acquired under a doctrine- and requirements-based process. It is the responsibility of the TRADOC training developer to identify these requirements in coordination with the combat developer and materiel developer to ensure materiel systems and training subsystems or NSTDs are developed, procured, and fielded in a timely manner.

Training device development processes are managed and monitored through the use of life cycle models. These models contain a sequence of specific program activities, documentation requirements, and decision phases essential to the U.S. Army's materiel acquisition process. The models at appendix A and appendix B to this procedural guide depict the normal interactions between the combat, training, and materiel developers. The events shown are based on DOD-established practices for integrated system and device fielding.

Note that the models for development and procurement of NSTDs differ from those for development and acquisition of STDs. This difference occurs because STDs must follow the acquisition process for the developing system, whereas NSTDs are separate items of equipment and are developed and procured independently of any other item.

Life cycle models for development and acquisition of materiel systems or training devices are not intended to restrict the overall acquisition process; accordingly, the models are routinely tailored by integrating data available from studies and/or field testing. Tailoring does not eliminate documentation requirements; however, it does allow for flexibility by combining phases and milestones and accelerating the established process.

Purpose

This chapter focuses on the steps and documentation that require training developer initiation and interaction with other players in the acquisition process. Each of the steps, for both STDs and NSTDs, is discussed in general terms to provide overall information on each step and the associated actions required. More specific information on key elements is presented in subsequent chapters of the guide.

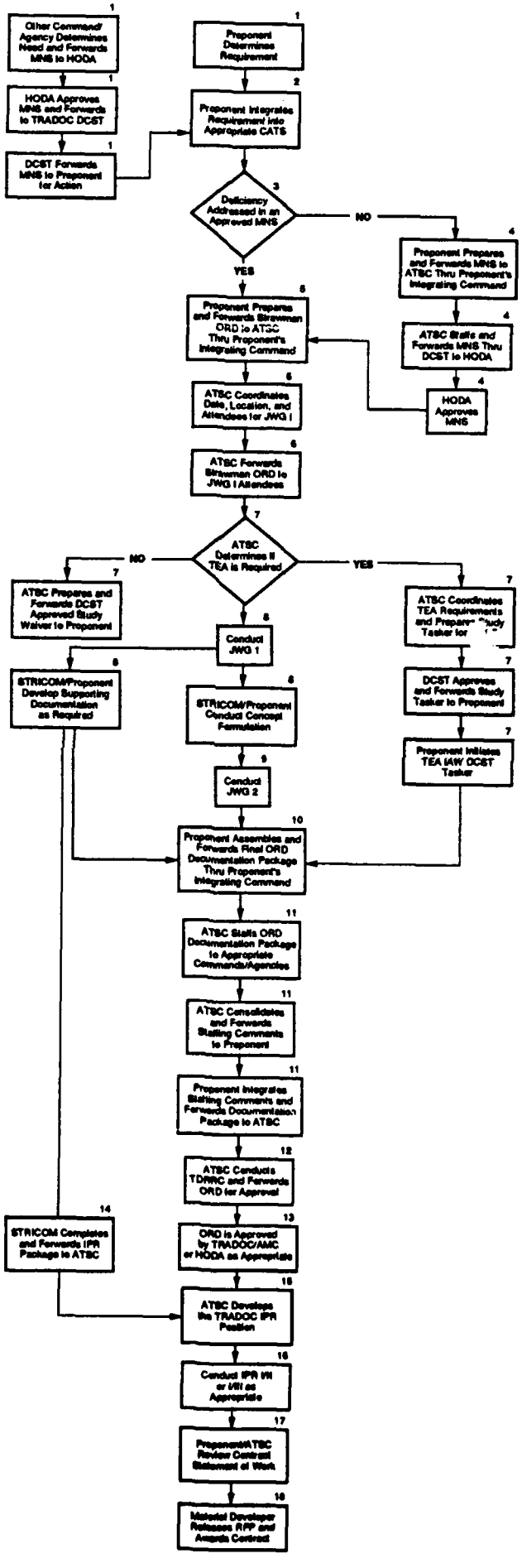
Two Processes

The steps associated with two similar, but distinct, acquisition and life cycle processes are addressed in this chapter. Accordingly, it is organized in two sections:

- Nonsystem Training Device Acquisition Process. This process begins with the recognition of a need for an NSTD and culminates in the publishing of an approved operational requirements document (ORD) and conduct of an in-process review (IPR) to permit development of the proposed training device. This process is based on the Nonsystem Training Device Life Cycle Model found in appendix A.

- System Training Device Acquisition Process. This process begins with the recognition of a need for a training device as part of a new system's training subsystem and proceeds through the development of all supporting training documentation for the system's ORD. The key elements in development and acquisition of STDs are to ensure that the requirements for the devices are documented in the system's requirements documentation and that a concept formulation is conducted for each device requirement. This process is based on the System and Training Subsystem Life Cycle Model found in appendix B. Within this chapter this process is presented in two phases (system documentation and concept formulation).

NONSYSTEM TRAINING DEVICE ACQUISITION PROCESS OUTLINE



Introduction

NSTDs, like weapon or equipment systems, are developed and procured under the acquisition guidance and policies outlined in DODI 5000.2, *Defense Acquisition Management Policies and Procedures*. A coordinated effort is essential between the TRADOC training developer and the AMC materiel developer from the recognition of an NSTD requirement throughout the development and acquisition process to ensure the fielded device provides a cost- and training-effective solution to the identified training deficiency or issue.

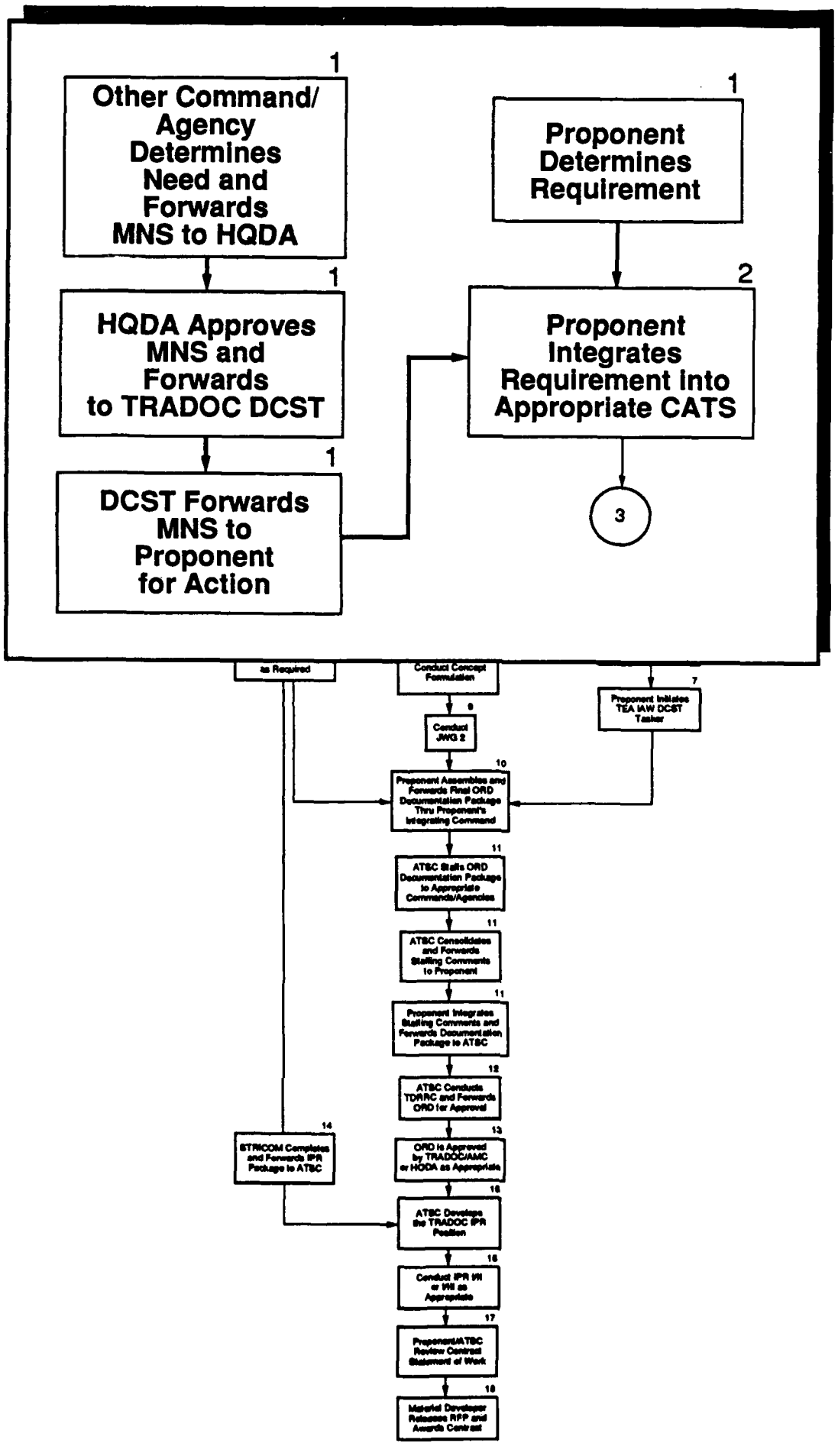
Definition

An NSTD is a device that supports general military training. Training devices for fielded systems may also be documented in a separate ORD (like NSTDs). However, funding for system TADSS remains the responsibility of the system PEO/PM.

Comment

Each of the steps of the NSTD process is summarized in this chapter. Starting on the next page, specific steps are highlighted on the opposing page to the text. The text describes the NSTD process, which consists of 18 interrelated steps. A step in this process may have one or more related elements. For example, step 1, "Determine Requirement," consists of four elements, each identified as step 1. This is because a need or requirement can be identified by more than one source. The text for step 1 explains the elements of the step to be followed depending on where the need or requirement originated.

NONSYSTEM TRAINING DEVICE ACQUISITION PROCESS OUTLINE



Step 1
Determine Requirement

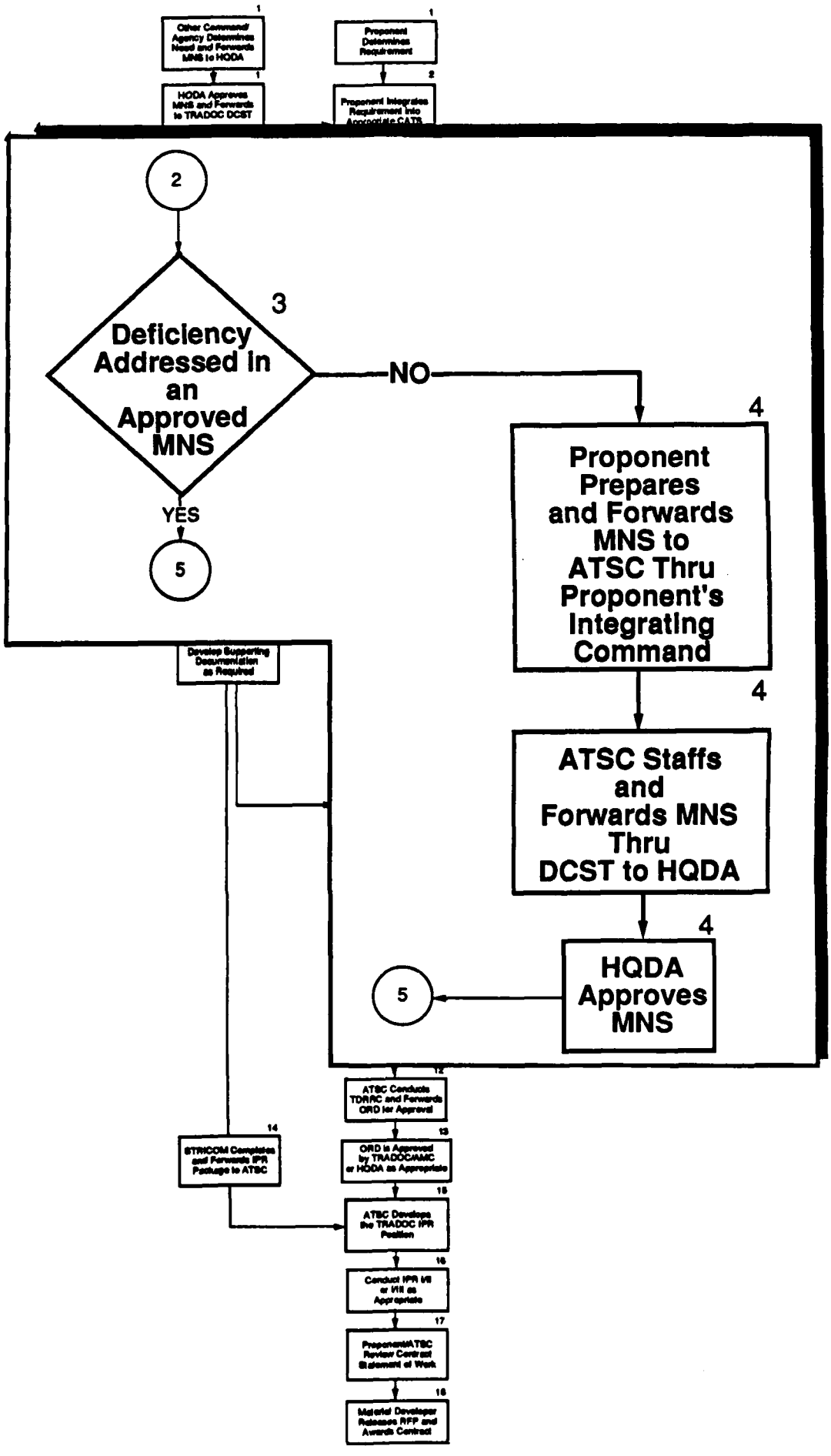
The process of documenting device requirements begins with a recognition of a need/requirement by the training community for a training device as a cost- and training-effective solution for a stated training deficiency. This need may be determined by the training developer after conducting an analysis using the systems approach to training (SAT) process or may be proposed by an individual, unit, agency, or command. The analysis process may include data from postfielding studies, other training studies, command guidance, training exercises, and similar sources. This need, when identified, must support a specific mission need.

If the requirement is identified by the TRADOC school proponent, the proponent will integrate the requirement into the appropriate combined arms training strategy (CATS). If a requirement is identified by other than the school proponent, then that requirement is forwarded through HQDA and TRADOC channels to the proponent for integration into the appropriate CATS and initiation of the acquisition process. The document transmitting the need may be a formal Mission Need Statement (MNS) prepared by any command or may be as informal as through the suggestion award program or a memorandum describing a training deficiency. If a MNS is submitted HQDA may approve the document then submit it though TRADOC to the proponent school for development of an ORD. At this point in the process, what is important is that the requirement get to the proponent for validation and integration into the CATS so that further acquisition actions can be initiated.

Step 2
CATS Integration

The CATS is the basis for an integrated training program that supports institution through unit training requirements and standards. Once the requirement has been determined, the training developer must ensure that it is incorporated into the proponent's CATS. All TADSS requirements must be included in CATS. The CATS priority list is used to plan, program, and budget funds in support of research, development, and acquisition (RDA) requirements and to adjust program dollars within the training mission area (TMA).

NONSYSTEM TRAINING DEVICE ACQUISITION PROCESS OUTLINE



Step 3
Decision: Existing Approved MNS?

At this point in the process, formalization of the program to develop and/or procure a nonsystem TADSS begins. An approved mission need statement (MNS) is required to formalize this process by permitting funds to be expended in the conduct of concept studies. These studies begin to define functional requirements for the proposed TADSS as well as identifying alternatives for concept formulation in meeting the identified need/requirement. If the training deficiency that generated the requirement is addressed in an already approved MNS, the training developer may proceed to step 5, preparing the strawman ORD. If not, then a MNS must be prepared and forwarded through channels to HQDA for approval (step 4).

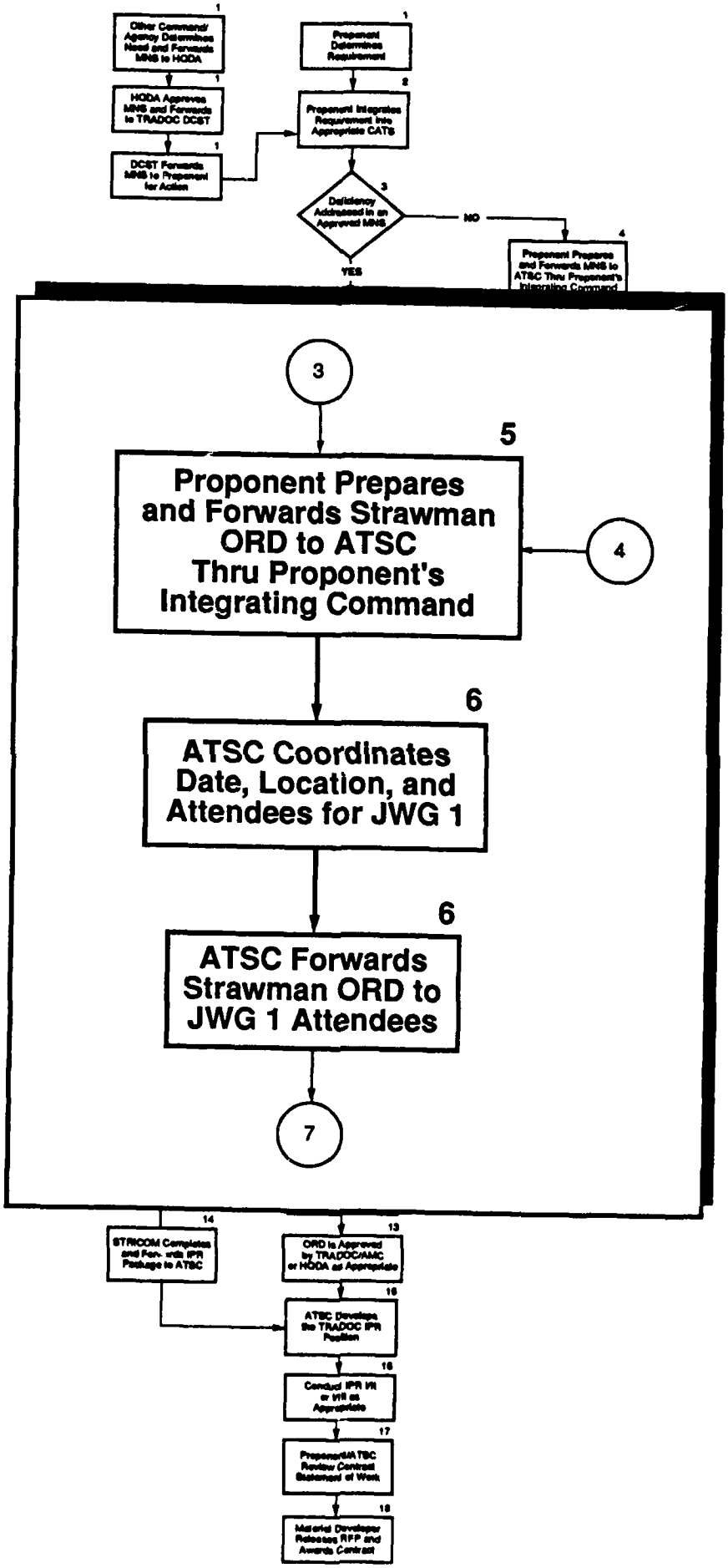
Step 4
MNS Preparation and Approval

If an approved MNS addressing the identified need/requirement is not in existence, then the proponent training developer must initiate one at this time. The MNS addresses the training requirement as a mission need and not as a hardware-specific requirement. The content and format for a MNS is found in DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*. Because this manual was designed to provide guidance for developing documentation in support of the acquisition of materiel systems as opposed to training hardware, additional guidance specific to TADSS requirements documentation has been developed and is provided in chapter 3 of this procedural guide.

Upon approval of the MNS by the proponent's school commandant, the training developer forwards the MNS to ATSC through the appropriate integrating command. ATSC staffs the MNS through HQ TRADOC for approval by HQDA. ATSC and the proponent training developer must maintain coordination throughout the staffing process to ensure all appropriate comments are incorporated into the document prior to forwarding it to HQDA for approval. HQDA is the lowest level of approval authority for the MNS.

Subsequent to approval, ATSC distributes the MNS to the proponent and other agencies/services as required. Each school must retain a record copy of their approved MNS.

NONSYSTEM TRAINING DEVICE ACQUISITION PROCESS OUTLINE



Step 5
Strawman ORD Development

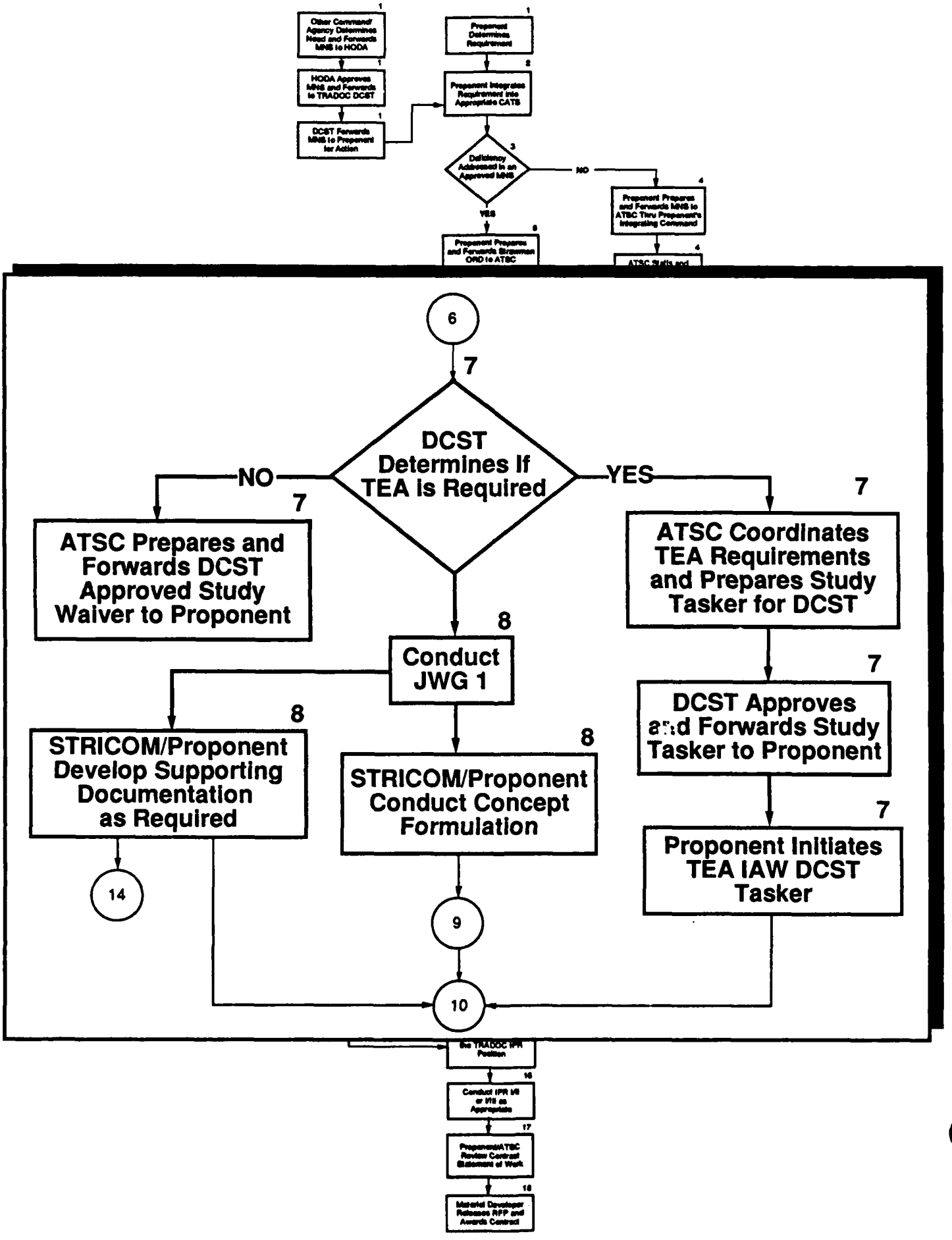
When a MNS has been approved, the proponent school begins development of an ORD for the proposed training device. The ORD format, like the MNS, is found in DOD 5000.2-M. The content and format of an ORD specifically for nonsystem TADSS are described in detail in chapter 3 of this procedural guide. Development of an ORD in sufficient detail for staffing and approval is an iterative process that can be expected to take from six to nine months. (The actual time is dependent on conduct of concept formulation.)

To begin this interactive process, the strawman ORD is developed and staffed within the proponent school to collateral and subordinate agencies prior to being forwarded through the proponent's integrating command to ATSC. A system training plan (STRAP) may be required for the proposed device. ATSC, in conjunction with the Systems Training Integration Division (STID), Training Development and Analysis Directorate (TDAD), will determine whether a STRAP is required and inform the proponent training developer. If a STRAP is required, it should be developed concurrently with the ORD actions.

Step 6
Pre-JWG 1 Coordination

Upon receipt of the strawman ORD from the proponent school, ATSC reviews the document for completeness and initiates actions leading to joint working group (JWG) 1. ATSC coordinates with the proponent and Simulation, Training, and Instrumentation Command (STRICOM) to determine where and when the JWG will take place as well as who will attend. Copies of the strawman ORD and the proposed agenda are distributed to all JWG members. Any agencies or major Army commands (MACOMs) that will not be represented at the JWG are requested to provide comments to ATSC.

NONSYSTEM TRAINING DEVICE ACQUISITION PROCESS OUTLINE



Step 7
Decision: TEA Required?

A training effectiveness analysis (TEA) assesses the cost and training effectiveness of alternative training approaches to satisfy a training need. ATSC recommends to Deputy Chief of Staff for Training (DCST) whether or not a TEA should be required. The recommendation is based on an evaluation of the probable cost, complexity, applicable technologies, risk, and other related factors. If a TEA is required, ATSC prepares a study tasker for the DCST to send to the proponent outlining the extent of the necessary TEA actions. The TEA process continues through all subsequent phases of the device development process on an as-required basis. A TEA, if conducted, supports the concept formulation and must be completed in time to support approval of the ORD. Types of TEAs are explained in chapter 6 of this procedural guide.

If a TEA is not required, ATSC will coordinate for DCST approval of a study waiver. ATSC will forward the approved waiver to the proponent school.

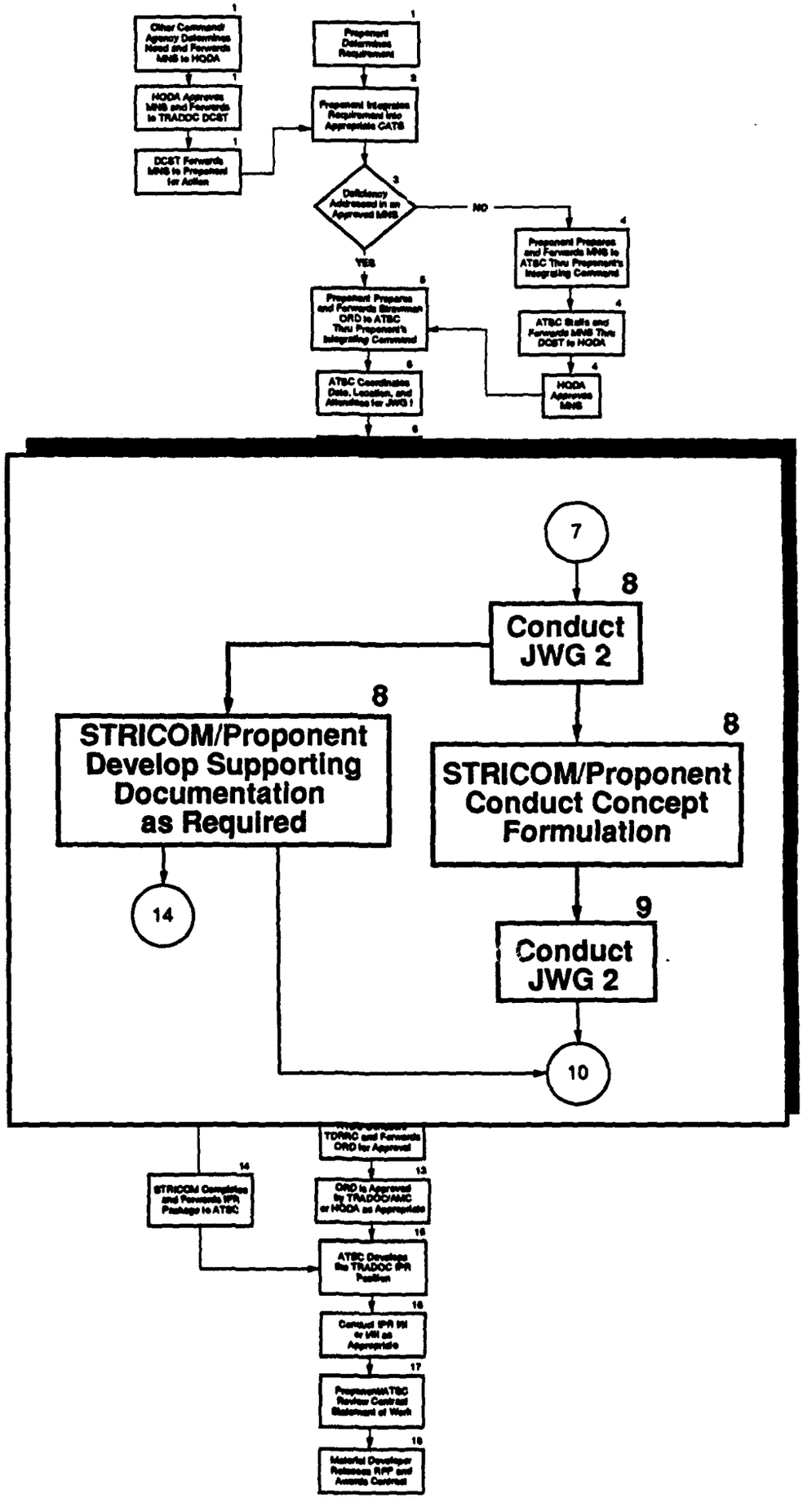
Step 8
Conduct JWG 1

The JWG process, more than any other single element, distinguishes the training device acquisition process from any other materiel acquisition process. Normally there will be at least two JWGs conducted during documentation development for an NSTD. During this two-JWG process, the ORD will progress from the strawman through a fully documented requirements package that when approved will allow the materiel developer to proceed to a request for proposal (RFP) complete with technical and engineering specifications.

The proponent and the materiel developer (usually STRICOM) are the chair and vice chair, respectively, for JWG 1. The purpose of JWG 1 is to define the overall acquisition strategy, establish program milestones, refine the strawman ORD, and task appropriate members to initiate supporting efforts to complete the ORD package. These supporting initiatives and tasks include but are not limited to the following:

- Develop technical approach alternatives - AMC.
- Initiate basis of issue plan (BOIP) feeder data (BOIPFD) and qualitative and quantitative personnel requirements information (QQPRI) - AMC.
- Develop SMMP - TRADOC/AMC.
- Refine the ORD - TRADOC/JWG members.

NONSYSTEM TRAINING DEVICE ACQUISITION PROCESS OUTLINE



Step 8
Conduct JWG 1
(con.)

- Conduct TEA - TRADOC.
- Prepare/refine operational mode summary/mission profile (OMS/MP) - TRADOC.
- Develop test and evaluation master plan (TEMP) - AMC.
- Develop Reliability, availability, and maintainability (RAM) data - TRADOC/AMC. At this point in the process, RAM data will consist of the parameters required in the ORD and the OMS/MP.

At the completion of JWG 1, the proponent develops the draft ORD based on the results of the JWG and forwards copies along with the minutes of the meeting to all attendees and other interested agencies and MACOMs.

During the time between JWG 1 (step 8) and JWG 2 (step 9), the action items that were assigned to the JWG members must be completed so that at JWG 2 a final documentation package (the ORD and all supporting documentation) can begin to be assembled for final staffing and the approval process. The time frame for this will usually be six to nine months, depending on how long concept formulation takes.

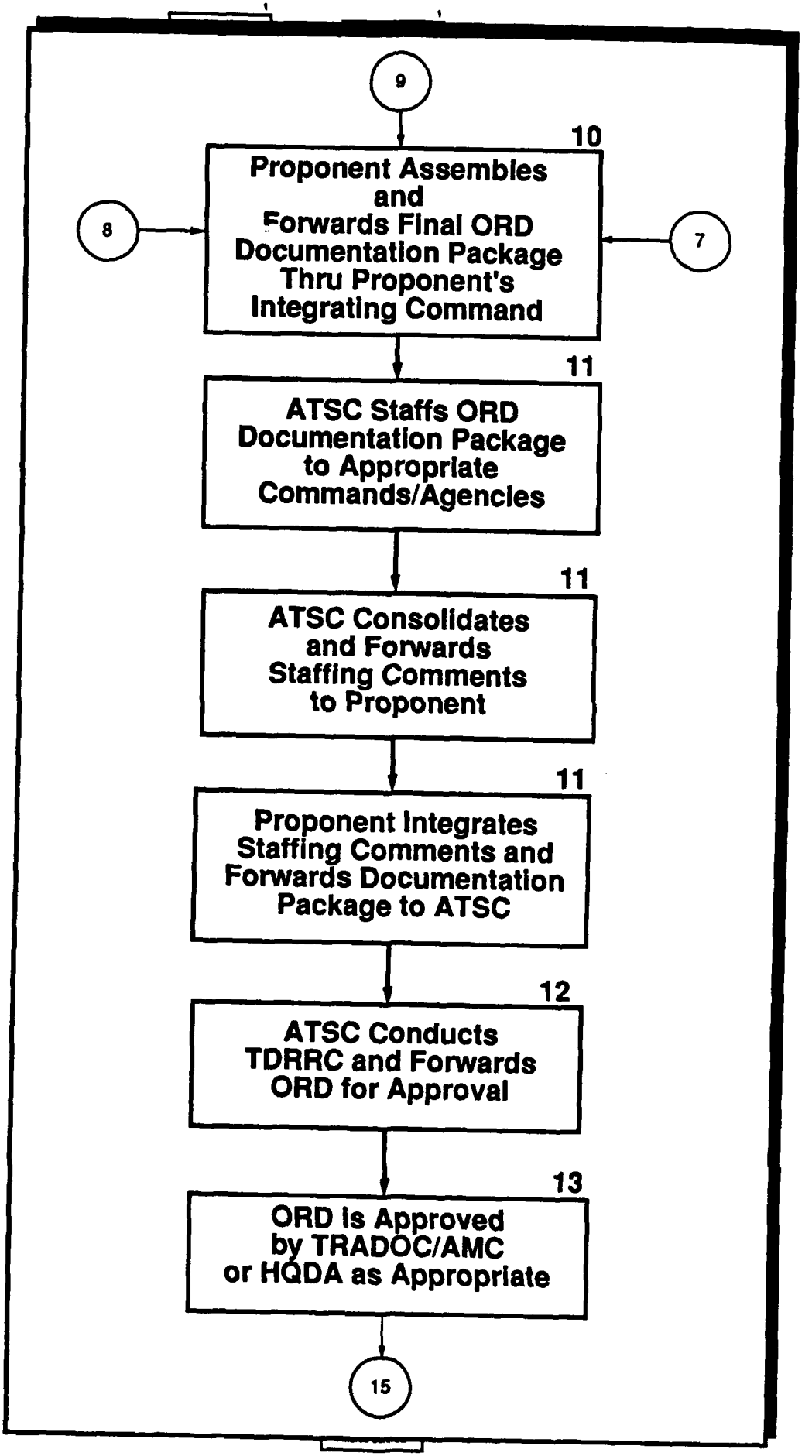
Step 9
Conduct JWG 2

After concept formulation has been completed, the proponent and the materiel developer schedule a second JWG. The purpose of JWG 2 is for the materiel developer to present the technical approach alternatives and corresponding logistical support alternatives and for the proponent to select the best technical approach (BTA) and appropriate logistical support concept from these alternatives.

Following selection of the BTA, JWG 2 establishes additional program milestones and tasks attendees for final elements of the ORD documentation package. These elements are the following:

- Final BOIP/QQPRI data - TRADOC.
- TEA data - TRADOC.
- Completed RAM rationale report (RRR) - CASCOM.
- TEMP - AMC/TRADOC.
- Refined CATS - TRADOC.

NONSYSTEM TRAINING DEVICE ACQUISITION PROCESS OUTLINE



Step 10
Documentation Assembly/Staffing

Approximately three months after JWG 2 (after tasking actions are completed), the proponent assembles the final draft ORD package for staffing. The ORD package is forwarded through the proponent's integrating command to ATSC. The RRR is approved by the Combined Arms Support Command (CASCOM) and a summary of the report is included with the ORD package. Approval of the RRR is required prior to a recommendation of ORD approval by the Training Device Requirements Review Committee (TDRRC) (step 12).

Step 11
Staffing and Integration of Comments

Upon receipt, ATSC staffs the ORD package with HQDA and HQ TRADOC staff elements, the MACOMs, other services, and other TRADOC schools as appropriate. Upon completion of staffing, if no major changes are required, the ATSC action officer prepares the package for presentation to the TDRRC (step 12). If major revisions are necessary, the package must be returned to the proponent for appropriate action.

All comments received from this staffing will be addressed in a coordination annex to the ORD. A rationale will be provided for those comments that were not accepted.

Step 12
Conduct TDRRC

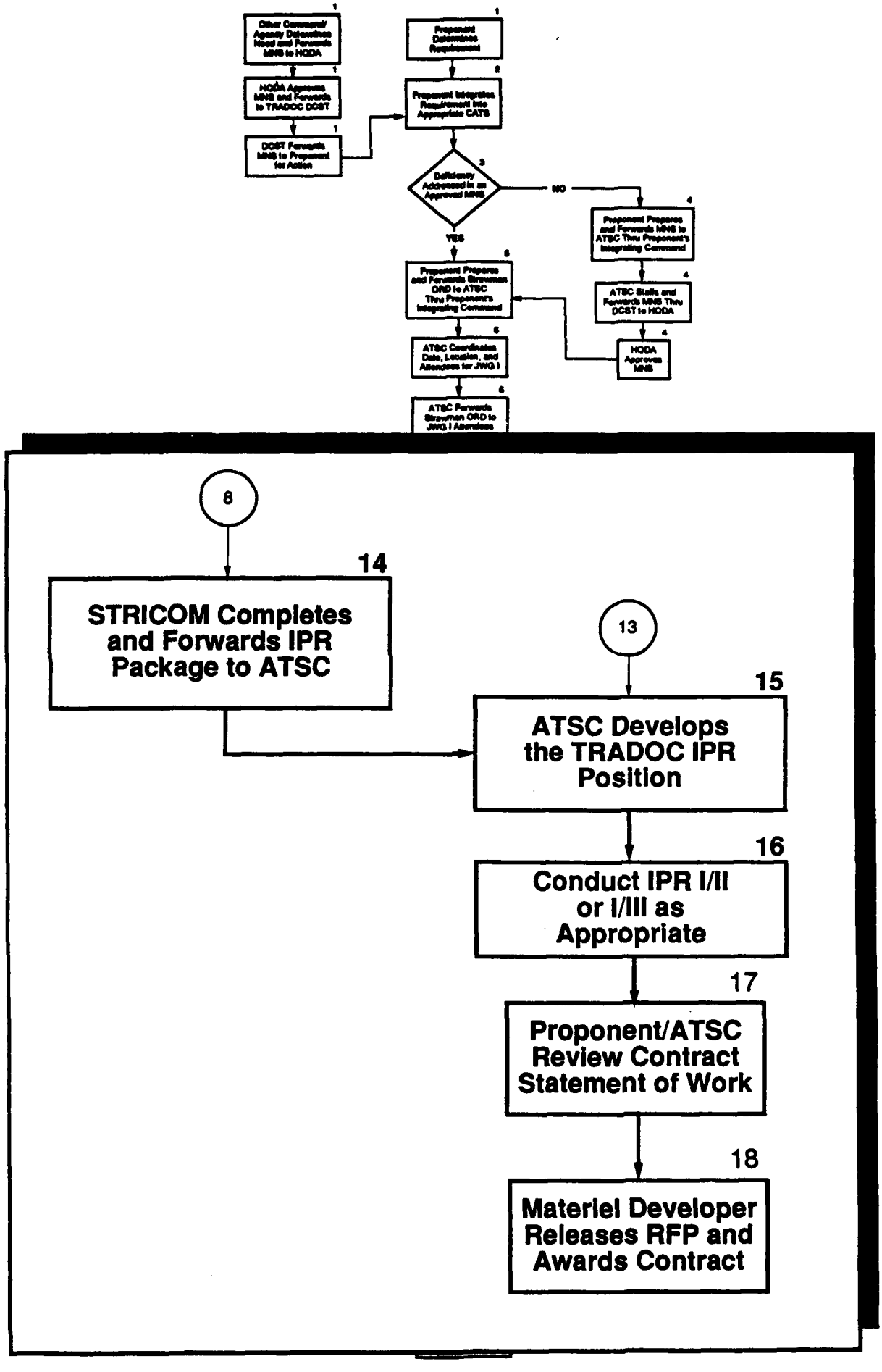
The completed ORD package is referred to the TDRRC for final review and recommendation for approval. The TDRRC ensures that the ORD and its supporting documentation meet all regulatory requirements and are administratively correct and that the ORD is ready to be sent to the approval authority.

ATSC chairs the TDRRC. Committee membership and responsibilities can be found in chapter 8 of this procedural guide.

Step 13
ORD Approval

Upon recommendation for approval by the TDRRC, ATSC forwards the documentation package to the approval authority. Approval of training device ORDs is normally at the TRADOC/AMC level. Some major TADSS items may require HQDA-level approval. In any case ATSC will coordinate the approval process, and the proponent school will be provided a copy of the final approved document.

NONSYSTEM TRAINING DEVICE ACQUISITION PROCESS OUTLINE



Step 14
IPR Package Development

Concurrently with the ORD development and approval process, the materiel developer develops the IPR package for a milestone decision. Although the ORD has been approved, device development cannot proceed until a milestone decision permits. The materiel developer conducts the IPR. The decision authority is at the AMC level or higher.

The materiel developer recommends the direction of the program to the decision authority. TRADOC may concur with these recommendations, concur with modifications, or nonconcur. A TRADOC position will be determined after review of the materiel developer's IPR package. The TRADOC IPR position is established by ATSC (step 15).

Step 15
TRADOC IPR Position

Upon receipt of the IPR package from STRICOM, ATSC prepares a recommended TRADOC position for the IPR.

Step 16
Conduct IPR

The materiel developer conducts the IPR, as explained in step 14. If the TRADOC position, is in complete concurrence with the materiel developer, then no further action is required by the proponent, ATSC, or TRADOC. If the TRADOC position varies from the materiel developer's position, then representation by ATSC and/or TRADOC may be required to defend the TRADOC position at the formal IPR.

Step 17
Review Statement of Work

The materiel developer prepares a statement of work (SOW) for a requests for proposal (RFP) to industry for development and acquisition of the training device. Both the proponent and ATSC must review this SOW to ensure that the device requirements being presented to industry match the requirements that were delineated in the ORD.

Step 18
RFP/Contract Award

After review and approval of the SOW by the proponent and ATSC, the materiel developer will release the RFP to industry.

Action After NSTD Contract Award

After the materiel developer awards the contract for the device, the training developer is not finished with developmental actions. A review of the model for developing nonsystem devices at appendix A will show that more actions are left to be accomplished in the NSTD development and acquisition process. These actions include developing test plans, conducting tests, evaluating the device after fielding, and developing requests under the materiel change management process if required. This will ensure that when the device is fielded users will be able to operate and maintain the device to its maximum capability.

Pertinent Regulations and Publications

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

AR 70-1, *Army Acquisition Policy*

AR 71-2, *Basis of Issue Plan (BOIP) and Qualitative and Quantitative Personnel Requirements Information (QQPRI)*

AR 350-38, *Training Device Policies and Management*

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

TRADOC Reg 350-7, *Systems Approach to Training*

TRADOC Reg 350-32, *The TRADOC Training Effectiveness Analysis (TEA) System*

TRADOC Reg 350-40, *The Combined Arms Training Strategy*

TRADOC Reg 351-9, *Systems Training Development*

Related Pages

Nonsystem Training Device Mission Need Statement, pg. 3-4

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Training Plan, pg. 5-5

Basis of Issue Plan/Qualitative and Quantitative Personnel Requirements Information, pg. 5-9

Related Page (con.)

System MANPRINT Management Plan, pg. 5-23

Testing and Evaluation, pg. 5-28

Training Effectiveness Analysis Process, pg. 6-8

Concept Formulation, pg. 6-12

Training Device Joint Working Group Process, pg. 7-3

Other Joint Working Groups, pg. 7-13

Modification Management, pg. 9-1

System Training Device Acquisition Process

Introduction

U.S. Army policy dictates the fielding of total systems. The term "total system" refers to a materiel system that, when fielded, is complete with all training and support subsystems. In order to develop total systems, close coordination throughout the development cycle is required between combat, training, and materiel developers.

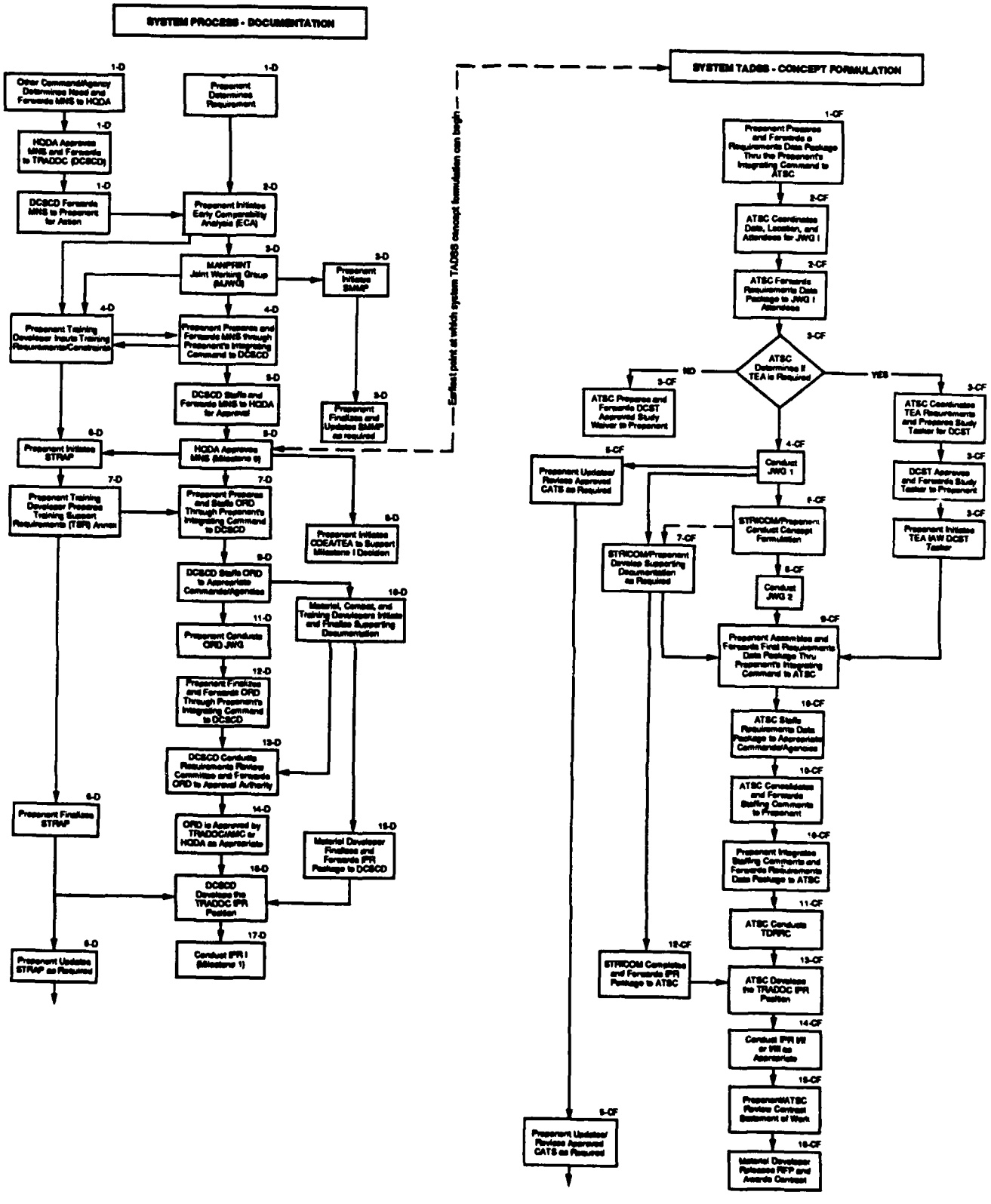
The process of identifying and procuring training support items (embedded training, devices, simulators, and simulations) for emerging systems is a process within a process. Put another way, a training device is a materiel item. As such, development and acquisition of this materiel item must be accomplished in accordance with all procurement policies and regulations. The item must also be acquired within the system's acquisition program. The training developer must work within the constraints of the materiel acquisition strategy for the system but at the same time must identify, develop, test, and procure training support items. The process for obtaining these items is very similar to that used to acquire NSTDs with one notable exception: STDs do not have their own requirements documentation (MNS or ORD). Requirements for training support items must be documented in the system MNS and ORD and in supporting documentation. This information map presents a synopsis of how the training developer ensures the appropriate training hardware can be developed and procured for emerging systems without the formal documentation required for the acquisition of NSTDs.

The training developer must remain cognizant of the fact that although a separate MNS and ORD are not required for the development and procurement of STDs, all requirements for supporting documentation are still applicable to ensure cost- and training-effective TADSS are developed and procured.

Definition

An STD is a device that supports training for a specific weapon or equipment system. These devices are normally documented, developed, and procured concurrently with the materiel system.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE

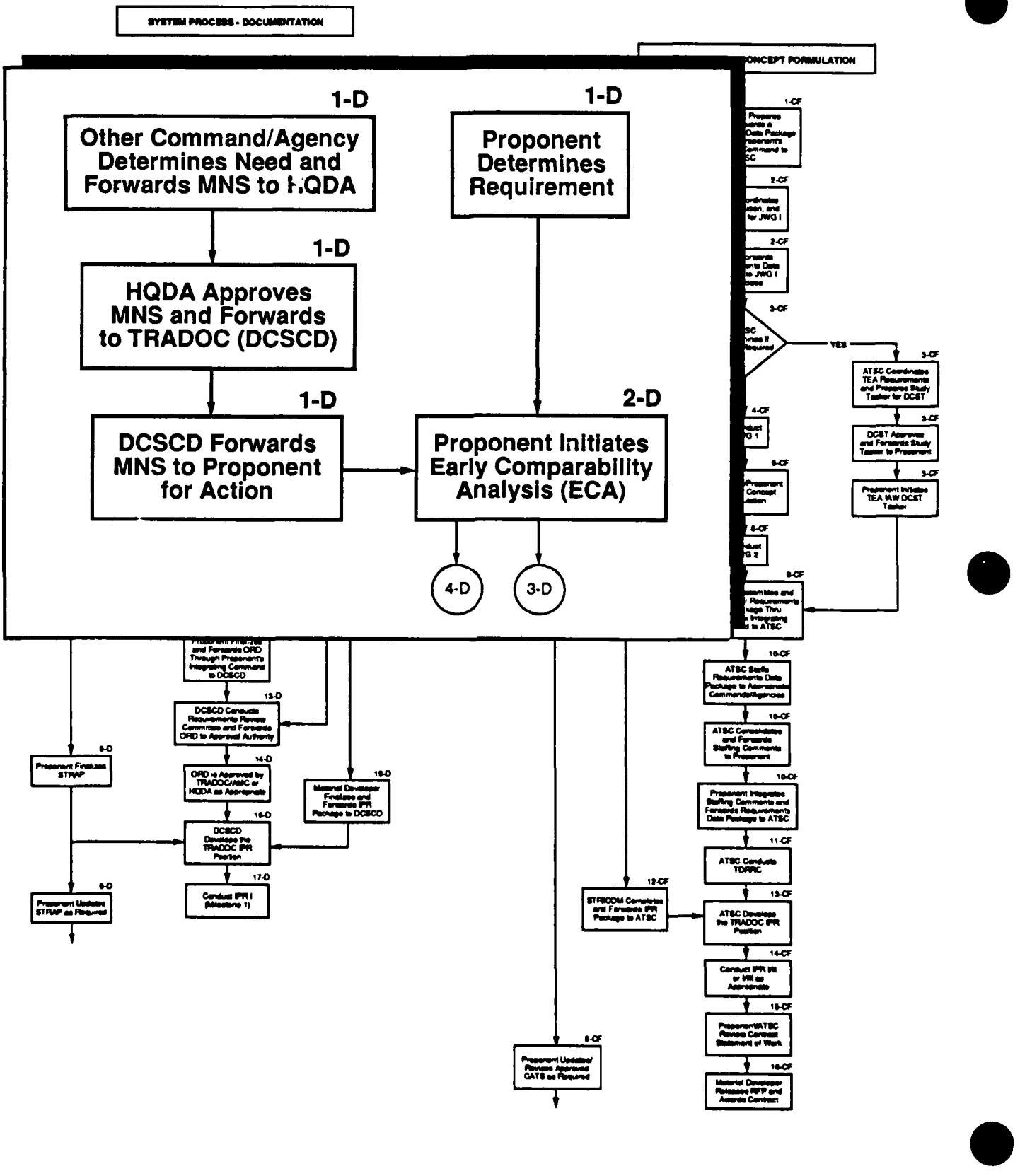


Comment

The overall acquisition process for materiel systems and training subsystems is outlined in the System and Training Subsystem Life Cycle Model at appendix B. This information map presents the process by which STD requirements are integrated into the materiel system acquisition process. Starting on the next page, specific steps are highlighted on the opposing page to the text. The text describes the system documentation process and the system TADSS concept formulation process, which results in appropriately documented requirements for system training device requirements. The general process of the system TADSS concept formulation is very similar to the process for development and acquisition of NSTDs with the exception of the specific documentation required.

Each of the steps of the system documentation process and the system TADSS concept formulation process is summarized in this chapter. The system documentation process begins with the identification of a need or requirement for a new materiel system and proceeds through approval of the system ORD and conduct of a milestone I IPR. The system TADSS concept formulation process may begin at or after the system's milestone 0 decision and proceeds through release of an RFP for device development/procurement. To distinguish between documentation steps and concept formulation steps, the steps are identified with a "D" for documentation or a "CF" for concept formulation. A step in either process may have one or more related elements. For example, step 1-D, "Determine Requirements," consists of four elements, each identified as step 1-D. This is because the requirement can be identified by more than one source. The text for step 1-D explains the elements of the step to be followed depending on where the requirement originated.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 1-D Determine Requirement

The requirement for a new materiel system is determined through a concept- and doctrine-based process. It is a continuing process that considers such factors as war-fighting capabilities and deficiencies, the existing and emerging threat, current doctrine and future concepts, fiscal constraints, and the emergence of new technology. Recommendations for the solutions to war-fighting capability issues are sought in the domains of doctrine, training, leader development, organization or materiel. Improvements in soldier performance, which transcends all other domains, is always of utmost consideration. The combat developer at the proponent TRADOC school is the one most likely, in the course of ongoing studies and analyses, to recognize a war-fighting capability issue and to recommend a solution; but, requirements can be identified by any command, agency, or individual. When the need for a new or modified materiel system to meet a specific mission need has been identified, the planning for justifying and documenting this need is initiated through conduct of a formal or informal early comparability analysis (ECA).

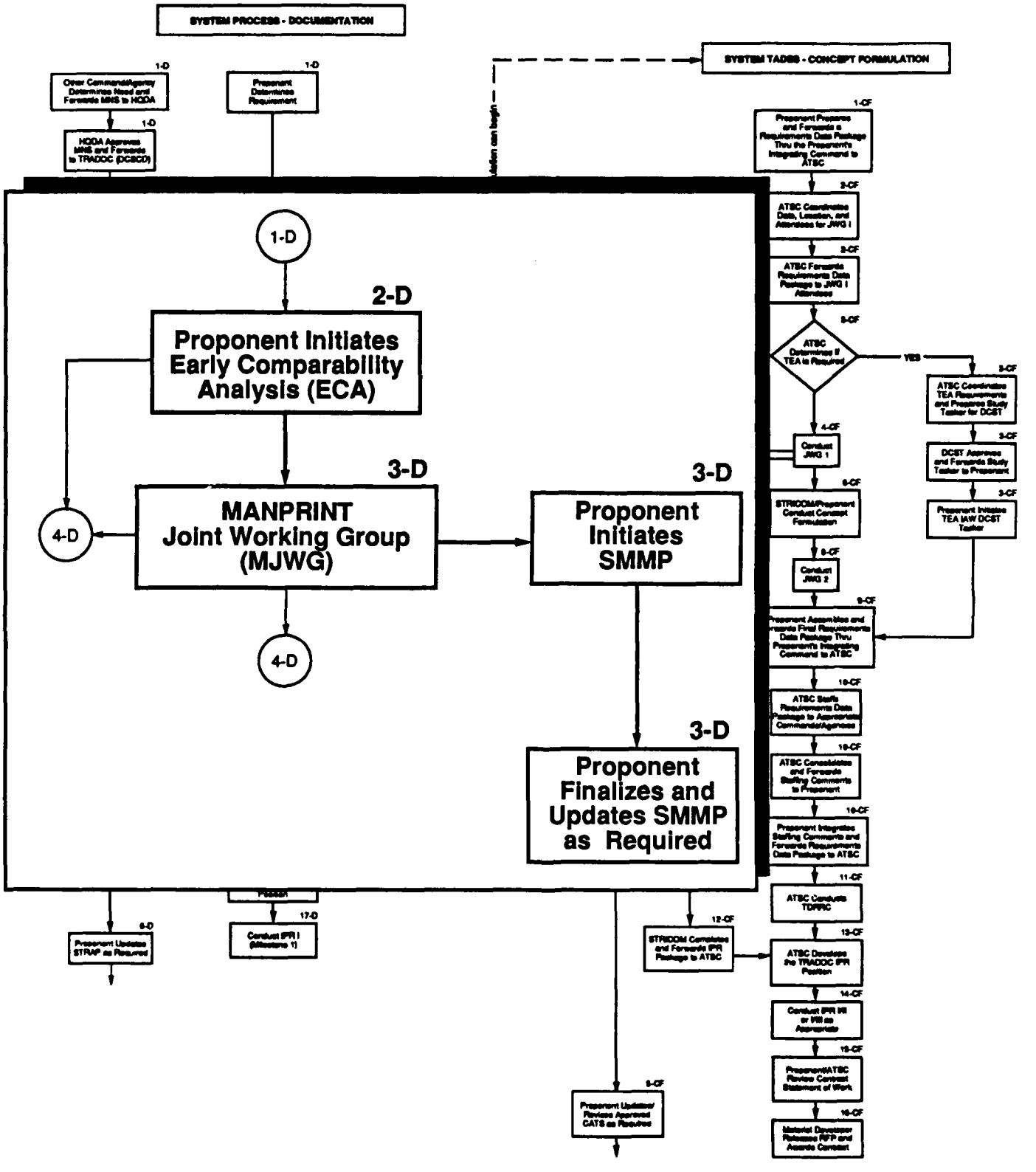
If a requirement is identified by other than the school proponent, then that requirement is forwarded through HQDA and TRADOC channels to the proponent for initiation of the acquisition process. The document transmitting the need may be a formal Mission Need Statement (MNS) prepared by any command or may be as informal as through the suggestion award program or a memorandum describing a battlefield deficiency. If a MNS is submitted HQDA may approve the document then submit it though TRADOC to the proponent school for development of an ORD. At this point in the process, what is important is that the requirement get to the proponent for validation so that acquisition actions can be initiated.

Step 2-D Initiate Early Comparability Analysis (ECA)

Upon determination of a need for a new or modified materiel system, the proponent combat developer will initiate an ECA. The ECA is a scientific analysis of predecessor and reference systems conducted to capitalize on lessons learned from previously fielded systems in order to influence design parameters of a new system.

- A predecessor system is a system or item of equipment that currently exists that has been targeted for replacement or product improvement.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 2-D Initiate Early Comparability Analysis (ECA) (con.)

- A reference system is a system or components of existing systems that can be found in current inventories to meet or closely approximate the mission requirements of a newly proposed system or component.

The proponent training developer uses the results of the ECA to develop an initial training concept to prepare for the manpower and personnel integration (MANPRINT) JWG (MJWG) and development of the system MANPRINT management plan (SMMP) (step 3-D). This information is also used to input training requirements and constraints to the system MNS (step 4-D). Additional information on the ECA can be found in the *Training Developers' Procedural Guide for Identifying Requirements for System Training Devices.* If a formal ECA is not conducted for a new system, the training developer should still follow the thought process associated with the ECA to develop an initial training concept.

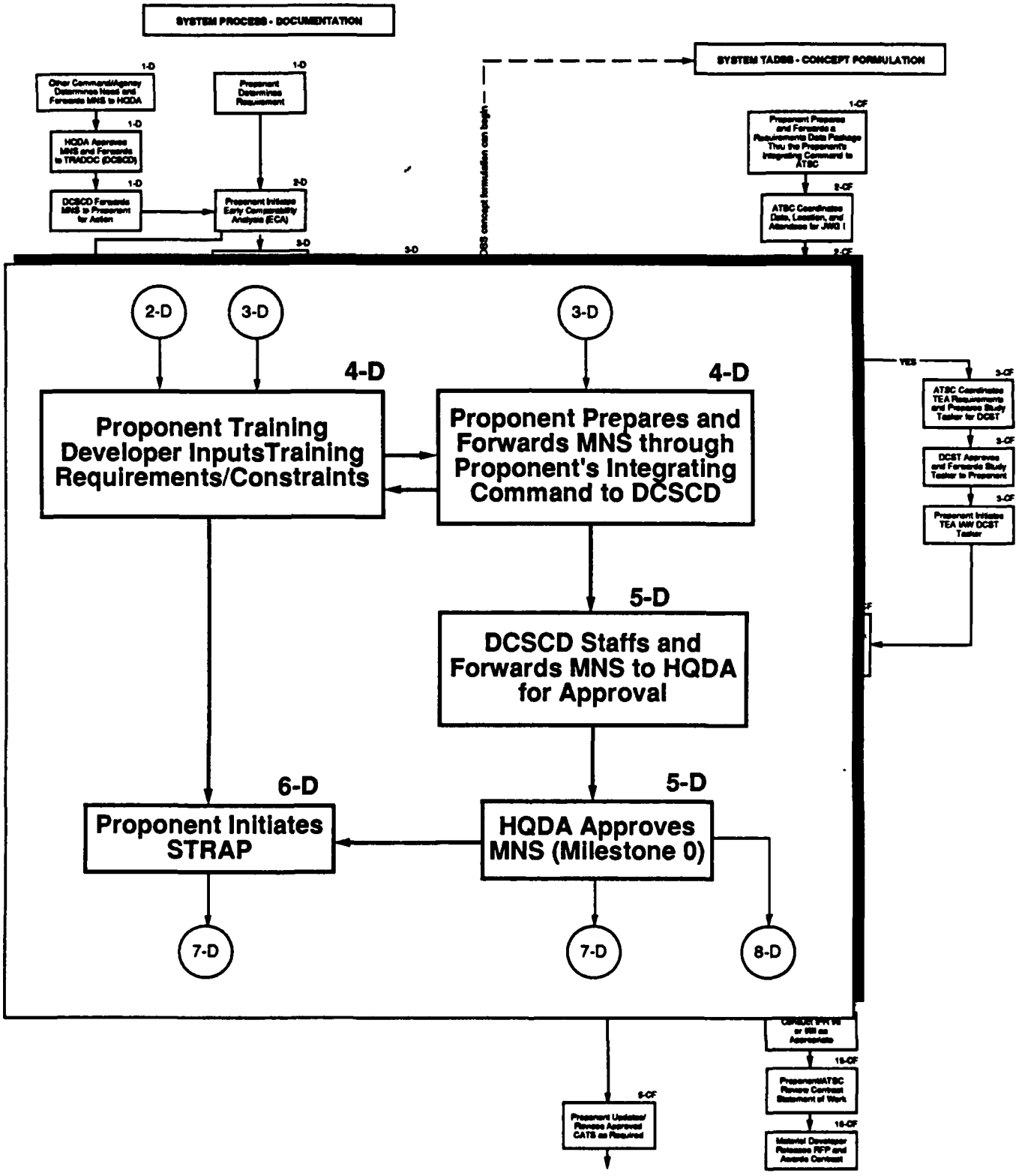
Step 3-D MANPRINT JWG

After the combat developer has determined that a new materiel system will be required and preliminary data is available from the ECA, an MJWG is convened. MANPRINT is a comprehensive technical effort to support system effectiveness by integrating into the materiel development and acquisition process all relevant information:

- Human factors engineering.
- Manpower.
- Personnel.
- Training and training devices.
- System safety.
- Health hazards.

These elements are referred to as the six domains of MANPRINT. At this JWG, members develop the SMMP. The SMMP is a dynamic planning and management document used by all activities involved in the materiel development and acquisition process to ensure that the six domains of MANPRINT are addressed throughout the system's life cycle. The SMMP is updated as required throughout system development.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 4-D
MNS Preparation

At this point in the process, formalization of the program to develop and/or procure a new materiel system begins to take place. An approved MNS is required to formalize this process and establish a management decision package (MDEP) to permit the programming and expenditure of funds to conduct concept studies. The content and format for a MNS is found in DOD 5000.2M, *Defense Acquisition Management Documentation and Reports*. The proponent combat developer prepares the MNS with assistance from the training developer. Training developer input to the MNS is general in nature and centers around constraints associated with system training requirements. Broad training concepts are established at this time for eventual input to the STRAP (step 6-D) and the training support requirements (TSR) annex to the ORD (step 7-D).

Step 5-D
Staff and Approve MNS

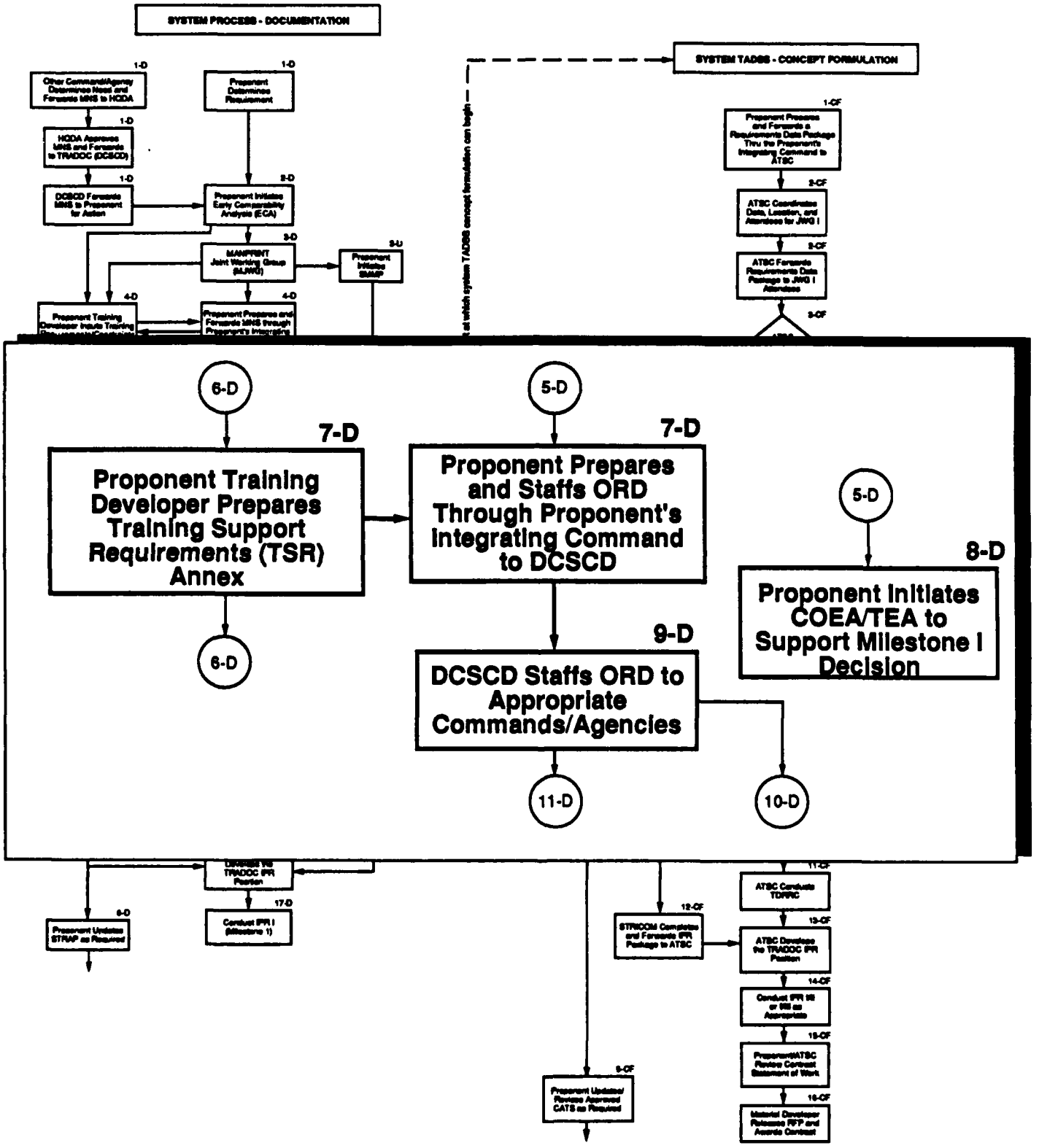
Upon approval of the MNS by the proponent's school commandant, the combat developer forwards it through the appropriate integrating command to HQ TRADOC for staffing and final approval by HQDA. HQDA is the lowest level of approval authority for the MNS.

Approval of the MNS constitutes a milestone 0 approval, allowing the system to enter concept exploration and definition (phase 0) of the life cycle model. (See appendix B.)

Step 6-D
Initiate STRAP

The STRAP is one of the most important documents for which the training developer will be responsible in the materiel system development and acquisition process. The STRAP is the master training plan for a new system. It documents the results of early training analyses and specifically addresses who requires training, what tasks need to be trained, and when, where, and how the training will be conducted. Training concepts and strategies in the STRAP are used as input to the system requirements documentation. The STRAP is an evolving document that is updated before each milestone decision review (MDR) throughout the system's development and any time that training concepts or strategies change.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 7-D
Prepare and Staff ORD and TSR Annex

Upon approval of the MNS, the proponent combat developer, in conjunction with the training developer and the materiel developer, prepares an ORD. The ORD concisely states the essential operational, technical, logistic, training support, and cost parameters necessary to initiate the development and/or procurement of the system. The training developer must maintain close coordination with the combat developer during ORD preparation to ensure training and training support requirements are documented in the system ORD. Once the ORD is approved, funding, including that for training support items, becomes more defined.

Training requirements identified in the ORD are detailed in a TSR annex. This annex includes specific requirements for embedded training and TADSS. It is essential that the training developer identify TADSS requirements in this annex. Requirements for TADSS that are not documented in the TSR annex at ORD approval may have to be developed and procured under a separate ORD for each device.

The ORD is staffed through the proponent's integrating command to HQ TRADOC, where it will be further staffed with appropriate commands and agencies (step 9-D).

Step 8-D
COEA/TEA

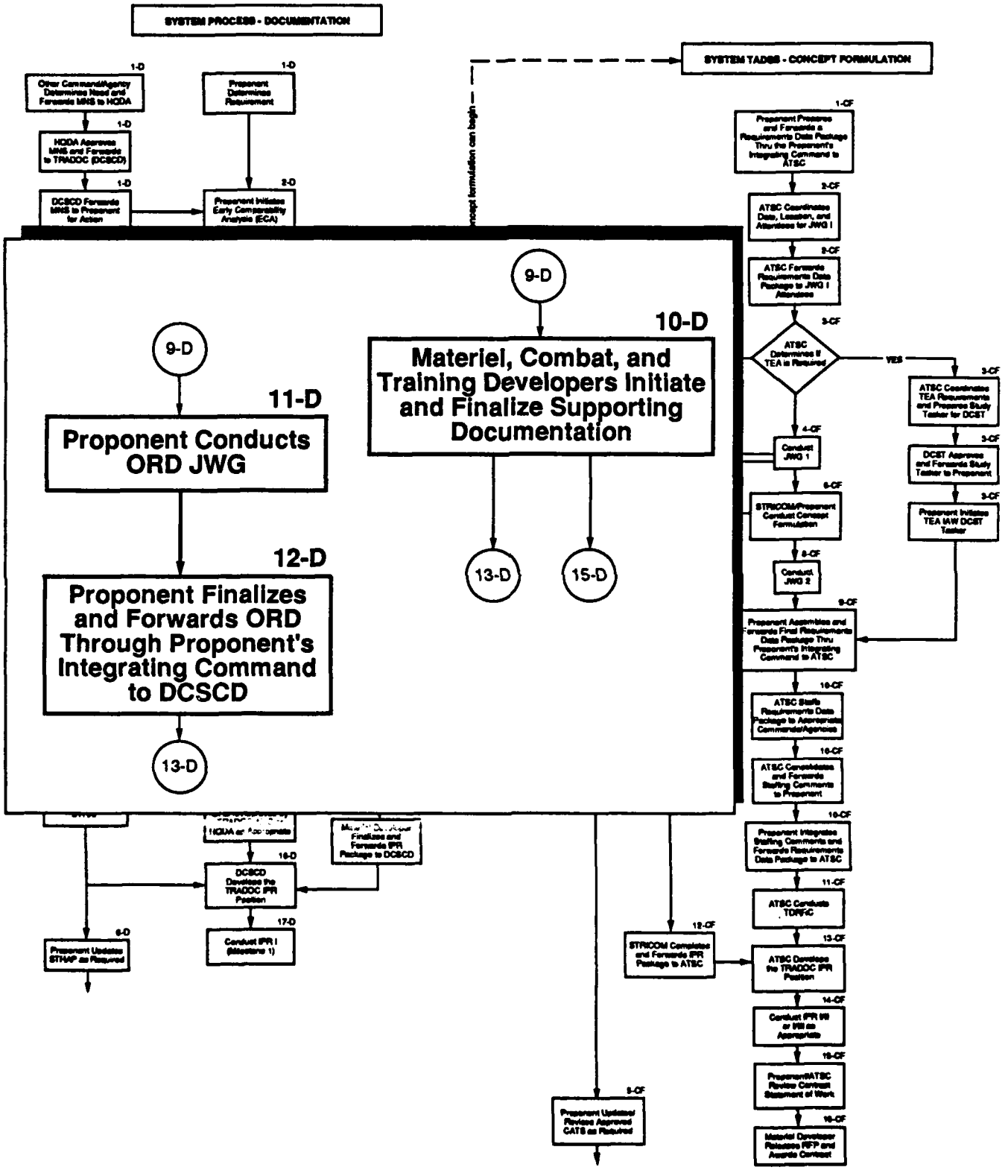
Concurrently with ORD preparation, the combat developer conducts a cost and operational effectiveness analysis (COEA). The COEA is a comparative analysis of alternative means of meeting a need or requirement and the cost of developing, producing, distributing, and sustaining each alternative in a military environment.

As part of the COEA, the training developer conducts a TEA. The TEA is an analysis conducted to compare alternative training concepts and strategies for the proposed new system. Requirements for embedded training and TADSS can be derived from the TEA and documented in the ORD and TSR annex.

Step 9-D
Staff ORD

Upon receipt of the ORD by HQ TRADOC, the DCSCD staffs the document with appropriate commands and agencies for comments. Recipients of the ORD will be invited to provide comments and/or attend a JWG (step 11-D) to discuss and finalize the documentation.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 10-D
Prepare Supporting Documentation

While the ORD is in the staffing process, combat, materiel, and training developers initiate the supporting documentation. Supporting documentation must be finalized prior to the Requirements Review Committee's recommendation for approval (step 13-D). The following are the major documents supporting the ORD:

- Basis of issue plan (BOIP) and qualitative and quantitative personnel requirements information (QQPRI).
- Test and evaluation master plan (TEMP).
- New equipment training plan (NETP).
- System manprint management plan (SMMP).
- System training plan (STRAP).
- Reliability, availability, and maintainability (RAM) rationale report.

Not only must this supporting documentation be finalized to obtain a recommendation for ORD approval, but it also directly impacts the IPR package prepared by the materiel developer for a milestone I decision (step 14-D).

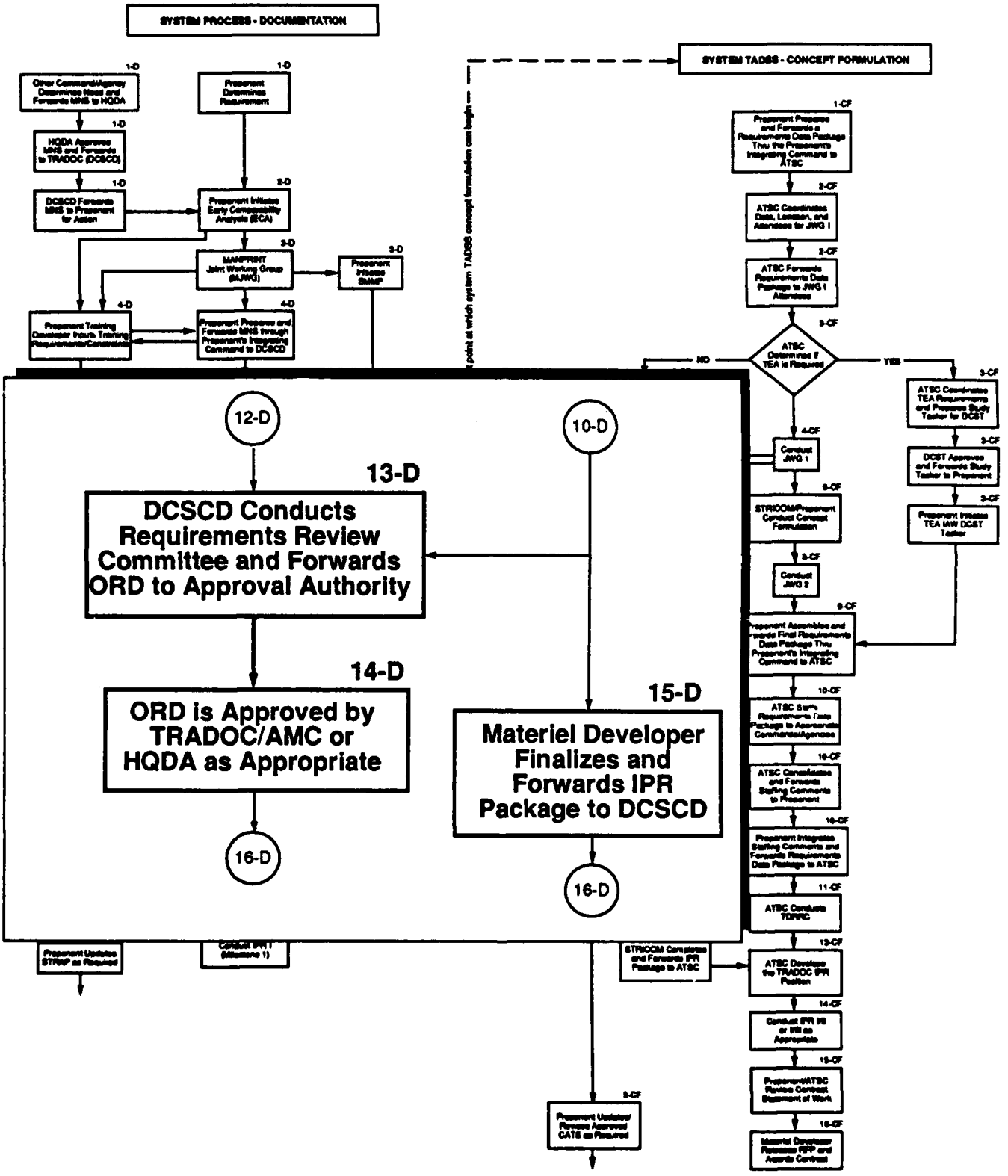
Step 11-D
ORD JWG

A JWG is a group of representatives from the combat, materiel, and training development communities and selected subject matter experts providing a forum for direct communication to facilitate the coordination of requirements documentation and related actions in the materiel acquisition process. After staffing of the ORD has been completed, the proponent combat developer convenes a JWG to finalize the ORD and assign follow-on actions. It is essential that the training developer attend and become active in the JWG to ensure all training requirements are addressed in the documentation.

Step 12-D
Finalize ORD

Comments and recommendations from the JWG are included in the documentation, and a final ORD is prepared for the proponent school commandant's approval and forwarded through the proponent's integrating command to DCSCD. At this time, the training developer must again ensure that all training requirements are addressed in the basic documentation and included in the TSR Annex.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 13-D
Requirements Review Committee (RRC)

Upon receipt of the final ORD package from the proponent, the DCSCD convenes the RRC. The committee ensures documents are complete and that they clearly state the required essential characteristics of the system in a manner that will allow the materiel developer to proceed with an RFP for industry to design and develop the system.

Training representation to the RRC is provided by the DCST at HQ TRADOC to ensure training subsystem requirements, including testing, are addressed appropriately in the documentation.

After validation of the requirement and agreement that the documentation is complete and adequately defines the requirement, the RRC recommends approval and forwards the package to the appropriate approval authority.

Step 14-D
ORD Approval

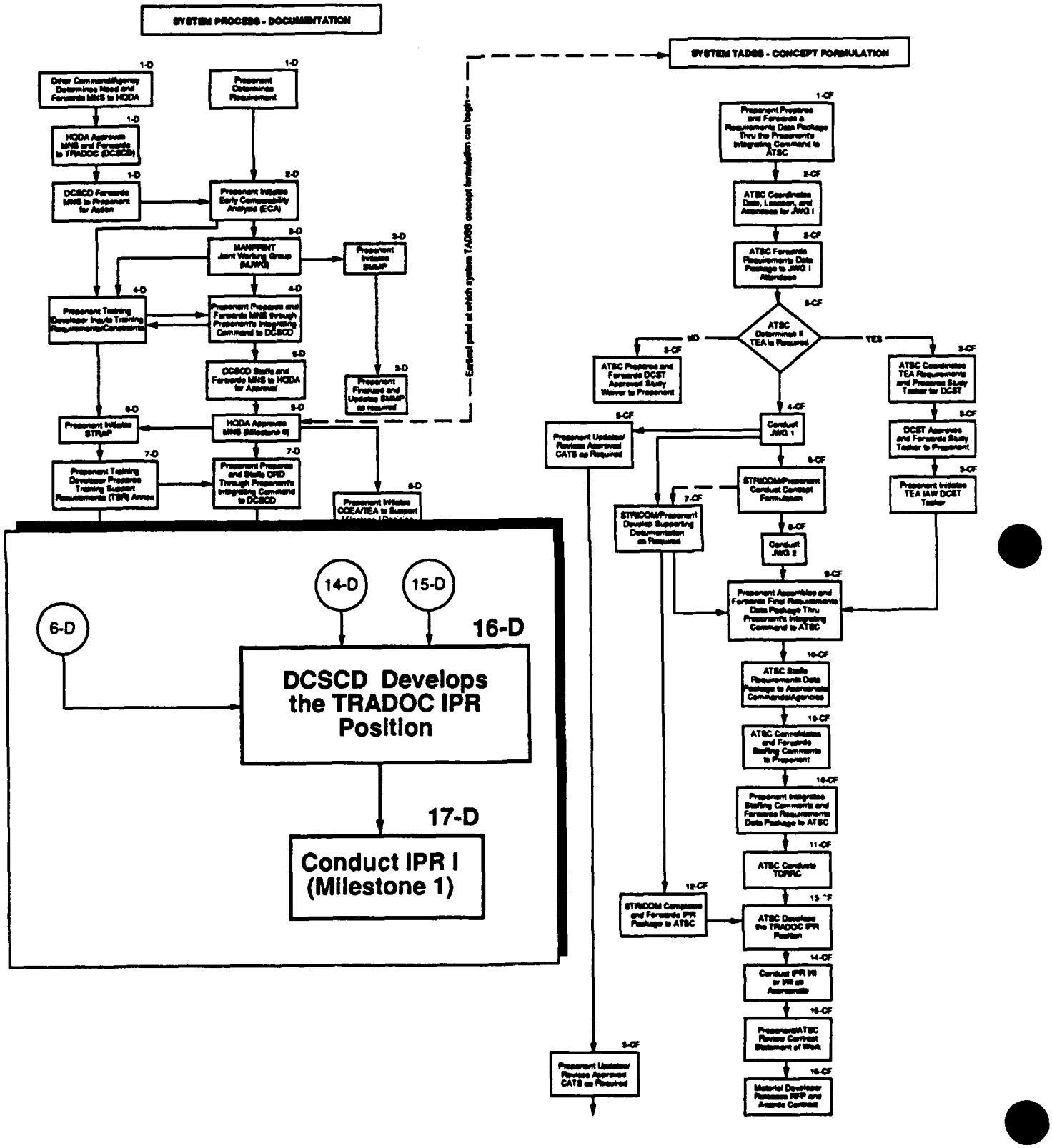
The ORD is approved either by TRADOC and AMC, HQDA, or DOD as appropriate. The approval authority is determined based on the acquisition category (ACAT) under which the developmental program falls. An explanation of ACATs can be found in chapter 1 of this procedural guide and in appropriate DOD directives and U.S. Army regulations. The HQDA or DOD acquisition executive assigns the ACAT at the beginning of the program (milestone 0).

Step 15-D
IPR Package Development

Concurrently with the ORD development and approval process, the materiel developer develops the IPR package for a milestone I decision. Although the ORD has been approved, the system development cannot proceed until a milestone I decision permits. The materiel developer conducts the IPR to obtain this decision. The decision authority is at the HQ AMC level or higher.

The materiel developer recommends the direction of the program to the decision authority. TRADOC may concur with these recommendations, concur with modifications, or nonconcur. A TRADOC position will be made after review of the materiel developer's IPR package. (Step 16-D).

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 16-D TRADOC IPR Position

Upon receipt of the IPR package from the materiel developer, DCSCD prepares a recommended TRADOC position for the IPR.

Step 17-D Conduct IPR

The materiel developer conducts the IPR, as explained in step 15. If the TRADOC position is in complete concurrence with the materiel developer, then no further action is required by the proponent, DCSCD, or HQ TRADOC. If the TRADOC position varies from the materiel developer's position, then representation by TRADOC may be required at the formal IPR.

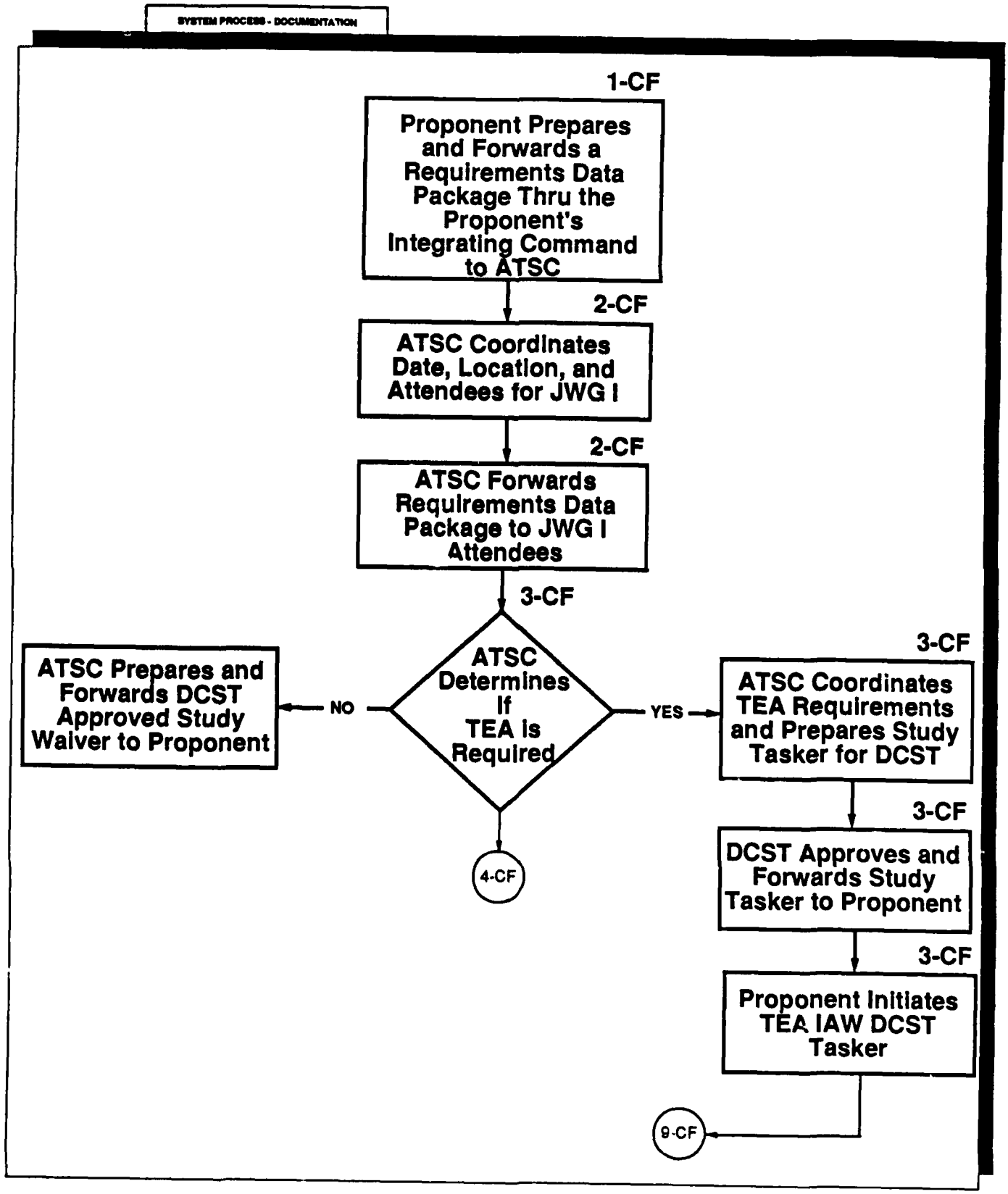
System Process - Documentation Summary

This has been a brief explanation of the documentation process for a new materiel system. More detailed discussions of the training developer's involvement in this process and related documentation can be found in the appropriate chapters of this procedural guide. There are three major points for the training developer to remember about this process:

- Begin interaction with the combat developer as early in the process as possible. This will ensure that TADSS requirements are included in the system documentation.
- Develop a comprehensive STRAP and update it whenever training strategies change and before each MDR. A well thought-out STRAP captures and keeps current the training information required in other documents.
- Be an active participant in all phases of the system documentation process to ensure training and training support items are developed and procured with the system.

The remainder of this information map addresses a process within the system development and acquisition process: conducting concept formulation for those TADSS that were documented as requirements for the training subsystem.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 1-CF Prepare/Forward Requirements Data Package

Each training device to be developed and/or procured for the proposed materiel system will require its own concept formulation to be performed. The data package, prepared by the proponent and forwarded to ATSC, must contain sufficient information about the proposed training device to allow the materiel developer (usually STRICOM) to begin concept formulation and develop the materiel developer's IPR package. Since the required data may exist in many forms, there is no specific format for the data package. For a complete list of the required items to be addressed in the data package, see "Training Device Requirements Data Package" in chapter 4 of this procedural guide.

Step 2-CF Pre-JWG 1 Coordination

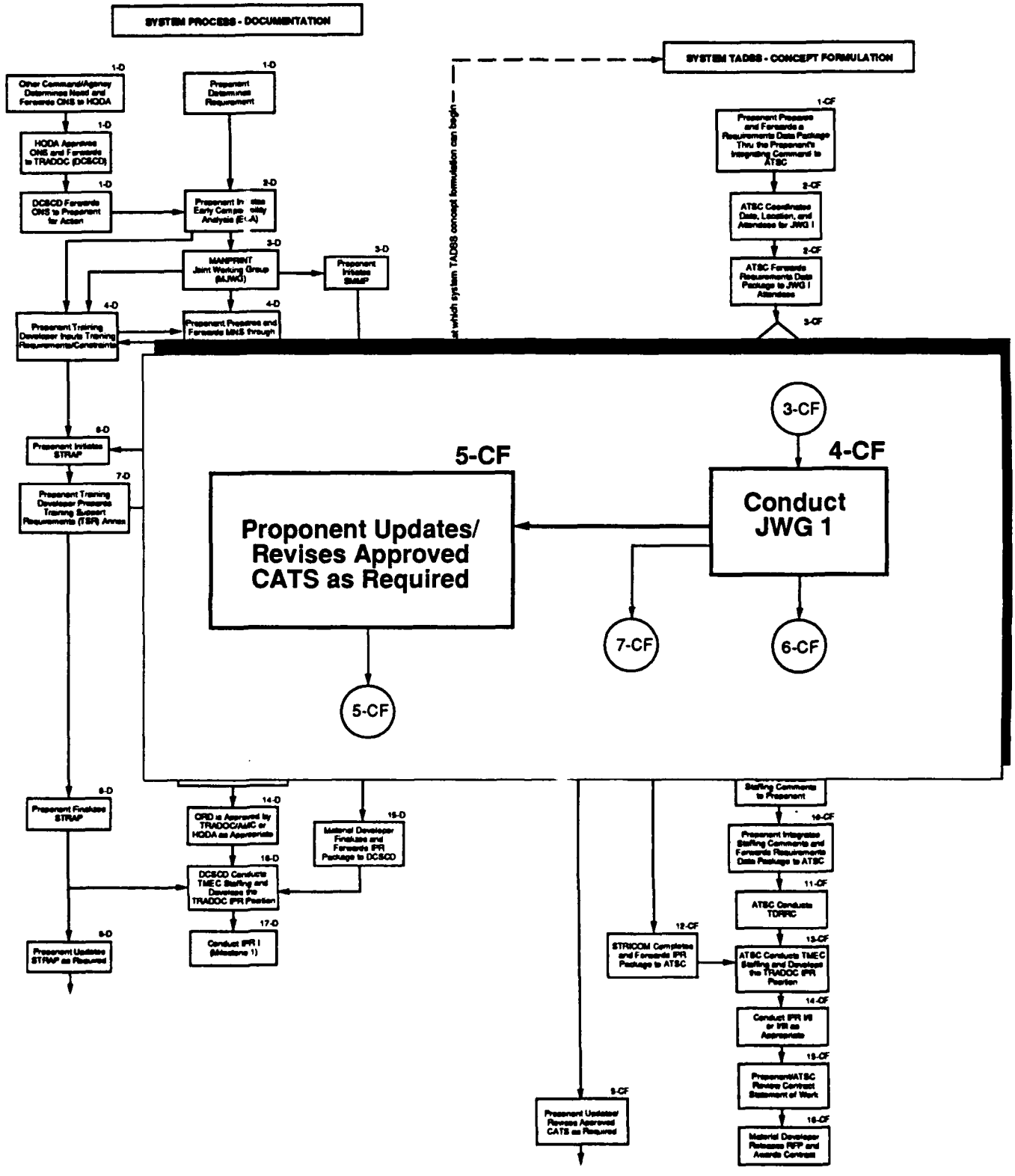
Upon receipt of the data package from the proponent school, ATSC reviews the document and prepares the JWG read-ahead package for all participants of JWG 1. This entails providing copies of the data package and the proposed agenda to all JWG members. Any agencies or MACOMs that will not be represented at the JWG are requested to provide comments to ATSC.

Step 3-CF Decision: TEA Required?

A TEA assesses the cost and training effectiveness of alternative training approaches to satisfying a training requirement. The recommendation is based on an evaluation of the probable cost, complexity, applicable technologies, risk, and other related factors. If a TEA is required, ATSC prepares a study tasker for the DCST to send to the proponent outlining the extent of the necessary TEA actions. The TEA process continues through all subsequent phases of the device development process on an as-required basis. A TEA, if conducted, supports the concept formulation and must be completed in time to support approval of the training device requirements data package. Types of TEAs are explained in chapter 6 of this procedural guide.

If a TEA is not required, ATSC will coordinate for DCST approval of a study waiver. ATSC will forward the approved waiver to the proponent.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 4-CF
Conduct JWG 1

The JWG process, more than any other single element, distinguishes the training device acquisition process from any other materiel acquisition process. Normally there will be at least two JWGs conducted during the concept formulation of each STD. During this two-JWG process, the requirements data package will progress from a draft (not all information is yet known about the proposed device) through a fully documented requirements package that, when complete, will allow the materiel developer to proceed to an IPR and subsequent release of an RFP complete with technical and engineering specifications.

The proponent and the materiel developer (usually STRICOM) are the chair and vice chair, respectively, for JWG 1. The purpose of JWG 1 is to define the overall acquisition strategy, establish program milestones, and task appropriate members to initiate supporting efforts to complete the requirements data package. These supporting initiatives and tasks include but are not limited to the following:

- Develop technical approach alternatives.
- Develop TEMP.
- Develop RRR.
- Conduct TEA.

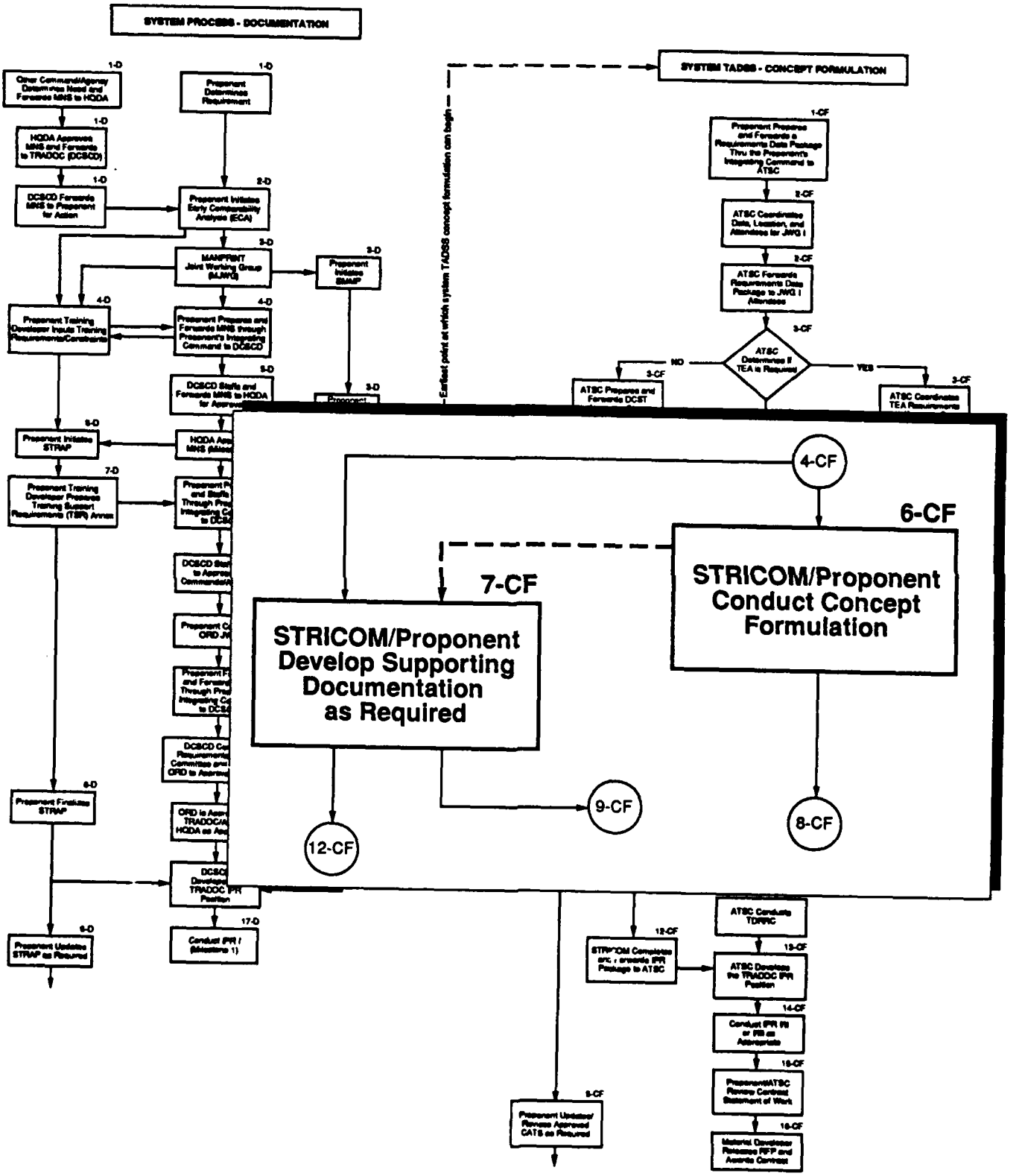
At the completion of JWG 1, action items for the completion of the data package are assigned to the JWG members. The minutes of the meeting are provided to all attendees and other interested agencies and MACOMs.

During the time between JWG 1 and JWG 2 (step 7-CF), the action items that were assigned to the JWG members must be completed so that at JWG 2 a final requirements data package (including all supporting documentation) can begin to be assembled for final staffing and review by the TDRRC. The time frame for this will usually be six to nine months, depending on how long concept formulation takes.

Step 5-CF
Update/Revise
CATS Strategies

All TADSS requirements must be included in the proponent's functional CATS and updated/revised as the situation warrants. These updates will directly affect the system ORD and TSR annex as well as supporting documentation and TADSS concept formulation. Chapter 8 contains additional information regarding CATS.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 6-CF
Conduct Concept Formulation

After JWG 1, the materiel developer, in conjunction with the training developer, can begin conducting the concept formulation. Remember that each training device requires its own concept formulation. However, if a requirements data package for more than one training device was presented at the JWG, the concept formulations may be conducted concurrently. The concept formulation analyzes and evaluates available and emerging technology to meet the requirements as defined in the requirements data package. These technologies are considered candidates for device development and are evaluated in terms of cost, training effectiveness, degree of developmental risk, and constraints placed on the system and/or device training strategies. At JWG 2 the best of these candidate technologies will be selected as the best technical approach as weighed against each of the factors. For a complete description of the concept formulation, see chapter 6 of this procedural guide.

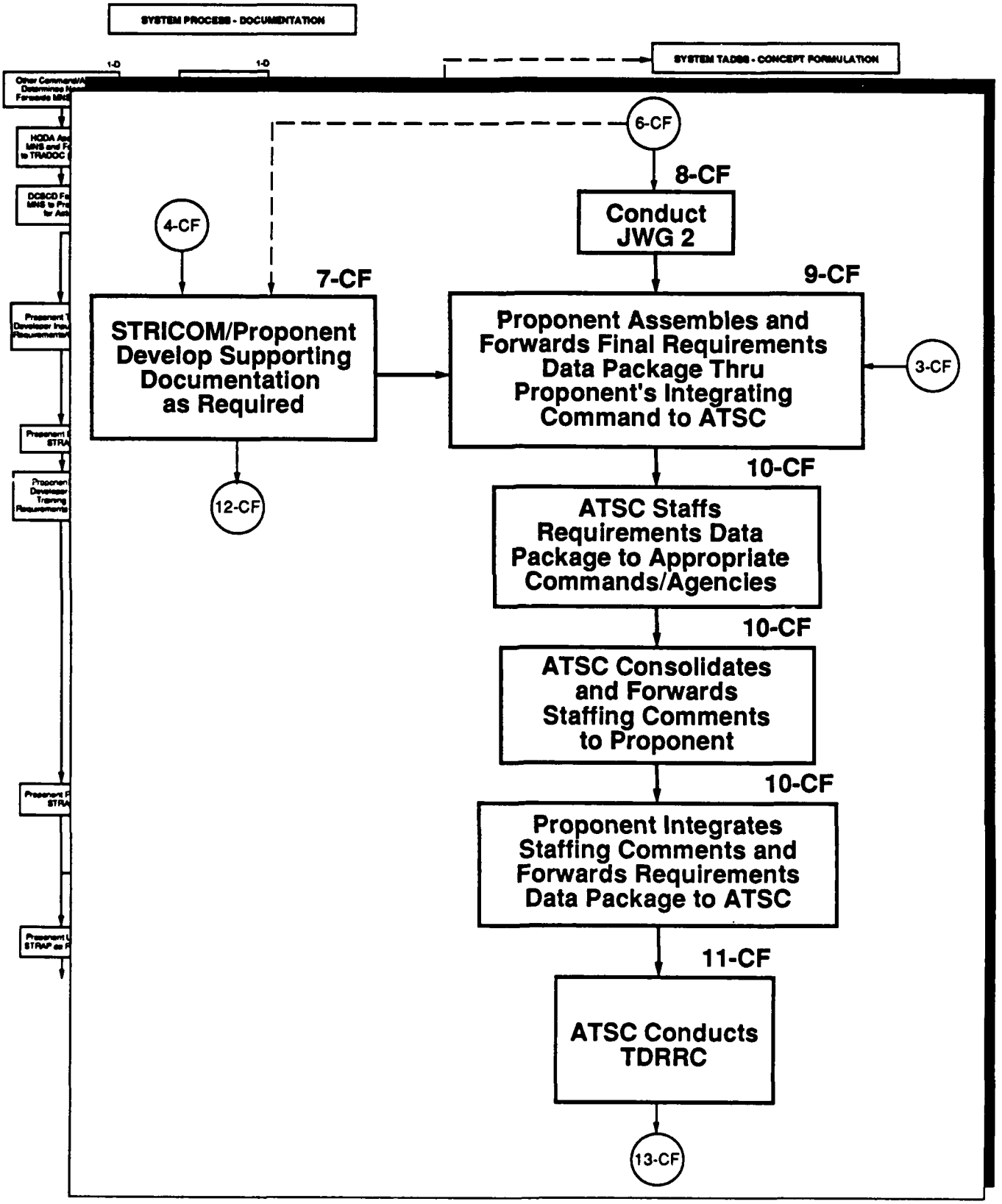
Note in the diagram on the opposing page that a dashed arrow is drawn between step 6-CF and step 7-CF. This is to show that the concept formulation has a direct impact on the completion of supporting documentation. Until the best technical approach has been selected, and other documentation that relies on a technological selection cannot be completed.

Step 7-CF
Develop Supporting Documentation

Supporting documents to the requirements data package must be developed to allow the materiel developer to complete the IPR package and technical specifications for an RFP. Each document and the agency primarily responsible for its development are listed below:

- RRR - proponent/CASCOM.
- BOIP/distribution plan - proponent.
- Refined CATS - proponent.
- Concept formulation data supporting the BTA - materiel developer.
- Integrated logistic support plan (ILSP) - materiel developer.
- TEMP - materiel developer.
- NETP - materiel developer.
- TEA - proponent.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 7-CF Develop Supporting Documentation (con.)

More detailed information regarding this documentation can be found in the appropriate sections of this procedural guide.

Step 8-CF Conduct JWG 2

After concept formulation has been completed, the proponent and the materiel developer schedule a second JWG. The purpose of JWG 2 is for the materiel developer to present the technical approach alternatives and corresponding logistical support alternatives and for the proponent to select the best technical approach (BTA) and appropriate logistic support concept.

Following selection of the BTA, JWG 2 establishes additional program milestones and tasks attendees for final elements of the requirements data package.

Step 9-CF Assemble/Forward Final Requirements Data Package

Once tasking actions are completed after JWG 2, the proponent assembles the final requirements data package for staffing. The data package is forwarded through the proponent's integrating command to ATSC. Concurrently, a copy of the RRR is approved by the CASCOM and a summary of the report is included with the requirements data package. The RRR must be approved prior to a recommendation for approval of the data package by the TDRRC (step 11-CF).

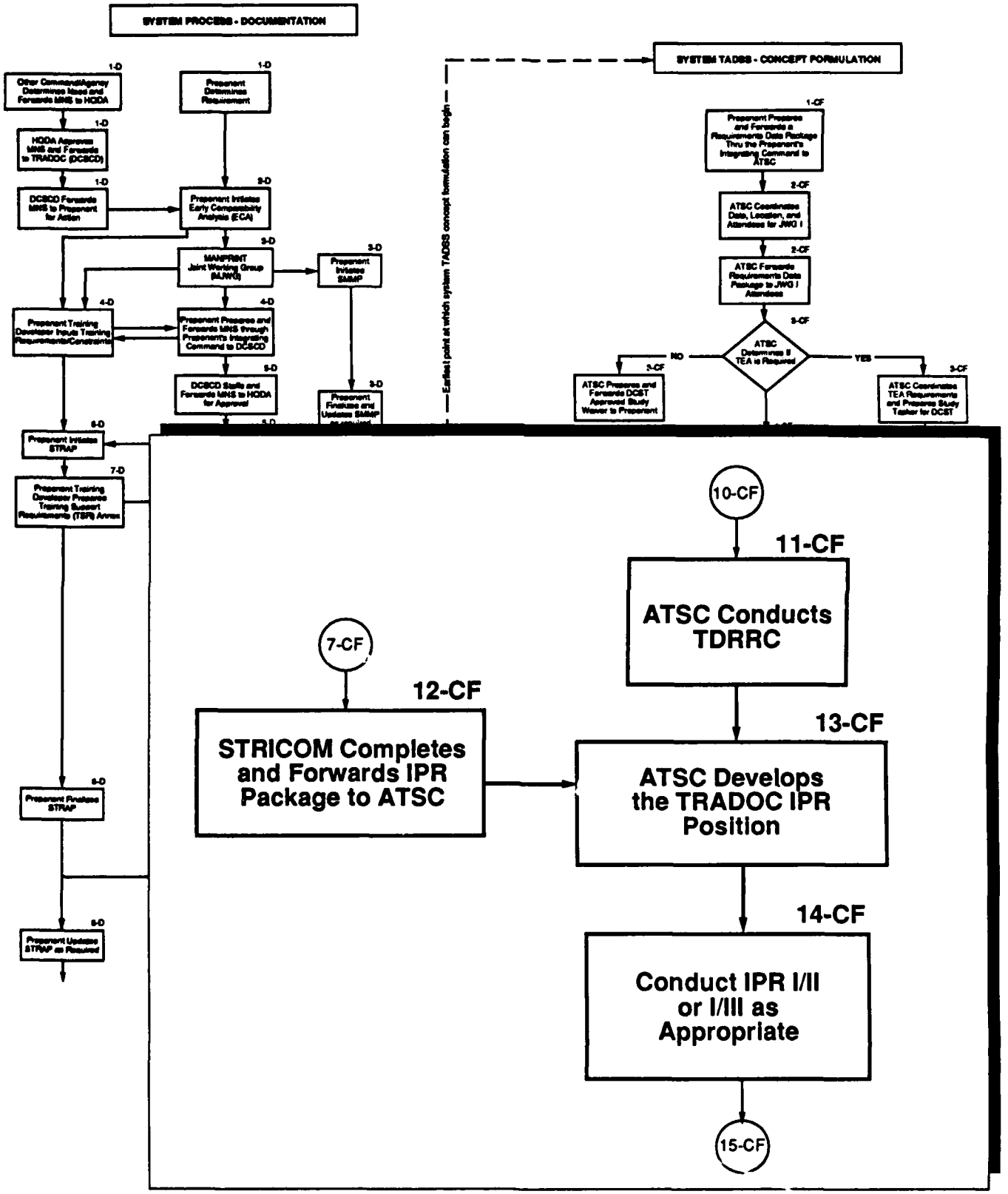
Step 10-CF Staff and Integrate Comments

Upon receipt, ATSC staffs the requirements data package with HQ TRADOC staff elements, the MACOMs, other services, and TRADOC schools as determined appropriate. Upon completion of staffing, if no major changes are required, the ATSC action officer prepares the package for presentation to the TDRRC (step 11-CF). If major revisions are necessary, the package must be returned to the proponent for appropriate action.

Step 11-CF Conduct TDRRC

The completed requirements data package is referred to the TDRRC for final review. The TDRRC serves as the user representative for review, validation, and processing of all training device requirements documentation. The committee ensures documents are complete and that they clearly state the type of device needed to support training and enhance combat readiness.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 11-CF Conduct TDRRC (con.)

ATSC chairs the TDRRC. Chapter 8 of this procedural guide explains committee membership and their responsibilities.

Step 12-CF IPR Package Development

Concurrently with the data package development and approval process, the materiel developer develops the IPR package for a milestone decision. Although the data package has been approved, the STD development program cannot proceed until a milestone I decision permits. The materiel developer conducts the IPR to obtain this decision. The decision authority is at the HQ AMC level or higher.

The materiel developer recommends the direction of the program to the decision authority. TRADOC may concur with these recommendations, concur with modifications, or nonconcur. A TRADOC position will be made after review of the materiel developer's IPR package. (Step 13-CF).

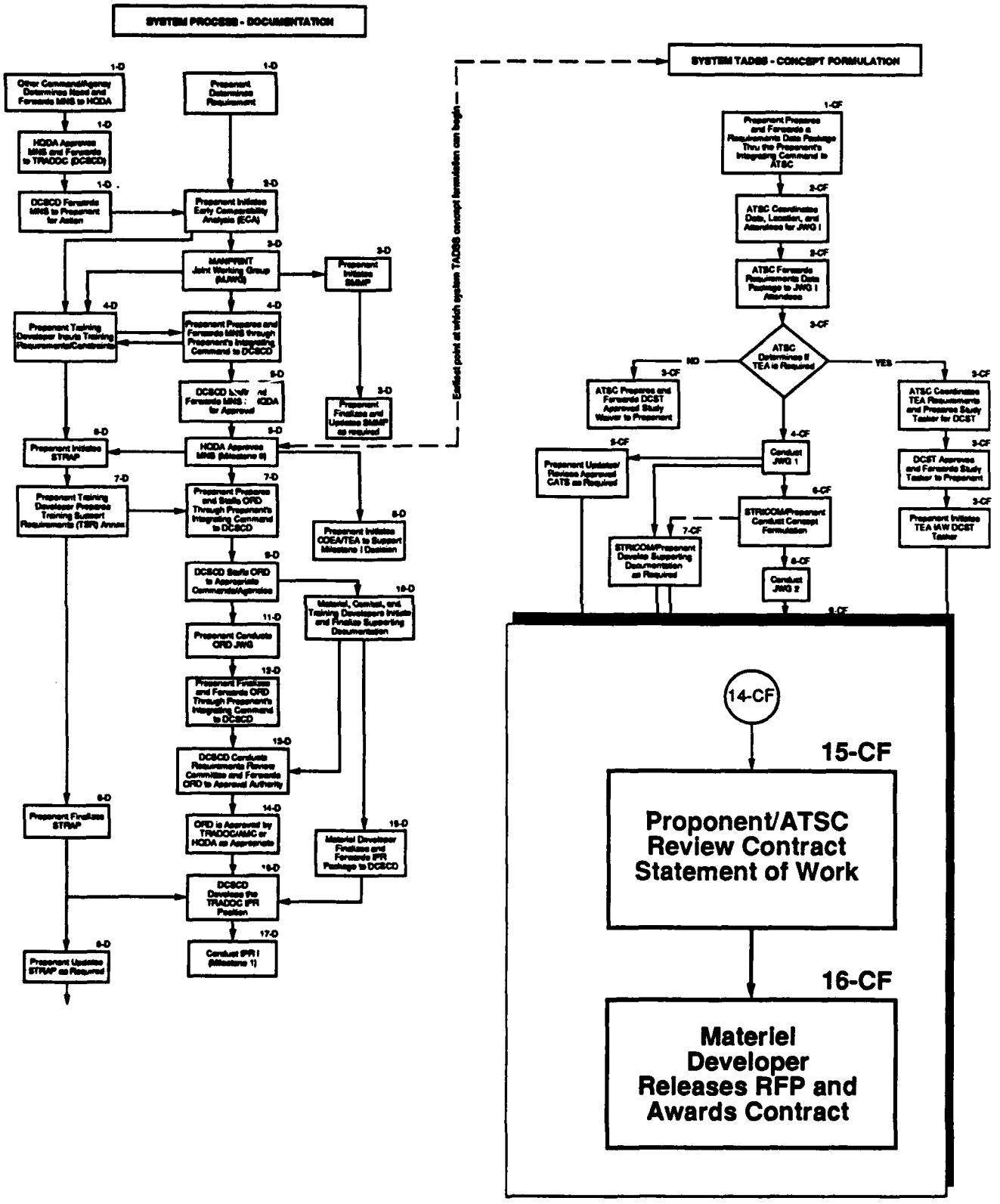
Step 13-CF TRADOC IPR Position

Upon receipt of the IPR package from STRICOM, ATSC prepares a recommended TRADOC position for the IPR.

Step 14-CF Conduct IPR

The materiel developer conducts the IPR, as explained in step 12-CF. If the TRADOC position is in complete concurrence with the materiel developer's position, then no further action is required by the proponent, ATSC, or TRADOC. If the TRADOC position varies from the materiel developer's position, then representation by ATSC and/or TRADOC may be required at the formal IPR.

SYSTEM TADSS ACQUISITION PROCESS OUTLINE



Step 15-CF Review Statement of Work

The materiel developer prepares an SOW for an RFP to industry for development and acquisition of the training device. Both the proponent and ATSC must review this SOW to ensure that the device requirements being presented to industry match the requirements that were delineated in the requirements data package.

Step 16-CF RFP/Contract Award

After review and approval of the SOW by the proponent and ATSC, the materiel developer will release the RFP to industry. There are times when the award of the contract will not be competitive. For example, if the prime contractor (the contractor developing the system) also has the capability to produce the required training hardware, the system program manager (PM) or program executive officer (PEO) may permit that contractor to produce the training devices without further competition. Conversely, the PM/PEO may decide that it is to the government's advantage to compete the development of the device openly within industry.

Actions After System TADSS - Contract Award

Although the contract award completes the concept formulation process for the development and acquisition of system TADSS, the training developer is not finished with developmental actions. A review of the model for developing systems and training subsystems at appendix B will show that many actions and much coordination are left to be accomplished in the STD development and acquisition process. Training subsystems should be developed and tested concurrently with the systems that they support. This will ensure that when new or modified systems are fielded into the Army inventory, users will be able to operate and maintain the systems to their maximum capacity and enhance combat readiness.

Pertinent Regulations and Publications

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

AR 70-1, *Army Acquisition Policy*

AR 71-2, *Basis of Issue Plan (BOIP) and Qualitative and Quantitative Personnel Requirements Information (QQPRI)*

AR 350-38, *Training Device Policies and Management*

Pertinent Regulations and Publications (con.)

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

TRADOC Reg 350-7, *Systems Approach to Training*

TRADOC Reg 350-32, *The TRADOC Training Effectiveness Analysis (TEA) System*

TRADOC Reg 350-40, *The Combined Arms Training Strategy*

TRADOC Reg 351-9, *Systems Training Development*

Related Pages

System Mission Need Statement, pg. 4-4

System Operational Requirements Document, pg. 4-9

Annex C, Training Support Requirements, pg. 4-20

Training Device Requirements Data Package, pg. 4-26

System Training Plan, pg. 5-5

Basis of Issue Plan/Qualitative and Quantitative Personnel Requirements Information, pg. 5-9

Reliability, Availability, and Maintainability, pg. 5-17

System MANPRINT Management Plan, pg. 5-23

Testing and Evaluation, pg. 5-28

New Equipment Training Plan, pg. 5-34

Cost and Operational Effectiveness Analysis, pg. 6-4

Concept Formulation, pg. 6-12

Training Device Joint Working Group Process, pg. 7-3

Other Joint Working Groups, pg. 7-13

Validation/Prioritization and Review Approval Process, pg. 8-1

Modification Management, pg. 9-1

CHAPTER 3

NONSYSTEM TRAINING DEVICE REQUIREMENTS DOCUMENTATION

Nonsystem Training Device Requirements Documentation

Overview

Introduction

The need for a new or improved NSTD may be proposed by any individual, unit, agency, or command. Chapter 2 provides an overview of the process for the development and/or acquisition of NSTDs. This chapter provides detail on the documentation required to initiate the materiel acquisition process in relation to research, development, and acquisition of NSTDs. It addresses only the primary documents needed to support the need and requirement. Supporting documentation is found in chapter 5.

Documenting the Requirement

There are two primary documents that are essential to the development and acquisition of NSTDs:

- Mission need statement (MNS).
- Operational requirements document (ORD).

Comment

Although detailed information regarding supporting documentation is not presented in this chapter, training developers should be cognizant of the fact that requirements documentation will not be approved without these supporting documents. Close coordination with other players in the materiel acquisition process must be maintained throughout the process, and all documentation must be completed at appropriate points in the process before device development and acquisition can begin or proceed.

Mission Need Statement (MNS)

The MNS is the initiating document for any materiel acquisition program. The proponent training developer prepares the NSTD MNS with input from the materiel developer. The MNS does not propose a materiel solution to the stated need but rather addresses a training requirement as a mission need. HQDA approval of the MNS constitutes a milestone 0 decision and permits the conduct of conceptual studies to determine alternative solutions to meeting the stated need.

Operational Requirements Document (ORD)

The ORD describes the operational parameters for a proposed NSTD. The training developer prepares the ORD with input from the materiel developer and many other players in the materiel acquisition process (logisticians, testers, users). ORD development is an iterative process, requiring close and constant coordination throughout the process. When approved, the device acquisition program may proceed to a Milestone I (or I/II or I/III) decision permitting continuation of the acquisition program.

Supporting Documentation

Supporting documentation required for approval of NSTD requirements documentation will be mentioned throughout this chapter. The level of detail for these documents varies depending on the complexity, cost, or basis of issue of the proposed device. The following are some of the primary supporting documents associated with the development and acquisition of NSTDs:

ORD annexes

- Annex A, Rationale.
- Annex B, Coordination.
- Annex C, Training Device Strategy.

Other supporting documentation

- System MANPRINT management plan (SMMP).
- Test and evaluation master plan (TEMP).
- Basis of issue plan (BOIP)/qualitative and quantitative personnel requirements information (QQPRI).
- System training plan (STRAP).
- Distribution plan.
- Reliability, availability and maintainability (RAM) rationale report.
- Training effectiveness analysis (TEA).

Additional information on this supporting documentation can be found in chapter 5.

Pertinent Regulations and Publications

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

AR 350-38, *Training Device Policies and Management*

Related Pages

Nonsystem Training Device Mission Need Statement, pg. 3-4

Nonsystem Training Device Operational Requirements Document, pg. 3-9

Testing and Evaluation. pg 5-28

Nonsystem Training Device Mission Need Statement

Introduction

When a training deficiency has been identified, determination and documentation of the best possible solution are required. Identification of a need may result from a number of sources, such as an analysis of training programs or mission performance, feedback from trainers in the field, or training tests and exercises. If an NSTD is determined as the best probable solution to the identified deficiency, then the training developer must begin the documentation to permit funds to be identified for conceptual studies. The documentation required to initiate such a program is the MNS.

Purpose

The NSTD MNS has three main purposes:

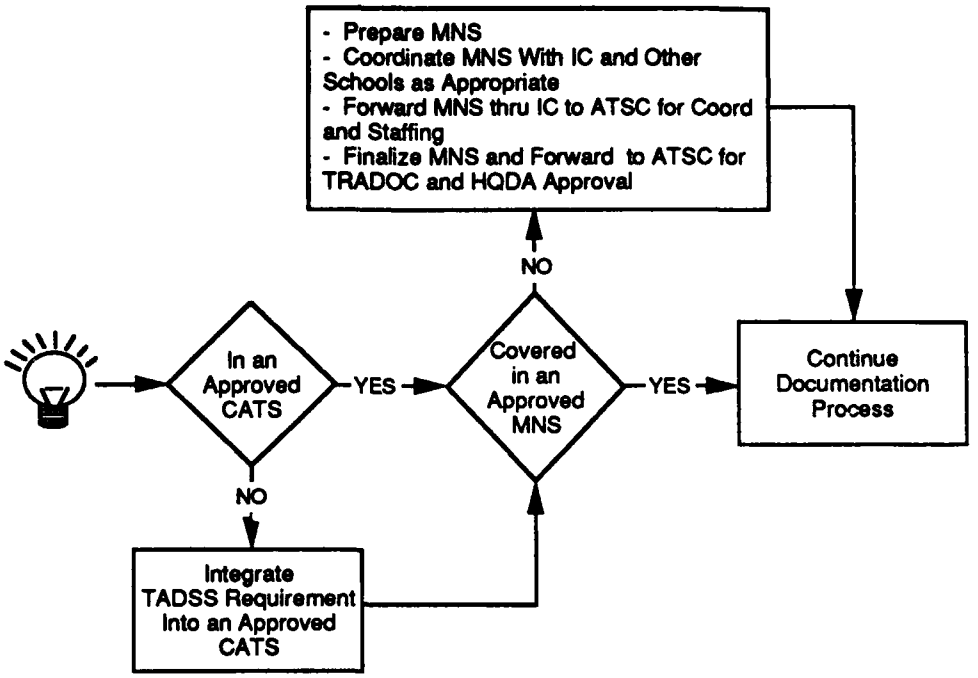
- Document an identified mission need that cannot be satisfied by a nonmateriel solution.
- Provide essential information necessary to complete the Determination of Mission Need phase in the NSTD life cycle management process.
- Permit the expenditure of funds for the conduct of conceptual studies of alternative solutions to solve the stated need.

Process

When a training or performance deficiency has been identified and a nonmateriel solution does not appear to be the most cost- and training-effective course of action, the proponent training developer incorporates the requirement into CATS and determines if an existing approved MNS documents the need. If an approved MNS does not exist to support development of requirements documentation, then the training developer initiates MNS development.

If a new MNS is required, the training developer prepares the MNS, coordinates it with other schools as appropriate, and forwards it through the integrating command to ATSC for HQ TRADOC staffing. ATSC obtains TRADOC and HQDA approval and notifies the proponent of MNS approval.

Process (con.)



NSTD MNS Content/Format

The NSTD MNS is not to exceed five pages in length and consists of five paragraphs. Additional information to help explain or define the need may be appended to the basic document.

MISSION NEED STATEMENT (MNS)

1. Defense Planning Guidance Element
2. Mission and Threat Analysis
3. Nonmateriel Alternatives
4. Potential Materiel Alternatives
5. Constraints

Paragraph 1
Defense Planning Guidance

In this paragraph the training developer must assess the U.S. Army and/or TRADOC long range training plan and identify the major program(s) to which the need responds, for example, supports home station training for the active and reserve components. The training developer must also reference the functional training strategy(ies) within the CATS that the proposed training capability/need supports. Subparagraphs may be used as necessary to address these information elements.

Paragraph 2
Mission and Threat Analyses

The training developer uses this paragraph to describe the specific training need or deficiency upon which the identified requirement is based. This need must be defined in terms of training objectives and general capabilities. The need is not developed or defined in terms of equipment or specific performance objectives. The training developer must also identify the war-fighting capabilities that resulted from the continuing doctrine and requirements review process. A primary source for identification of these capabilities is the battlefield development plan (BDP) that is maintained by HQ TRADOC.

Paragraph 2 must also contain a detailed description of the contribution the training objective will make in terms of achieving the related war-fighting capability. Further requirements of this paragraph include comments on the timing and general priority of the identified need relative to others in the designated functional area. Subparagraphs may be used as necessary to provide this information.

Paragraph 3
Nonmateriel Alternatives

In this paragraph the training developer must provide information and rationale as to why nonmateriel alternatives are inappropriate or inadequate to achieve the identified training need. Nonmateriel considerations include potential change in current operational doctrine, concepts, tactics, training, or organizational structure. Subparagraphs may be used as necessary to cover this information.

Paragraph 4
Potential Materiel Alternatives

This paragraph contains a description of any known training systems or programs capable of meeting the proposed need that have been developed, are under development, or are in production by other services or allied nations. It also discusses the potential for interservice applications or allied cooperation that may apply to the development process.

Paragraph 4 Potential Materiel Alternatives (con.)

This paragraph also is used to indicate any potential areas of study in the Concept Exploration and Definition phase where existing U.S. allied military or commercial training systems or product improvements may have application. This data is not used for evaluation of these potential alternatives. This data is for identification of possible solutions only. Subparagraphs are used as necessary to include this information.

Paragraph 5 Constraints

The training developer uses this paragraph to describe any constraints that may impact on solutions responding to the developing need:

- Logistics support.
- Transportation.
- Power sources.
- Manpower, personnel, training constraints, human factors, system safety, and health hazards.
- Communications and/or software and hardware interface.
- Security.
- Standardization or interoperability with other services or allied nations.

Also included in this paragraph is a discussion of the operational/training environments in which the proposed training capability is to be used. If these are different, the level of desired/required capability in these environments is defined, for example, the level of training that is required for reserve and active component training or garrison versus deployed environments. Subparagraphs may be used as necessary to address this information, especially in the case of Manpower and Personnel Integration (MANPRINT) considerations.

Pertinent Regulations and Publications

DODI 5000.2, *Defense Acquisition Management Policies and Procedures*

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

AR 70-1, *Army Acquisition Policy*

AR 350-38, *Training Device Policies and Management*

Related Pages

Training Effectiveness Analysis Process, pg. 6-8

Combined Arms Training Strategy, pg. 8-5

Modification Management, pg. 9-1

Nonsystem Training Device Operational Requirements Document

Introduction

Upon approval of the NSTD MNS, the proponent begins preparation of an ORD. The ORD will define a materiel requirement as a solution to the stated need. Development of the NSTD ORD is an iterative process involving training developers, materiel developers, testers, logisticians, and others providing information from the user community.

The training developer, with input from the materiel developer and others, is responsible for preparing the NSTD ORD. Since the ORD is the document that will be the basis for a request for proposal (RFP) for development and procurement, it is imperative to clearly define the requirements of the device. Developers and end item users must be given sufficient information to facilitate comprehensive planning to support fielding of the device and integration into existing training programs.

Purpose

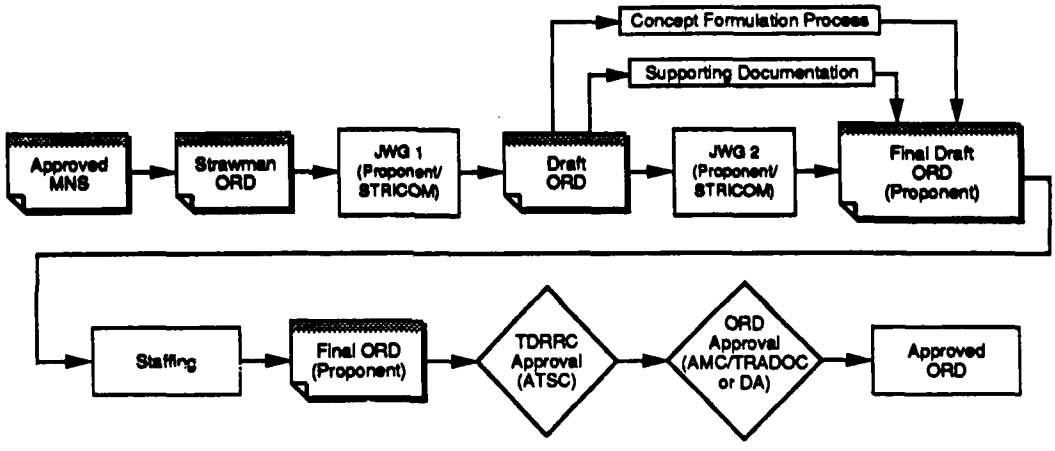
The NSTD ORD has four main purposes:

- Provide the materiel developer with the minimum acceptable device requirements, capabilities, and operational standards needed to meet the MNS.
- Alert the materiel development and training communities to anticipated logistics support for the proposed training device.
- Distribute advance planning information regarding training requirements and criteria associated with operation and maintenance of the proposed device.
- Allow a milestone I/II decision to permit the training device acquisition program to proceed to phases I and II, Demonstration and Validation/Engineering and Manufacturing.

Process

Preparation of the NSTD ORD is an iterative process. This process will result in a strawman ORD, Draft ORD, final draft ORD, and Final ORD. The NSTD joint working group (JWG) process in chapter 7 provides additional details on the iterative developmental process. The iterative development of this document occurs because as the device proceeds through life cycle development, additional data on each of the key elements of the document emerges, allowing continuous updates.

The end result of this document development process is a final ORD. Concurrently with the NSTD ORD development and update processes, the required annexes are initiated and refined. The NSTD ORD development process is shown below.



Strawman ORD Actions

The training developer initiates the process by developing the strawman ORD based on the need identified in the NSTD MNS. If a STRAP is required, ATSC informs the proponent, and the training developer begins the STRAP development at this time.

At this point, the ORD is staffed internally in the proponent school to interested/affected agencies. Staffing structure and procedures may vary from school to school. Internal standing operating procedures (SOPs) contain this information.

When the document has completed internal staffing and all comments are incorporated, the proponent forwards the strawman ORD through the integrating command to ATSC.

Strawman ORD Actions (con.)

ATSC reviews the document for completeness and prepares the read-ahead package for the JWG 1. This package includes a copy of the strawman ORD and instructions for conduct of the JWG. Additional information is at Chapter 7, JWG Process.

Concurrently with the staffing action, ATSC makes a determination regarding the requirement for the program and/or the level of study effort needed to support the program. The Deputy Chief of Staff for Training (DCST) issues to the proponent a study directive (if required) outlining the study actions to be taken. When JWG 1 actions have been completed, the JWG will result in publication of the draft ORD.

Draft ORD Actions

During the time between JWG 1 and JWG 2, a number of critical actions related to continued development of the device documentation are in progress. These include but are not limited to the following:

- The materiel developer Simulation, Training and Instrumentation Command (STRICOM) conducts concept formulation for the device.
- The SMMP is drafted based on discussion and task assignment in the JWG.
- The TEMP, to include critical operational issues and criteria (COIC), is developed and documented.
- The BOIP/QQPRI is developed.
- The training strategy is updated and refined.
- Ongoing study processes are continued.

The key factor for conduct of JWG 2 and further action on device development is the status of the concept formulation. Once STRICOM has completed the concept formulation, JWG 2 can take place. At this point in the process, the training developer ensures that all interim action items are completed and that the requirements documents are current. The product resulting from these actions is a final draft ORD.

Final Draft ORD Actions

The final draft ORD and available supporting documentation comprise the ORD package. The training developer is responsible for staffing this package with other schools. ATSC accomplishes subsequent staffing to major commands, HQ TRADOC, and other agencies as designated.

Final Draft ORD Actions (con.)

When all comments have been received from the staffing process, the coordination annex (annex B) of the ORD is developed. This annex contains a list of all comments submitted during the staffing process that were not accepted for inclusion into the document. Rationale for nonacceptance of comments is also provided in annex B.

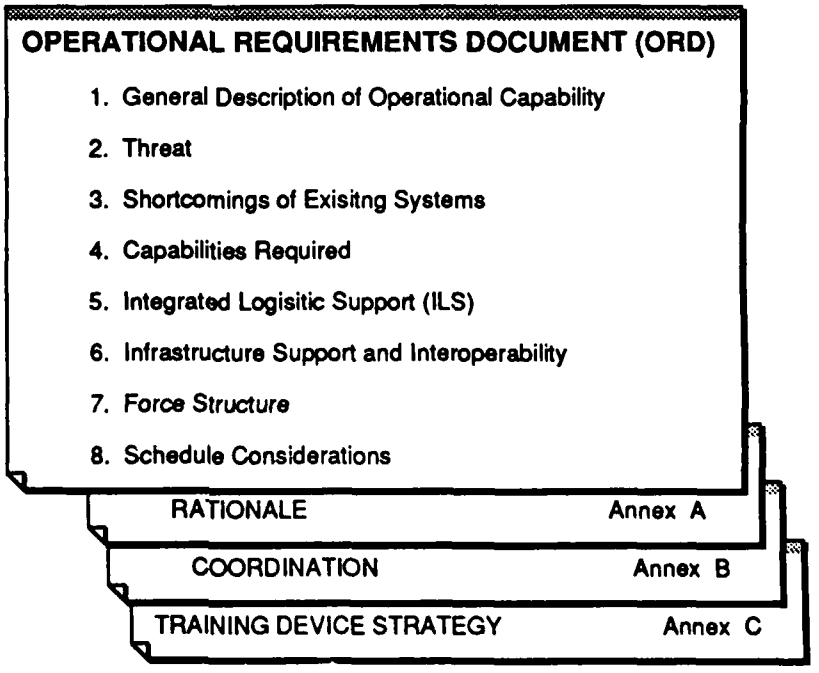
Final ORD Actions

Once the coordination annex is developed and revision of the base documents (with submitted comments) is completed, the final ORD is submitted to ATSC for review. Prior to continuing on in the approval process, ATSC reviews the document, and it is submitted to the Training Device Requirements Review Committee (TDRRC). (Additional information on the TDRRC process is in chapter 6.)

When the TDRRC document, it is submitted for final approval. The approval authority is normally TRADOC and AMC; however, for some programs higher level approval may be required.

NSTD ORD Content/Format

The ORD consists of eight paragraphs with subparagraphs as applicable to fully define the requirement. The completed ORD package also includes three annexes.



Paragraph 1
General Description of Operational Capability

The training developer uses paragraph 1 to identify the mission area(s) that the proposed device supports and to provide sufficient detail in the description to initiate program and logistic planning. This paragraph also describes how the device fits into the CATS. The OMS/MP, the training device strategy (annex C of the ORD), and the CATS must be in agreement and mutually supportive.

Paragraph 2
Threat

The training developer identifies the battle lab that the device or simulation supports. This paragraph also describes the contribution of the device in terms of achieving war-fighting and training capabilities. A review of the information contained in paragraph 2 of the MNS may assist in developing this data. The war-fighting capabilities identified in paragraph 2 of the MNS must be contained in this paragraph.

Paragraph 3
Shortcomings of Existing Systems

This paragraph must describe why existing training systems or programs cannot meet current or projected training requirements. The training developer substantiates the data for this paragraph by discussing/ reviewing those programs or devices identified in paragraph 4 of the MNS and explaining why they do not meet the need. Factors that are addressed include why the present method of training is no longer cost/training effective and what, if any, cost savings or trade-offs of other resources will be realized upon fielding of the proposed training device; for example, use of this device will reduce the OPTEMPO by 10 rounds of tank main gun ammunition per crew per year.

Paragraph 4
Capabilities Required

In paragraph 4 the training developer identifies those essential characteristics and performance capabilities required for the proposed device. These are stated in operational terms, prioritized, if possible, and delineated in three subparagraphs: System Performance, Logistics and Readiness, and Critical System Characteristics.

Each performance parameter is specified in terms of a minimum acceptable value (threshold) required to satisfy the training mission need and a performance objective. The objective should represent a measurable, beneficial increase in training capability, operations, and support above the threshold. A listing of the rationale for each critical performance characteristic developed is attached at Annex A, Rationale. Characteristic and performance capabilities submitted without a corresponding rationale will not be accepted.

Paragraph 4 Capabilities Required (con.)

4.a. System Performance - includes any device performance parameters that affect the training requirement such as throughput requirements, engagement ranges, weapon system/hardware characteristics to be emulated or simulated, interface requirements with other training systems, and/or existing operational equipment. Describe mission scenarios (wartime and peacetime) in terms of mission profiles, employment tactics, and environmental conditions.

4.b. Logistics and Readiness - contains any RAM requirements identified for the device. It also identifies any system support requirements or constraints for maintenance and/or replacement requirements. It is used to describe the expected maintenance manpower and skill level's availability as a MANPRINT constraint. MANPRINT information may be incorporated in paragraph 5.c. if the issue requires detailed explanation.

4.c. Critical System Characteristics - addresses natural environmental factors (such as climatic, terrain, and oceanographic factors), electromagnetic compatibility, and frequency assignment for training systems operating in the electromagnetic spectrum. It also defines the expected mission capability (for example, full or percentage of degradation in the identified environments), identifies any physical and operational security needs, and defines and addresses any critical physical characteristics such as height, weight, etc.

Paragraph 5 Integrated Logistics Support (ILS)

The training developer uses the following subparagraphs to address any organizational, intermediate, depot-level, or contractor logistical support objectives for initial operational capability and full operational capability (IOC/FOC) achievement.

5.a. Maintenance Planning - contains all identified maintenance support tasks and provides the rationale for selecting contract logistic support versus organic maintenance repair.

5.b. Support Equipment - defines the standard support equipment required by the training device. It also describes the test and fault isolation capabilities desired of any automatic test equipment required and the applicable level of maintenance. This subparagraph also identifies the need for special tools or test equipment or constraints associated with the requirement.

5.c. Human Systems Integration - identifies the manpower, personnel, training, human factors engineering, system safety, and health hazards constraints. These are extracted from the "Issues" section of the SMMP and presented in summary form.

Paragraph 5 Integrated Logistics Support (ILS) (con.)

Manpower limitations in the force structure for military and civilian operators, instructors, and maintainers are also defined. Analytical methodologies, such as hardware versus manpower (HARDMAN) comparability, that are or were used to determine manpower, personnel, or training impacts for the device should be explained even though they are not part of the ORD. This subparagraph is used to address any other MANPRINT constraints, objectives, or thresholds that are not covered in other ORD areas.

5.d. Computer Resources - contains information on special requirements and potential constraints occurring in this functional area. Examples include specific language(s), data base architecture, and interoperability considerations. This subparagraph also addresses all mission-critical and support resources and automated test equipment and describes the capabilities desired or required for recurring computer resource support.

The training developer uses this element to identify and input details on any unique user interface requirements, documentation needs, special software certifications, configuration management, postdeployment software support, and anticipated frequency of software changes and/or system upgrades.

5.e. Other Logistics Considerations - describes the provisioning strategy for the device. Any unique facility and shelter requirements are specified. Special packaging, handling, and transportation considerations are identified. Unique data requirements such as engineering data for depot support of the device or supporting equipment are defined.

Paragraph 6 Infrastructure Support and Interoperability

The training developer uses the subparagraphs outlined on the next page to discuss any interfacing systems at the system/subsystem, platform, and force levels. Specifically addressed are those systems related to command, control, communications, and intelligence (C^3I); transportation and basing; and standardization and interoperability. Information in this paragraph and subparagraphs must identify any other ORD and/or other services that may have similar requirements. If applicable, a joint potential designation (joint, joint interest, or independent) must be assigned.

Paragraph 6 Infrastructure Support and Interoperability (con.)

6.a. Command, Control, Communication, and Intelligence - information describes how the training device will support and integrate with the C^3I architecture that is expected to exist at the time the proposed device is fielded. This description includes any data requirements (data, voice, and video), computer network support, and antijamming requirements. It also identifies any unique intelligence information requirements including intelligence interfaces, communications, and data base support requirements to support the conduct of training with or without the proposed device. These information elements are provided as applicable.

6.b. Transportation and Basing - describes how the device will be moved to or within the training environment. Deployability of training devices in support of mobile forces is a consideration and must be addressed in this and other appropriate paragraphs. The normal institutional, home station, local, and major training area locations of training devices may become less viable if the target audience is deployed to an operational area with specific and continuing training requirements.

This subparagraph also identifies any setup and/or takedown constraints and special lift requirements, to include description of facilities, required to support normal use and storage of the training device. Requirements for new permanent construction routinely take up to five years to accomplish. Accordingly, if a requirement for a special facility exists, this information must be identified and documented as early as possible in the process.

6.c. Standardization, Interoperability, and Commonality - identifies considerations for joint use of the device. This subparagraph also includes information regarding any procedural and technical interfaces, communications, protocols, and standards required to ensure interoperability with other services, joint service, and allied training systems. This subparagraph also addresses energy standardization and efficiency needs for fuels and electrical power as applicable.

6.d. Mapping, Charting, and Geodesy Support - identifies cartographic materials, digital topographic data, and geodetic input required to support training device employment. Where possible, Defense Mapping Agency standard military data will be used.

6.e. Environmental Support - identifies any standard or unique weather, oceanographic, and astrogeophysical support requirements. This data must include accuracy and forecast frequency specifications.

Paragraph 7
Force Structure

The training developer uses this paragraph to identify and estimate the number of training devices that will be required including spares and quantities needed to support other services' or government agencies. This information is used to assist in the development of essential elements of information for the training device strategy at annex E. This data is included in the MANPRINT requirements related to the proposed device.

Paragraph 8
Schedule Considerations

This paragraph defines the events and actions required to attain IOC and FOC. The preliminary schedule should reflect sufficient flexibility for revisions as the program is progressively defined and trade-off studies are completed. This scheduling effort must also clearly specify the level of performance or capability necessary to reach IOC or FOC. Included are the number of training devices, operational and support personnel, facilities, and maintenance support that must be in place.

If device availability in a specific time frame is critical, the milestone objective for IOC is specified and the impact if this objective is not achieved is described. A window of acceptability is provided if appropriate. Subparagraphs and milestone schedules should be used as necessary to address this information.

Annex A
Rationale

The rationale annex supports each of the essential characteristics that were developed for the device and documented in paragraph 4 (Capabilities Required) of the ORD. Each essential characteristic element identified must have a corresponding rationale statement. Characteristics that do not have a rationale will not be accepted.

Annex A will also include a synopsis of the executive summary of the approved RAM rational report (RRR).

Annex B
Coordination Annex

The coordination annex is used to document all comments that were received during staffing of the ORD that were not accepted for inclusion into the document. Each comment that is not accepted by the proponent must have a corresponding justification for its nonacceptance.

Annex C Training Device Strategy

Annex C, by title and content, is a highly critical document in the overall device development process. This document is comprised of two paragraphs with device-specific substantiating information:

- Paragraph 1 is a listing of all individual and collective tasks that are associated with training the device.
- Paragraph 2 is a comprehensive narrative covering the information developed regarding how the device is to be used to train. This narrative includes where the device is to be used (institution, unit, local training area, home station), who will use it (individuals, crews, reserve and/or active components), and how the device fits into the overall hierarchy of training prerequisite skills and knowledge.

The training developer must ensure that all information critical to the successful employment to standards of the proposed device is covered in this annex and that this information is an integral element in the prevailing CATS.

Commercially Available Devices

Requirements for commercially available (off-the-shelf) devices meeting the criteria of an NDI are documented using the ORD. This action is based on an approved MNS as with any other nonsystem device. However, since this solution to a training need minimizes or eliminates developmental risk, ORD annexes and supporting documentation will be tailored accordingly.

Supporting Documentation

Other supporting documents and data that are required in conjunction with the ORD are discussed in detail in chapter 5.

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

AR 350-38, *Training Device Policies and Management*

TRADOC/AMC Pam, 70-11, *RAM Rationale Report Handbook*

Related Pages

Nonsystem Training Device Mission Need Statement, pg. 3-4

Basis of Issue Plan/Qualitative and Quantitative Personnel Requirements Information, pg. 5-9

Reliability, Availability, and Maintainability, pg. 5-17

Testing and Evaluation, pg. 5-28

Training Effectiveness Analysis Process, pg. 6-8

Concept Formulation, pg. 6-12

Training Device Joint Working Group Process, pg. 7-3

Combined Arms Training Strategy, pg. 8-5

Training Device Requirements Review Committee, pg. 8-11

In-Process Review, pg. 8-14

Modification Management, pg. 9-1

CHAPTER 4

SYSTEM TRAINING DEVICE REQUIREMENTS DOCUMENTATION

System Training Device Requirements Documentation

Overview

Introduction

U.S. Army policy dictates the fielding of total systems. The term "total system" refers to a materiel system that when fielded is complete with all training and support subsystems. It is the responsibility of the proponent training developer to ensure that the training subsystem is identified, developed, procured, and fielded with the system it will support. To this end, the training developer must be cognizant of the documentation requirements for the proposed system, the training input to this documentation, and the supporting documentation prepared by the training developer.

This chapter provides pertinent information on the system requirements documentation. Although system requirements documentation is the responsibility of the proponent combat developer supported by the materiel developer, the training developer has specific responsibilities to provide training-related input to the documentation and to author much of the supporting documentation. This required input is addressed in detail in this chapter. Supporting documentation is presented in detail in chapter 5.

Documenting the Requirement

There are two primary documents that are essential to the development and acquisition of new materiel systems:

- Mission need statement (MNS).
- Operational requirements document (ORD).

Comment

Although detailed information regarding supporting documentation is not presented in this chapter, training developers should be cognizant of the fact that requirements documentation will not be approved without these supporting documents. More to the point, the training subsystem, including system TADSS, may lag behind in funding and/or development if not identified and documented early in the system acquisition process. Close coordination with the proponent combat developer must be maintained throughout the process, and all documentation must be completed at appropriate points in the process before device development and acquisition can begin or proceed.

Mission Need Statement (MNS)

The MNS is the initiating document for any materiel acquisition program. The proponent combat developer prepares the MNS with input from the training developer and materiel developer. The MNS does not propose a materiel solution to the stated need but rather addresses a requirement as a mission need. HQDA approval of the MNS constitutes a milestone 0 decision and permits the conduct of conceptual studies to determine alternative solutions to meet the stated need.

Operational Requirements Document (ORD)

The ORD describes the operational parameters for a proposed materiel system. The combat developer prepares the ORD with input from the training developer and materiel developer and many other players in the materiel acquisition process (logisticians, testers, users). ORD development is an iterative process requiring close and constant coordination throughout the process. When approved, the system acquisition program may proceed to a milestone I (or I/II or I/III) decision permitting continuation of the acquisition program. Major training developer input to ORD development lies in preparation of the training support requirements (TSR) annex, which details requirements for training programs and system TADSS.

Supporting Documentation

Supporting documentation required for approval of system requirements documentation will be mentioned throughout this chapter. The level of detail for these documents varies depending on the complexity, cost, or basis of issue of the proposed training products and materiel to support the system. The following are some of the primary supporting documents associated with the development and acquisition of systems:

ORD annexes

- Annex A, Rationale.
- Annex B, Coordination.
- Annex C, Training Support Requirements (TSR).

Other supporting documentation

- System MANPRINT management plan (SMMP).
- Test and evaluation master plan (TEMP).

Supporting Documentation (con.)

- Basis of issue plan (BOIP)/qualitative and quantitative personnel requirements information (QQPRI).
- System training plan (STRAP).
- Distribution plan.
- Reliability, availability and maintainability (RAM) rationale report.
- Training effectiveness analysis (TEA).

Additional information on this supporting documentation can be found in chapter 5.

Pertinent Regulations and Publications

DODI 5000.2, *Defense Acquisition Management Policies and Procedures*

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

AR 70-1, *Army Acquisition Policy*

AR 350-38, *Training Device Policies and Management*

Related Pages

System Mission Need Statement, pg. 4-4

System Operational Requirements Document, pg. 4-9

Annex C, Training Support Requirements, pg. 4-20

Training Device Requirements Data Package, pg. 4-26

System Mission Need Statement

Introduction

When a need for a materiel system has been identified as the solution to a deficiency, it must directly relate to a specified mission need. This correlation is accomplished by the development of a MNS. The MNS is the initiating document that is a prerequisite for acquisition of all materiel systems. It is a general statement that expresses the need in terms of the required operational capability of the proposed system. The proponent combat developer develops the system MNS with input from the training developer and materiel developer.

Purpose

The MNS has three main purposes:

- Define the battlefield deficiency in terms of operational need to provide multiple options for analysis.
- Document a mission need that cannot be satisfied by a nonmateriel solution.
- Obtain a milestone 0 decision to authorize conceptual studies to be conducted in the Concept Exploration and Definition phase (phase 0) of the materiel acquisition program.

Comment

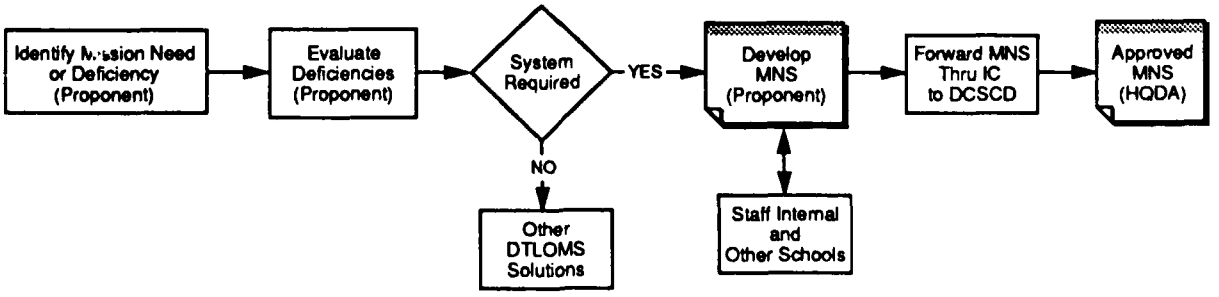
Although the is not a stated purpose of the MNS, the training developer should look upon this document as the first opportunity to begin the training and TADSS requirements identification process for a proposed new materiel system. The inclusion in this document of broad training requirements, in the form of constraints on the system, will facilitate further training subsystem requirements documentation.

Process

Development of the system MNS begins with the identification of a mission need(s) or deficiency(ies) through the continuing assessment of current and projected capabilities. These deficiencies are described in terms of operational capability needs and evaluated to determine if they can be satisfied by nonmateriel solutions such as changes in doctrine, tactics, training, or organization. If an identified need cannot be satisfied by a nonmateriel solution, a MNS is prepared using the format outlined in DOD Manual 5000.2-M, *Defense Acquisition Management Documentation and Reports*. The training developer becomes involved in this process when the manpower and personnel integration (MANPRINT) joint working group (JWG) is convened to initiate the draft System MANPRINT Management Plan (SMMP) and to determine if a formal Early Comparability Analysis (ECA) should be conducted. Combat developers and training developers use the information gained from the ECA to assist in developing input to the system MNS. If a formal ECA is not conducted, the training developer should use the thought process behind the ECA to determine broad training strategies and identify the kinds of TADSS that may be required. Detailed information regarding conduct of an ECA can be found in the *Training Developers' Procedural Guide for Identifying Requirements for System Devices*.

Through the ECA process the training developer will have determined the probable requirement for system TADSS to support the initial training strategy. These requirements are documented in paragraph 5 of the MNS so that they may be further evaluated during concept studies in phase 0 of the acquisition program.

The proponent combat developer staffs the MNS with other TRADOC schools as appropriate and forwards it through the integrating command to HQ TRADOC for further staffing as required and submission to HQDA for approval. HQDA is the lowest approval authority for a MNS. A graphic depiction of the MNS development/approval process is shown below.



Content/Format

The system MNS consists of five paragraphs and is not to exceed five pages in length. Additional information to help explain or define the need may be appended to the basic document.

MISSION NEED STATEMENT (MNS)

1. Defense Planning Guidance Element
2. Mission and Threat Analysis
3. Nonmateriel Alternatives
4. Potential Materiel Alternatives
5. Constraints

Paragraph 1 Defense Planning Guidance

The combat developer identifies the major program planning objective or section of the Defense Planning Guidance to which the stated need responds. Reference to DOD or long-range investment plans, if applicable, is also provided. Also included are needs related to the Army modernization plan (AMP).

Paragraph 2 Mission and Threat Analyses

The combat developer identifies and describes the mission need or deficiency. The need is defined in terms of mission, objectives, and general capabilities. The need is not presented in terms of equipment or system-specific performance characteristics. The validated threat to be countered and the projected threat environment and shortfalls of existing capabilities or systems in meeting these threats are described. The timing of the need and its general priority relative to others in this functional area are also discussed.

Paragraph 3 Nonmateriel Alternatives

The combat developer discusses the results of the mission area analysis. This paragraph should identify any changes in U.S. or allied doctrine, operational concepts, tactics, organization, and training that were considered in the context of satisfying the deficiency. An explanation as to why such changes were judged to be inappropriate and/or inadequate must be provided.

Paragraph 4
Potential Materiel Alternatives

The combat developer identifies any known systems or programs that address similar needs that are in use, under development, or in production by other services or allied nations. The potential for interservice or allied cooperation is discussed. Potential areas of study for concept exploration/definition including the use of existing U.S. or allied military commercial systems and/or product improvements of existing systems are also indicated. These alternatives <u>are not</u> evaluated in the MNS.

Paragraph 5
Constraints

The combat developer describes, as applicable, key conditions and parameters related to infrastructure support that may impact on satisfying the mission need. Considerations include but are not limited to the following areas:

- Logistics support.
- Transportation.
- Mapping, charting, and geodesy support.
- MANPRINT (including training and TADSS).
- Command, control, communications, and intelligence (C^3I).
- Security.
- Standardization or interoperability with NATO, other allies, and other DOD components.
- The level of desired mission capabilities in these operational environments:
  - Conventional and nuclear weapons effects.
  - Nuclear, biological, and chemical contamination (NBCC) impact.
  - Electronic and natural limitations.

Subparagraphs are used as necessary to provide for complete discussion of this information.

Training Developer Input

The training developer's main responsibility in the system MNS development is to ensure that prescribed information on training support requirements, to include training devices and embedded training, is documented in Paragraph 5, Constraints. The basic concept for training the proposed system should have been determined through the ECA process.

Pertinent Regulations and Publications

DOD Manual 5000.2M, *Defense Acquisition Management Documentation and Reports*

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

Related Pages

System Operational Requirements Document, pg. 4-9

System Training Plan, pg. 5-5

Training Effectiveness Analysis Process, pg. 6-8

Other Joint Working Groups, pg. 7-13

Combined Arms Training Strategy, pg. 8-5

Modification Management, pg. 9-1

Introduction

When it is determined that the solution to a deficiency is a new materiel system, and a MNS has been approved, the proponent combat developer prepares the ORD. The system ORD is a formal requirements document that, when approved and funded, permits a program to proceed to a milestone I decision thereby allowing development or production. The ORD concisely states the minimum essential operational, technical, logistic, training support, and cost parameters necessary to initiate development or procurement of a system.

The combat developer prepares the system ORD; however, the training developer coordinates and provides input on training, training support, and TADSS requirements. Training developer coordination with the combat developer must be proactive and routine. Maintaining close relationships with the combat development studies personnel and possessing full knowledge of the emerging operational concept provide the opportunity to ensure appropriate system- and training-based solutions are applied to the stated battlefield deficiency.

Training developers must attend the combat development work groups to discuss training constraints and problems associated with the proposed system. During the drafting of the ORD and after its approval, proactive training developer input to the SMMP and solutions to MANPRINT issues will ensure that training support and training device areas of interest/influence are properly addressed in the system's requirement documents.

Purpose

The system ORD has four main purposes:

- Provide decision makers with the minimum essential information necessary to complete the Concept Exploration and Definition phase and proceed to the Demonstration and Validation/ Engineering and Manufacturing Development phases of the acquisition process.
- Provide the materiel developer with the information essential to the preparation of a request for proposal (RFP) to industry for system development.

Purpose (con.)

- Describe the system's minimum essential operational and support characteristics.
- Define the system's training support package including embedded training and training device requirements.

Process

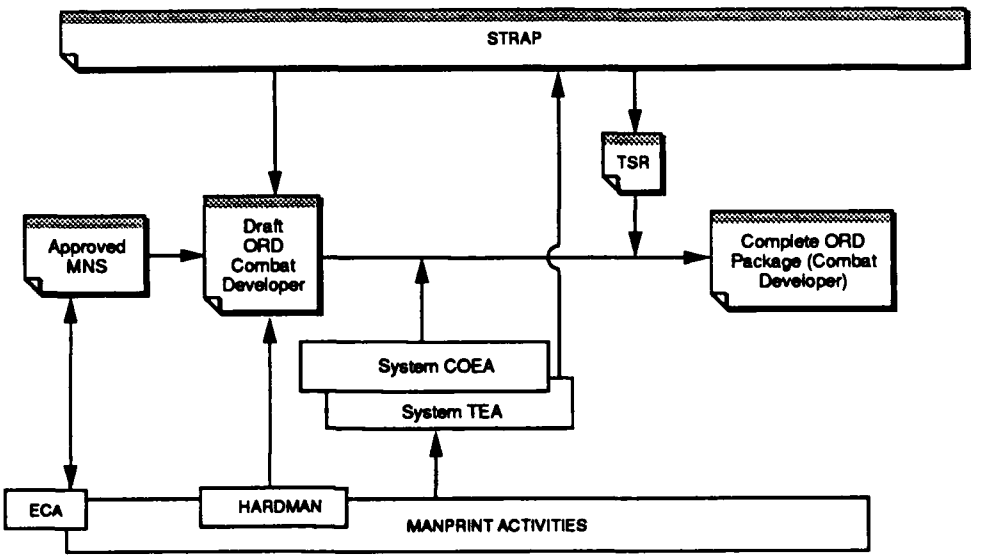
After the system MNS has been approved, the combat developer begins development of the ORD. The proponent combat developer prepares the system ORD with input from the materiel developer, training developer, logistician, MANPRINT domain personnel, test and evaluation elements, and interested MACOMs. The following areas are addressed in the ORD:

- Operational characteristics of the system and embedded training requirements.
- A technical assessment and associated risks.
- A system support assessment including a statement and information on the system support plan testing during Initial Operational Test and Evaluation (IOT&E).
- MANPRINT requirements, including--
  - Manpower/force structure assessment.
  - Personnel assessment.
  - Training assessment including the need for TADSS.
  - Human factors engineering (HFE) assessment.
  - System safety assessment.
  - Health hazard assessment.
- Standardization and interoperability.
- Milestone schedule.

The development of the system ORD is a progressive action. The process is graphically depicted in the next figure. Additional information is gained from system studies related to operational and training requirements. This data is integrated as appropriate.

Process (con.)

When the combat developer at the proponent school completes the system ORD draft, it is staffed internally and externally to all interested/affected agencies. The training developer continues to update the system training plan (STRAP) with emerging information from the ECA, the HARDMAN analysis (if conducted), and other system studies. Upon completion of staffing and receipt of input to the system ORD, a JWG is convened to finalize the system ORD for the approval process.

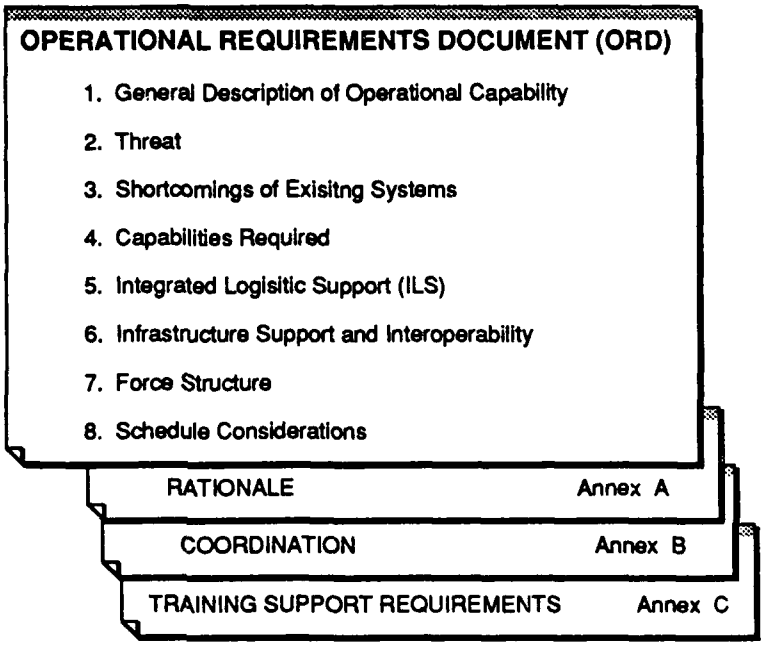


Because detailed information regarding training device characteristics is not normally available at the time of system ORD development and approval, the training developer provides as much data as possible and continues to research device designs and strategies. A training device concept formulation is developed as soon as the system studies provide sufficient information to analyze device technologies.

At this point in the process, the training developer obtains training-related information from logistical support analysis (LSA) data and the results of any operational testing of the system and system support package. Final training device requirements and characteristics are then developed and submitted in the training device requirements data package.

Content/Format

The ORD consists of eight paragraphs with subparagraphs as applicable to fully define the requirement. A completed ORD package will also contain three annexes. The content and format for the ORD can be found in DOD 5000.2M, *Defense Acquisition Management Documentation and Reports.*



Paragraph 1 General Description of Operational Capability

Paragraph 1 contains information describing the overall mission area, type of system proposed, and the anticipated operational and support concepts in sufficient detail to support program and logistics support planning. It contains a brief summary of the MNS. If a MNS did not precede the ORD, the process that examined alternatives to satisfy the mission need and development of the operational requirements is explained.

Paragraph 2
Threat

This paragraph summarizes the threat and the projected environment. Threat information should reference Defense Intelligence Agency (DIA) or Service Technical Intelligence Center approved documents and should be validated by the Service Intelligence Director. For major defense acquisition programs, the DIA-validated System Threat Assessment Report is referenced. In some nonwar-fighting systems, the threat may be listed as "not applicable."

Paragraph 3
Shortcomings of Existing Systems

This paragraph explains why existing systems do not meet current or projected requirements. Proposed systems are not described in this paragraph.

Paragraph 4
Capabilities Required

In this paragraph the combat developer identifies performance data (operational effectiveness and suitability) capabilities and characteristics required. These are stated in operational terms and priorities if possible. Performance parameters are specified in terms of a minimum acceptable value (threshold) required to satisfy the mission need and objective. The objective should represent a measurable, beneficial increase in capability or operations and support capabilities above the identified threshold.

Subparagraphs to the Capabilities Required paragraph of the ORD are tailored to include and/or describe, as applicable, system performance parameters or considerations in the following major and subtopical areas:

4a. System Performance - includes system performance parameters such as range, accuracy, payload, speed, and mission reliability. Mission scenarios (wartime and peacetime if different) are described in terms of mission profiles, employment tactics, and environmental factors (all-inclusive, natural, and man-made, for example, weather, countermeasures, ocean acoustics.)

4b. Logistics and Readiness - includes measures for mission-capable rate, operational availability, frequency and duration of preventive or scheduled maintenance actions, etc. Measures are described in terms of mission requirements considering both wartime and peacetime logistics operations. Combat support requirements are identified including battle damage repair capability, mobility requirements, expected maintenance manpower and skill levels, and surge and mobilization objectives and capabilities.

Paragraph 4 Capabilities Required (con.)

4c. Critical System Characteristics - addresses electronic counter countermeasures (ECCM) and wartime reserve modes (WARM) requirements, conventional and initial nuclear weapons effects, nuclear, biological, and chemical (NBC) contamination survivability, natural environmental factors (such as climate and terrain factors), and electromagnetic compatibility and frequency spectrum assignment of systems operating in the electromagnetic spectrum. The expected mission capability is defined (full, percent degraded, etc.) in the various environments. Applicable safety parameters such as those related to system, nuclear, explosive, and flight safety are included. Communications, information, and physical and operational security needs are identified.

Note: While the training concept in paragraph 5-C includes any embedded training requirements, these requirements must also be identified in the appropriate subparagraph of paragraph 4. This ensures that all required embedded training capabilities are identified and that the appropriate corresponding rationale is annotated in the rationale annex.

Paragraph 5 Integrated Logistics Support (ILS)

In paragraph 5, along with its subparagraphs, the organizational, intermediate, and depot-level support objectives for initial operational capability (IOC) and full operational capability (FOC) are established.

5a. Maintenance Planning - identifies maintenance tasks to be accomplished and time phasing for depot maintenance including programmed depot maintenance and surveillance inspections such as nuclear hardness and structural integrity. The planning approach for contract versus organic repair is also described.

5b. Support Equipment - defines the standard support equipment to be used by the system. The test and fault isolation capabilities desired of the automatic test equipment at all levels are expressed in terms of realistic and affordable probabilities and confidence levels.

Paragraph 5 Integrated Logistics Support (ILS) (con.)

5c. Human Systems Integration - briefly describes the operational and maintenance training concept (pipeline, training devices, embedded training/on-board training, interactive courseware). Manpower, personnel, training, human factors engineering, system safety, and health hazard constraints are identified. Objectives and thresholds are established if applicable for manpower (force structure and end strength), personnel (numerical and skill level), training, and safety. Manpower and training methodologies to be used are specified (for example, HARDMAN comparability methodology).

Note: Training developers must provide requirements for embedded training and TADSS to the combat developer for input to this paragraph. Details on these requirements will be documented in Annex E, Training Support Requirements.

5d. Computer Resources - identifies computer resource constraints (language, computer, data base, architecture, or interoperability constraints). All mission-critical and supporting computer resources are addressed including automated test equipment. The capabilities desired for integrated computer resources support are described. Explanations of unique user interface requirements, documentation needs, and special software certifications are provided.

5e. Other Logistics Considerations - describes the provisioning strategy for the system. Any unique facility and shelter requirements are specified. Special packaging, handling, and transportation considerations are identified. Unique data requirements are defined, such as engineering data for depot support and technical orders for the system and depot.

Paragraph 6 Infrastructure Support and Interoperability

In this paragraph the combat developer discusses interfacing systems (at the system/subsystem, platform, and force levels), specifically those related to C^3I, transportation, basing, and standardization and interoperability. Related ORD and other services that may have similar requirements are identified. A joint potential designation is assigned (joint, joint interest, or independent).

Paragraph 6 Infrastructure Support and Interoperability (con.)

6a. Command, Control, Communications, and Intelligence - describes how the system will be integrated into the C^3I architecture anticipated to exist at the time the system will be fielded. Included are data requirements (data, voice, video), computer network support, and antijamming requirements. Unique intelligence information requirements including intelligence interfaces, communications, and data base support pertaining to target and mission planning activities, threat data, etc. are included.

6b. Transportation and Basing - describes how the system will be moved to or within the theater and identifies any lift constraints. The basing and associated facilities available for training locations and main and forward operation bases are provided.

6c. Standardization, Interoperability, and Commonality - describes considerations for joint use, National Atlantic Treaty Organization (NATO) cross-servicing, etc. Procedural and technical interfaces and communications, protocols, and standards required to be incorporated to ensure interoperability with other services, joint service, and allied systems are identified. Energy standardization and efficiency needs for fuel and electrical power are addressed as applicable.

6d. Mapping, Charting, and Geodesy Support - identifies cartographic materials, digital topographic data, and geodetic data needed for system employment. Where possible, Defense Mapping Agency standard military data will be used.

6e. Environmental Support - identifies the standard and unique weather, oceanographic, and astrogeophysical support required. Data accuracy and forecast frequency requirements are included.

Paragraph 7 Force Structure

This paragraph contains the estimated number of systems or subsystems needed including spares and training units. The platforms and quantities including other services or government agencies, if appropriate, that will employ the systems or subsystems being developed and procured to satisfy this ORD are identified.

Note: Training developers must provide the combat developer with estimates of systems or components required for training and estimates of the number of TADSS.

Paragraph 8 Schedule Considerations

Paragraph 8 defines what actions, when complete, will constitute attainment of IOC and FOC (remains flexible for revision as the program is progressively defined and trade-off studies are completed). The operational capability or level of performance necessary to declare IOC and FOC is defined. The numbers of operational systems, operational *and support personnel*, facilities, and organizational, intermediate, and depot support elements that must be in place are included. If availability in a specific time frame is important, an objective for IOC is specified. The impact if this objective is not achieved is described, and a window of acceptability is identified if appropriate.

Annex A Rationale

Annex A contains the rationale for each of the essential characteristics that were developed for the system and documented in paragraph 4 (Capabilities Required) of the basic document. Each essential characteristic that is identified for the system must have a corresponding rationale. Characteristics without an acceptable rationale will not be accepted. Annex A will also include a synopsis of the executive summary of the approved RAM Rational Report (RRR).

Annex B Coordination

Annex B is used to document all comments that were received during staffing of the ORD that were not accepted for inclusion into the document. Each comment that is not accepted must have a corresponding justification for its nonacceptance.

Annex C Training Support Requirements (TSR)

Annex C provides a comprehensive description of all training support requirements including embedded training capabilities and TADSS. This chapter contains detailed information on the content and format of annex C beginning on page 4-20.

Training Developer Input

Because the system ORD establishes funding parameters and provides the definition of the requirements from which the materiel developer will prepare an RFP to industry, it is essential that the training developer identifies and documents to the maximum extent possible all training support requirements and costs. This is accomplished by working routinely and proactively with the combat developer and materiel developer throughout the system ORD development process to ensure that all training considerations are addressed in the ORD. Extraordinary attention should be focused on the training support requirements detailed in Annex C, TSR.

Pertinent Regulations and Publications

DOD Manual 5000.2M, *Defense Acquisition Management Documentation and Reports*

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

TRADOC Reg 351-9, *Systems Training Development*

Related Pages

System Mission Need Statement, pg. 4-4

Annex C, Training Support Requirements, pg. 4-20

System Training Plan, pg. 5-5

Reliability, Availability, and Maintainability, pg. 5-17

System MANPRINT Management Plan, pg. 5-23

Training Effectiveness Analysis Process, pg. 6-8

Concept Formulation, pg. 6-12

Training Device Joint Working Group Process, pg. 7-3

Other Joint Working Groups, pg. 7-13

Combined Arms Training Strategy, pg. 8-5

Related Pages (con.)

Requirements Review Committee, pg. 8-8

Training Device Requirements Review Committee, pg. 8-11

In-Process Review, pg. 8-14

Modification Management, pg. 9-1

Annex C, Training Support Requirements

Introduction

The TSR Annex to the system ORD provides a detailed summary of all training support requirements for the developing system. A well documented TSR annex will provide the system acquisition program management with the information necessary to program funding and developmental actions to ensure that the training subsystem can be developed, tested, and procured along with the system it supports.

Purpose

The TSR annex has five main purposes:

- Inform the combat developer and materiel developer of the system training support requirements including embedded training capabilities and TADSS.
- Identify funding requirements to support development and procurement of system TADSS.
- Facilitate the development of training plans based on the training subsystem.
- Provide information for facilities and logistic support requirements.
- Allow tracking of the proposed training support items through the materiel acquisition process in concert with system development.

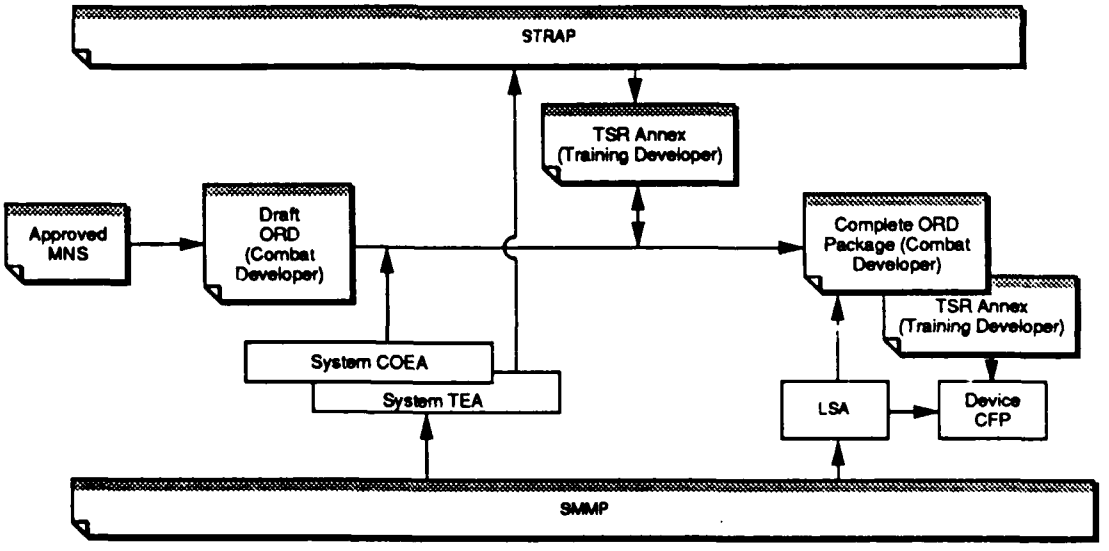
Comment

The TSR annex is developed concurrently with the system ORD and attached to the basic document as annex C. While the ORD provides essential information for the system to proceed to a milestone I/II decision and an RFP, the annex will normally not provide sufficient information for a training device statement of work (SOW) for an RFP and developmental actions. At this point, sufficient system LSA data has not yet been generated to support training device concept formulation. When the training developer has analyzed LSA data and training device concept formulation has been completed, the device can be developed, either by the prime (system contractor) or under a separate contract.

Process

The training developer has been formulating the training concept since the ECA and initial input to the system MNS. This training concept and support requirements to accomplish training under the concept have been documented in the STRAP (see chapter 5). If the training developer has prepared a detailed STRAP, development of the TSR annex will not present a major effort. All information required to prepare this annex is derived from the STRAP, which results from the following:

- The ECA.
- Training constraints in the MNS.
- Required system embedded training capability(ies).
- Information gained from actions and analyses conducted under the SMMP.
- System cost and operational analysis (COEA) and training effectiveness analysis (TEA).
- The proposed basis of issue for the system.



Comment

It is important to remember that the STRAP and the SMMP are evolving documents that are updated and modified throughout the acquisition cycle. As such, the data that is being developed for the TSR annex is continually affected and requires routine review and update.

Content/Format

The TSR annex summarizes the training support requirements that have been identified through analyses and documented in the STRAP. It provides the materiel developer and training community with sufficient information to plan for development of the training devices and support items and eventual fielding and integration into training programs. The annex contains the following essential training information:

- A summary of system training constraints.
- The system training concept for both institutional and unit or sustainment training.
- A description of the embedded training requirements.
- Training support requirements including system end items or components for use in the training base and general support requirements.
- A description, in as much detail as possible, of each device required for system training.

The TSR annex addresses the system training requirements in six general paragraphs and a separate paragraph for each required training device beginning with paragraph 7.

TRAINING SUPPORT REQUIREMENTS (TSR)
ANNEX C TO SYSTEM ORD

1. Training Constraints
2. Training Concept
3. Significant Training Issues at Risk
4. Embedded Training
5. System Hardware Requirements
6. General Training Support Requirements
7. Training Device Requirements

Paragraph 1
Training Constraints

This paragraph describes constraints that impact on training. Development of these constraints helps to formulate and support the rationale for the training concept. The SMMP is the primary source of constraints input.

Paragraph 2
Training Concept

This paragraph explains how personnel (individuals and crews) are trained to operate, maintain, and manage the system. This paragraph is intended to be an overview summarizing the detailed training concept in the STRAP. Subparagraphs cover the following:

2a. Institutional training strategy - summarizes the institutional training strategy as defined in the STRAP that includes considerations applicable to U.S. Army Reserve (USAR) schools, reserve component training divisions, and TRADOC institutions as appropriate.

2b. Unit training strategy - summarizes the unit training strategy as defined in the STRAP that addresses MACOM or active component/reserve component (AC/RC) unique training strategies.

Paragraph 3
Significant Training Issues at Risk

This paragraph summarizes the information contained in the STRAP regarding training issues at risk.

Paragraph 4
Embedded Training Requirements

This paragraph states the functional requirement, if applicable, for the system if it is to be designed with an embedded training capability. If no embedded training requirement exists, the following statement must be made, "The need for an embedded training capability has been investigated, and it has been determined that no requirement exists."

Paragraph 5
System Hardware Requirements

This paragraph outlines the need and rationale for system hardware or components of the system to support the training base. Subparagraphs are included that address each type of item and the projected quantity required.

Paragraph 6
General Training Support Requirements

This paragraph provides subparagraphed statements of the need and rationale for each type of training support item/product required to support training of the system. Examples are training-unique munitions, target systems and targetry, visual information and printed products, and turnkey training. (Training devices are addressed at paragraph 7.) When possible, information is included as to the projected quantities required by year if appropriate.

Paragraph 7
Training Device Requirements

This paragraph describes each training device requirement in a functional statement containing the type of device required, the environment in which it will operate, and information on the projected quantity required. An example is "A direct support/general support (DS/GS) level system electronics maintenance training device is required to train maintainers in an institutional environment on those skills and tasks peculiar to this materiel system. Specific tasks to be trained will result from the proponent's review of the contractor-developed LSA data. A total of nine devices are required: three at the proponent institution, one at the Ordnance School, one at each of four regional training sites, and one at 7ATC, Vilseck, Germany."

If more than one type of training device or simulator is required, each will be addressed in a separate paragraph sequentially numbered 8., 9., etc. Subparagraphs and tabs, as outlined below, are included for each device and/or simulator. Each training device paragraph will include two subparagraphs:

a. Constraints - a statement or list of constraints relative to each of the MANPRINT domains. These constraints must be considered in the design, operation, and maintenance of the training device or simulator.

b. Logistical support concept - a statement of the proponent's proposed concept for logistical support of the training device or simulator, for example, the DS/GS electronics maintenance trainer will be maintained by on-site logistical/maintenance support activities.

Comment

If the need for a system training device is determined through testing or other means and it was not identified in the system ORD and included in the ORD approval, the documentation for the system device will be prepared using the NSTD format and procedures found in appropriate sections of this procedural guide. Funding to support concept formulation, research and development, and procurement remains programmed and funded as part of the materiel system.

Pertinent Regulations and Publications

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

AR 70-1, *Army Acquisition Policy*

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

TRADOC Reg 351-9, *System Training Development*

Related Pages

System Operational Requirements Document, pg. 4-9

System Training Plan, pg. 5-5

Training Effectiveness Analysis Process, pg. 6-8

Training Device Joint Working Group Process, pg. 7-3

Other Joint Working Groups, pg. 7-13

Requirements Review Committee, pg. 8-8

Training Device Requirements Data Package

Introduction

When the need for a STD has been identified and documented in the TSR annex to the system ORD, a concept formulation must be performed to support the development of an IPR package and contract SOW for STD development and procurement. Normally, STRICOM will perform the concept formulation based on the information provided by the proponent. This information constitutes the training device requirements data package.

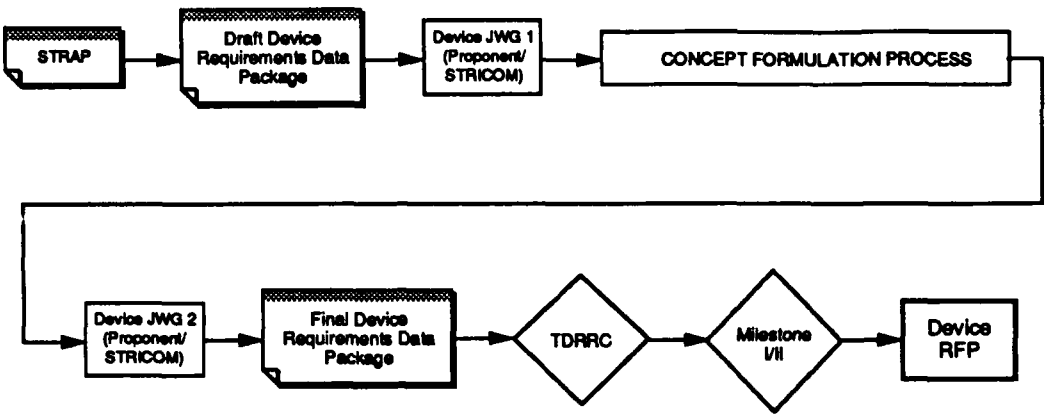
Purpose

The purpose of the data package is to provide the materiel developer with detailed data on the functional requirements, operational characteristics, and essential/critical tasks to be trained by the proposed STD. This data allows the materiel developer to begin the concept formulation process leading to the selection of the best technical approach (BTA) and to initiate contract actions for device development and procurement.

Process

The training device requirements data package is comprised of key elements of information needed to initiate the JWG process and begin concept formulation for a proposed training device. The design of the STD is dependent on the critical tasks to be trained and a definition of the essential operational and physical characteristics. As the development of the materiel system matures, requirements for the training subsystem, including required STDs, become increasingly clear and better defined. The figure on the next page highlights the development of the data package. The information for the data package is derived from many sources and forwarded to ATSC when all elements become available.

Process (con.)



The information elements comprising the data package are obtained from a number of sources. The primary source of information is the STRAP. If the proponent has developed a comprehensive STRAP and updated it as system development progresses, then providing the information for the data package will not be a major effort. Other important sources of information include the TSR annex, task list derived from LSA or other sources, and system studies (COEA and TEA).

The proponent compiles the information elements for the data package and forwards the completed package to ATSC. When ATSC and the proponent agree that sufficient information to support concept formulation has been provided, ATSC will forward the package to STRICOM and the JWG membership. Concurrently, ATSC will coordinate a date and location for JWG 1. This then begins the concept formulation JWG process for an STD. See chapters 6 and 7 respectively for the concept formulation and JWG process.

Content

There is no specified format for a training device requirements data package. It is simply a collection of critical data required by the materiel developer to support performance of a concept formulation. As a minimum, the following information is required to support the beginning of the concept formulation:

- The system training strategy.
- Training device strategy.
- Tasks to be trained (conditions and standards).

Content (con.)

- Target audience description (military occupational specialty (MOS), skill level, active/reserve).
- Proposed training environment (local training area, garrison, TRADOC school, combat training center).
- Training constraints.
- Essential functional characteristics of the proposed device.
- RAM requirements for the training device.

Comment

Most of the information required for the training device data package can be found in the STRAP, in the results of system studies, and in system documentation (system ORD with the TSR annex). Proactive and frequent participation by the training developer in the development of this documentation and involvement in the preliminary studies will simplify the task of preparing the data package. The proponent must be involved in the LSA process to ensure that the system operation and maintenance tasks information which is critical to the concept formulation process is captured and recorded.

Pertinent Regulations and Publications

TRADOC Reg 351-9, *System Training Development*

AR 700-127, *Integrated Logistics Support*

Related Pages

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Operational Requirements Document, pg. 4-9

Annex C, Training Support Requirements, pg. 4-20

System Training Plan, pg. 5-5

Concept Formulation, pg. 6-12

CHAPTER 5

SUPPORTING DOCUMENTATION

Supporting Documentation

Overview

Introduction

When a requirement for a materiel system and/or training device has been determined, the combat developer and the training developer must develop the necessary requirements documents. The primary and initiating documents are the Mission Need Statement (MNS) and the Operational Requirements Document (ORD) (see chapters 3 and 4). Each of these documents serves a specific purpose in the acquisition process. However, these documents alone do not contain all of the required information to support development and procurement actions under a materiel acquisition program.

A number of supporting documents are essential to the acquisition process to initiate and record additional information requirements. The following are the major supporting documents to the MNS and ORD in the development and acquisition process that will be discussed in this chapter:

- System training plan (STRAP).
- Basis of issue plan (BOIP)/qualitative and quantitative personnel requirements information (QQPRI).
- Reliability, availability, and maintainability (RAM) data.
- System MANPRINT management plan (SMMP).
- Test and evaluation master plan (TEMP).
- New equipment training plan (NETP).

An effectiveness analysis process is used to determine cost, operational, and training effectiveness for systems and for training devices. This process results in two additional supporting documents:

- Cost and operational effectiveness analysis (COEA) - a comparative analysis of competing alternatives for system design, characteristics, and technology conducted by the combat developer. The COEA is conducted concurrently with and supports the materiel developer's concept formulation to arrive at the best technical approach (BTA) for system design.

Introduction (con.)

- Training effectiveness analysis (TEA) - a generic term for comparative analysis of competing training alternatives. Regarding system training alternatives, a TEA is conducted concurrently with the COEA to analyze competing system training alternatives. In relation to training devices, TEAs are conducted to analyze competing alternatives for device design, characteristics, and technology to support the materiel developer's concept formulation. The training developer conducts TEAs.

Effectiveness analyses and concept formulation are discussed in chapter 6.

Not all of these documents are required for each materiel system or training device under development. Within this chapter each of these supporting documents will be discussed in the detail required for the training developer. Where appropriate, tailoring of the process for document development will be presented. "Tailoring," in this context, means that if complete documentation is not required in each case, opportunities for exceptions or shortcuts will be identified.

System Training Plan (STRAP)

The STRAP is the master training management plan for a new system or major training device. It addressees who is trained and when, where, and how the training is conducted. The proponent training developer develops the STRAP. Although the STRAP is required for each new system, it may not be required for all nonsystem training devices (NSTDs).

Basis of Issue Plan/Qualitative and Quantitative Personnel Requirements Information (BOIP/QQPRI)

The BOIP is a planning document that indicates where the system or training device is to be located, how many are required, and other equipment and personnel changes that will be required as a result of fielding.

The QQPRI is a compilation of organizational, doctrinal, training, and personnel information used to determine the need for a new or revised military occupational specialty (MOS) or additional skill identifier (ASI). This data is also used to prepare plans to provide the amount of trained personnel required for operating and supporting the new system or training device.

The BOIP and QQPRI are associated documents (prepared and staffed together) that must be approved and incorporated with the ORD package at ORD approval. The formal documentation of the BOIP/QQPRI is the combat developer's responsibility.

Reliability, Availability, and Maintainability (RAM) Data

RAM is a measurement of system or device effectiveness. RAM requirements are assigned to systems, training equipment, and training devices to ensure operational readiness, performance of specified functions, and economy of operation and maintenance within existing policies and procedures. Combat developers, training developers, and materiel developers jointly identify, collect, and document RAM characteristics.

System MANPRINT Management Plan (SMMP)

The SMMP is a planning and management guide used to ensure that all domains of manpower and personnel integration (MANPRINT) are considered throughout the development and acquisition process. The SMMP addresses all aspects of the proposed MANPRINT effort associated with the system or training device. The combat developer initiates the SMMP for new systems acquisition, and the training developer initiates it in the case of required training devices.

Test and Evaluation Master Plan (TEMP)

The TEMP is the basic planning document for test and evaluation requirements related to a particular acquisition program. The materiel developer develops and updates the TEMP throughout the acquisition cycle. The TEMP must have sufficient detail to explain the overall test and evaluation (T&E) program. Each acquisition program requires an approved TEMP; however, as in other acquisition and management actions, the level of detail for individual TEMPs may be tailored depending on the particular acquisition program's level of effort and risks associated with the T&E effort.

New Equipment Training Plan (NETP)

The NETP is required for each developing system and major training device. It contains personnel, training, and cost information keyed to major decision points in the designated management process for the developing system or training device. The materiel developer initiates the NETP, which is prepared using the Army Modernization Training Automation System (AMTAS) data base. The NETP covers all aspects of training, answering the who, what, when, where, how, and associated cost questions.

Pertinent Regulations and Publications

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

AR 71-2, *Basis of Issue Plan (BOIP) and Qualitative and Quantitative Personnel Requirements Information (QQPRI)*

AR 350-35, *U.S. Army Modernization Training*

AR 351-9, *Systems Training Development*

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

TRADOC/AMC Pam 70-11, *RAM Rationale Report Handbook*

Related Pages

System Training Plan, pg. 5-5

Basis of Issue Plan/Qualitative and Quantitative Personnel Requirements Information, pg. 5-9

Reliability, Availability, and Maintainability, pg. 5-17

System MANPRINT Management Plan, pg. 5-23

Testing and Evaluation, pg. 5-28

New Equipment Training Plan, pg. 5-34

Training Effectiveness Analysis Process, pg. 6-8

System Training Plan

Introduction

The STRAP is the master training plan for a new/improved system. It documents the results of early training analyses covering specifically who requires training, what tasks need to be trained, and when, where, and how the proponent will conduct training. The training developer prepares the STRAP with input from the combat developer and the materiel developer.

Tailoring

Although the STRAP is normally required for each new or improved materiel system, it may be abbreviated depending on the complexity of the proposed system. Specific requirements for any given STRAP or for the possibility of a waiver of the STRAP for minor systems may be obtained from the System Training Integration Division (STID), Training Development and Analysis Directorate (TDAD), HQ TRADOC.

Also, a STRAP may be required for major NSTDs. The proponent training developer should coordinate with ATSC to determine STRAP requirements for NSTDs.

Purpose

The STRAP has the following purposes:

- Plan for all necessary system- and device-related training and training support.
- Establish milestones for training development requirements.
- Identify and document training support resource requirements.
- Establish the basis for assessment of training subsystem development progress in support of--
  - Requirements Review Committee (RRC) reviews.
  - Integrated logistics support (ILS) reviews.
  - Training test support packages (TTSPs).
  - Milestone decision reviews (MDRs).
  - Type classification.

Comment

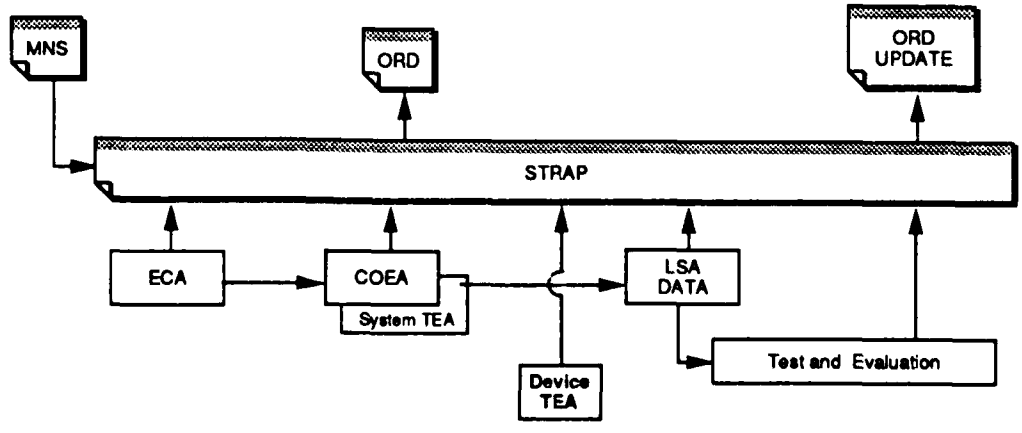
The STRAP is initiated when the need for a new or modified system has been identified. Training constraints and initial training strategies are documented in the STRAP and used to input the system's ORD.

For NSTDs the STRAP is developed on an as-required basis and is initiated at the time of the strawman ORD. ATSC, in conjunction with STID, determines for an NSTD the requirement for a STRAP.

Since most STRAPs will be developed for new systems, the process described here is for a new system STRAP. If a STRAP for an NSTD is required, the development process is the same, but the information requested will be pertinent to the training device and will be used to input training device requirements documentation.

Process

The STRAP is an evolving document that starts at the beginning of the system research and development process (MNS approval). The training developer determines the initial training concept for the system and initiates an outline of the STRAP. As the STRAP becomes more detailed with the information gained through system studies, MANPRINT analyses, logistic support analysis (LSA) data development, system and device operational testing, and actions performed under the systems approach to training (SAT), the data is used to input training information to the system requirements documentation. This process is shown below.



Process (con.)

The information found in the STRAP is used throughout the system and training subsystem development process. A key document supporting STRAP development is the TTSP, which is documented in paragraph 7 of the STRAP. Data elements include task lists, target audience description, and training concepts. Specifically, this information supports development of plans for testing the system devices.

Content/Format

The STRAP content varies throughout the system development process as training plans and strategies change. An initial STRAP will contain the following information:

- Summary of system description.
- Assumptions.
- Training concept.
- Training device strategy.
- Training constraints.
- Summary of significant training issues at risk.

The format for the STRAP and its associated annexes is contained in TRADOC Reg 351-9, *System Training Development.*

Pertinent Regulations and Publications

AR 71-2, *Basis of Issue Plan (BOIP) and Qualitative and Quantitative Personnel Requirements Information (QQPRI)*

AR 351-9, *Systems Training Development*

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

Related Pages

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Operational Requirements Document, pg. 4-9

Training Device Requirements Data Package, pg. 4-26

Related Pages (con.)

Basis of Issue Plan/Qualitative and Quantitative Personnel Requirements Information, pg. 5-9

System MANPRINT Management Plan, pg. 5-23

Test and Evaluation, pg. 5-28

New Equipment Training Plan, pg. 5-34

Training Effectiveness Analysis Process, pg. 6-8

Other Joint Working Groups, pg, 7-13

Basis of Issue Plan/Qualitative and Quantitative Personnel Requirements Information

Introduction

The BOIP/QQPRI process is ongoing throughout the materiel development process. The BOIP and QQPRI are associated documents that are required for developmental actions that result in the introduction of new materiel systems into the U.S. Army inventory. Responsibility for preparation and coordination of the BOIP/QQPRI for developing systems belongs to the proponent combat developer with assistance from the training developer and the materiel developer. This information map describes the process and provides an explanation of how the basis of issue and personnel requirements are integrated with the materiel system documentation development.

Definition

The BOIP is a planning document that indicates where the system and support equipment are to be located, the number required, and other equipment and personnel changes required as a result of materiel system fielding.

The QQPRI is a compilation of organizational, doctrinal, training, and personnel information used to determine the need for a new or revised MOS or specialty skill identifier (SSI) to support the operation or maintenance of a new materiel system.

Tailoring

Training devices and simulators meeting the following criteria do not require a BOIP/QQPRI:

- Will not be type classified (TC).
- Will be contractor-maintained.
- Will be assigned to a table of distribution and allowances (TDA).

System training devices will be listed on the BOIP/QQPRI for the system. They do not normally have their own BOIP or QQPRI.

Purpose

The BOIP and QQPRI are used to assist HQDA in establishing overall U.S. Army requirements for a materiel system. An approved BOIP is required to be part of the complete ORD package prior to ORD approval. The BOIP and QQPRI are developed and coordinated as a package. They complement each other to do the following:

- Record resource requirements and program the acquisition and distribution of the materiel system and its associated training support equipment.
- Record organizational needs and assist in determining organizational design.
- Establish or revise MOS, ASI, or civilian occupations to support operation or maintenance of the materiel system.
- Plan the training of the personnel needed to operate, maintain, and support the materiel system.

Content

A completed BOIP contains the following:

- Total quantity of systems and support equipment required by the U.S. Army.
- Quantity to be issued to each type unit.
- Associated items of equipment, by type and quantity, including training equipment and devices.
- Personnel distribution needed to operate and maintain the system, by skill and quantity.
- Training programs for the required skills.
- List of systems displaced by the new system.

The QQPRI contains the following:

- Principal items of equipment associated with the system including training equipment and devices.
- Direct productive annual maintenance man-hours (DPAMMH) for the system and all associated equipment.

Content (con.)

- All MOS/ASI required for operation or maintenance of the system.
- Duty positions and titles of personnel required for operation/maintenance of the system.
- Unique duties, tasks, and characteristics.
- Personnel qualifications.
- New or revised MOS draft job descriptions.

Comment

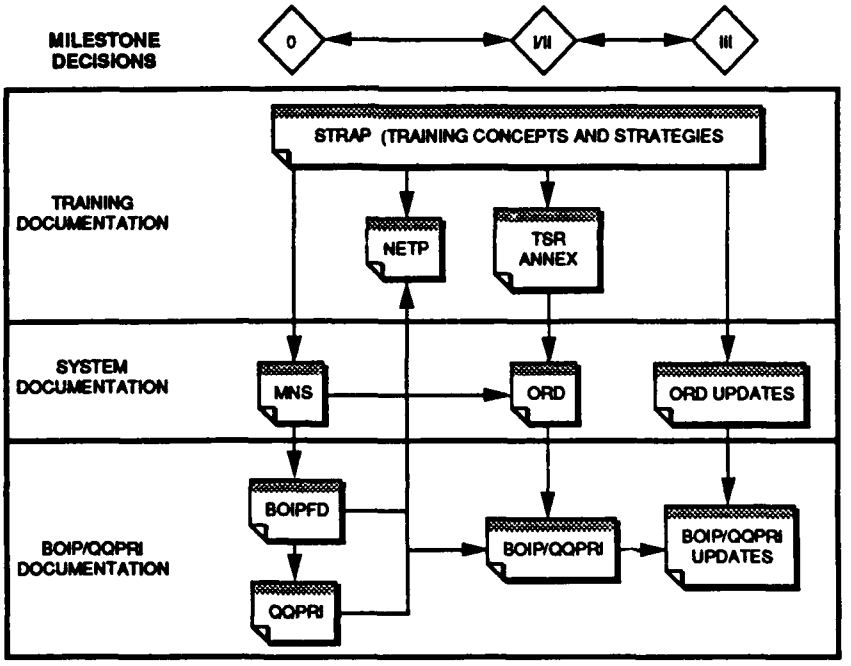
In developing the BOI/BOIP data, training developers must assess requirements in terms of how many devices are needed at a particular time in a geographic area to support the proponent's combined arms training strategy (CATS). This assessment considers personnel and equipment density and other resource constraints such as ranges, training area availability, and a comparison of the costs of training with or without the devices or other training support equipment.

An important consideration at this time is whether the devices will be assigned to the unit's tables of organization and equipment (TOE) or to training support center (TSCs) for further distribution to units, as required, for training. Devices issued through TSCs are assigned to a TDA. These devices are documented as such in the system BOIP even though the system itself supports a TOE unit.

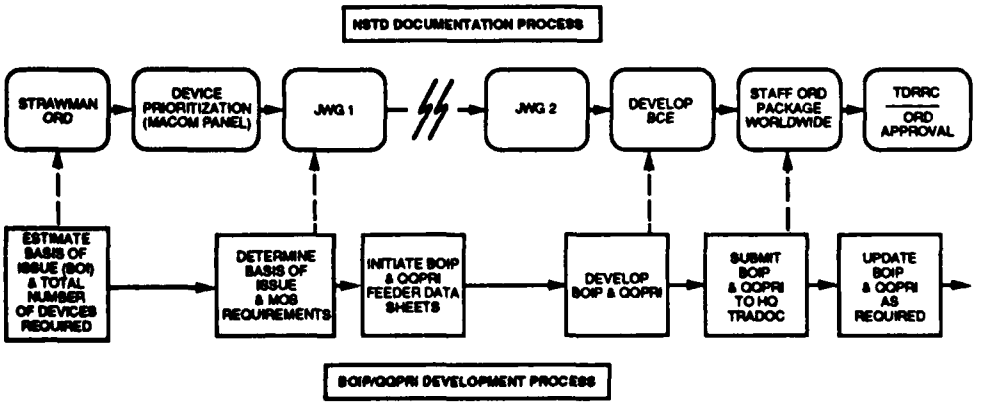
Process

The following figure depicts the relationship of the BOIP/QQPRI process to the training developer's input to the system documentation. Note that the training developer's input is based on training concepts and strategies documented in the STRAP. The combat developer's BOIP/QQPRI input to the system requirements documents is direct input between the BOIP/QQPRI and system documentation processes.

Process (con.)



The next figure describes this relationship for an NSTD. In addition to showing the BOIP/QQPRI development process, the relationship to the developing NSTD documentation and products related to device fielding are shown.



Training Concept/ Strategy

As shown in the previous figures, the BOIP/QQPRI development and the documentation processes are derived from the training concept/strategy. If thorough analysis and documentation occurred in the development of the system STRAP or NSTD MNS, the training developer can readily determine where the device is required and the number needed to support the proponent's CATS.

Estimate Total Number of Devices Required

When the training developer confirms a requirement for a training device as the preferred solution to a training deficiency, the requirement is documented in the NSTD ORD. The requirement for a training device to support a materiel system is documented in the system ORD (TSR).

To input to either of these documents, the training developer estimates the total number of devices required to support the proponent's CATS. Factors to consider in arriving at this estimate include the following:

- Where the training will take place (TRADOC school, active U.S. Army units, reserve component units, or other training areas).
- Where the device will be located (TRADOC school only, active U.S. Army units, reserve component units, major training centers, TSCs, or other locations).
- The current basis of issue of any devices that the new device will replace.

This data, supported by the initial analysis and the STRAP, becomes input to the ORD and the preliminary planning for BOIP/QQPRI data.

Determine Basis of Issue and MOS Requirements

Using information gained from previous and ongoing analysis, the training developer determines a rough estimate of device requirements. This estimate is based on the training strategy and the type of units in specific geographical locations requiring the device. Factors to be considered in arriving at these determinations include basically the same questions covered during the ORD development except at this point more information is known regarding the device training strategy and the MOS required for operation and maintenance.

Although a formal BOIP/QQPRI is not available for inclusion in the ORD, sufficient information regarding distribution and MOS requirements must be provided to agencies in the staffing sequence to enable the development of reasonably sound recommendations.

Submit BOIP Feeder Data (BOIPFD) and QQPRI

The materiel developer prepares the BOIPFD and an initial QQPRI and forwards them to the U.S. Army Force Integration Support Agency (USAFISA) to review the documents to ensure that the BOIPFD and the QQPRI are compatible. The documents are then sent as a package to the U.S. Army Combined Arms Command (CAC) for coordination with major Army commands (MACOMs) affected by the new system. CAC forwards the package to the proponent school, where the combat developer and the training developer cooperatively complete the BOIP and QQPRI from the initial QQPRI and BOIPFD information.

Develop BOIP/QQPRI

At this point in the BOIP/QQPRI development process, the training developer and the combat developer follow the instructions in AR 71-2, *Basis of Issue Plan (BOIP) and Qualitative and Quantitative Personnel Requirements Information (QQPRI)*, to formalize the data collected to date into BOIP and QQPRI format. The combat developer at the proponent school is responsible for the formalizing process. The training developer's responsibility is to provide accurate device and training support equipment BOIP/QQPRI data to permit development of the formal documentation.

Submit BOIP/QQPRI to HQ TRADOC

After final development of the BOIP/QQPRI, the proponent training/combat developer submits the package to HQ TRADOC. HQ TRADOC approves the package after coordination with other required agencies and forwards the finalized package to HQDA for approval. This package remains the approved BOIP/QQPRI until it is changed in accordance with instructions in AR 71-2 or until device fielding. For NSTDs the BOIP/QQPRI accompanies the ORD for review by the TDRRC.

Update BOIP/QQPRI

The BOIP/QQPRI is reviewed throughout the system or NSTD development cycle. If a major change takes place during development that necessitates a change in distribution of the system or nonsystem device, supporting equipment, or operator/maintainer MOS, the package is coordinated with appropriate agencies and MACOMs. When changes are made to the BOIP/QQPRI, MOS decisions or distribution plans are amended as necessary.

Summary of BOIP/QQPRI Actions

BOIP/QQPRI data for systems, NSTDs, and training support equipment is developed from the training concept and strategy as documented in the STRAP and system or NSTD requirements documentation as appropriate. It is formalized following the formats and procedures in AR 71-2.

It is important for the training developer to remember that the BOIP/QQPRI process and the requirements documentation process are parallel actions and are mutually supportive. The training developer bases distribution requirements for training devices and training support equipment on CATS and provides BOIP/QQPRI information to the combat developer in a timely manner to ensure proper documentation development.

Related Products

Two products that derive their input directly from the BOIP/QQPRI are the distribution plan and the NETP. They are used to facilitate fielding the system and training the personnel designated to operate and maintain the system and training devices.

- Distribution plan - describes who receives the device and the schedule of issue for NSTDs that are to be placed on a TDA. There is no set format for a Distribution Plan. The material developer develops the distribution plan in close coordination with the training developer.

- NETP - if required is developed by the materiel developer within 30 days after BOIP/QQPRI initiation and is coordinated with the training developer. It identifies what training is required for introducing the systems into U.S. Army schools, training centers, and units. The NETP also identifies resources and establishes responsibilities for the development and presentation of this training. Most NSTDs will not require a NETP.

Comment

At the CAC and TRADOC schools, the combat developer is responsible for all formal BOIP/QQPRI actions. The training developer responsible for developing STDs and NSTDs should seek the assistance of the school combat developer and follow the directions of AR 71-2 to comply with BOIP/QQPRI requirements.

Comment (con.)

The major focus of the procedures outlined herein are for system training devices; however, the basic processes are the same for NSTDs.

Pertinent Regulations and Publications

AR 71-2, *Basis of Issue Plan (BOIP) and Qualitative and Quantitative Personnel Requirements Information (QQPRI)*

Related Pages

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Operational Requirements Document, pg. 4-9

New Equipment Training Plan, pg. 5-34

Training Device Joint Working Group Process, pg. 7-3

Other Joint Working Groups, pg. 7-13

Introduction

RAM requirements are those imposed on systems or devices to ensure *operational readiness, performance of* required functions, and economy of operation and maintenance within existing policies and procedures. RAM programs are applicable to materiel systems; test, measurement, and diagnostic equipment (TMDE); training devices; and ancillary equipment developed, produced, maintained, procured, or modified for U.S. Army use. The RAM elements are defined as follows:

- Reliability - the duration or probability of failure-free performance of intended functions under specific conditions and time intervals. This measurement is usually stated as mean time between failure (MTBF).
- Availability - the percentage of time an item is in a mission-committable status.
- Maintainability - the capacity of an item to be maintained in a specified condition by personnel with specific qualifications. The measure of ease of maintenance is quantified as mean time to repair (MTTR). The measure of maintenance burden is quantified as the maintenance ratio (MR).

RAM characteristics must be quantified in the ORD and included in contract specifications. This data provides a basis for logistical support analyses and the development of support equipment. RAM evaluations support the exploration of alternatives, selection of technical approaches, and identification of technical risks. The information presented here explains RAM requirements for NSTDs. For a complete and detailed explanation of RAM requirements for developing systems, see TRADOC/AMC Pam 70-11, *RAM Rationale Report Handbook.*

The materiel developer and training developer, in coordination with the Combined Arms Support Command (CASCOM) determine RAM characteristics and goals for NSTDs. The materiel developer establishes and maintains RAM programs, develops a RAM data base, and ensures compliance with RAM evaluation and established standards.

CASCOM is responsible to provide assistance to the proponent in the development and analysis of RAM data and to develop and approve the RAM Rationale Report (RRR).

Tailoring

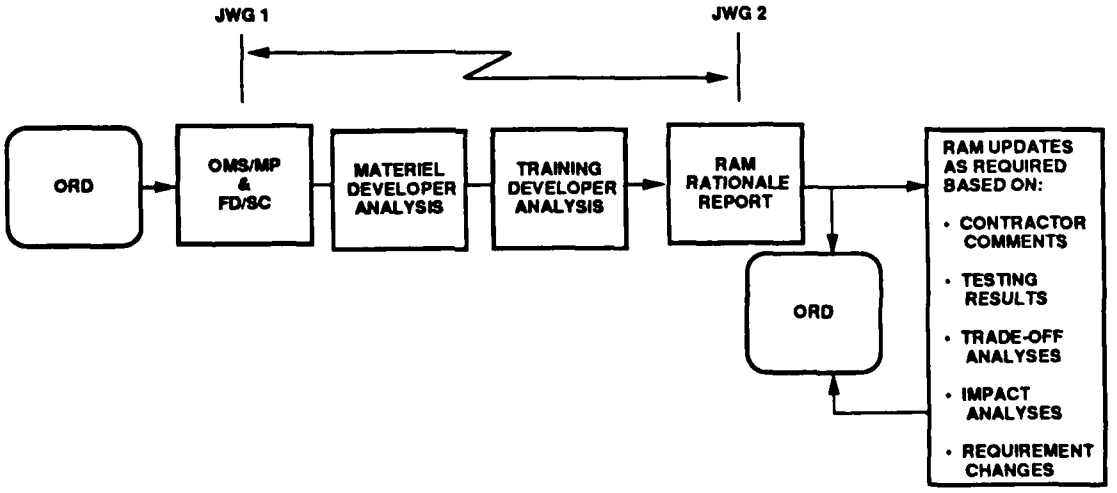
Requirements for commercially available (off-the-shelf) TADSS and TADSS meeting the criteria of a nondevelopmental item (NDI) are documented using an ORD based on an approved MNS. However, since an NDI solution to a training need minimizes or eliminates developmental risk, a tailored RRR defining how the available NDI solution meets the OMS/MP at an acceptable level is prepared by CASCOM to support the MDR.

Process

The following are the major documentation and analyses associated with the RAM for developing NSTDs through approval of the ORD:

- Operational Mode Summary/Mission Profile (OMS/MP).
- Failure definition and scoring criteria (FD/SC).
- Materiel developer analysis.
- Training developer analysis.
- RRR.

The next figure is a simplified version of the RAM development and documentation process as it relates to NSTD and system TADSS development.



Operational Mode Summary/Mission Profile (OMS/MP)

CASCOM and the training developer prepares the OMS/MP, which describes how the training device will be used.

- The OMS describes the anticipated mix of the ways the device is used to support the proponent's CATS. The OMS covers all missions in the MP and shows the relative frequency of the various missions.

- The MP is a time-phased description of the operational events and environments the device experiences from the beginning to the end of a specific mission. The MP identifies tasks, events, duration, operating conditions, and environment for each phase of the device's mission.

The OMS/MP must be developed at or prior to JWG 1 as that concept formulation can be initiated.

Materiel Developer Analysis

The materiel developer analysis is intended to identify overall design and support options and levels of reliability and maintainability performance that are not only technically achievable but also have acceptable cost, schedule, and risk characteristics commensurate with the training developer's RAM goals and constraints. The materiel developer analysis consist of the following:

- A comparative analysis using a baseline comparative system (BCS) to determine probable reliability and maintainability characteristics. The BCS compares a training device similar to the proposed device or, if none exists, a hypothetical device made up of assemblies (components) having technology and complexity similar to the proposed device.

- A state-of-the-art analysis, which is intended to identify opportunities for design improvements of the new device in comparison to the BCS.

- A materiel developer proposal analysis, which analyzes alternatives to device design based on mission and economic considerations used to select the proposal that best meets the needs of the U.S. Army. The output of this analysis is the identification of broad approaches to device design and support that appear to be the most reasonable proposal form a technical viewpoint.

Training Developer Analysis

The training developer analysis sets the goals for the RAM program and examines the ability of the RAM requirements to successfully validate the device's assigned missions. The training developer analysis contains the following:

- A statement of the qualitative RAM goals and constraints.
- Administrative and logistics downtime (ALDT).
- Maintenance manpower analysis.
- Wartime mission accomplishment validation.
- Peacetime availability/readiness analysis.

RAM Rationale Report (RRR)

The RRR documents the RAM requirements and results of RAM-related analyses that are performed throughout the device's development cycle. The RRR is prepared by CASCOM based on information that is developed from the ORD and OMS/MP. A synopsis of the executive summary of this report will be included in the rationale annex of the ORD. The RRR consists of ten paragraphs. For NSTDs paragraphs 1 through 8 are completed between strawman ORD development and JWG 2. Paragraphs 9 and 10 are completed after the final ORD approval if required for modifications based on RAM updates. Details for completion of these paragraphs are found in TRADOC/AMC Pam 70-11.

The following table provides a brief description of each paragraph in the RRR and identifies the activity responsible to assist CASCOM in the preparation.

RAM Rationale Report (RRR) (con.)

PARAGRAPH	DESCRIPTION	ASSISTING ACTIVITY
1. Executive Overview	An executive summary with user RAM goals and constraints and a RAM impact briefing	Training Developer and Materiel Developer
2. OMS/MP	The operational mode summary and mission profile	Training Developer
3. FD/SC	The failure definition and scoring criteria	Training Developer
4. Materiel Developer Analysis	An analysis of the baseline comparison system and operating and support cost	Materiel Developer
5. Training Developer Analysis	An analysis of operational effectiveness and supportability	Training Developer
6. Logistic Support Analysis (LSA) Interface	A copy of the logistic support analysis record (LSAR) "A" sheet	Materiel Developer and Training Developer
7. RAM Parameters	Definition of the RAM parameters used in the ORD and the methods of calculating them	Training Developer
8. Points of Contact	Name, address, and telephone number of all members of the RAM working group	Training Developer
9. ORD Update	An update of the ORD RAM requirements based on contractor comments and feedback	Training Developer
10. Translation to Technical Requirements	Documentation of the procedures used to translate the operational RAM requirements in the ORD to technical requirements for use in the request for proposal (RFP) and contract	Materiel Developer

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

AR 70-10, *Test and Evaluation During Development and Acquisition of Materiel*

AR 702-3, *U.S. Army Materiel Systems Reliability, Availability, and Maintainability*

AR 1000-1, *Basic Policies for System Acquisition*

TRADOC/AMC Pam 70-11, *RAM Rationale Report Handbook*

Related Pages

Nonsystem Training Device Acquisition Process, pg. 2-3

System Training Device Acquisition Process, pg. 2-13

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Operational Requirements Document, pg. 4-9

Annex C, Training Support Requirements, pg. 4-20

Training Device Joint Working Group Process, pg. 7-3

Other Joint Working Groups, pg. 7-13

System MANPRINT Management Plan

Introduction

The SMMP is a dynamic planning and management document. The SMMP is used by all activities involved in the materiel development and acquisition process to ensure that MANPRINT issues are addressed throughout the materiel system's or NSTD's life cycle. The SMMP qualifies as the human system integration plan that is required by DOD.

The SMMP documents the data available, data development requirements, methodology, schedule, and sources for data collection and application to address MANPRINT issues and concerns. This data will be used to prepare the STRAP for the system or training device. It also provides the proponent with documentation that all available data has been examined and a plan or program established to address MANPRINT issues throughout the materiel acquisition process. The SMMP also does the following:

- Provides an audit trail recording MANPRINT issues raised.
- Documents the data sources, analyses, trade-offs, and decisions made throughout the materiel acquisition process.
- Serves as documentation of what was considered and why it was or was not used.
- Provides a source of continuity to lessen the impact of personnel turnover on the MANPRINT effort.

Tailoring

The SMMP is tailored for each system or device depending on complexity and MANPRINT issues at risk.

Process

The SMMP is prepared for each new materiel acquisition or major materiel change (product improvement) made to a system or NSTD. The SMMP is jointly approved by TRADOC and the materiel developer 60 days prior to each MDR. A copy of the SMMP is provided to HQDA for staffing and comment.

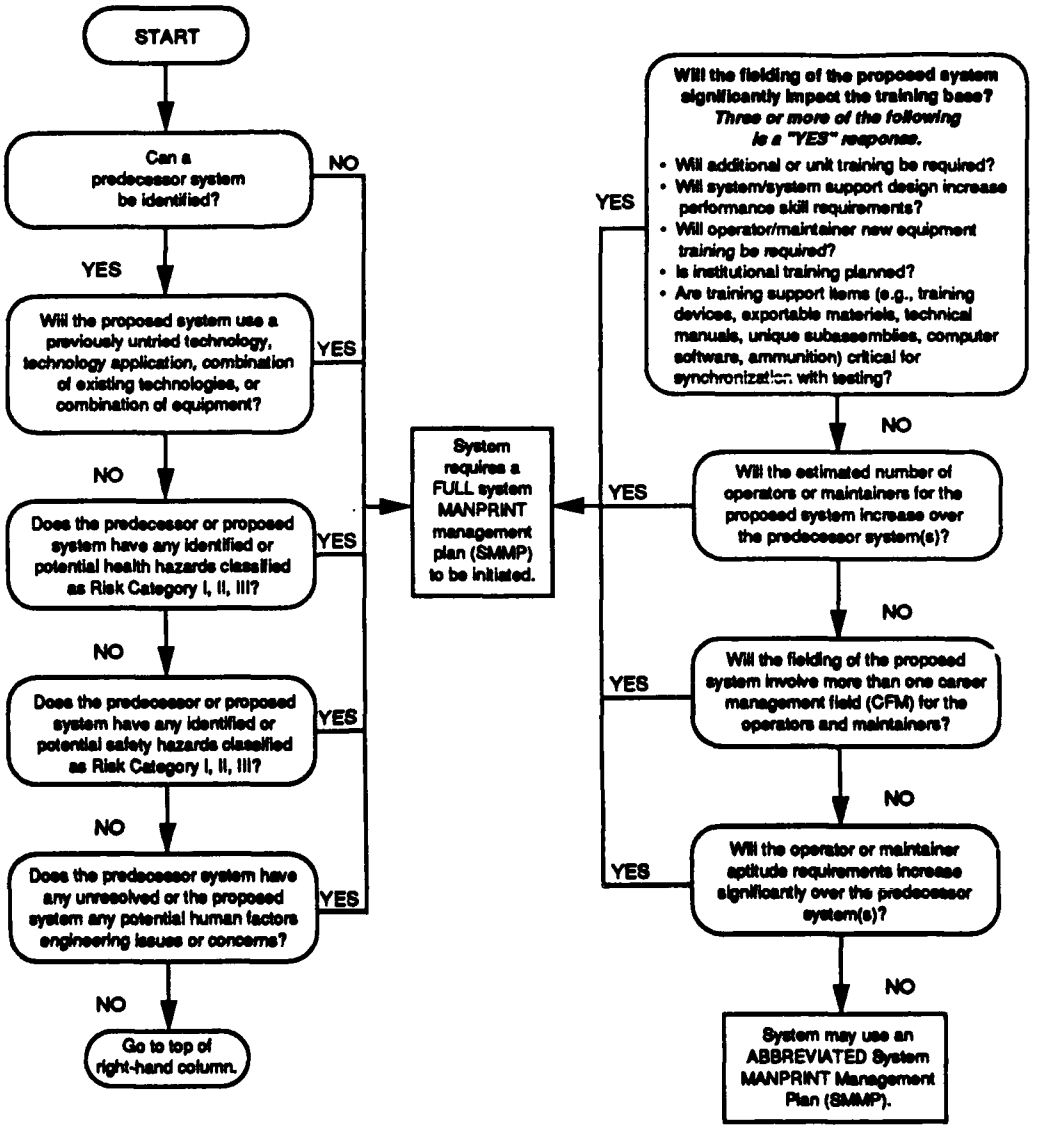
Process (con.)

The SMMP is initiated at a MANPRINT joint working group (MJWG) prior to program start-up and development of the system ORD by the combat or developer when a deficiency requiring a materiel solution is identified. In the case of training devices, the MJWG is normally conducted as part of joint working group (JWG) 1. At this point in the acquisition process, the SMMP will be vague and, in some areas, blank. Limited information may be available on the materiel system or device at this point. As the acquisition process progresses, the information will become more specific and definitive. Initiation of the SMMP follows a logical progression as follows:

- All potential data sources and analysis requirements are identified.
- Available program guidance is reviewed.
- Existence of predecessor systems (or reference components) is determined.
- The list of data sources is examined to determine which are appropriate for the effort being initiated, are readily available, or must be generated. The availability of resources to generate this data is also determined. As the program progresses, data sources may be added or eliminated depending on requirements *and resources.*
- The acquisition strategy (which also may be extremely vague at this time) is reviewed, and priorities are set for when data must be available.

A fully developed SMMP may not be required if there is minimum impact in the MANPRINT area. The following matrix can be used to assist in determining the level of effort required for the SMMP.

Process (con.)



Content/Format

The SMMP addresses all aspects of the proposed MANPRINT effort associated with the new system. The format for the SMMP can be found in AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process.* The SMMP includes the following:

- Title/approval page.
- Abbreviated total system description
  - System type (combat, combat support, combat service support).

Content/Format (con.)

- Operational/maintenance concept.
- MOSs.

- Acquisition strategy
  - Acquisition program category (ACAT I, II, III, IV).
  - Acquisition type (developmental, nondevelopmental, material change).
- Deficiencies and/or lessons learned of the predecessor system.
  - Deficiencies, not data sources.
- MANPRINT parameters
  - Threshold (minimum acceptable value).
  - Objective goal (measurable, beneficial increase in capability, operation, or support above the threshold).
  - More detailed than ORD.
- MANPRINT issues
  - Summary listing of issues.
  - Issue (brief statement of issue and impact).
  - Affected domains (all applicable domains).
  - Responsible agency (who provides data to resolve the issue or answer the question).
  - Data source and projected availability (document containing data to resolve issue/question and date available).
  - Findings (resolution/answer to issue).
  - Status (open/closed/monitor).
- MANPRINT execution
  - Time-phased description of how the MANPRINT program will be executed in each acquisition phase.

Pertinent Regulations and Publications

AR 385-16, *System Safety Engineering and Management*

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

Early Comparability Analysis (ECA) Procedural Guide (USAPIC)

Related Pages

Nonsystem Training Device Acquisition Process, pg. 2-3

System Training Device Acquisition Process, pg. 2-13

System Operational Requirements Document, pg. 4-9

System Training Plan, pg. 5-5

Training Effectiveness Analysis Process, pg. 6-8

Training Device Joint Working Group Process, pg. 7-3

Modification Management, pg. 9-1

Appendix A, Nonsystem Training Device Life Cycle Model, pg. A-1

Appendix B, System and Training Subsystem Life Cycle Model, pg. B-1

Introduction

T&E efforts are integral elements of the overall materiel acquisition process. The training developer provides documentation and frequent input to operational testing, force development testing, joint user testing, technical testing, and evaluations as appropriate. The T&E program for a developing system or training device is detailed in the TEMP. This information map explains established programs that ensure availability of informal, formal, immediate, and deliberate means of evaluating and improving systems, training subsystems, and nonsystem training devices (NSTDs). It also provides an overview of the TEMP, operational issues and criteria (OIC), and the TTSP.

Types of Tests

There are several different types of tests that can be conducted throughout the development of materiel systems and training devices. The following are those that the training developer may become involved in and (if part of the program's T&E effort) that must be outlined in the TEMP:

- Early user test and experimentation (EUT&E).
- Initial operational test and evaluation (IOT&E).
- Follow-on operational test and evaluation (FOT&E).
- Force development test and experimentation (FDT&E).
- Joint user testing.
- Technical testing (TT).

Tailoring

Test and evaluation programs are tailored for each materiel acquisition program. The level of detail for the TEMP and the number of tests to be conducted for a training device can normally be expected to be less than that required for a major weapon system. Common sense should be applied in laying out and documenting the T&E program. In some circumstances (for example, a nondevelopmental item (NDI) training device) there may be no requirement for operational or technical testing.

Early User Test and Experimentation (EUT&E)

This phase of testing employs user personnel during the Concept Exploration and Definition phase prior to entering Demonstration and Validation/Engineering and Manufacturing Development. The purpose is to test a materiel concept, support planning for training and logistics, identify interoperability problems and future testing requirements, and provide data for an operational evaluation to support the milestone I/II decision. Specific tests or experiments during EUT&E may include an innovative test (IT), FDT&E, operational feasibility test (OFT), or other designated tests.

Initial Operational Test and Evaluation (IOT&E)

IOT&E is a field evaluation employing typical user personnel under realistic operational conditions and typical evaluation. It is conducted during the Demonstration and Validation/Engineering and Manufacturing Development phase to assess operational effectiveness and suitability of military materiel prior to a full production decision (milestone III).

Follow-on Operational Test *and Evaluation* (FOT&E)

FOT&E is conducted after a full production decision to obtain information absent in previous operational tests and evaluation or to verify correction of materiel, training, or concept deficiencies.

Force Development Test and Experimentation (FDT&E)

FDT&E is a range of tests and experiments conducted with troops under field conditions to support both materiel system acquisition and the development of doctrine, training, organizations, logistics, and materiel concepts/requirements. These tests support definition of the materiel requirement or assess the doctrine, training, organization, and logistics developed for the materiel system.

Joint User Testing

The U.S. Army participates in joint user testing with one or more of the other services to evaluate systems or concepts having an interface with another service or requiring a test environment of another service.

Technical Testing (TT)

Technical testing is conducted within the acquisition process to examine level of performance versus design specifications.

Test and Evaluation Master Plan (TEMP)

The TEMP is the basic planning document for T&E related activities in a particular acquisition program. The materiel developer develops and updates the TEMP throughout the acquisition cycle. The TEMP contains sufficient detail to explain the system's overall T&E program. Each acquisition program has an approved TEMP; however, as in other management actions and events, the level of detail in particular TEMPs is tailored depending on the program level of effort and risks associated with the specific program.

Content/Format

The TEMP is detailed to the extent necessary to show the type, duration, location, and schedule for planned testing. Specifically the TEMP does the following:

- Relates T&E efforts to critical technical, operational, and training issues.
- Explains the relationship between T&E schedules and program decision points.
- Addresses the T&E to be accomplished in each of the acquisition *management phases.*
- Shows the test articles planned to satisfy test objectives.

The format and detailed information on the content of the TEMP is found in DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports.* Requirements for testing in any specific acquisition program will be determined at the test integration working group (TIWG) (see chapter 7).

Comment

The training subsystem, including embedded training capabilities and training devices, is normally tested along with the system and is also addressed in the system TEMP. As system development proceeds and the requirement for training devices becomes more detailed in the STRAP, the training developer must ensure that the materiel developer updates the TEMP to include training-related test requirements. If necessary a separate TEMP is developed for each training device or family of training devices to track the testing of the devices.

Operational Issues and Criteria (OIC)

OICs are used to determine the scope, emphasis, and intensity of the T&E effort. This determination is the basis for the resources (personnel, time, facilities, equipment, instrumentation, and funds) that must be committed to obtain the data to answer the issues and evaluate the level to which the criteria are met. Issues are incorporated into the TEMP.

At key milestones in any materiel acquisition program, decision makers must determine if a materiel system will proceed into the next phase of acquisition. Essential input to these decisions is an independent operational evaluation that focuses on the critical operational issues and criteria (COIC) and additional operational issues and criteria (AOIC).

- Questions on operational issues permit an evaluation of the overall operational effectiveness and suitability of a materiel system.
- Criteria are standards by which issues are evaluated. These elements in conjunction with the scope of the planned T&E and rationale to support selection of the criteria constitute the OIC.
- The two distinct levels of OIC (COIC and AOIC) are interrelated and mutually supportive and assist in the decision process for acquisition of materiel systems.

Critical Operational Issues and Criteria (COIC)

COIC are key issues, with associated scope, criteria, and rationale, that must be answered to support the next MDR. They are reviewed and revised/updated as required to support subsequent MDRs. COICs are developed by the combat developer for developing systems and by the training developer for devices in coordination with the TIWG.

Additional Operational Issues and Criteria (AOIC)

AOICs are issues, with associated scope, criteria, and rationale, developed by the independent operational evaluator, the combat developer, or training developer to support a complete assessment of the system and/or device acquisition status at each MDR. They are developed to complement or support evaluation of the COIC as well as to provide for a comprehensive evaluation of the total system/device. AOICs are documented in the TEMP.

Training Test Support Package (TTSP)

The TTSP is provided for use in evaluating training on new systems or devices. An explanation of the development and coordination of the TTSP is contained in paragraph 7, TTSP, of the STRAP. The TTSP will contain the following as applicable:

- STRAP.
- Training certification plan.
- Training schedule.
- Program of instruction (POI) for each MOS/SSI affected.
- Training data requirements.
- Army training evaluation plan (ARTEP) or changes to ARTEP.
- List of training aids, training devices, embedded training components, and simulators.
- Target audience description.
- Soldier training publications or changes.
- Crew drills.
- Lesson plans.
- Ammunition, targets, and ranges required for training.
- Critical task list.
- Description of how user personnel will be trained for the test.

Pertinent Regulations and Publications

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

AR 70-1, *Army Acquisition Policy*

AR 70-10, *Test and Evaluation*

Pertinent Regulations and Publications (con.)

AR 71-3, *User Testing*

TRADOC Reg 71-9, *User Test and Evaluation*

DA Pam 71-3, *Operational Testing and Evaluation Methodology and Procedures Guide*

Related Pages

Nonsystem Training Device Acquisition Process, pg. 2-3

System Training Device Acquisition Process, pg. 2-13

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Training Plan, pg. 5-5

Training Device Joint Working Group Process, pg. 7-3

Other Joint Working Groups, pg. 7-13

Modification Management, pg. 9-1

New Equipment Training Plan

Introduction

The NETP is used to document the training and training-related resources that will be required for operators, maintainers, and leaders upon fielding of a new system or (in some cases) a training device. The materiel developer is responsible to initiate and maintain the NETP. Training developers and users input to the plan and, in conjunction with the materiel developer, update it as changes warrant during the system's/device's development cycle.

Tailoring

Information required for training developer input to the NETP is available in the STRAP. If the STRAP is well written and updated as required, it should not be a major task to develop/update the NETP.

System training devices will not normally have their own NETP but rather will be incorporated into the system NETP. A major NSTD may have an NETP, but most NSTDs may not require an NETP.

Purpose

The need for and extent of new equipment training requirements are determined by the level of impact on readiness and the skills and experience of the personnel and units scheduled to receive the new equipment. The NETP is a management tool designed to do the following:

- Ensure all actions are identified and implemented for development of successful and comprehensive training programs for new and improved equipment.
- Identify who and what will be trained.
- Identify how and when initial, institutional, sustainment, and doctrine and tactics training will be provided to the active U.S. Army and to the reserve components.
- Plan for the resources required to conduct training on the new equipment.

Process

NETPs are developed using the AMTAS centralized data base network. The materiel developer is responsible for development and maintenance of the NETP, while the Deputy Chief of Staff for Operations (DCSOPS) at HQDA is the final approving authority for all information in the AMTAS and on the NETP.

TRADOC and MACOMs receiving new equipment provide information to the materiel developer through AMTAS for development and update of the NETP. The materiel developer will prepare the initial NETP within 30 working days after any of the following events takes place:

- Development of BOIPFD and QQPRI.
- Receipt of a draft requirements document.
- Receipt of a procurement directive.
- Notification of intent to reenter equipment into the U.S. Army inventory.

After initiation of the NETP, each command will input pertinent data within 30 working days. Since the NETP is on the automated system (AMTAS), Commands submit suggested changes on-line. The materiel developer considers changes and incorporates them into the NETP or provides justification for nonacceptance. DCSOPS makes the final decision on differences between the materiel developer and commands.

NETPs undergo annual updates at training support work groups (TSWGs). The materiel developer chairs the TSWG. TRADOC and other MACOMs having input to the NETP attend the TSWG. (See chapter 7).

Content/Format

The NETP contains personnel, training, and cost information keyed to major decision points in the acquisition cycle. This information, as a minimum, includes the following:

- A summary of the training concept for each receiving MACOM.
- Location of major training events.
- Date, by quarter and fiscal year, that training will begin.
- Total number of classes scheduled for each course.

Content/Format (con.)

- Number and source of student input for each course.
- Resource requirements and responsibilities (manpower, dollars, and facilities) for training.
- System and training development milestones for the following:
  - BOIP/QQPRI development.
  - New materiel briefings.
  - Training literature development and availability.
  - MOS decisions.
  - Training and doctrine development.
  - Training device and simulator development.
  - Training aids and other training support equipment.

The training developer should not be concerned with the format of the NETP. Since data is input through the AMTAS, format is taken care of automatically. The materiel developer makes printed copies available.

Training Developer Input to the NETP

The TRADOC proponent training developer provides the majority of the training-related information to the NETP and coordinates closely with the combat developer and the STID, TDAD, in the office of the Deputy Chief of Staff for Training (DCST) at TRADOC.

Information is derived from the early comparability analysis (ECA) and other MANPRINT studies for early input to the NETP. Training information is updated throughout the system development process using information from the STRAP. Detailed instructions for providing input to the NETP through AMTAS are provided in DA Pam 350-40, *Army Modernization Training Plans for New and Displaced Equipment.*

Pertinent Regulations and Publications

AR 350-35, *U.S. Army Modernization Training*

DA Pam 700-142, *Instructions for Materiel Release, Fielding, and Transfer*

DA Pam 350-40, *Army Modernization Training Plans for New and Displaced Equipment*

Related Pages

System Training Plan, pg. 5-5

Other Joint Working Groups, pg. 7-13

CHAPTER 6

TRAINING DEVICE STUDIES

Training Device Studies

Overview

Introduction

Studies and analyses form the basis for entry into a materiel acquisition program. Studies are performed for new systems, their training subsystems, NSTDs, and training programs. The following are the primary studies/analyses associated with the acquisition of system TADSS and NSTDs that will be discussed in this chapter:

- Cost and operational effectiveness analysis (COEA). The COEA is the responsibility of the proponent combat developer. Discussion on the COEA will consist of an overview with emphasis on the training developer's input.

- Training effectiveness analysis (TEA). The proponent training developer conducts the TEA. "TEA" is a generic term that refers to analytical studies of alternative training concepts or media. TEAs are conducted as part of COEAs to arrive at recommended training subsystems. They may also be used for comparative analysis of competing alternatives for system TADSS or NSTDs.

- Concept formulation. Concept formulation is conducted jointly by the combat developer and materiel developer for new systems and by the training developer and materiel developer for device requirements. A concept formulation is conducted concurrently with and is supportive of a COEA or TEA.

Within this chapter each of these studies will be discussed in the level of detail required for a training developer. Where appropriate, tailoring of the process will be presented. In this context "tailoring" means that if the complete process is not required to be accomplished in each case, opportunities for exceptions or shortcuts will be identified.

Cost and Operational Effectiveness Analysis (COEA)

The COEA is required for all materiel system acquisition programs. The proponent combat developer conducts the COEA concurrently with the concept formulation, which the materiel developer and combat developer jointly conduct. The COEA is conducted to analyze competing alternatives for resolution of a recognized battlefield deficiency. The initial COEA supports a milestone I decision. An updated COEA (if required because of changes in the system program) is prepared to support each ensuing milestone decision.

Cost and Operational Effectiveness Analysis (COEA) (con.)

Concurrently with the conduct of the COEA, the training developer conducts a TEA. The purpose of the TEA is to analyze competing training concepts for use in the system's training subsystem. This TEA is referred to as "TEA I" because it, like the COEA, supports a milestone I decision.

Training Effectiveness Analysis (TEA)

The training developer conducts TEAs to support a multitude of training decisions. Within the materiel acquisition process, TEAs are conducted to support milestone decisions. TEAs are named for the milestone decision of the acquisition program in which they occur. For example, a TEA conducted during phase 0 to support a milestone I decision is referred to as a "TEA I," while a TEA conducted to support a milestone III decision takes place during phase II and is referred to as a "TEA III."

A postfielding TEA (PFTEA) is also conducted on each training device after the device has been in the field long enough for its training effectiveness to be evaluated.

Concept Formulation

Concept formulation is a process jointly conducted by combat developers and materiel developers for materiel systems and by training developers and materiel developers for training devices. The intent of the concept formulation is to evaluate trade-offs among alternatives to system or device technologies, costs, and effectiveness to determine the best technical approach to materiel development and/or procurement. Concept formulation consists of three phases:

- Trade-off determination (TOD).
- Trade-off analysis (TOA).
- Best technical approach (BTA).

Training developer involvement in concept formulation for new system development is minimal. When conducting the system concept formulation, the combat developer and the materiel developer should use information provided to the combat developer in the TEA that supports the COEA.

For training devices the training developer participates with the materiel developer (usually simulation, training, and instrumentation command (STRICOM)) in the conduct of the concept formulation. Upon completion of the analysis, the training developer selects the BTA.

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

AR 350-38, *Training Device Policies and Management*

Related Pages

Cost and Operational Effectiveness Analysis, pg. 6-4

Training Effectiveness Analysis Process, pg. 6-8

Concept Formulation, pg. 6-12

Introduction

The proponent combat developer conducts the COEA for new system development/procurement. The COEA is included in this procedural guide because the training developer's input to the COEA, in the form of a TEA, could have a profound influence on system design and characteristics. Design influence is most apparent regarding embedded training capabilities but is also of prime consideration in requirements for simulators and major training devices. For these reasons the training developer should have a basic understanding of the COEA and a more complete understanding of the associated TEA.

Tailoring

The training developer should remember that the combat developer conducts the COEA. With this in mind, close coordination must be effected to determine the complexity of the new system regarding operation and maintenance. This will have a major bearing on the level of detail to which the TEA will have to be conducted.

Some systems may have little or no training impact and will require only a minor TEA effort or no TEA at all.

Purpose

The COEA is a phased effort throughout the materiel acquisition program. The purpose will vary depending on which phase of the program the information is being gathered to support.

- During phase 0 the COEA is used to evaluate competing alternatives to resolve a battlefield deficiency or capability issue. Information provided is to assist in a milestone I decision. This is referred to as "COEA I."
- During phase I the COEA provides decision makers with a comparative evaluation of competing alternatives for system design, capabilities, and rough cost estimates. This (COEA II) leads to a milestone II decision.
- COEA III, supporting a milestone III decision, is usually one that updates cost estimates since by this time the system design approach has typically been chosen.

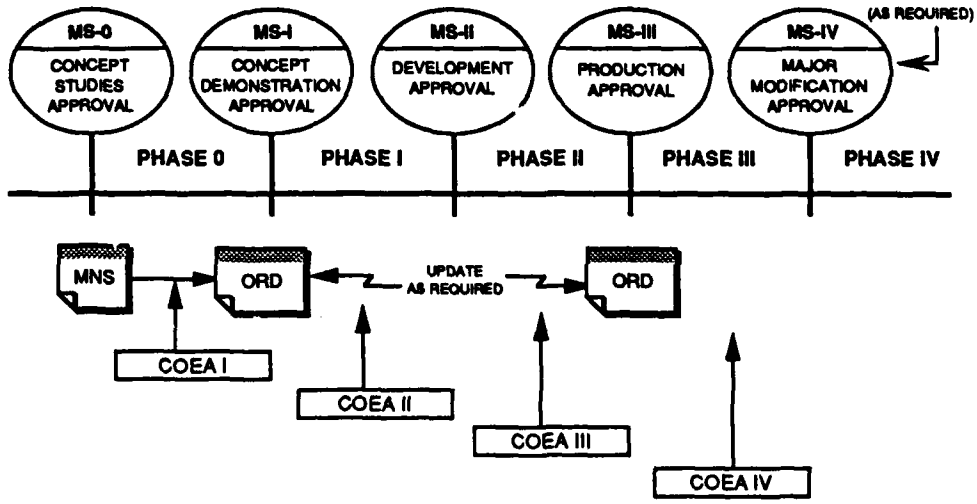
Purpose (con.)

- COEA IV is prepared for a milestone IV decision. The purpose of this COEA is to consider costs and other consequences involved in modification to the system.

If there are few changes since the initial COEA was conducted, there may not be a need for other COEAs during system development. TEAs should be prepared or updated to support each required COEA.

Process

The phases of COEA development are tied to the system requirements documentation. The COEA and each update, if required, are to support milestone decisions as shown below.



Content/Format

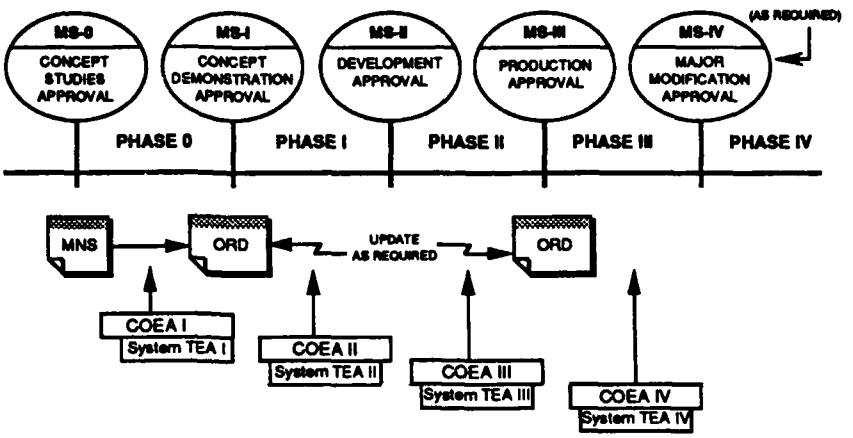
The content and format for a COEA are explained in detail in DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports.*

Training Developer Input

The training developer has minimal input to the basic conduct or documentation of the COEA; however, a TEA will be appended to the COEA. The conduct of this TEA is the responsibility of the training developer. The results of the TEA may have a major impact on system design and cost, particularly if the TEA shows that the preferred training strategy is through the use of embedded training or major simulators or devices.

System Training Effectiveness Analysis (TEA)

The TEA for the system follows much the same process as the COEA does for the system. This is logical since the TEA is an enclosure to the COEA and therefore is updated as the COEA is updated. The figure below shows this process.



The TEA conducted to support the COEA for a milestone I decision evaluates all competing training strategies. As the system design strategy becomes more firm and succeeding COEAs are more concerned with cost than competing designs, the updated TEAs provide more firm cost estimates for the selected training concept.

TEAs for System TADSS

The remainder of this chapter addresses TEAs for training devices and concept formulation. For developing systems there will be a TEA conducted to support the COEA. A TEA will also be conducted in support of a concept formulation for any training device that is identified as required for the training subsystem. TEAs conducted to support design, development, and procurement of system TADSS are, in essence, the same as those conducted to support NSTD acquisition programs. See Training Effectiveness Analysis beginning on page 6-8 for system TADSS TEA requirements.

Pertinent Regulations and Publications

DOD 5000.2-M, *Defense Acquisition Management Documentation and Reports*

Related Pages

System Training Device Acquisition Process, pg. 2-13

Training Effectiveness Analysis Process, pg. 6-8

Concept Formulation, pg. 6-12

Introduction

A TEA, in the generic sense, is a training study. The study may be conducted at any time that a problem is evident or anticipated in a training or performance environment. Within the materiel acquisition process, the training developer is primarily concerned with those TEAs that support milestone decisions in the development cycle of new materiel systems or TADSS. TEAs may be very limited in scope and conducted by the proponent training developer or may be comprehensive studies requiring a detailed study plan and the assistance of outside agencies or contractors. The extent of the TEA is dependent, in large part, on the complexity of the developing materiel or its expected use.

Detailed information pertaining to studies for materiel systems and NSTDs is found in TRADOC Reg. 350-32, *The TRADOC Training Effectiveness Analysis (TEA) System.*

Tailoring

Some developing systems may have no impact on training. In this case there may be no need for a TEA. The training developer may request a waiver of the TEA requirement from the Systems Training Integration Division (STID), Training Development and Analysis Directorate (TDAD), HQ TRADOC. In some cases TEAs may be deferred until there is enough information from combat development studies to define the training mission.

In the case of training devices, a waiver of the TEA requirement may be requested through ATSC. There are four types of TEAs associated with the materiel acquisition process based on the full-scale development model (see chapter 1). Each TEA is an update and refining of the previously conducted TEA. Since training devices are normally developed and procured under a tailored management model, the TEA process should be tailored accordingly.

Types of TEAs in the Materiel Acquisition Process

TEAs are conducted in the materiel acquisition process to support milestone decisions. For materiel system acquisition, TEAs are conducted and updated to support the COEA; therefore, time lines are dictated by the system development program (see previous information map, COEA).

Types of TEAs in the Materiel Acquisition Process (con.)

Development and procurement of training devices (system or NSTD) make up a materiel acquisition program that will normally require its own TEA and concept formulation. Within this process TEAs are identified by the program acquisition milestone decision that they support. There are four phases of TEA development (TEA I through TEA IV). Each requires analysis to document information pertinent to decision makers at each milestone.

- TEA I is conducted during Phase 0, Concept Exploration and Definition, to provide information for a milestone I decision. At this point the TEA explores competing concepts and technologies available or projected to meet training mission requirements. TEA I supports the concept formulation, which is conducted concurrently.

- TEA II is conducted during Phase I, Demonstration and Validation, to provide input to the milestone II decision. The TEA II scope may be adjusted depending on the extent of understanding of the new device after concept formulation has been completed and the BTA has been selected. At this time, the training developer can get more firm information on the costs associated with the selected alternative.

- TEA III, conducted during Phase II, Engineering and Manufacturing Development, is a comprehensive cost and training effectiveness type of analysis or an update of such an analysis. It is conducted to provide input to the milestone III decision. It directly addresses issues bearing upon the milestone II decision.

- TEA IV is performed during Phase III, Production and Deployment. The purpose of this TEA is to determine whether major modifications must be made to a device still in production.

- A PFTEA is conducted when a device has been in the field sufficient time for a training program to be stabilized (normally within 18-24 months of fielding). It can assess the effectiveness of the training program and the TADSS within the program, or it may only address a specific device. This TEA is not technically a part of the acquisition program but is required and should be programmed by the proponent school.

The above explanation of the types of TEAs is based on the full-scale development model. Most training devices are developed/procured under a tailored model (see chapter 1). For this reason it is rare that the four TEAs would be conducted for any single device. Tailoring of the TEA process should be consistent with the tailored management model that is used.

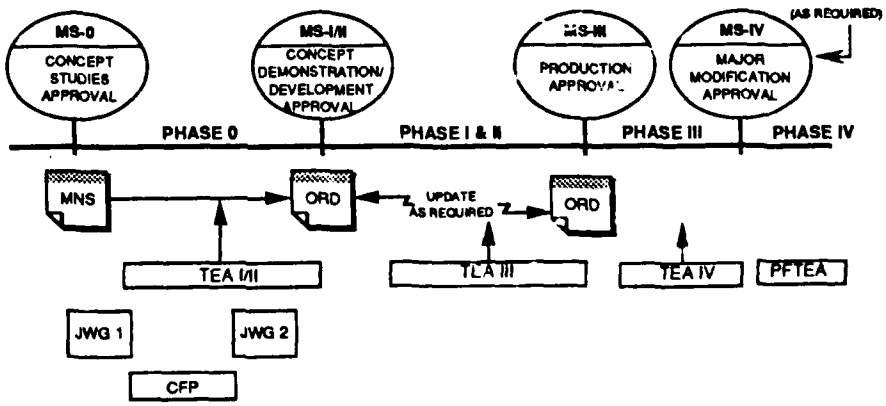
Process

TEAs in support of COEAs for developing systems are performed or updated as required to support the specific developing system. The training developer will effect coordination with the combat developer and STID to determine these requirements.

ATSC prescribes the conduct of TEAs for TADSS (system devices or NSTDs) after coordination with appropriate elements of HQ TRADOC. Upon submission of a strawman ORD (for NSTDs) or a draft training device requirements data package (for system devices) (see chapter 4), ATSC will notify the proponent training developer of the type and scope of TEA that is required.

Since developing training devices normally follow a tailored management model that seeks a combined milestones I and II approval at completion of phase 0, the training developer will normally be requested to perform a TEA I/II. On the other hand, if a milestone III decision is being sought at the completion of phase 0, a TEA I/III will be in order. This might be the case for a nondevelopment item (NDI) that could feasibly go straight to production and employment after initial studies have been completed. (Engineering and manufacturing development would not be required for an nondevelopmental item (NDI).)

The figure below shows the normal process under a tailored NSTD model.



The key point to remember from this graphic is that the TEA supports concept formulation, which in turn supports requirements documentation so that a favorable milestone decision can be made allowing the program to proceed into the next development phase.

If the initial TEA is sufficient to proceed through the development and acquisition process, no further updates will be required. However, if circumstances dictate, ATSC will direct additional TEA efforts.

Content/Format

There is no prescribed format for a TEA. The extent of the study effort required will help to define the format in which the required information should be presented. What is required is that the training developer can show that alternatives have been considered and that the recommended alternative is most logical in terms of training effectiveness and cost and that it supports the concept formulation.

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

TRADOC Reg 350-7, *A Systems Approach to Training*

TRADOC Reg 350-32, *The TRADOC Training Effectiveness Analysis (TEA) System*

TRADOC Pam 11-8, *Studies and Analysis Handbook*

Related Pages

Nonsystem Training Device Acquisition Process, pg. 2-3

Nonsystem Training Device Mission Need Statement, pg. 3-4

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Mission Need Statement, pg. 4-4

System Operational Requirements Document, pg. 4-9

Annex C, Training Support Requirements, pg. 4-20

System Training Plan, pg. 5-5

System MANPRINT Management Plan, pg. 5-23

Cost and Operational Effectiveness Analysis, pg. 6-4

Concept Formulation, pg. 6-12

Concept Formulation

Introduction

Concept formulation consists of a series of analytical studies performed by the materiel, combat, and training developers to determine the BTA to develop and procure the most cost-, operational-, and training-effective system or training device. A concept formulation is performed for a new system, for each training device requirement identified in the training subsystem, and for each NSTD. The results of the concept formulation are documented in the concept formulation package (CFP).

The elements of the CFP are the same for systems and devices, except that the COEA for the system is considered a part of the CFP, whereas with training devices the TEA is considered a separate effort. Both the COEA and the TEA are conducted concurrently with concept formulation and are supportive of the BTA.

Training developer input to the system CFP is minimal. The TEA that is included in the COEA is the primary training developer input. Accordingly, this information map will concentrate on concept formulation for training devices and not for systems.

Tailoring

Although the concept formulation for training devices is to be jointly conducted by the training developer and the materiel developer, STRICOM normally performs the entire process through a services contract. The training developer needs only to maintain close coordination with STRICOM and to review each phase of the process for concurrence with the direction in which the studies are proceeding.

Purpose

The CFP establishes technical and economic specifications to satisfy the stated requirement. The training developer and the materiel developer use information in the CFP to establish technical and cost specifications for the training device.

Concept Formulation Analyses

Three analyses are conducted as concept formulation. The documentation of these three analyses comprises the CFP:

- TOD - conducted by the materiel developer.

Concept Formulation Analyses (con.)

- TOA - conducted by the training developer.
- BTA - conducted by the materiel developer with assistance from the training developer. The training developer selects the BTA from the alternatives presented.

Trade-Off Determination (TOD)

The materiel developer conducts the TOD for a training device with assistance from the training developer. It contains the following:

- A description of the individual technical approaches.
- Evidence that the proposed technical approach is engineering rather than experimental (includes technical risks).
- Trade-offs for the suggested approach.
- Estimated life cycle costs.
- Recommended technical approach.

The TOD documentation includes technical analyses or trade-offs; risks; capabilities needed; costs; schedules; integrated logistics support (ILS) requirements; estimated total Army manpower requirements; health, safety, and human factors engineering (HFE) requirements; and ecological factors. Much of this information is derived through the manpower and personnel integration (MANPRINT) process.

Trade-Off Analysis (TOA)

The training developer prepares the TOA with assistance from the materiel developer. It contains the following:

- Mission and performance envelopes with justification and rationale.
- Analysis of system or device trade-offs, risk, development schedules, and logistic support.
- Selection of the BTA from an operational and ILS perspective.
- Description of the environmental and ecological factors and health, safety, and HFE requirements that the U.S. Army must consider in fielding the system or device.

NOTE: The training developer will not normally be required to perform this analysis (see "Tailoring").

Best Technical Approach (BTA)

The materiel developer prepares the BTA with assistance from the training developer. It contains the following:

- A description of the BTA and ILS concepts based on the results of the TOD and TOA.
- Evidence that the proposed BTA is engineering rather than experimental.
- Estimated cost.
- Total Army manpower requirements.
- Procurement and scheduling estimates.
- Recommendation on project management.
- Draft environmental impact statement.

Comment

STRICOM has the responsibility to conduct concept formulation for all training devices (system devices and NSTDs). The system program executive officer/project manager (PEO/PM) normally provides funding for concept formulation for system training devices. For NSTDs funds come from the TMA R&D dollars allocated for development of NSTDs.

Training Effectiveness Analysis (TEA)

As previously stated the training developer is responsible for the TEA that is part of the COEA effort of the system. It considers the following in its analysis:

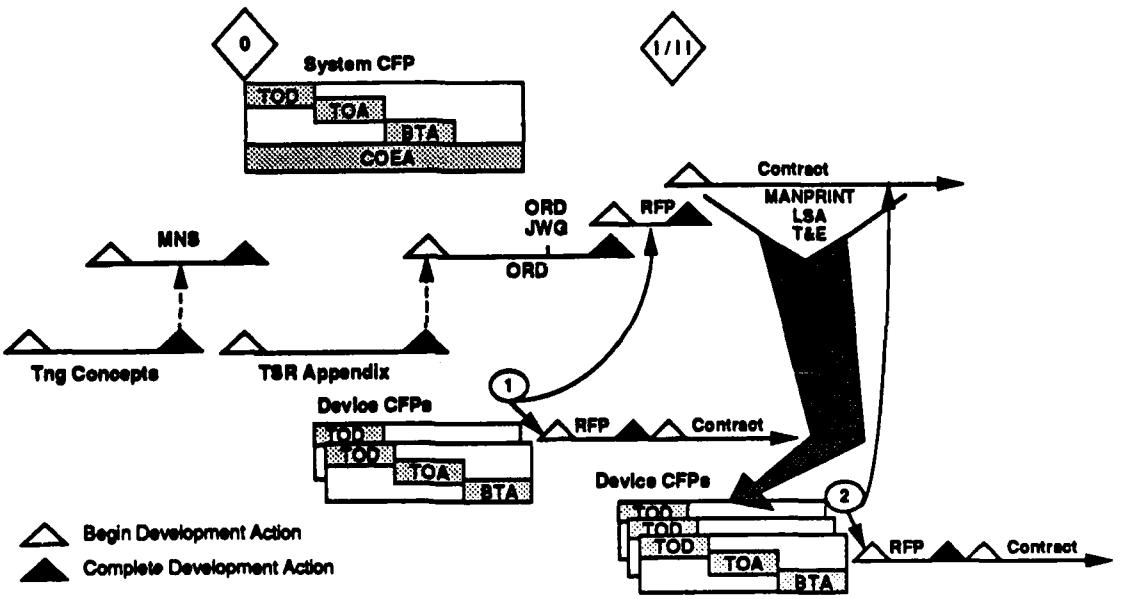
- Tasks and missions to be performed.
- Conditions under which the tasks must be performed.
- Programmed capabilities to perform the tasks and resulting deficiencies.
- Cost alternatives.

The TEA documents the comparative effectiveness of alternative means of meeting a training need or requirement and the cost of developing, producing, distributing, and sustaining each alternative. For more information on the TEA, see the previous information map (TEA).

Process for System TADSS

The TOD, TOA, and BTA are normally done in successive order; however, some overlap of effort will usually occur.

Concept formulation for each device begins when sufficient information is obtained from the system concept formulation, the early comparability analysis (ECA), and, if necessary, the logistical support analysis (LSA) data. A draft training device requirements data package (chapter 4) is submitted to ATSC, and JWG 1 is scheduled (chapter 7). Completion of the device CFP through BTA is the basis for the conduct of JWG 2 for the training device. The next figure shows the phasing of the concept formulation for the materiel system and its associated training devices.



(1) If device concept formulation is complete before ORD approval, the device may be developed and procured under the system contract using the system RFP, or it may be developed and procured under separate contract using a separate RFP.

(2) If device concept formulation is complete after ORD approval, the device may be developed and procured under a modification to the system contract, or it may be developed and procured under separate contract using a separate RFP.

Process for System TADSS (con.)

The phasing of the CFPs leading to a request for proposal (RFP) for the training devices in this figure assumes that the requirements for the devices were identified early in the system documentation development process and included in the system MNS and ORD. When the proponent training developer is ready to initiate JWG 1 for a training device concept formulation, a training device requirements data package is forwarded by memorandum to ATSC and STRICOM. The training device requirements data package should contain the following:

- The system training strategy. This is extracted from the STRAP, or the STRAP is attached to the memorandum.
- The device strategy (part of the STRAP).
- The tasks to be trained.
- A target audience description (military occupational specialty (MOS), active or reserve components).
- The proposed training environment (local training area (LTA), unit, institution, etc.).
- Training constraints.
- The essential functional characteristics of the device.
- Reliability, availability, and maintainability (RAM) parameters for the training device.

As part of the concept formulation, STRICOM determines the most appropriate contracting approach (for example, incorporate the device requirement into the system contract or execute a separate contract) for device development and procurement.

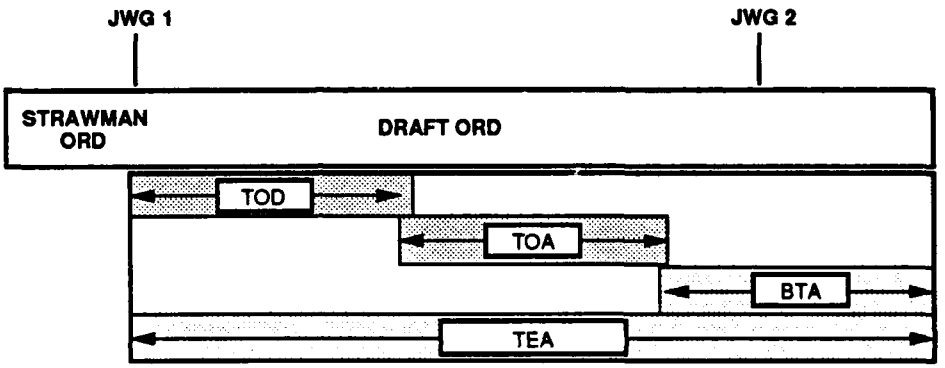
If more than one training device is associated with the materiel system, each training device requires its own concept formulation. Concept formulation for the separate devices may be conducted separately or concurrently depending on sufficiency and availability of information to the training developer to support JWG 1 conduct and initiation of the process.

If the requirement for system TADSS is identified after ORD approval, documentation of the requirement follows the procedures for NSTD requirements.

Process for Nonsystem Training Device (NSTD)

Concept formulation for NSTDs is conducted essentially the same as for system TADSS. A key difference in the process is that the requirements documentation is impacted by the concept formulation. NSTD concept formulation supports development of an ORD to permit a milestone decision leading to an RFP for device development/procurement.

The supporting TOD, TOA, and BTA are normally done in succession, but some overlap may occur. The TEA requires information from the TOD, TOA, and BTA, but it is conducted concurrently and used as input to the device ORD following JWG 2. The figure below shows the phasing of the concept formulation for NSTDs.



Comment

Although the BTA is selected at JWG 2, the documentation of the CFP is completed later in the process. It is essential that BTA selection take place at JWG 2 to allow STRICOM to develop costing information. The training developer normally selects the BTA as part of the JWG.

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

AR 350-38, *Training Device Policies and Management*

TRADOC Reg 350-42, *TRADOC Training Effectiveness Analysis (TEA) System*

Related Pages

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Operational Requirements Document, pg. 4-9

Training Device Requirements Data Package, pg. 4-26

Cost and Operational Effectiveness Analysis, pg. 6-4

Training Effectiveness Analysis Process, pg. 6-8

Training Device Joint Working Group Process, pg. 7-3

Other Joint Working Groups, pg. 7-13

CHAPTER 7

JOINT WORKING GROUPS

Joint Working Groups

Overview

Introduction

A joint working group (JWG), for materiel acquisition purposes, consists of representatives from the combat, materiel, and training development communities and selected subject matter experts meeting in a prescribed forum for direct communication. The purpose is to facilitate coordination of requirements documentation and related actions in the materiel acquisition process. As such, the JWG brings all interested parties to one location to determine responsibilities and milestones and to prepare or coordinate requirements and supporting documentation. The JWG is not merely a meeting of interested parties, but more of a process whereby close and continual coordination can be effected throughout a training device development and acquisition program.

Types of JWGs

This chapter provides information on the types of JWGs in which the training developer will routinely be involved during acquisition programs for new systems or NSTDs:

- Training device JWG.
- Manpower and personnel integration (MANPRINT) JWG (MJWG).
- Test integration working group (TIWG).
- System mission need statement (MNS) JWG.
- System operational requirements document (ORD) JWG.
- Training and support work group (TSWG).

Of the six JWGs listed above, the most important to the training developer is the Training Device JWG. Accordingly, this process will be addressed in detail in this chapter. Sufficient information will be provided on the other JWGs to familiarize the training developer with the purpose of each in order to make a meaningful contribution as the need arises.

JWG Composition

JWG membership can be comprised of any number of personnel and agencies that the proponent (combat, materiel, or training developer) determines can contribute to the development of the designated requirements and documentation process.

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

AR 350-38, *Training Device Policies and Management*

Related Pages

Training Device Joint Working Group Process, pg. 7-3

Other Joint Working Groups, pg. 7-13

Training Device Joint Working Group Process

Introduction

The development and acquisition of training devices requires the coordinated effort of a number of personnel and agencies working together for a common goal. Each has a specific area of expertise or input that supports development of the most cost- and training-effective systems and devices.

JWGs bring representatives from specified agencies together and provide a forum for direct communication that facilitates the coordination of requirements documentation, identification and assignment of responsibilities and action items, and establishment of milestones for completing these actions.

During the training device development and acquisition process, there will normally be at least two JWGs. The conduct of the JWGs for NSTDs and for system TADSS is basically the same. Accordingly, this discussion of the JWG process will address the process as it relates to NSTDs. Where appropriate, differences in the process applicable to system TADSS will be identified. For ease of identification, the word "NOTE" will precede an explanation of the difference in the process.

Purpose

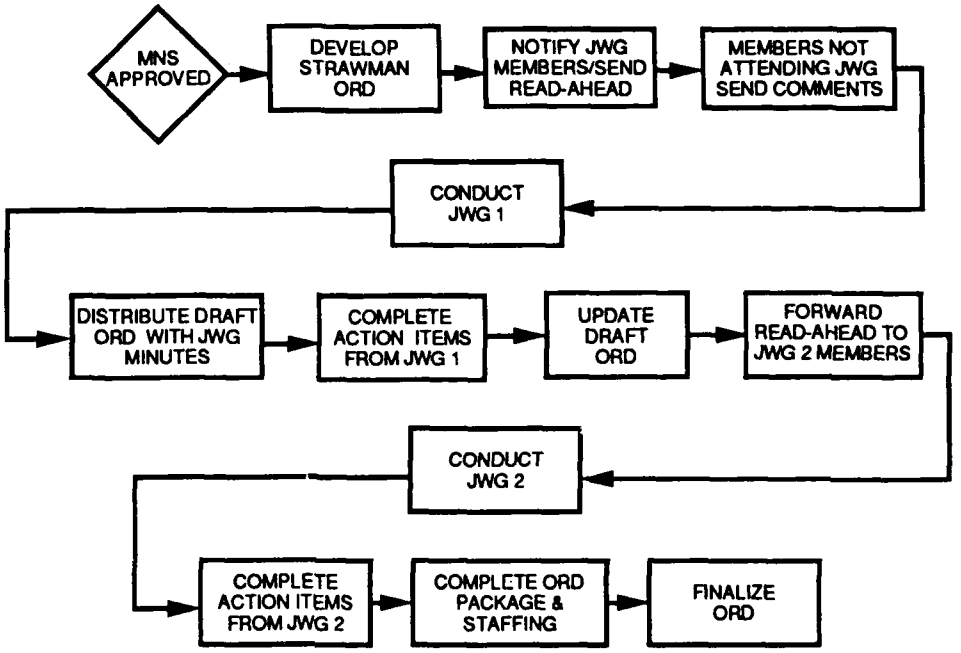
The training device JWG has three primary purposes:

- Prepare requirements documentation.
- Assign responsibilities for action items.
- Establish milestones for completion of action items.

Process

The proponent training developer and the materiel developer (usually simulation, training, and instrumentation command (STRICOM)) jointly chair the training device JWGs. Normally, there are two JWGs associated with the development of a training device. In some cases additional JWGs may be necessary. The following figure depicts the JWG process and events that lead to a coordinated final ORD for submission to the approval authority.

Process (con.)



Before a JWG for an NSTD can be scheduled or conducted, the training developer must provide sufficient information to the training and materiel development communities for the major players to clearly understand the requirement. To accomplish this the proponent develops a strawman ORD and concurrently coordinates with ATSC for scheduling of JWG 1. The completed Strawman ORD is forwarded through the integrating command to ATSC for review and subsequently forwarded to JWG 1 members in the read-ahead package.

NOTE: System TADSS that have been identified and documented in the system ORD do not require a separate MNS or ORD. In this case the JWG process is initiated by forwarding the training device requirements data package to ATSC (see chapter 4).

JWG 1

ATSC in coordination with the proponent and the materiel developer determines a tentative date and prospective attendees for JWG 1. All prospective members are notified and provided a read-ahead package that, as a minimum, consists of the following:

- Strawman ORD with applicable annexes.

JWG 1 (con.)

- School point of contact (POC).
- Security clearance requirements (if applicable).
- JWG date, time, location, and billeting information.
- Chairperson and vice chairperson designees.

Invitees are requested to provide to the proponent POC a list of attendees and/or POCs by name, grade, and security clearance (if required) at least one week prior to the scheduled JWG. Agencies unable to attend the scheduled JWG will provide comments containing all information essential to the developing ORD (also one week prior to the JWG).

When the JWG has been convened, the agenda that was provided to the members is the basis for discussions. The chairperson (proponent training developer) and vice chairperson (materiel developer) may establish or modify the agenda and procedures to meet JWG objectives. In any case, the following are normally part of the agenda:

- Proponent's overview - expands on the requirements information provided in the read-ahead package. Administrative details and guidelines for conduct of the meeting are presented.
- Training effectiveness analysis (TEA) requirements - ATSC informs the proponent of the extent of the study effort that will be required.
- Personnel/agency assignments for and milestones for completion of--
  - System MANPRINT management plan (SMMP).
  - System training plan (STRAP) (if applicable).
  - Concept formulation.
  - Test and evaluation master plan (TEMP).
  - Basis of issue plan (BOIP) and qualitative and quantitative personnel requirements information (QQPRI).
  - Reliability, availability, and maintainability (RAM).
  - New equipment training plan (NETP) (if applicable).
  - Training device strategy.

JWG 1 Proponent's Overview

All members of the JWG should have a basic understanding of the device requirement from the read-ahead package provided by the proponent training developer. The proponent's overview expands on the read-ahead and responds to questions regarding the following:

- Training deficiencies that led to the determination that a training device is required.
- Constraints associated with--
  - Device characteristics.
  - Training environment in which the device must operate.
  - Cost.
  - Proposed basis of issue (BOI) to support the device strategy.
  - Required availability date for training.
  - RAM.
  - Any other factors that will impact on development of the draft ORD.
- Procedures for conduct of the meeting and objectives to be achieved.

Draft ORD

After input from the JWG members has been received in all subject areas, the group can develop the draft ORD. The ORD should be as detailed as possible, although it cannot be complete until all actions have been completed. The content and format of the ORD are found in chapter 3 of this procedural guide. The subject areas listed in the proponent's overview provide the essential information to develop the basic document and annexes (except life cycle cost summary and coordination annexes, which are completed after JWG 2 and final ORD staffing).

For system TADSS the training device requirements data package is used to provide information to the materiel developer for preparation of the formal IPR package as required by DOD 5000.2-M *Defense Acquisition Management Documentation and Reports.*

Assign Action Items/Establish Milestones

At this point in the training device development and acquisition process, there are many unanswered questions regarding the design, cost, required distribution, supportability, and operational parameters. Additional studies and analyses are required to answer these questions and ensure acquisition of a cost- and training-effectiveness device that addresses the training deficiency. JWG members are assigned actions to respond to these questions prior to JWG 2. These actions include the following:

- Conduct of the concept formulation leading to the best technical approach (BTA), which is to be selected at JWG 2.
- Conduct of MANPRINT-related studies.
- Development of the device NETP (if required).
- Submission of BOIP feeder data (BOIPFD)/QQPRI.
- Development of the BOIP/QQPRI.
- Development of RAM data (to be completed after selection of BTA).
- Input to the TEMP and related test plans.
- Development of and/or revision of the STRAP (if required).
- Conduct of the TEA.

Milestones for completion of each of the action items are established and recorded in the minutes of JWG 1. The scheduling for JWG 2 is dependent on completion of concept formulation.

Comment

All of the actions listed above are phased developments conducted throughout the acquisition process. See appropriate chapters for more detail on the accomplishment of these actions.

NOTE: Training developer responsibilities for the completion of these actions for the acquisition of NSTD may differ from those for the acquisition of system TADSS.

JWG 2

The time between the end of JWG 1 and the start of JWG 2 is used to complete the action items that were assigned at JWG 1. These actions may include update of the STRAP, TEMP, and SMMP as well as the conduct of tests and studies and the development of much of the RAM data. The level of effort required for each of these actions may vary between devices.

JWG 2 is normally the only time that all members of the JWG reconvene. Intensive work by all members occurs between the JWGs to support the ongoing development of device characteristics, training device strategies, logistics support requirements, MANPRINT requirements, BOI, and other actions leading to a complete and accurate documentation of the requirement. By the time JWG 2 is convened, these data elements should be fairly solidified. JWG 2 is conducted much like JWG 1 with the intent of finalizing actions and establishing milestones for producing a final draft ORD for coordination. JWG 2 has four primary purposes:

- Select the BTA.
- Complete/assign action items necessary for the completion of the final draft ORD documentation package.
- Assign responsibilities to JWG members for those actions remaining in the device development cycle.
- Establish milestones for completion of action items or events.

The composition of JWG 2 is the same as the composition for JWG 1. New members may be added to the JWG membership as required at any point in the JWG process.

JWG 2 Agenda

As in JWG 1, the agenda for JWG 2 is provided as part of the read-ahead package. The proponent training developer and the materiel developer establish the agenda and conduct the JWG in the most efficient manner appropriate for the developing device. The following items are discussed, and to the extent possible, agreed upon at JWG 2:

- A proponent's overview, summarizing the actions and decisions occurring since JWG 1.
- Presentation of the technical approaches by the materiel developer and the selection of the BTA by the training developer.

JWG 2 Agenda (con.)

- Milestones for completion of all paragraphs and annexes of the ORD (except for the coordination annex, which is completed as a result of staffing actions).

Proponent's Overview

The proponent opens the JWG with a brief discussion of the status of the developing ORD and a summary of the actions occurring since JWG 1. Members' questions regarding the read-ahead package are answered. The intent of the overview is to review all actions related to the following:

- Training deficiencies that led to the determination of the training device requirement.
- Training device strategy.
- BOI to support the device strategy.
- Constraints associated with--
  - Device characteristics.
  - Training environment.
  - Cost.
  - Required availability date.
  - RAM.
  - Other factors that will affect development of the final ORD or fielding of the device.
- Status of action items from JWG 1.
- Procedures for conduct of the meeting and objectives to be achieved.

Select Best Technical Approach (BTA)

The materiel developer presents to the JWG members the technical approaches. The training developer will select the BTA based on the previous results of the TOD and TOA. Briefing information for each alternative will include the following:

- A description of the alternative.

Select Best Technical Approach (BTA) (con.)

- Trade-offs associated with the alternative.
- Associated risks.
- Capabilities.
- Integrated logistic support (ILS), including--
  - Administrative and logistic down time (ALDT).
  - Best operational capability (BOC).
  - Minimum acceptable value (MAV) and cost to meet stated operational availability.
- Environmental and ecological factors.
- Health, safety, and human factors engineering.

Once the BTA has been selected, the materiel developer can begin work on annex D of the ORD (life cycle cost summary). The life cycle cost summary is an action item to be completed after JWG 2 and prior to staffing of the final draft ORD.

Develop Final Draft ORD

After selection of the BTA, JWG members begin the development of the final draft ORD and subsequent staffing. Comments from staffing are used to finalize the ORD for the approval process.

To develop the final draft ORD, JWG members use all information gained from completion of the actions and events between JWG 1 and JWG 2. All paragraphs and appendices are addressed and developed during this process except the coordination annex, which is developed at the conclusion of staffing.

There are a number of actions and events that continue during the training device development process that must be planned before the JWG convenes. These actions, many of which are continuations of tasks and milestones scheduled at JWG 1, include the following:

- Update of the SMMP and conduct of MANPRINT-related studies.
- Update of the NETP (if it was determined that new equipment training will be required).
- Finalization of and updates to BOIP/QQPRI.

Develop Final Draft ORD (con.)

- Update to the TEMP and accomplishment of further technical and operational testing.
- Update of the STRAP (if it was determined that a STRAP would be required).
- Development of the life cycle cost summary.
- Finalization of the RAM rationale report.
- Completion or update of the TEA as required.

Develop Final Draft ORD for Staffing

The majority of the work to develop the final draft ORD for staffing and eventual approval occurred during JWG 2. The key tasks that remain to complete the process are including information that could not be included at the JWG, staffing the document for comment, and finalizing the document for the approval process. The training developer prepares the final draft ORD for staffing. This document is staffed internally at the proponent school then forwarded through the proponent's integrating command to ATSC for continued staffing. (Additional information regarding the staffing and coordination of the ORD is in chapter 3.) Staffing actions include the following:

- Deputy Chiefs of Staff elements at HQ TRADOC.
- Other MACOMs as appropriate.
- Other services as appropriate.
- Office of the Chief, Army Reserve (OCAR)/National Guard Bureau (NGB).
- Director of Information Systems Command.

At the completion of the staffing process, ATSC reviews and consolidates comments and forwards them to the proponent school. The proponent incorporates appropriate comments in the ORD and records actions taken on comments in the coordination annex.

The proponent school forwards the completed document under signature of the School Commandant to ATSC for review by the Training Device Requirement Review Committee (TDRRC). Members of the JWG may be called upon for additional data or updates for continuing events and actions during the remainder of the life cycle for the developing training device.

Pertinent Regulations and Publications

AR 350-35, *New Equipment Training*

AR 350-38, *Training Device Policies and Management*

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

AR 700-127, *Integrated Logistic Support*

TRADOC Reg 71-9, *User Test and Evaluation*

Related Pages

Nonsystem Training Device Acquisition Process, pg. 2-3

System Training Device Acquisition Process, pg. 2-13

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Operational Requirements Document, pg. 4-9

Training Device Requirements Data Package, pg. 4-26

Basis of Issue Plan/Qualitative and Quantitative Personnel Requirements Information, pg. 5-9

Reliability, Availability, and Maintainability, pg. 5-17

System MANPRINT Management Plan, pg. 5-23

Testing and Evaluation, pg. 5-28

Concept Formulation, pg. 6-12

Introduction

The JWG process encompasses a number of different types of JWGs that are available for the training developer and combat developer to use in the materiel acquisition program. The first portion of this chapter outlined the JWGs that specifically apply to training devices or materiel systems with emphasis on the training developer's interaction. The focus of this information map is the JWGs that are primarily the responsibility of the combat developer. These JWGs do however require training developer attendance and/or input.

Types of JWGs

Five types of JWGs are discussed in this information map:

- MANPRINT joint working group (MJWG).
- TIWG.
- System MNS JWG.
- System ORD JWG.
- TSWG.

Working Group Composition

JWG membership can be comprised of any number of personnel and agencies that the JWG proponent (combat, materiel, or training developer) determines appropriate to the development of the requirements document or specific subject areas for the designated JWG.

MANPRINT JWG

The proponent combat developer chairs the MJWG. It is convened early in the system development process, as soon as possible after the need for a new or improved materiel system has been identified. MJWG scheduling normally occurs before milestone 0 (MNS approval) in the acquisition process. The training developer should attend this JWG to ensure that all MANPRINT requirements for training subsystems, to include training devices, are being considered or identified to the proponent combat developer. Of particular importance at this point are the SMMP and the ECA input considerations. The MJWG has three main purposes:

MANPRINT JWG (con.)

- Identify and manage MANPRINT issues throughout the materiel acquisition process.
- Provide oversight to ensure that the MANPRINT process is carried out and that the products are meaningful.
- Determine what MANPRINT analyses will be required for the proposed system or training subsystem development.

Test Integration Working Group (TIWG)

The materiel developer chairs the TIWG. The proponent is responsible to integrate/combine tests to develop the most efficient and cost-effective test program. This is accomplished through the TIWG. The TIWG is a working group designed to facilitate the integration of test requirements through close coordination between the materiel developer, training developer, combat developer, and operational testers with a purpose to minimize test development time and cost and preclude duplication between developmental and operational testing. The TIWG develops a TEMP that covers all T&E actions through the production/deployment phase of the acquisition process.

The TIWG has four primary purposes:

- Assist the materiel developer in the preparation of the TEMP.
- Monitor the test program's progress.
- Update the TEMP as required.
- Develop and finalize critical operational issues and criterias (COICs).

Test and evaluation (T&E) are integral parts of the materiel acquisition process. T&E ultimately provides the data to answer the basic concern of whether the system/device will perform as required: Can the soldier use it, is it training effective, and is it affordable? T&E is conducted to assist decision makers in reducing acquisition risks by--

- Validating attainment of technical performance specifications, objectives, and supportability.
- Examining materiel defects.

Test Integration Working Group (TIWG) (con.)

- Assessing training and operational effectiveness, suitability, and readiness.
- Determining training requirements, compatibility, and interoperability as required.

U.S. Army policy requires integrated testing where feasible and the use of all available data (for example, contractor, other services, allies) for evaluation purposes. These considerations are addressed during TIWG planning.

System Mission Need Statement (MNS) Joint Working Group (JWG)

The proponent combat developer for the system MNS convenes and chairs the MNS JWG. The intent of the MNS JWG is to obtain input from major players in the requirements documentation process to produce the system MNS. Training developer attendance at this JWG is essential to ensure that the proposed training strategy, including probable requirements for embedded training capabilities and training devices, is identified in the MNS. These actions permit programming of funds to support concept formulation and the eventual research and development (R&D) and procurement of the system and training support items. (See chapter 4 for additional Information.)

The development of the training strategy and the recognition of probable system TADSS requirements are supported by the early comparability analysis (ECA). If a formal ECA is not conducted, the training developer should use the ECA methodology to arrive at an initial training strategy and proposed TADSS requirements. For detailed information regarding this process, see the *Training Developers' Procedural Guide for Training Device Strategies.*

System Operational Requirements Document (ORD) Joint Working Group (JWG)

The proponent combat developer for the system ORD convenes and chairs the ORD JWG. It takes place after staffing of the draft system ORD. The purpose of the ORD JWG is to resolve differences arising from the staffing, to incorporate staffing comments, and to produce a final system ORD. Training developer input to the ORD JWG updates the training strategy and the need for training devices and embedded training capabilities. (See chapter 4 for additional information.)

System Operational Requirements Document (ORD) Joint Working Group (JWG) (con.)

The ORD does not undergo a second staffing after completion of the ORD JWG; accordingly, the training developer should be prepared to present the combat developer with an updated training support requirements (TSR) annex (annex C) based on comments from staffing and training decisions derived from the continuing training analyses that have occurred since the draft was developed and staffed with the system ORD.

Training Support Working Group (TSWG)

The materiel developer (designated major subordinate command (MSC) of AMC) having responsibility for development of the emerging system convenes and chairs the TSWG. The TSWG has three primary purposes:

- Coordinate or resolve issues for individual NETPs.
- Approve NETPs.
- Develop the consolidated NETP (CNETP).

The MSC consolidates and publishes NETPs as CNETPs. Individual TRADOC proponent training developers do not normally attend the TSWG; however, they are represented by the Systems Training Integration Division (STID), Training Development and Analysis Directorate (TDAD) at HQ TRADOC. The proponent training developer may be required to provide input for the NETP prior to the TSWG (see chapter 5).

Comment

Training developer input to all JWGs and related documentation discussed here is obtained from the STRAP and reformatted, as required, for requirements documentation purposes. If the training developer has developed and updated the STRAP, the required information is readily available for these JWGs, which ensures that training support requirements for the emerging system are considered for development, funding, and acquisition.

Pertinent Regulations and Publications

AR 350-35, *New Equipment Training*

AR 350-38, *Training Device Policies and Management*

AR 602-2, *Manpower and Personnel Integration (MANPRINT) in the Materiel Acquisition Process*

Pertinent Regulations and Publications (con.)

AR 700-127, *Integrated Logistic Support*

TRADOC Reg 71-9, *User Test and Evaluation*

Training Developers' Procedural Guide for Training Device Strategies

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Related Pages

Nonsystem Training Device Acquisition Process, pg. 2-3

System Training Device Acquisition Process, pg. 2-13

System Mission Need Statement, pg. 4-4

System Operational Requirements Document, pg. 4-9

Annex C, Training Support Requirements, pg. 4-20

System Training Plan, pg. 5-5

Basis of Issue Plan/Qualitative and Quantitative Personnel Requirements Information, pg. 5-9

Reliability, Availability, and Maintainability, pg. 5-17

Testing and Evaluation, pg. 5-28

New Equipment Training Plan, pg. 5-34

Concept Formulation, pg. 6-12

CHAPTER 8

VALIDATION/PRIORITIZATION AND REVIEW/APPROVAL PROCESS

Validation/Prioritization and Review/Approval Processes

Overview

Introduction

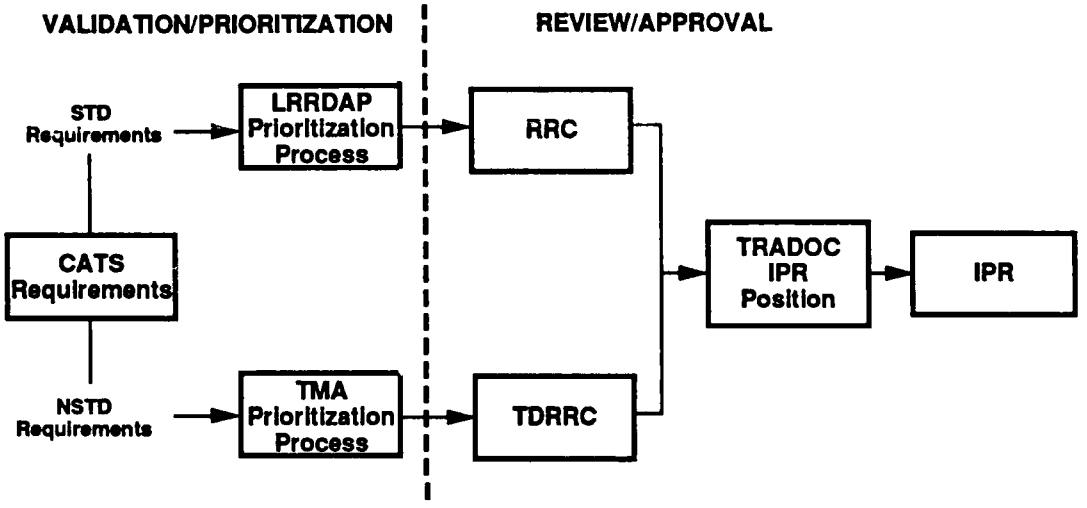
Throughout the development cycle of a training device, priorities must be assigned and decisions must be made regarding program direction and continuation. The joint working group (JWG) process (addressed in chapter 7) provides a forum for the majority of the preliminary decisions pertaining to training device program direction. However, the JWG process does not provide high-level decision makers the opportunity to observe program status and to provide direction. This chapter provides background on the processes used by combat developers, training developers, materiel developers, and decision makers to prioritize devices, determine program status, and provide development direction for system TADSS and NSTDs. Areas covered include the following:

- Validation/Prioritization--
  - Combined arms training strategy (CATS) prioritization.
    - -- Training mission area (TMA) prioritization process.
    - -- Long-range research, development, and acquisition plan (LRRDAP) prioritization process.
- Review/Approval--
  - Requirements review committee (RRC).
  - Training device requirements review committee (TDRRC).
  - In-process review (IPR).

Some of these processes and committees have application to both system TADSS and NSTDs while others apply only to one or the other. The different applications will be identified and explained as appropriate.

Process

To understand the process of prioritization and review of training device acquisition programs, each of the processes and committees listed above must be considered as a part of the overall process. As the following figure shows, the process begins with a prioritization of the device within the overall concept of the CATS. This strategy includes TADSS and all the training resources required to train the U.S. Army now and those required for future training.



If TADSS are required to support training for a new system, then the device acquisition program will follow the system documentation process, and the combat developer's RRC will review the requirements prior to approval. Training developer representation at this committee is provided by the System Training Integration Division (STID), Training Developments and Analysis Directorate (TDAD) at HQ TRADOC. The TDRRC reviews training device requirements data packages for each individual system device.

If the requirement is for an NSTD, then the process follows the NSTD requirements documentation process and is reviewed prior to approval by the TDRRC.

In either case ATSC periodically reviews the acquisition program throughout its development cycle at HQ TRADOC to obtain a TRADOC position on program direction prior to any IPR conducted by the materiel developer. Milestone decisions throughout the program are made at the IPRs.

CATS Prioritization

Training device requirements are considered validated when they are included in an approved CATS. Prioritization of these validated requirements is accomplished in one of two ways dependent on the category of device (nonsystem or system). NSTDs are prioritized under the TMA prioritization process while STDs are prioritized along with the system they support under the LRRDAP prioritization process.

- The TMA prioritization process establishes priorities for all NSTDs based on their criticality of need. Each NSTD requirement is evaluated against all other NSTD requirements to form a notional 1-N prioritization listing.

- The LRRDAP prioritization process establishes priorities for materiel system requirements. STDs are included in the acquisition programs of the materiel systems that they support and are prioritized with the systems.

RRC

The Deputy Chief of Staff for Combat Developments (DCSCD) convenes the RRC at HQ TRADOC to review all aspects of the final system ORD prior to recommending approval by the designated authority. The proponent training developer is normally represented at the RRC by the STID representative. Training developer input is essential at this review, since this is the last time the training developer is able to influence requirements prior to the development of a request for proposal (RFP) for the system and its training subsystem.

TDRRC

The TDRRC is chaired by the Director, Devices Management Directorate (DMD), ATSC with members from TRADOC and observers from STRICOM. The TDRRC is convened to review and recommend approval of requirements for new or modified training devices as required.

IPR

The materiel developer conducts IPRs throughout the system's or device's development cycle. The combat developer, the training developer, and others having input to the program attend the IPRs. An IPR is conducted before each decision point in the acquisition process and any time that major changes occur in the program. Concurrence and/or comments from all members of the IPR concerning program status and direction are consolidated and forwarded to appropriate decision makers for review/approval as appropriate.

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

HQTRADOC Memorandum, Subject: *Policy for TRADOC Materiel Documentation Review and Approval*

Related Pages

Combined Arms Training Strategy, pg. 8-5

Requirements Review Committee, pg. 8-8

Training Device Requirements Review Committee, pg. 8-11

In-Process Review, pg. 8-14

Introduction

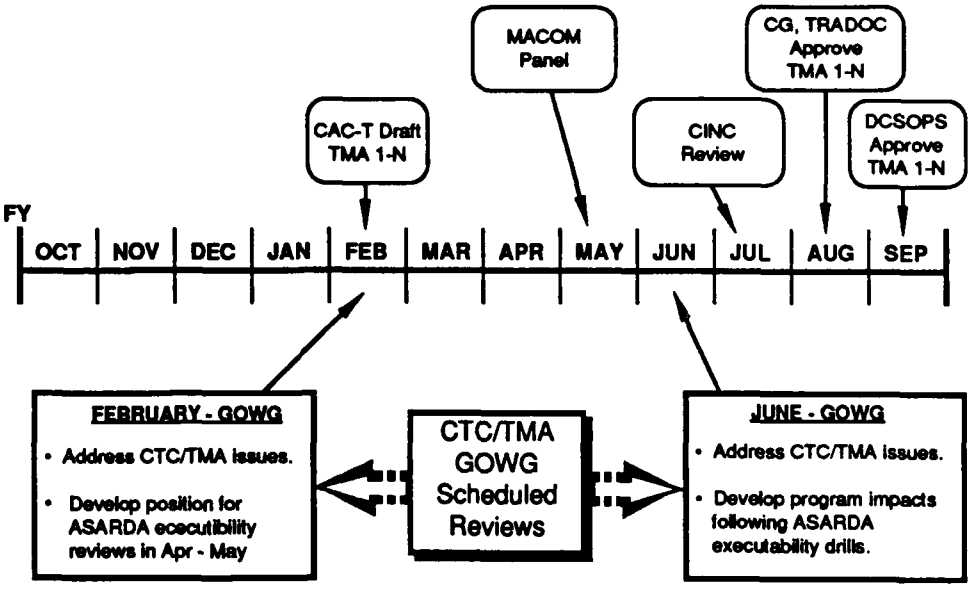
CATS is the overarching training strategy for the U.S. Army. It identifies training products, materiel, and resources required for current and future training. Integration of training devices into approved CATS serves as a validation of device requirements and permits the development of requirements documentation. CATS is an integral part of the Enhanced Concept-Based Requirements System (ECBRS). ECBRS consists of in-depth analyses of the current and projected threat in order to identify and resolve war-fighting capability issues. Products emanating from the ECBRS are incorporated into planning documents used to define and resource programs in the domains of doctrine, training, leader development, organizations, materiel, and soldier (DTLOMS).

Two products of the ECBRS that are critical to the prioritization and resourcing of training devices are the CATS and the LRRDAP. The CATS and the LRRDAP provide the framework for the prioritization of training devices competing for limited resources placed again acquisition programs.

TMA Prioritization Process

Since the CATS is the capstone document of the TMA of the ECBRS, NSTDs prioritized under CATS are said to be prioritized under the TMA prioritization process. This process establishes priorities for all NSTDs based on their criticality of need. The process is comprised of a number of procedures and decision points that culminate in a prioritized 1 through N (1-N) list of NSTDs. The following figure shows the events that take place each even- numbered calendar year in this prioritization process. The objective is to produce in September of each even-numbered calendar year a prioritized training resource list that enables TRADOC and HQDA to integrate NSTD funding requirements into the Program Objective Memorandum (POM).

TMA Prioritization Process (con.)



The process begins when combined arms command-training (CAC-T) drafts a 1-N notional list prioritizing NSTDs from proponents' input. The notional list is provided to the general officer working group (GOWG) for review and revision as required. CAC-T incorporates comments/revisions from the GOWG into a draft prioritization list and coordinates this list with MACOMs.

The ATSC and HQDA jointly chair a panel consisting of representatives from the MACOMs to further refine the draft prioritization list of the NSTDs. The refined list derived from this panel is coordinated with the Commanders in Chief (CINCs) of the MACOMs, and CAC-T prepares a final list that is presented to the CG TRADOC for approval. Upon commanding general (CG) TRADOC approval, the list is forwarded to DCSOPS for final approval and incorporation into the POM and long-range plans.

LRRDAP Prioritization Process

The LRRDAP is the long-range planning document for research, development, and acquisition of materiel systems identified as requirements under the ECBRS. The LRRDAP prioritization process establishes priorities for materiel system requirements. STDs are included in the acquisition programs of the materiel systems that they support and are prioritized with the systems. Requirements for prioritization of materiel systems for the LRRDAP are the responsibility of the proponent combat developer. Input to the combat developer by the proponent training developer is required to ensure training subsystems, including devices, are identified and included as part of system acquisition programs.

Comment

Additional details and explanations for this process are contained in TRADOC Regulation 350-40, *The Combined Arms Training Strategy.*

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

AR 350-38, *Training Device Policies and Management*

TRADOC Reg 350-40, *The Combined Arms Training Strategy*

Related Pages

Nonsystem Training Device Mission Need Statement, pg. 3-4

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Mission Need Statement, pg. 4-4

System Operational Requirements Document, pg. 4-9

Requirements Review Committee

Introduction

The RRC serves as the user representative for review, validation, and processing of requirements documentation for new systems. The committee ensures documents are complete and that they clearly state the required essential characteristics of the system in sufficient detail to allow the materiel developer to proceed with an RFP to industry for design and development of the system. Training developer representation to the RRC is provided by the STID, TDAD of the Deputy Chief of Staff for Training (DCST) at HQ TRADOC to ensure training subsystem requirements, including testing, are addressed in the requirements document.

Process

When the proponent combat developer has completed the system operational requirements document (ORD) package, it is forwarded to the DCSCD at HQ TRADOC for final review prior to being sent to the approval authority. The DCSCD coordinates the documentation with appropriate staff elements and schedules the RRC. The RRC is the committee that conducts this review. The RRC members conduct a line-by-line review. After this review the committee either recommends approval or returns the documentation to the proponent school for revision or with a disapproval and accompanying rationale.

Membership

The RRC is normally chaired by the Director of the Systems, Priorities, and Integration Directorate, DCSCD, HQ TRADOC and consists of the following permanent members:

- Scientific advisor (for major systems only).
- Director, Combat Service Support Directorate.
- Director, Combat Requirements Directorate.
- Director, Plans Directorate.
- Director, Training Development and Analysis.
- Director, Requirements and Programs Directorate.
- Director, Systems, Priorities, and Integration Directorate (chair).

Membership (con.)

The membership of the RRC may be extended to include other TRADOC directorates or other agencies as required for the review of documentation on specific systems. The Director, STID or a designated representative normally represents the training developer at RRCs.

Purpose

The RRC reviews each system ORD to ensure the following:

- It is supported by a valid need that cannot be solved by changes in doctrine, training, leader development, or organization.
- The system's operational and essential characteristics are realistic, are based on operational needs, and do not contain specifics that actually belong in the RFP.
- The documentation has been prepared and coordinated under current policy and guidance.
- The document is clear and concise (free of jargon and technical statements that are hard to understand).
- The training subsystem is addressed sufficiently to permit the identification of funding for training device concept formulation and eventual procurement.

After review of the requirements document, the RRC takes one of the following actions:

- Forwards the document through the DCSCD to the TRADOC approval authority.
- Returns the document to the proponent school for incorporation of RRC-directed changes.
- Disapproves the document and returns it to the proponent school with rationale for the disapproval.

Comment

Since the combat developer at the proponent school has the lead for development of the ORD and for preparation of the document for RRC review, it is essential for the training developer to work closely with the combat developer to ensure that all training requirements are incorporated in the document prior to the RRC. While approval of the system ORD constitutes the approval of system TADSS included in the document, the TDRRC will further review associated training device requirements documentation.

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

Related Pages

System Operational Requirements Document, pg. 4-9

Annex C, Training Support Requirements, pg. 4-20

Training Device Requirements Review Committee, pg. 8-11

Training Device Requirements Review Committee

Introduction

The TDRRC serves as the user representative for review, validation, and processing of all training device requirement documents. The committee ensures that documents are complete and that they clearly state the type of device the U.S. Army needs to support training and enhance combat proficiency. For NSTDs the committee reviews the completed ORD package. For system TADSS the TDRRC reviews the final training device requirements data package.

Process

The TDRRC constitutes the final reviewing authority for all training device requirements documentation.

Requirements documents ready for approval are forwarded to the Director, DMD for review and processing.

The Operations Division, DMD conducts initial evaluation, ensures accuracy/completeness, and schedules the document for presentation at the next committee meeting.

The committee secretary schedules meetings, notifies participants, and provides documents for review not later than 10 days prior to the meeting. A telephone poll may be conducted in lieu of a formal meeting.

TDRRC provides comments and recommendations during formal committee sessions. Concurrence/nonconcurrence for each requirements document is provided at the end of committee action.

Resolution of nonconcurrence is the responsibility of the DMD action officer.

Membership

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

Membership (con.)

Voting	Nonvoting
CASCOM	Materiel developer
CAC	Representative, proponent school
DMD ATSC, HQ TRADOC	DMD program manager
DCSCD, HQ TRADOC	Secretary, ATSC Operations
RTS ATSC	

Objectives

During the review of proposed training device requirements documents, committee members apply best military judgment to ensure the following major objectives, where applicable, have been met:

- Document complies with regulatory requirements and is complete.
- Adequate relationship exists between the statement of need, the threat, operational and training deficiency, and the essential characteristics of the proposed device.
- Documentation clearly reflects how a training device fits into the overall training strategy. Elements considered include but are not limited to type unit, estimated number of personnel to use or support the device, and ammunition trade-off (if applicable).

Other Considerations

Key considerations also covered in the TDRRC review are the following:

- Task list.
- Health hazard considerations.
- Human engineering and safety.
- Transportability.
- Operational environmental considerations.
- Storage and maintenance.
- Performance characteristics.
- Other service application.
- Training strategy.

Other Considerations (con.)

- Testing milestones.
- Cost assessment.
- Major Army command (MACOM) requirements.
- Degree of risk.
- Prediction of training/cost effectiveness.
- Reliability, availability,and maintainability (RAM) data.

Required Annexes and Attachments

The TDRRC ensures the following annexes/attachments, as appropriate, have been received and/or are available:

- Rationale annex.
- Coordination annex.
- Training device strategy.
- Executive summary of the training effectiveness analysis (TEA).
- RAM rationale report/executive summary (if available).
- Basis of issue plan/qualitative and quantitative personnel requirements information (BOIP/QQPRI) (if completed).

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

AR-350-38, *Training Device Policies and Management*

Related Pages

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Operational Requirements Document, pg. 4-9

Training Device Requirements Data Package, pg. 4-26

In-Process Review

Introduction

Within the materiel acquisition process, all systems or devices (except those being developed under the Designated Acquisition Program (DAP)) are reviewed throughout the development cycle under the IPR program.

The materiel developer conducts an IPR at the AMC major subordinate command (MSC) level. The AMC commander and the TRADOC commander normally exercise the joint AMC/TRADOC decision authority.

Process

Prior to an IPR, the materiel developer develops the IPR package and coordinates it with the IPR membership. Upon receipt of the IPR package for a new system acquisition the TRADOC system staff officer prepares a recommended TRADOC IPR position. This position is coordinated with the appropriate staff agencies for concurrence. If differences cannot be resolved by the TRASSO through this staffing process then a recommended position with the unresolved differences underscored, will be submitted to the Commanding General (CG) TRADOC for a decision. A TRADOC IPR position is obtained for all materiel acquisition programs. The training developer should provide input to the combat developer regarding the training subsystem for system positions. ATSC performs as the TRASSO for NSTD's.

The information in the IPR package is derived from the documentation developed to support the system or training device acquisition program. Many of these documents are described in this procedural guide. Others are peculiar to the materiel development community. A complete list of required documentation and formats to support an IPR can be found in the DOD 5000 series directives and instructions.

After coordination of the IPR package (and concurrence of all members if possible), the materiel developer schedules the IPR to present recommendations to the decision authority on program direction. If the TRADOC position, differs from the recommendations of the materiel developer, the TRADOC representative will defend the position at the IPR. The TRASSO represents TRADOC at IPRs for developing systems. ATSC is TRADOC's representative at NSTD IPRs.

IPR Participants

IPR participants are designated as members or observers. For NSTD development, IPR composition is as follows:

- Voting members are--
  - Materiel developer (chair).
  - TRADOC.
  - Army Materiel Support Analysis Activity (AMSAA).
  - Operational Test and Evaluation Command (OPTEC).
- Observers, identified and invited by the IPR chair, include--
  - HQDA representatives.
  - Funding agencies.
  - Manpower and personnel integration (MANPRINT) participants.
  - Others involved in the device development process.

Purpose

The purpose of the IPR is to make decisions relevant to the acquisition, testing or type classification of an item of materiel under development or procurement.

The following are major considerations at an IPR:

- What is the status of the program as opposed to what it should be?
- Where is the program going, and how does the program executive officer/project manager (PEO/PM) propose to get there?
- What risks exist in the program, and how does the PEO/PM intend to identify and close those risks?
- Is the PEO's/PM's proposed approach affordable?

Types of IPRs and Frequency

IPRs are normally conducted prior to each decision point in the acquisition process and at any time during the system's or device's development cycle when significant changes occur in the program. The materiel developer and combat/training developer determine whether a formal or informal IPR is required.

- Formal IPRs are normally conducted by conference. A conference is not required when all members unconditionally concur with the materiel developer's course of action as documented in IPR supporting documents. Written statements of unconditional concurrence must accompany transmittal of the document to the approval authority.
- The materiel developer may convene informal IPRs as required or when requested by a member. The IPR is used to review program status and determine appropriate courses of action when a formal decision is not required.
- Special IPRs may be directed as required for major decisions other than preprogrammed or planned milestone documentation. These IPRs require the same documentation and concurrence procedure as the formal IPR.

Required Information

As with almost everything in acquisition programs, the scope of the required information is tailored depending on the specific program. Information in the following areas is required for IPRs at milestone decision reviews:

- Decision requested.
- Program execution status (developmental efforts and financial management).
- Threat highlights and existing system shortfalls (for system acquisition programs) or training shortfalls (for NSTD acquisition programs).
- Alternatives assessed and results.
- Most promising alternative and rationale.
- Acquisition strategy (including test and evaluation planning, contracting approach, and cooperative opportunities).

Required Information (con.)

- Cost drivers and major trade-offs.
- Risk assessment and plans to reduce or eliminate risk.
- Affordability of selective alternative (funding and manpower).
- Recommendations.

Some of these areas are of more importance at different times within the program. This is why tailoring of the IPR is not only authorized but desired.

IPR Results

Documentation and approval of IPR actions normally occur as follows:

- IPR deliberations are recorded in the minutes and prepared by the chair. All members must sign the minutes before the results are forwarded for approval. The minutes will include, at a minimum--
  - IPR conclusions and recommendations.
  - Member agency positions.
  - Special input as required.
- Formal and special IPR results are documented and forwarded for approval within two working days of IPR conclusion.
- Approval authority announces decisions to all IPR participants within ten working days.
- The IPR chair distributes the approved results to all participants.

Pertinent Regulations and Publications

DODI 5000.2, *Defense Acquisition Management Policies and Procedures*

AR 70-1, *Army Acquisition Policy*

Related Pages

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Operational Requirements Document, pg. 4-9

Appendix A, Nonsystem Training Device Life Cycle Model, pg. A-1

Appendix B, System and Training Subsystem Life Cycle Model, pg. B-1

CHAPTER 9

MODIFICATION MANAGEMENT

Modification Management

Introduction

For more than 20 years, the U.S. Army product improvement programs (PIPs) were submitted by the system manager to HQDA for approval, and engineering change proposals (ECPs) were managed in a completely separate system. In an effort to bring system changes under one process, the modification management (MM) program was developed. MM encompasses all hardware, firmware, and software changes to type classified materiel. Class II ECPs (those that do not change the form or function of the item) are not under the MM process.

Objectives

The objectives of the U.S. Army MM process are to--

- Provide a single integrated process to manage all modifications to U.S. Army materiel.
- Establish better management of modification by giving the appropriate program manager more flexibility and responsiveness.
- Enhance block modification planning and execution and ensure that production and retrofit decisions are linked.
- Reduce impact on field caused by change.
- Provide control and discipline for the procedures that focus on significant modification efforts and resulting costs.

Reasons for MM

Changes to system configuration are normally made for one of the following reasons:

- Enhanced safety.
- Enhanced operational capability.
- Energy conservation.
- Operation and support cost reduction.
- Deficiency correction.

Reasons for MM (con.)

- Interoperability.
- Manpower and personnel integration (MANPRINT) considerations.

A modification can come from a variety of sources: contractor, user, or any agency in the U.S. Army. In most cases the originator must forward a proposed modification to the proponent for consideration.

Comment

Modification should be considered only after changes to doctrine have been evaluated and rejected or improvements to training or organization have been made. Modification to existing materiel systems is considered prior to acquiring or developing a new system. When a system or end item reaches milestone III, it is scheduled for a milestone decision review (MDR) for approval to begin production. The proponent may propose modifications, supported by adequate documentation consistent with the current MM guidance *Policy for TRADOC Materiel Documentation Review and Approval* and AR 70-1, *Army Acquisition Policy.*

MM is not to be used as a substitute to the materiel requirements documentation process. If a recommended modification will alter the capabilities of the materiel system or training device, then a change must be made to the operational requirements document (ORD) or a new ORD must be developed and approved. Changes to materiel capabilities are to be based on approved requirements.

Materiel Developer Responsibilities

The materiel developer (AMC) serves as the executive agent for HQDA on policy matters pertaining to the MM process and is responsible for coordinating the MM process. The materiel developer will--

- Ensure that each modification is adequately reviewed and evaluated, all integrated logistics support items are properly examined, and MANPRINT concerns and consideration are addressed.
- Prepare, staff for approval, distribute, and maintain the test and evaluation master plan (TEMP), when required, and obtain critical operational issues and criteria (COIC) from the combat developer.
- Receive and decide on modifications within designated authority.

Materiel Developer Responsibilities (con.)

- Ensure that upgrades to simulators and training devices caused by a system change (or vice versa) are included in the modification actions.
- Review the combat developer coordination check sheet to determine if formal coordination with the combat developer is required.
- Prepare the system improvement plan (SIP) for review by the program executive officer (PEO) or materiel developer and the combat developer.

Combat Developer Responsibilities

The Combat developer is the primary TRADOC agency responsible for the MM process. This responsibility includes involving the training developer and the materiel developer in coordinating modifications that impact their respective areas. The combat developer provides a position recommendation to the designated decision level on the following topics:

- Need.
- Funding requirements.
- SIP priority.
- SIP impact.
- Operating and support cost.
- Training and training devices.
- Threat.
- TEMP.
- Logistics impact.
- MANPRINT considerations.
- Doctrine.

The decision authority for modifications is linked to funding levels of the proposal change. For the proponent that link may be the combat developer, school commandant, or HQ TRADOC Materiel Evaluation Committee (TMEC). Decisions made at one level may be appealed to the next higher level.

Training Developer Responsibilities

To interact in the MM process, the training developer must coordinate closely with the combat developer. In most cases the training developer's responsibility is to assess the training impact of the proposed modifications (for example, additional instruction at the institution sustainment training impacts, and training device hardware changes). The training developer must ensure that the level and the impact of these modifications are provided to the combat developer for inclusion in MM documentation.

System Improvement Plan (SIP)

The SIP is a requirements-oriented document designed to provide a comprehensive plan of all ongoing and planned modifications to a system. The program sponsor prepares the SIP for the materiel developer and the combat developer counterpart. It is reviewed annually in conjunction with the planning, programming, budgeting, and execution system (PPBES) cycle. Modifications requiring approval by the program sponsor or higher authority must be consistent with the requirements shown in the SIP. The combat developer prioritizes the modifications in the SIP. A SIP is prepared for all acquisition category (ACAT) II systems and higher programs.

Preplanned Product Improvement (P^3I)

P^3I is the planned evolutionary improvement of a developmental system to enhance future application of projected technology. It is an acquisition strategy that minimizes risk and consciously integrates advanced technology through planned incremental upgrades to the developmental system. Included under the P^3I concept are improvements planned for existing systems that go beyond the current performance envelope to achieve a needed operational capability. P^3I requirements are documented in the system or nonsystem training device MNS and ORD, and the funding considerations for P^3I are included in the total life cycle cost estimate of the developmental program.

Pertinent Regulations and Publications

AR 70-1, *Army Acquisition Policy*

HQ TRADOC Memorandum, Subject: Policy for TRADOC Materiel Documentation Review and Approval, dated 21, April 1993.

Related Pages

Nonsystem Training Device Mission Need Statement, pg. 3-4

Nonsystem Training Device Operational Requirements Document, pg. 3-9

System Mission Need Statement, pg. 4-4

System Operational Requirements Document, pg. 4-9

System MANPRINT Management Plan, pg. 5-23

Testing and Evaluation, pg. 5-28

APPENDIX A

NONSYSTEM TRAINING DEVICE LIFE CYCLE MODEL

Appendix A

Nonsystem Training Device Life Cycle Model

Introduction

Training devices follow the same life cycle process as weapon or equipment systems. This process is commonly referred to as the life cycle model (LCM) and is described in chapter 2 of this procedural guide. The LCMs in this appendix has been tailored to show the relationships and interrelationships of the training developer's actions and products within the NSTD acquisition process.

Purpose

The purpose of the life cycle model contained in this appendix is twofold:

- To graphically present the life cycle model of an NSTD from identification of the training deficiency through fielding and postfielding actions.
- To provide quick reference to the appropriate section of the procedural guide covering the training developer's actions and requirements as the NSTD proceeds through the management model.

NSTD LCM

Since the NSTD has its own requirements document, the LCM is tied to the peculiarities of the development and approval of the NSTD operational requirements document (ORD). The model used for this purpose is based on the NSTD acquisition process outline discussed in chapter 2 of this procedural guide. Research, development, and acquisition of NSTDs differ somewhat from systems. These differences are evident in the decision points and training developer actions depicted in the LCM shown on pages A-3 and A-4. A comparison of this model with the system model shown in appendix B will help point out these differences. The NSTD LCM is presented in two formats.

NSTD LCM (con.)

- The model on page A-3 presents in a sequential line each of the requirements for the process. This format highlights with diamonds specific decision points throughout the process. The agency responsible for the action is shown. Page numbers by each action refer to a specific location in the procedural guide where information pertinent to that action can be found. This format provides all of the major actions and supporting documents that are required in the NSTD acquisition process.

- The model on page A-4 is presented in less detail and is designed to show the interrelationship of the actions taking place throughout the materiel acquisition process.

Key features of this model are the following:

- All major actions and products for the process are depicted relative to the acquisition milestones and phases.

- Decision points are highlighted and shown as diamonds.

- Actions and products are keyed to the pages in the procedural guide where information pertinent to related procedures can be found.

Pertinent Regulations and Publications

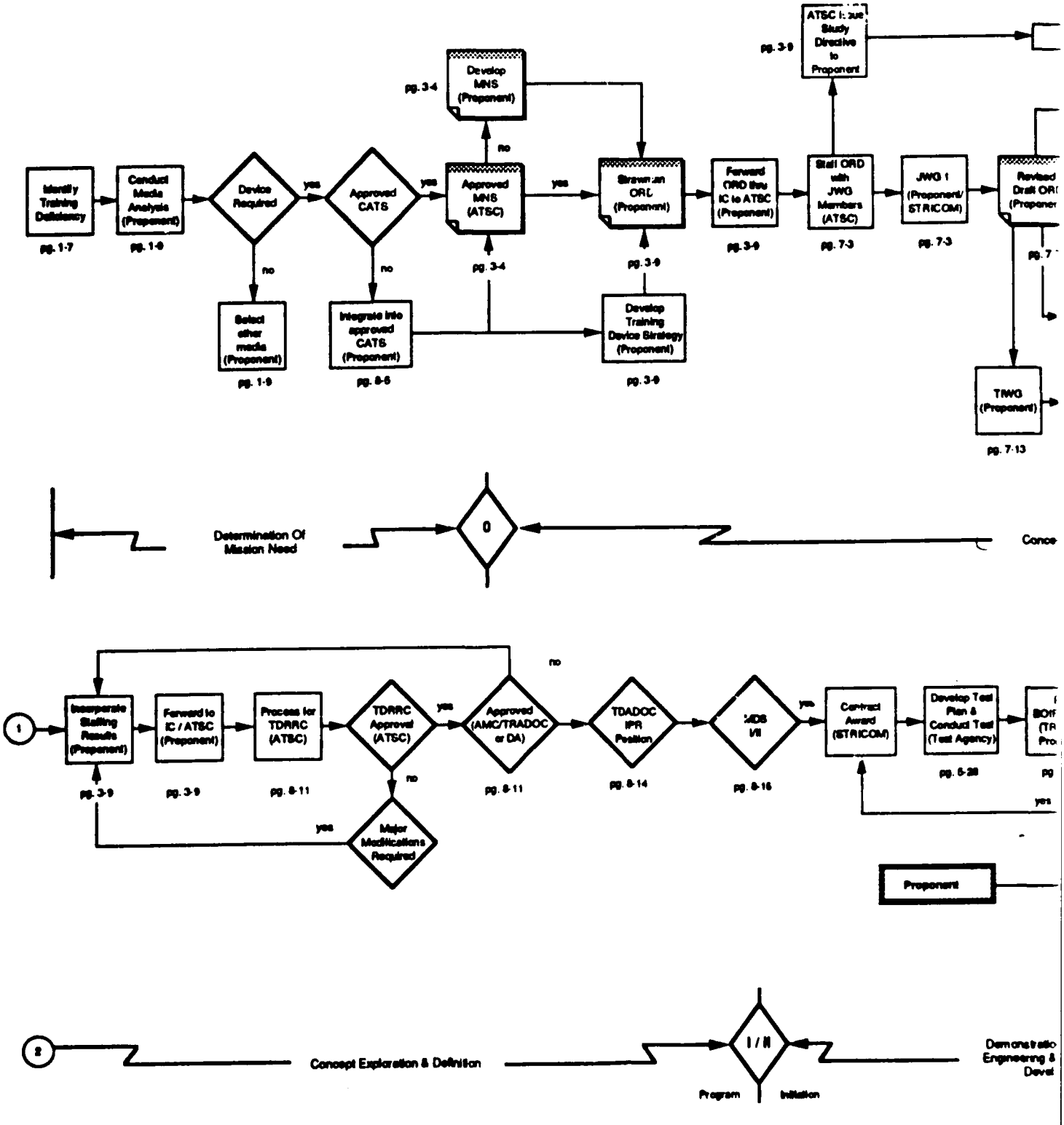
DODI 5000.2, *Defense Acquisition Management Policies and Procedures*

AR 70-1, *Army Acquisition Policy*

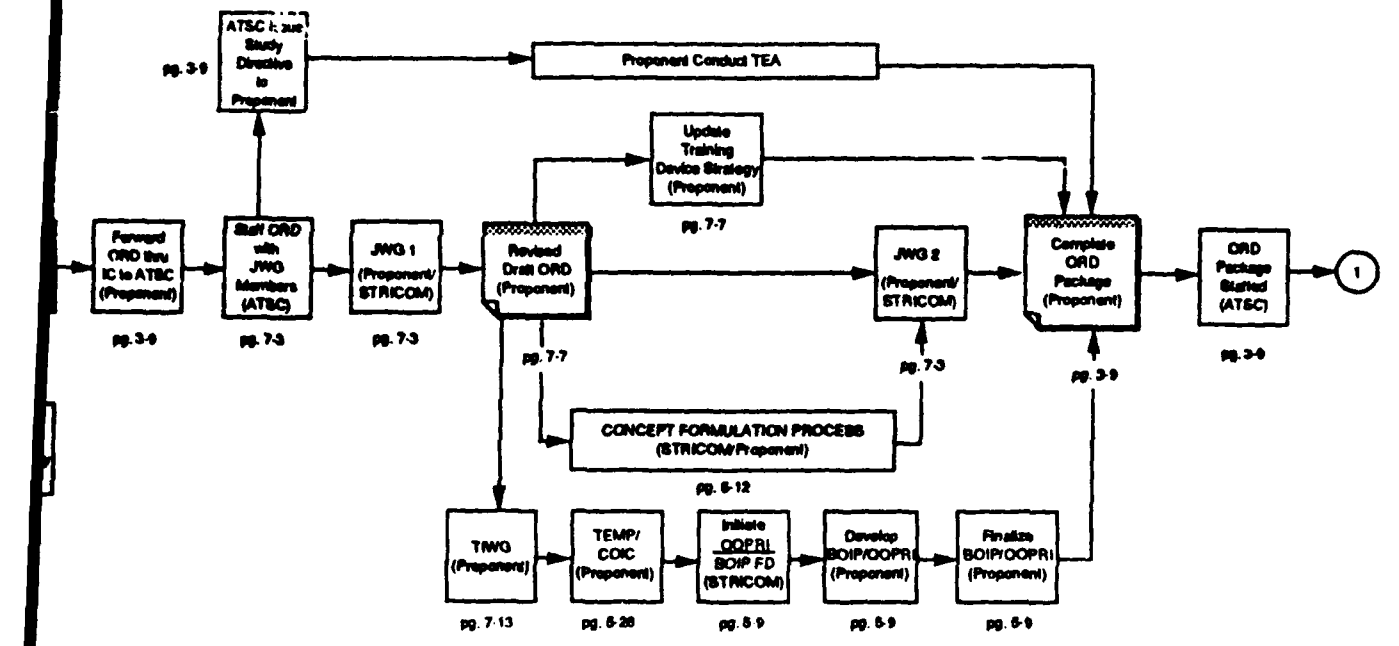
Related Pages

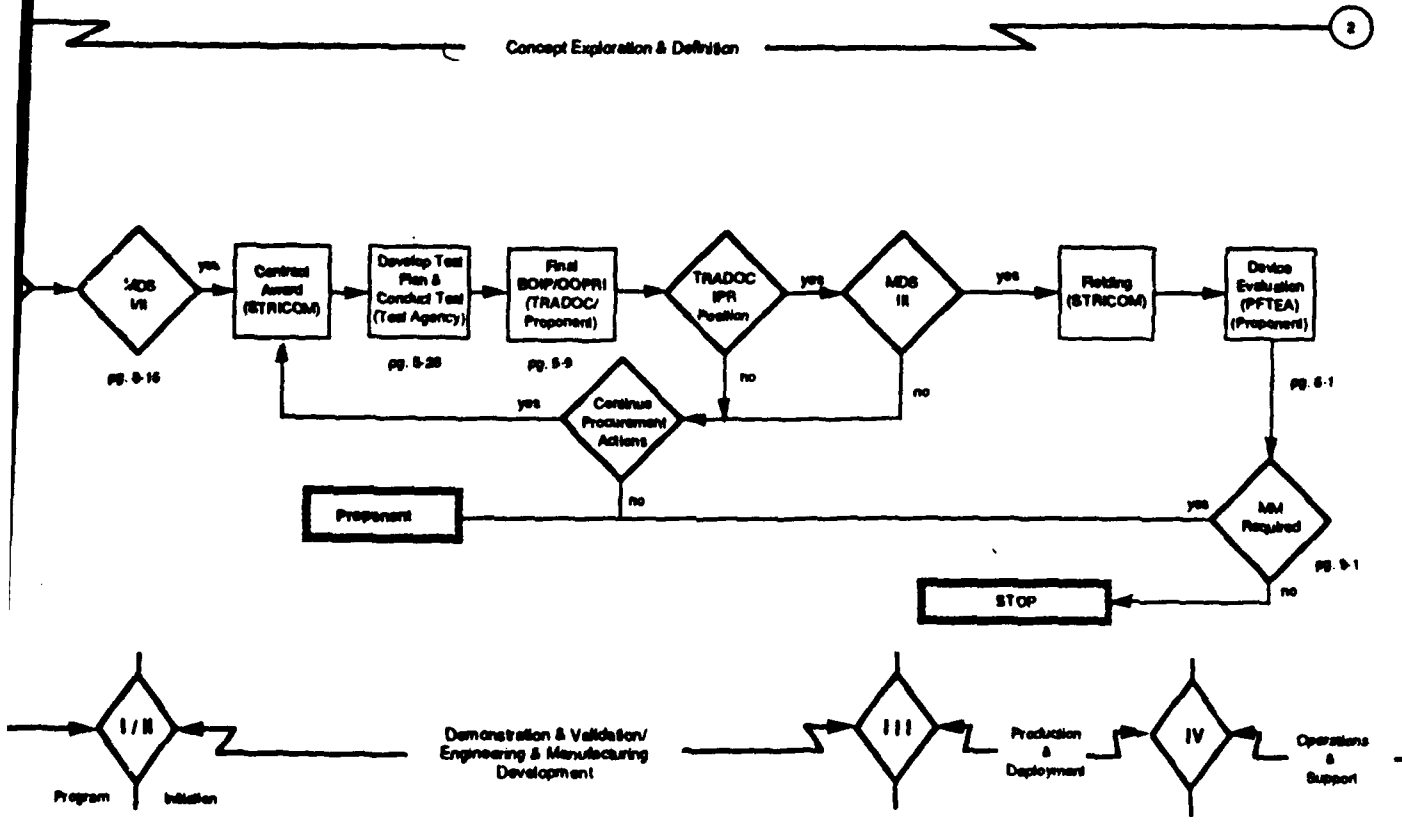
Nonsystem Training Device Acquisition Process, pg. 2-3

NONSYSTEM TRAINING DEVICE LIFE CYCLE MOD



TRAINING DEVICE LIFE CYCLE MODEL (NSTD LCM)





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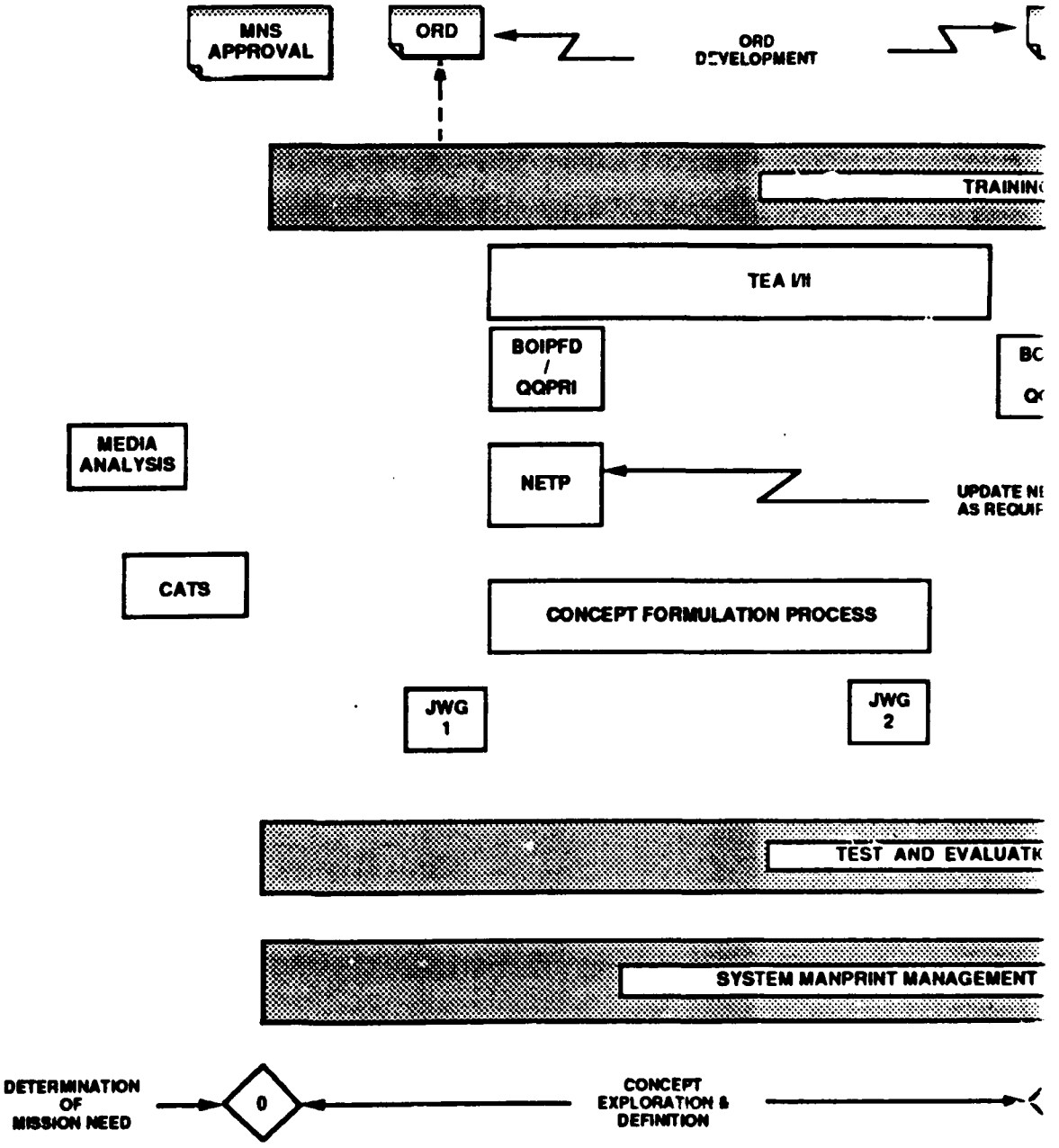
MNS APPROVAL
ORD
ORD DEVELOPMENT
TRAININ
TEA I/II
BOIPFD / QQPRI
BC
QC
MEDIA ANALYSIS
NETP
UPDATE NE AS REQUIR
CATS
CONCEPT FORMULATION PROCESS
JWG 1
JWG 2
TEST AND EVALUATI
SYSTEM MANPRINT MANAGEMENT
DETERMINATION OF MISSION NEED
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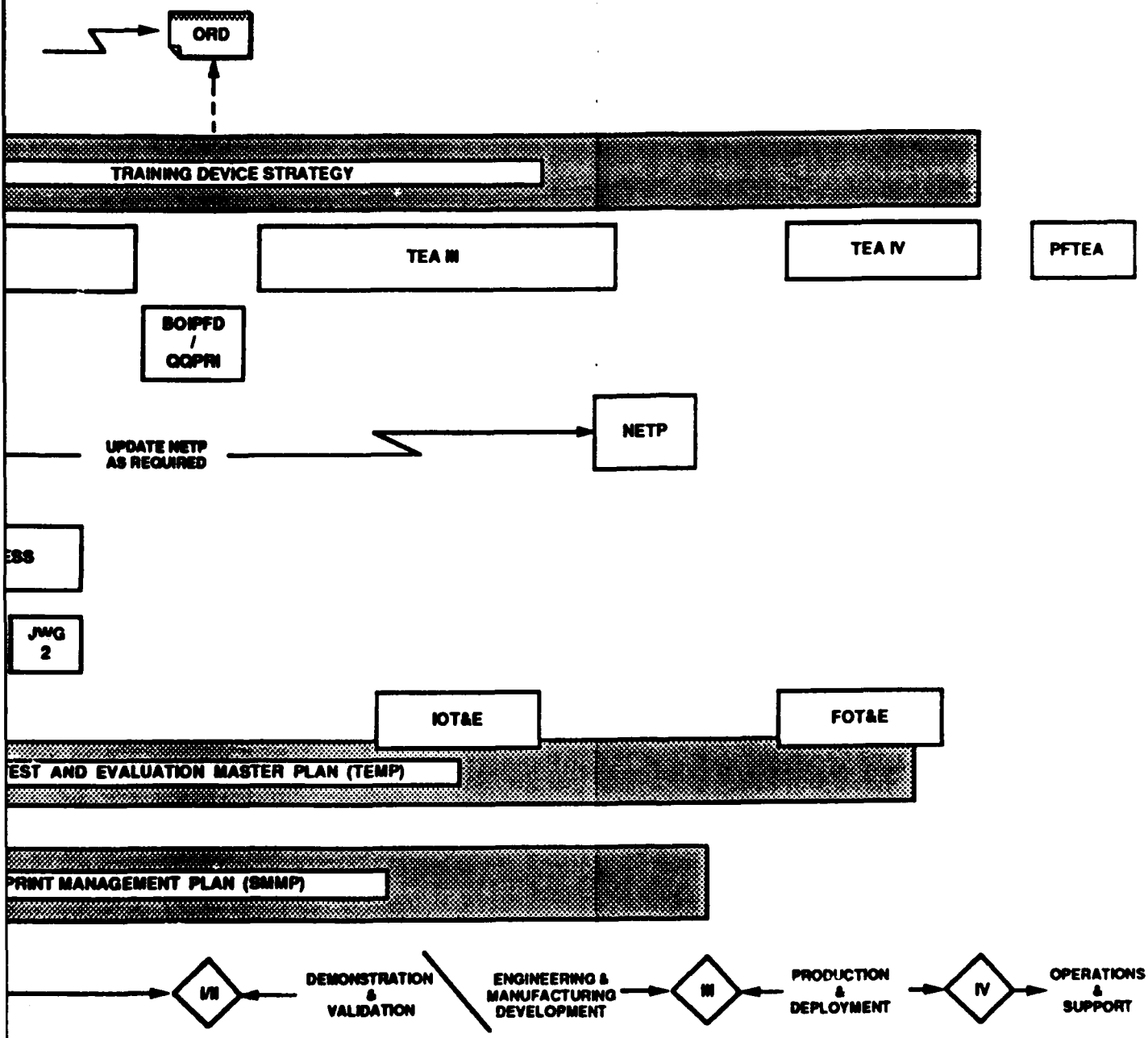
CONCEPT EXPLORATION & DEFINITION

TRAINING DEVICE LIFE CYCLE MODEL (NSTD LCM)



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APPENDIX B

SYSTEM AND TRAINING SUBSYSTEM LIFE CYCLE MODEL

Appendix B

System and Training Subsystem Life Cycle Model

Introduction

Training subsystems, including training devices, are developed and procured within the same acquisition process as the weapon or equipment system that they will support. This process is commonly referred to as the Life Cycle Model (LCM) and is described in chapter 2 of this procedural guide. The LCM in this appendix has been tailored to show the relationships and interrelationships of the training developer's actions and products within the system development and acquisition process.

Purpose

The purpose of the LCM contained in this appendix is twofold:

- To graphically present the life cycle of a system and its associated training subsystem from identification of the requirement through fielding and postfielding actions.
- To provide quick reference to the appropriate section of the procedural guide covering the training developer's actions and requirements as the system with its training subsystem proceeds through the model.

System LCM

Since training devices and other training support equipment are developed concurrently with the system they will support, it is necessary to depict the training developer's actions within the framework of the system's LCM. The LCM used for this purpose is a tailored LCM based on the system TADSS acquisition process outline discussed in chapter 2 of this procedural guide. The model in this appendix has been further tailored to show actions and products required from combat developers and training developers. The LCM for developing systems and training subsystems is presented in two formats.

System LCM (con.)

- The model on page B-3 presents in a sequential line each of the requirements for the process. This format highlights as diamonds specific decision points throughout the process. The agency responsible for the action is shown. Page numbers by each action refer to a specific location in the procedural guide where information pertinent to that action can be found. This format provides all of the major actions and supporting documents that are required in the system and training subsystem acquisition process.

- The model on page B-4 is presented in less detail and is designed to show the interrelationship of concurrent actions taking place throughout the materiel acquisition process.

Key features of this model are the following:

- All major actions and products for the process are depicted relative to the acquisition milestones and phases.

- Decision points are highlighted and shown as diamonds.

- Actions and products are keyed to the pages in the procedural guide where information pertinent to related procedures can be found.

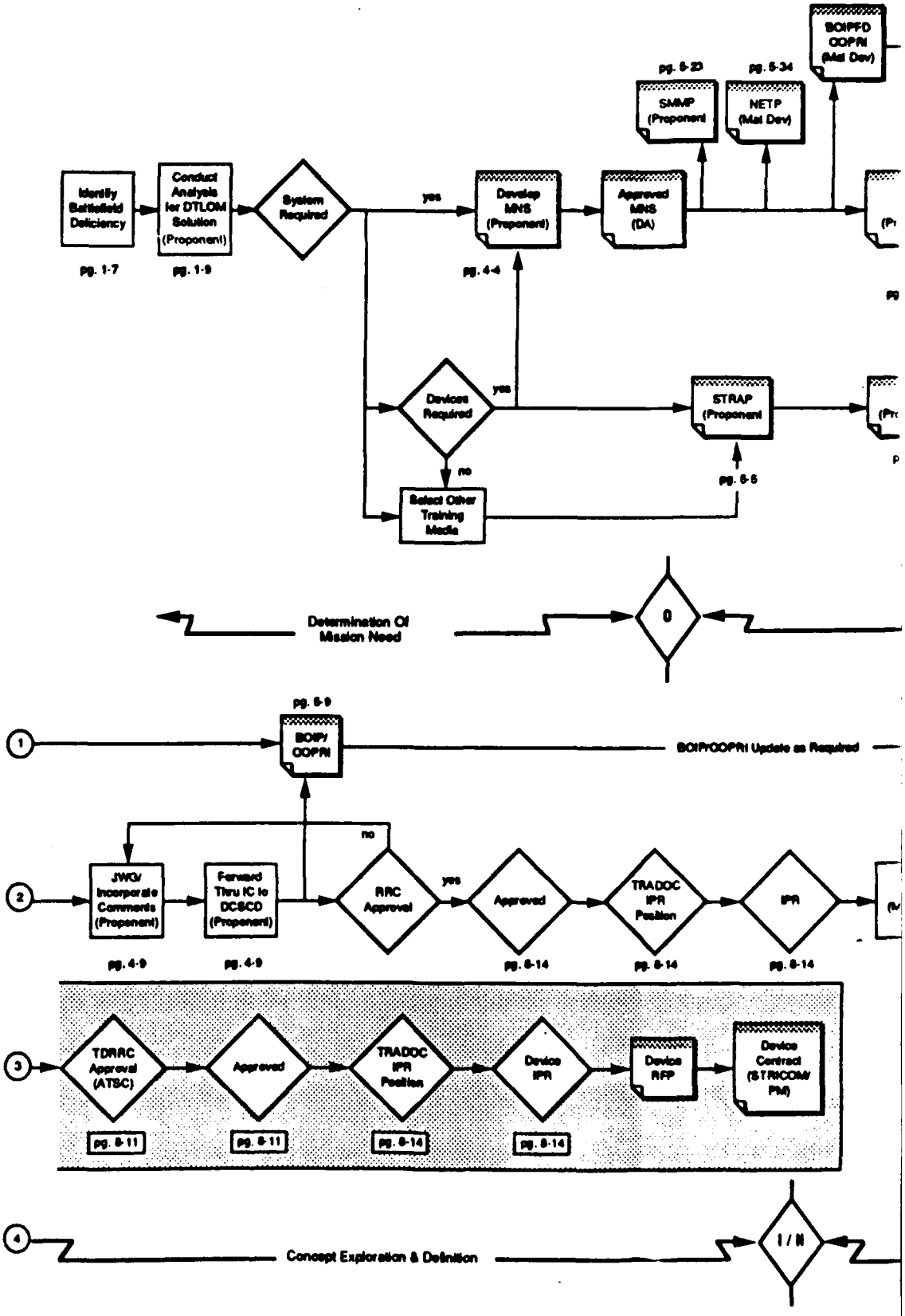
Pertinent Regulations and Publications

DODI 5000.2, *Defense Acquisition Management Policies and Procedures*

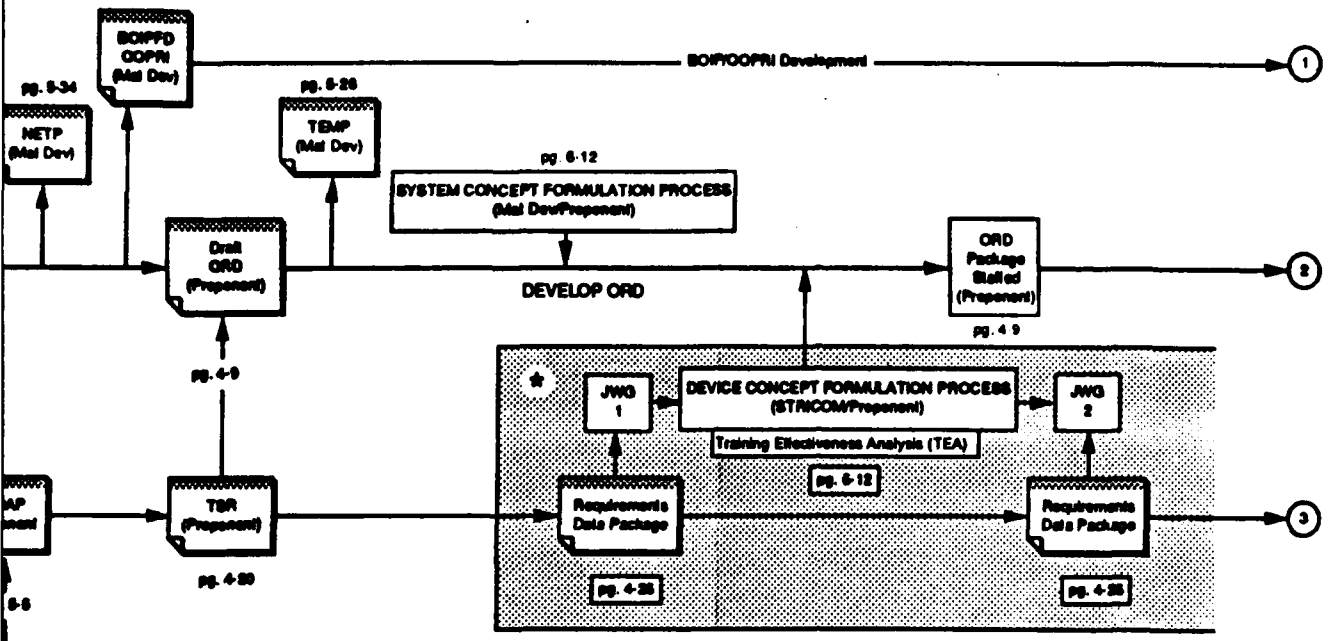
AR 70-1, *Army Acquisition Policy*

Related Pages

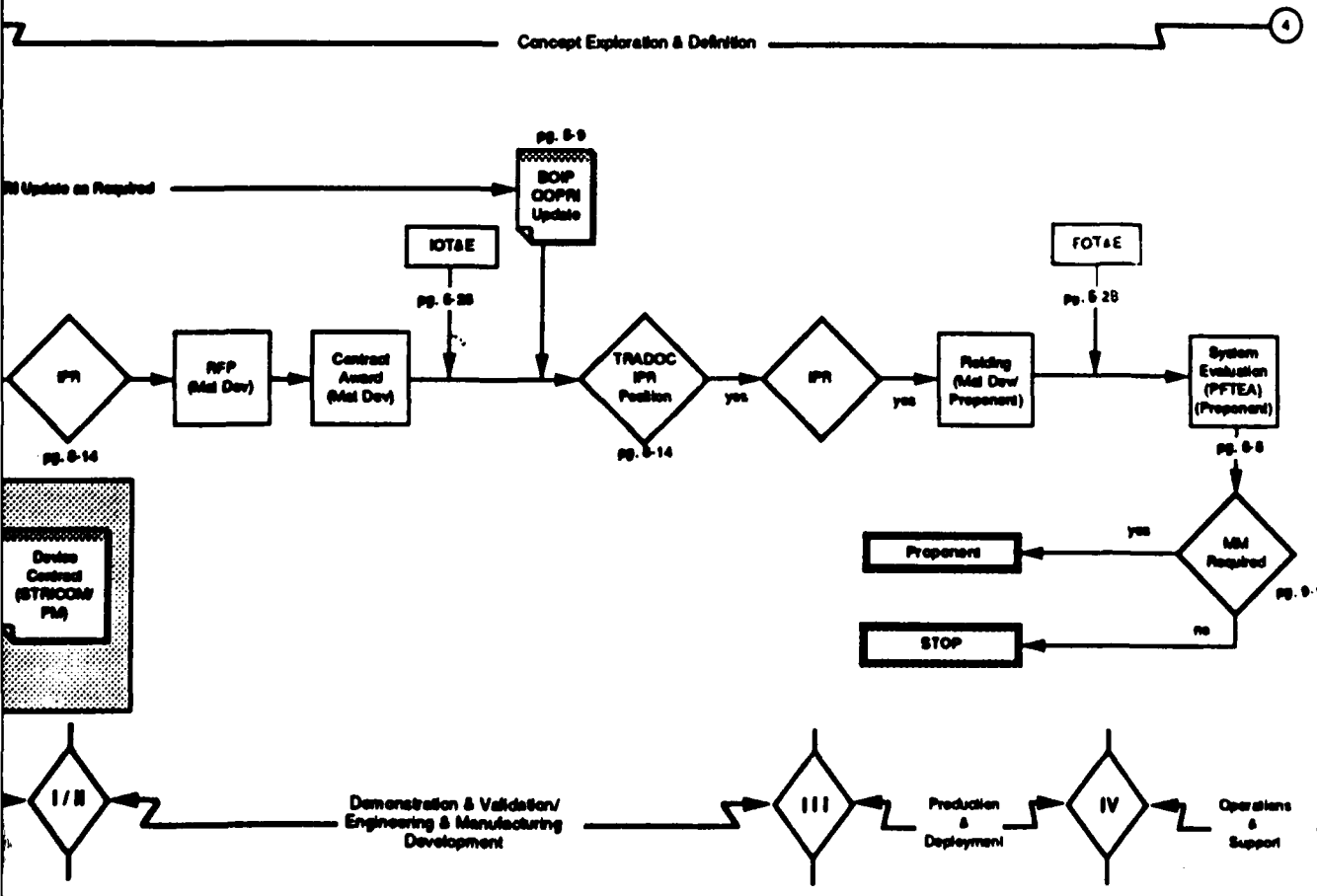
System Training Device Acquisition Process, pg. 2-13


BOIPFD COPRI (Mat Dev)
pg. 8-23
SMMP (Proponent)
pg. 8-34
NETP (Mat Dev)
Identify Battlefield Deficiency
pg. 1-7
Conduct Analysis for DTLOM Solution (Proponent)
pg. 1-9
System Required
yes
Develop MNS (Proponent)
pg. 4-4
Approved MNS (DA)
Devices Required
yes
STRAP (Proponent
pg. 8-5
no
Select Other Training Media
Determination Of Mission Need
0
pg. 8-9
1
BOIP/ COPRI
BOIP/COPRI Update as Required
no
2
JWG/ Incorporate Comments (Proponent)
pg. 4-9
Forward Thru IC to DCSCD (Proponent)
pg. 4-9
RRC Approval
yes
Approved
pg. 8-14
TRADOC IPR Position
pg. 8-14
IPR
pg. 8-14
3
TDRRC Approval (ATSC)
pg. 8-11
Approved
pg. 8-11
TRADOC IPR Position
pg. 8-14
Device IPR
pg. 8-14
Device RFP
Device Contract (STRICOM/ PM)
4
Concept Exploration & Definition
I / N

AND TRAINING SUBSYSTEM LIFE CYCLE MODEL



★ The shaded portion depicts system training device development. It can begin when sufficient information is available from the system to begin device concept formulation



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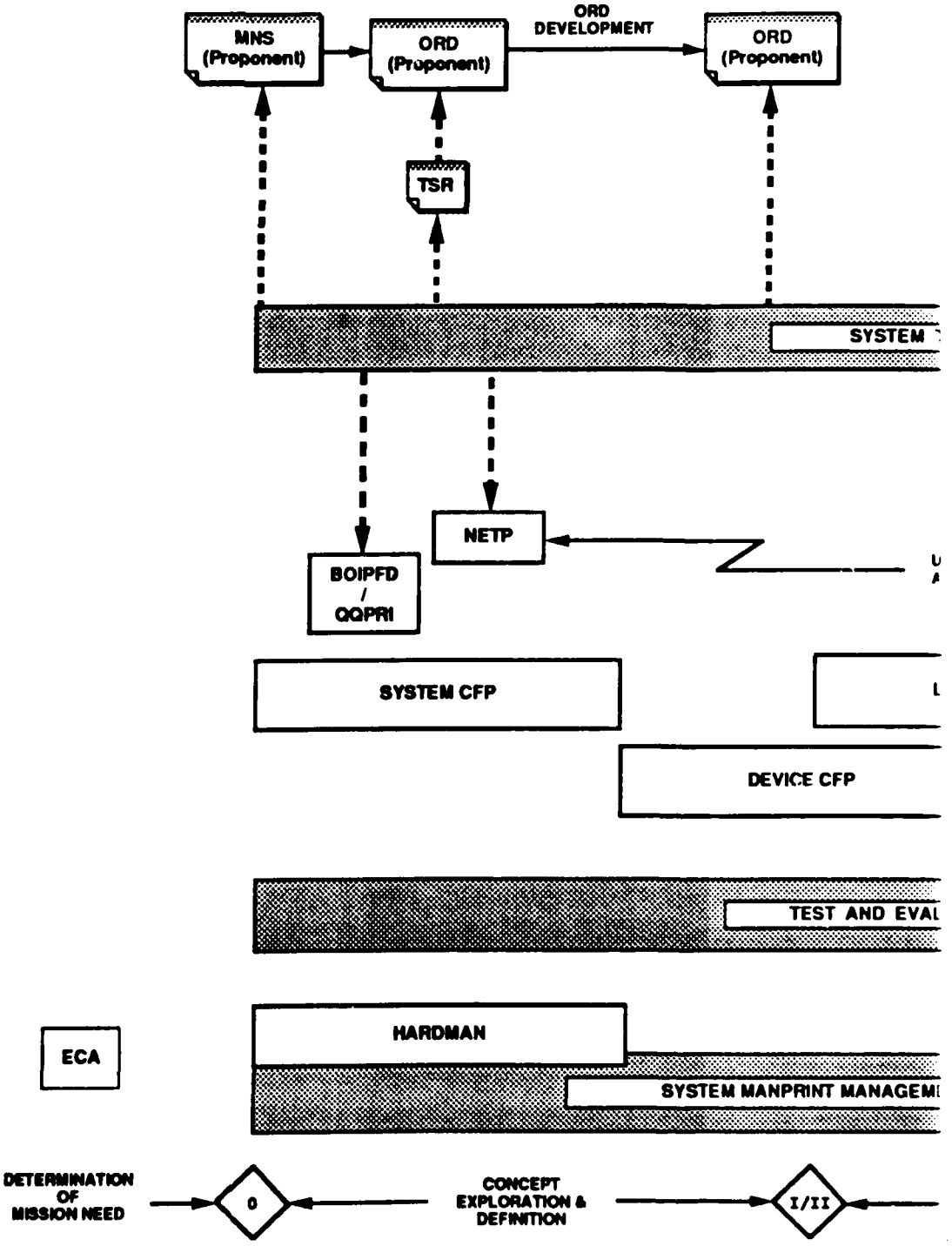
MNS
(Proponent)
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ORD
DEVELOPMENT
ORD
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TSR
SYSTEM
NETP
BOIPFD
/
QQPRI
SYSTEM CFP
DEVICE CFP
TEST AND EVAL
ECA
HARDMAN
SYSTEM MANPRINT MANAGEM
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MISSION NEED
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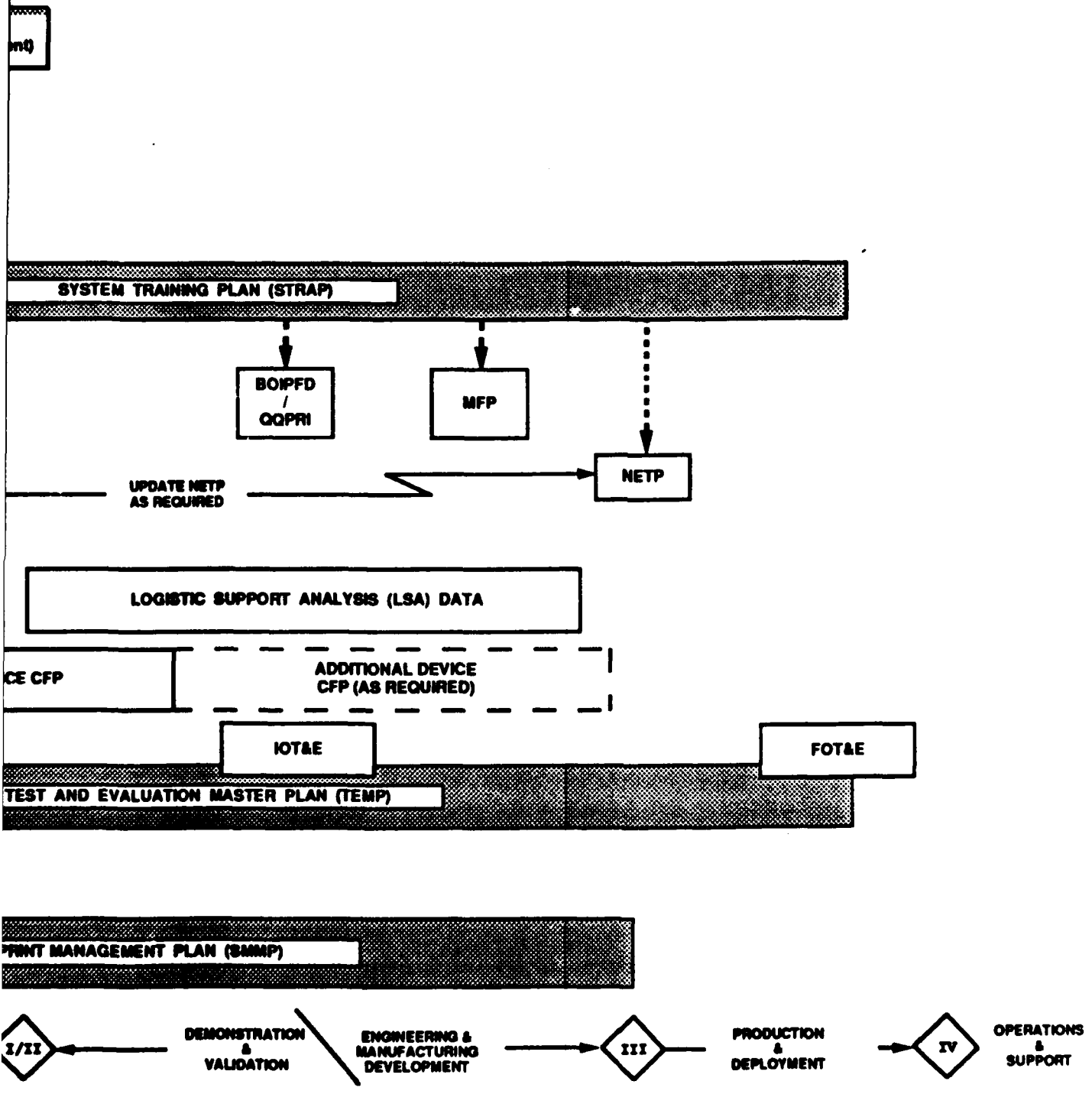
CONCEPT
EXPLORATION &
DEFINITION
I/II

EM AND TRAINING SUBSYSTEM LIFE CYCLE MODEL



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APPENDIX C

ACRONYMS

APPENDIX C

Acronyms

ACAT	Acquisition Category
AC	Active Component
ALDT	Administrative and Logistics Down Time
AMC	Army Materiel Command
AMSAA	U.S. Army Materiel Support Analysis Activity
AMTAS	Army Modernization Training Automation System
AOIC	Additional Operational Issues and Criteria
ARSTAF	Army Staff
ARTEP	Army Training Evaluation Plan
ASARDA	Assistant Secretary of the Army for Research, Development and Acquisition
ASI	Additional Skill Identifier
ATSC	Army Training Support Center
BCE	Baseline Cost Estimate
BCS	Baseline Comparative System
BDP	Battlefield Development Plan
BOC	Best Operational Capability
BOI	Basis of Issue
BOIP	Basis of Issue Plan
BOIPFD	BOIP Feeder Data
BTA	Best Technical Approach
C^3I	Command, Control, Communications, and Intelligence
CAC	Combined Arms Command

CAC-T	Combined Arms Command-Training
CASCOM	Combined Arms Support Command
CATS	Combined Arms Training Strategy
CFP	Concept Formulation Package
CG	Commanding General
CINC	Commander in Chief
CNETP	Consolidated New Equipment Training Plan
COEA	Cost and Operational Effectiveness Analysis
COIC	Critical Operational Issues and Criteria
DA	Department of the Army
DAP	Designated Acquisition Program
DCSCD	Deputy Chief of Staff for Combat Development
DCSOPS	Deputy Chief of Staff for Operations and Plans
DCST	Deputy Chief of Staff for Training
DIA	Defense Intelligence Agency
DMD	Device Management Directorate
DOD	Department of Defense
DODI	Department of Defense Instructions
DPAMMH	Direct Productive Annual Maintenance Man-hours
DS	Direct Support
DTLOMS	Doctrine, Training, Leader Development, Organizations, Materiel and Soldier
ECA	Early Comparability Analysis
ECCM	Electronic Counter-Countermeasures
ECP	Engineering Change Proposal

ERC	Executive Review Committee
EUT&E	Early User Test and Experimentation
FD/SC	Failure Definition and Scoring Criteria
FDT&E	Force Development Test and Experimentation
FOC	Full Operational Capability
FOT&E	Follow-on Operational Test and Evaluation
FSD	Full-scale Development
GOWG	General Office Working Group
GS	General Support
HARDMAN	Hardware Versus Manpower
HFE	Human Factors Engineering
HQ	Headquarters
HQDA	Headquarters, Department of the Army
ILS	Integrated Logistics Support
ILSP	Integrated Logistics Support Plan
IOC	Initial Operating Capability
IOT&E	Initial Operational Test and Evaluation
IPR	In-Process Review
IT	Innovative Test
JWG	Joint Working Group
LCCS	Life Cycle Cost Summary
LCM	Life Cycle Model
LRAMP	Long Range Army Materiel Requirements Plan
LRRDAP	Long Range Research Development and Acquisition Plan

LSA	Logistical Support Analysis
LTA	Local Training Area
MACOM	Major Army Command
MANPRINT	Manpower and Personnel Integration
MAV	Minimum Acceptable Value
MDEP	Management Decision Package
MDR	Milestone Decision Review
MJWG	MANPRINT Joint Working Group
MM	Modification Management
MNS	Mission Need Statement
MOS	Military Occupational Specialty
MP	Mission Profile
MR	Maintenance Ratio
MSC	Major Subordinate Command
MTBF	Mean Time Between Failure
MTTR	Mean Time To Repair
NATO	National Atlantic Treaty Organization
NBC	Nuclear, Biological, and Chemical
NBCC	Nuclear, Biological, and Chemical Contamination
NDI	Nondevelopmental Item
NET	New Equipment Training
NETP	New Equipment Training Plan
NGB	National Guard Bureau
NSTD	Nonsystem Training Device

OCAR	Office of the Chief, Army Reserve
OFT	Operational Feasibility Test
OIC	Operational Issues and Criteria
OMS	Operational Mode Summary
ONS	Operational Need Statement
OPTEC	Operational Test and Evaluation Command
OPTEMPO	Operating Tempo
ORD	Operational Requirements Document
P^3I	Preplanned Product Improvement
PEO	Program Executive Officer
PFTEA	Postfielding Training Effectiveness Analysis
PIP	Product Improvement Program
PM	Project Manager
POC	Point of Contact
POM	Program Objective Memorandum
POI	Program of Instruction
PPBES	Planning, Programming, Budgeting, and Execution System
PPBS	Planning, Programming, and Budgeting System
QQPRI	Qualitative and Quantitative Personnel Requirements Information
RAM	Reliability, Availability, and Maintainability
RC	Reserve Component
R&D	Research and Development
RDA	Research, Development, and Acquisition
RDTE	Research, Development, Test, and Evaluation

RFP	Request for Proposal
ROM	Rough Order of Magnitude
RRC	Requirements Review Committee
RRR	RAM Rationale Report
RTS	Ranges, Targets, and Simulators
SAT	Systems Approach to Training
SIP	System Improvement Plan
SMMP	System MANPRINT Management Plan
SOP	Standing Operating Procedure
SOW	Statement of Work
SSI	Specialty Skill Identifier
STD	System Training Device
STID	Systems Training Integration Division
STRAP	System Training Plan
STRICOM	Simulation, Training, and Instrumentation Command
T&E	Testing and Evaluation
TADSS	Training Aids, Devices, Simulations, and Simulators
TC	Type Classified
TDA	Table of Distribution and Allowances
TDAD	Training Development and Analysis Directorate
TDRRC	Training Device Requirements Review Committee
TEA	Training Effectiveness Analysis
TEMP	Test and Evaluation Master Plan
TIWG	Test Integration Working Group

TMA	Training Mission Area
TMDE	Test, Measurement, and Diagnostic Equipment
TOA	Trade-Off Analysis
TOD	Trade-Off Determination
TOE	Table of Organization and Equipment
TRADOC	Training and Doctrine Command
TRASSO	TRADOC System Staff Officer
TSC	Training Support Center
TSR	Training Support Requirements
TSWG	Training Support Work Group
TT	Technical Testing
TTSP	Training Test Support Package
USAFISA	U.S. Army Force Integration Support Agency
USAR	U.S. Army Reserve
WARM	Wartime Reserve Modes

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