

Army Regulation 602-2

Soldier-Materiel Systems

**Manpower and
Personnel
Integration
(MANPRINT) in
the System
Acquisition
Process**

Headquarters
Department of the Army
Washington, DC
1 June 2001

UNCLASSIFIED

SUMMARY of CHANGE

AR 602-2

Manpower and Personnel Integration (MANPRINT) in the System Acquisition Process

Specifically, this revision--

- o Revises the text for consistency with the DOD 5000 series throughout.
- o Establishes a MANPRINT Board of Advisors (MBA) and designates the co-chairs (para 1-1d).
- o Redefines the MANPRINT Joint Working Group as MANPRINT members of the Integrated Concept Team and the MANPRINT Working Integrated Product Team (WIPT)(para 1-4d).
- o Redefines the MANPRINT responsibilities of the HQDA Staff, Major Army Commands, and Heads of other Army elements (chap 2).
- o Incorporates MANPRINT General Officer Steering Committee policies and guidance (chaps 2, 3, and 4).
- o Changes the requirement for MANPRINT training for program, project, and product managers (PMs), combat developers (CBTDEVs) and TRADOC system managers (TSMs) (paras 2-3n,2-17c(1)).
- o Establishes the MANPRINT Web site (para 2-8i).
- o Designates the U.S. Army Research Laboratory-Human Research and Engineering Directorate (ARL-HRED) as the focal point for MANPRINT support in Integrated Concept Teams (ICTs) and Integrated Product Teams (IPTs) (para 3-2b).
- o Establishes policy for the implementation of MANPRINT as a Human Systems Integration (HSI) strategy (para 3-1).
- o Defines MANPRINT participation in the Training and Doctrine Command (TRADOC) Integrated Concept Team process (para 3-2).
- o Defines MANPRINT participation in the program/project/product manager's Integrated Product Team process (para 3-3).
- o Establishes timelines for the MANPRINT Domain Assessments (para 3-3c).
- o Establishes MANPRINT policy for accelerated acquisition programs (in this instance, Warfighting Rapid Acquisition Program (WRAP)) (para 3-6b).
- o Revises the System MANPRINT Management Plan (SMMP) policy (chap 4).
- o Defines the Army's HSI strategy that the PMs should use to fulfill the mandatory HSI responsibilities of DOD Regulation 5000.2-R (para 4-1a).
- o Revises policies relating to source selection documents (chap 5).

- o Establishes the MANPRINT Practitioner of the Year Award (chap 6).
- o Establishes Army Acquisition Executive (AAE) policy regarding MANPRINT policy for all Army acquisition programs (app B).
- o Revises policies relating to operational requirements documents (app B).
- o Establishes policy on MANPRINT common data elements (CDEs) (app B-2).

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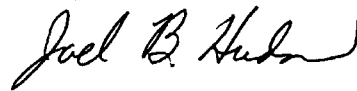
Soldier-Materiel Systems

Manpower and Personnel Integration (MANPRINT) in the System Acquisition Process

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:



JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army

History. This printing publishes a revision of this publication. Because the publication has been extensively revised, the changed portions have not been highlighted.

Summary. This regulation on Manpower and Personnel Integration (MANPRINT)

implements DOD Directive 5000.1 and DOD 5000.2-R.

Applicability. This regulation applies to the Active Army, the Army National Guard of the United States, and the U.S. Army Reserve.

Proponent and exception authority. The proponent for this regulation is the Deputy Chief of Staff for Personnel (DCSPER). The DCSPER has the authority to approve exceptions to this regulation consistent with controlling law and regulation. The DCSPER may delegate the approval authority, in writing, to the Director of Personnel Technologies.

Army management control process. This regulation contains management control provisions in accordance with AR 11-2 and identifies key management controls that must be evaluated.

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from HQDA

(DAPE-MR), 300 Army Pentagon, WASH DC 20310-0300.

Suggested Improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to HQDA (DAPE-MR), 300 Army Pentagon, Washington, DC 20310-0300.

Distribution. This publication is available in electronic media only and is intended for command levels D and E for the Active Army, the Army National Guard of the United States, and the U.S. Army Reserve.

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Glossary

Chapter 1 Introduction

1-1. Purpose

This regulation—

a. Establishes policy, responsibilities, and documentation requirements for implementing and supporting Manpower and Personnel Integration (MANPRINT), which fulfill the Army's Human Systems Integration (HSI) responsibilities in accordance with Department of Defense (DOD) Directive 5000.1 and DOD Regulation 5000.2-R.

b. Emphasizes front-end planning of soldier-system design for optimum total system performance as part of the Army acquisition policy (see AR 70-1).

c. Describes MANPRINT support available to and identifies support organizations for the program/project/product managers (PMs), U.S. Army Training and Doctrine Command (TRADOC) system managers (TSMs), combat developers (CBTDEVs), training developers (TNGDEVs), functional proponents (FPs), and milestone decision authorities (MDAs).

d. A MANPRINT Board of Advisors (MBA) will support the organizational structure, resourcing, and integration of the MANPRINT Program across the Army. The Board of Advisors will be co-chaired by the Principal Deputy to the Assistant Secretary of the Army (Manpower & Reserve Affairs) (ASA(M&RA)), the Deputy Under Secretary of the Army (Operations Research) (DUSA(OR)), and the Deputy Chief of Staff for Personnel (DCSPER). Complete organizational structure and responsibilities are identified in the MANPRINT Board of Advisors' Charter (see www.manprint.army.mil).

1-2. References

Required and related publications and prescribed and referenced forms are listed in appendix A.

1-3. Explanation of abbreviations and terms

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

1-4. The MANPRINT Program

a. The Army's MANPRINT Program focuses on the integration of human considerations into the system acquisition process to enhance soldier-system design, reduce life cycle ownership costs, and optimize total system performance. MANPRINT accomplishes this by ensuring that the "human" is fully and continuously considered as part of the total system in the development and/or acquisition of all systems. Human performance is a key factor in "total system performance," and enhancements to human performance will correlate directly to enhanced total system performance and help reduce life cycle ownership costs.

b. MANPRINT integrates and facilitates trade-offs among the seven domains but does not replace individual domain activities, responsibilities, or reporting channels. MANPRINT domains may be described as follows (see glossary, section II, terms):

(1) *Manpower.* The number of personnel, both military and civilian, required, authorized and potentially available to train, operate, maintain, and support each system acquisition.

(2) *Personnel.* The human aptitudes, skills, and capabilities required to operate, maintain, and support a system in peacetime and war.

(3) *Training.* The instruction and resources required to provide Army personnel with requisite knowledge, skills, and abilities to properly operate, maintain, and support Army systems.

(4) *Human Factors Engineering.* The comprehensive integration of human capabilities and limitations into system definition, design, development, and evaluation to promote effective soldier-machine integration for optimal total system performance.

(5) *System Safety.* The design and operational characteristics of a system that minimize the possibilities for accidents or mishaps caused by human error or system failure.

(6) *Health Hazards.* The systematic application of biomedical knowledge, early in the acquisition process, to identify, assess, and minimize health hazards associated with the system's operation, maintenance, repair or storage, such as: Acoustic energy, toxic substances (biological and chemical), oxygen deficiency, radiation energy, shock, temperature extremes, trauma and vibration.

(7) *Soldier Survivability.* The characteristics of a system that reduce fratricide as well as reduce detectability of the soldier, prevent attack if detected, prevent damage if attacked, minimize medical injury if wounded or otherwise injured, and minimize physical and mental fatigue.

c. To ensure MANPRINT considerations have the greatest impact on system design, they must be integrated into the system acquisition process as early as possible. MANPRINT analyses accomplished early in the program are especially valuable in identifying potential error- or problem-prone design features. To ensure MANPRINT is embedded in the system acquisition process, analytical tools must be applied when they can provide the greatest influence to the total

system. MANPRINT assessments will be conducted prior to milestone decision reviews to ensure MANPRINT has been properly applied and to identify impacts thereof.

d. MANPRINT domain subject matter experts (SMEs), formerly known as a MANPRINT Joint Working Group (JWG), will function as dedicated or on-call core members of Integrated Concept Teams (ICTs) and Integrated Product Teams (IPTs). The ARL–HRED field elements have been designated to act as focal points for ensuring that appropriate domain experts are available to support ICTs and IPTs. The MANPRINT representatives on the ICT will transition to the MANPRINT Working IPT (WIPT) and other IPTs, to include Overarching IPTs (OIPTs). As the Army Staff proponent for MANPRINT, the DCSPER (DAPE–MR) will play a role, as appropriate, in the identification of MANPRINT SMEs to work on ICTs and IPTs. The MANPRINT representatives on the ICT will ensure that MANPRINT constraints are identified, MANPRINT is embedded in requirements documents as applicable, and an audit trail of MANPRINT issues and concerns is provided in applicable program documents such as the ICT report or minutes. The audit trail should include the information in the System MANPRINT Management Plan (SMMP), SMMP-like tracking document or common data elements (CDEs) (see app B–2). As the system responsibility transitions from the ICT to the PM (and IPT), MANPRINT representatives will ensure that MANPRINT requirements are documented in the crosswalk from operational requirements document (ORD) to request for proposal (RFP), the system specification, and Test and Evaluation Master Plan (TEMP), as applicable. The MANPRINT WIPT will assist the PM in ensuring that MANPRINT requirements are met and issues resolved. The SMMP and the System Engineering Management Plan (SEMP) are excellent managerial tools to facilitate planning, organizing, and managing MANPRINT activities.

e. System MANPRINT requirements are communicated to industry through the RFP process, and are included as tasks in contract statements of work (SOWs).

f. The MANPRINT Board of Advisors is established as an intra-Army HQDA committee and a corporate level coordination and policy-making body that crosses functional elements of the Army. The MBA reflects the continuing need to ensure that Human Systems Integration (HSI) requirements are effectively integrated and embedded throughout the Army's force development, modernization, and acquisition processes. A continuous assessment by this body will help to maintain and/or identify improvement opportunities in support of the MANPRINT Program and help ensure that MANPRINT requirements play an integral role in all related combat and materiel development efforts across the Army. The MBA consists of General Officers and SESs from the offices and organizations that have MANPRINT responsibility as directed by the Board co-chairs, detailed in this regulation, and outlined in the Charter. The MBA co-chairs will provide leadership, take action in their areas of responsibility, and provide guidance and direction across the Army through other Board members. The co-chairs will provide advice and counsel to Army senior leadership as necessary.

1–5. Filing and records keeping

A MANPRINT case file by system (MARKS No. 602–2a) will be established by all Army organizations performing MANPRINT activities (see AR 25–400–2).

Chapter 2 Responsibilities

Section I

Army Acquisition Executive, Program Executive Officer, and Program/Project/Product Manager

2–1. Army Acquisition Executive

The Army Acquisition Executive (AAE) will include MANPRINT as appropriate in directives and policy statements concerning system acquisition.

2–2. Program Executive Officer

The Program Executive Officer (PEO) will—

- a.* Include in PM charters the responsibility for funding and executing the MANPRINT Program.
- b.* Monitor PM and contractor execution of MANPRINT Program requirements.
- c.* Rate assigned PM execution of MANPRINT responsibilities and consider rating in PM performance appraisals and efficiency reports.
- d.* Develop policy and procedures to ensure PMs obtain MANPRINT Domain Assessments and make them available to requesting headquarters.

2–3. Program/project/product manager

The program/project/product manager (PM) will—

- a.* Implement a proactive MANPRINT Program for all systems managed.

- b.* Include MANPRINT considerations as an explicit part of the source selection planning and implementation processes. MANPRINT is a key factor in both total system ownership/life cycle costs and the integrated soldier-system performance. Include all required and appropriate MANPRINT requirements and opportunities in the best value trade-off analyses associated with source selection in accordance with the Army Acquisition Executive (see fig B-4).
- c.* Include MANPRINT requirements in solicitation packages in sufficient detail to permit a determination of effort required.
- d.* Incorporate MANPRINT provisions in system contracts and specifications as appropriate.
- e.* Resolve MANPRINT issues and concerns to the greatest extent possible before each milestone decision review (MDR).
- f.* Ensure application of MANPRINT methodologies to hardware and software development, modification, and acquisition programs.
- g.* Ensure, in coordination with ODCSPER and the U.S. Army Research Laboratory-Human Research and Engineering Directorate (ARL-HRED), the resolution of MANPRINT issues and concerns during the acquisition program life cycle.
- h.* When appropriate, charter MANPRINT WIPTs. In cases where a MANPRINT WIPT is not necessary, ensure MANPRINT is represented on another appropriate IPT.
- i.* Exercise managerial control over the MANPRINT effort. Require a SMMP or another management and tracking mechanism, which includes the CDEs, as a MANPRINT/HSI strategy.
- j.* Use the field element designated by ARL-HRED as the focal point to coordinate the MANPRINT Program and the efforts of the other MANPRINT domains.
- k.* Ensure that MANPRINT performance parameters, objectives, and thresholds have been crosswalked from the ORD to the RFP and TEMP.
- l.* Provide resources and proper funding for effective MANPRINT Program implementation, testing, and maintenance.
- m.* Initiate requests for the conduct and preparation of MANPRINT Domain Assessments and provide results to ODCSPER and other headquarters when requested. Requests should be initiated not later than 120 days prior to an IPR or milestone decision.
- n.* Ensure that MANPRINT training is received by the staff officer that is implementing the PM's MANPRINT program, plans, and execution.

Section II

HQDA Elements

2-4. Assistant Secretary of the Army (Manpower and Reserve Affairs)

The Assistant Secretary of the Army (Manpower and Reserve Affairs) (ASA(M&RA)) will—

- a.* Provide Secretariat level oversight to the DCSPER in management of the MANPRINT Program.
- b.* Coordinate with Deputy Chief of Staff for Operations and Plans (DCSOPS); Deputy Chief of Staff for Personnel (DCSPER); Deputy Chief of Staff for Logistics (DCSLOG); Director of Information Systems for Command, Control, Communications, and Computers (DISC4), and appropriate major Army commands (MACOMs) to ensure that the manpower, personnel, and training requirements to support all acquisition systems, including commercial off-the-shelf (COTS) and nondevelopmental items (NDI), are integrated into the Army long-range planning processes, including the Total Army analysis, so that systems, when fielded, are adequately manned and supported.
- c.* Review the manpower estimate (ME) (required by 10 USC 2434) provided by DCSOPS. Transmit the approved ME to the Office of the Assistant Secretary of Defense (Personnel and Readiness).
- d.* Provide a co-chair for the MANPRINT Board of Advisors.

2-5. Assistant Secretary of the Army (Acquisition, Logistics, and Technology)

The Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)) will—

- a.* Establish Army policy and guidance for integrating MANPRINT within the research, development, and acquisition community.
- b.* Ensure the application of MANPRINT practices are considered throughout the system design and development processes for acquisition systems.
- c.* Include research, development, test, and evaluation (RDTE) funds for MANPRINT in budget submissions provided by the Science & Technology Panel of the Equip Program Evaluation Group (PEG). Such resourcing should address development of new MANPRINT tools, techniques, methodologies, and support for MANPRINT SMEs during ICT and IPT meetings and reviews.
- d.* Encourage PEO/PMs to receive appropriate MANPRINT training.

2-6. Assistant Secretary of the Army (Installations and Environment)

The Assistant Secretary of the Army (Installations and Environment) (ASA(I&E)) will—

- a. Establish Army policy governing System Safety and Health Hazards Assessment Programs.
- b. Provide oversight and guidance on the System Safety and Health Hazards Assessment aspects of the MANPRINT Program.

2-7. Deputy Under Secretary of the Army (Operations Research)

The Deputy Under Secretary of the Army (Operations Research) (DUSA(OR)) will—

- a. Provide oversight and guidance regarding MANPRINT in testing and evaluation for systems.
- b. Ensure MANPRINT concerns and considerations are addressed in systems tests and evaluations.
- c. Co-chair the MANPRINT Board of Advisors.

2-8. Deputy Chief of Staff for Personnel

The Deputy Chief of Staff for Personnel (DCSPER) via the Personnel Technologies Directorate (DAPE-MR) will—

- a. Exercise primary Department of the Army (DA) staff responsibility for the MANPRINT Program.
- b. Establish, coordinate, and disseminate DA MANPRINT Program policy, guidance, and procedures to all Army commands and agencies.
- c. Address unresolved critical MANPRINT issues at Army Systems Acquisition Review Councils (ASARCs), Information Technology Overarching Integrated Product Teams (IT OIPTs), and other acquisition decision reviews via the MANPRINT Assessment and provide recommendations or potential trade-offs to the MDA, as applicable.
- d. Serve as the Army's focal point for MANPRINT Program interfaces with other DOD services, government agencies, and international programs regarding policy, standards, and research and development.
- e. Serve as the proponent for the Army MANPRINT Training Program. Review the U.S. Army Logistics Management College's (ALMC) MANPRINT training courses for quality and content ensuring conformance with established goals, principles, policies, and procedures. In the case of the latter, via the MANPRINT Web site, support ALMC by providing updated MANPRINT training to prior graduates of MANPRINT training courses. Oversee MANPRINT training in all other courses of instruction (DOD and DA).
- f. Prior to the convening of a key IPR or MDR, issue a MANPRINT Assessment for the MDA with copies to the PEO/PM. This final MANPRINT Assessment will identify the critical issues requiring resolution prior to a recommendation being made for the system to proceed to the next acquisition phase.
- g. Finalize and approve MANPRINT Assessments on those systems acquisitions being monitored.
- h. Sponsor an annual MANPRINT Symposium to further professional coordination and collaboration among specialists in manpower, personnel, training, human factors engineering, system safety, health hazards, and soldier survivability from government, industry, and the academic community both in the U.S. and allied nations. The Directorate will sponsor, in conjunction with the Symposium, the MANPRINT Practitioner of the Year Awards.
- i. Establish the MANPRINT Web site as part of the overall DCSPER Web site. Maintain it as a primary source of information on MANPRINT policy, guidance, procedures, training, and events.
- j. Review MEs for completeness, accuracy, and manpower affordability.
- k. In coordination with the Office of the Deputy Chief of Staff for Operations and Plans (ODCSOPS), establish Army policy and guidance to ensure MANPRINT training resources are included in Army training programs.
- l. Serve as the proponent for the MANPRINT Technical Base Research and Development Program to identify and prioritize research needs. Coordinate the MANPRINT Technical Base Program with the Soldier Oriented Research and Development (SORD) Program under AR 70-8. Encourage industry to initiate independent research and development (IR&D) projects that support and improve MANPRINT methodology.
- m. In coordination with Office of the Deputy Chief of Staff for Logistics (ODCSLOG), establish policy on how MANPRINT and Integrated Logistics Support (ILS) programs will complement each other and interface.
- n. Review the application of MANPRINT in Army combat models and analyses.
- o. Review all applicable requirements documents, mission needs statements (MNSs), ORDs, and CAPSTONE requirements documents (CRDs) to ensure MANPRINT domain requirements have been properly addressed. Coordinate with PEOs and PMs to ensure those requirements have been adequately crosswalked and embedded into RFPs and TEMPs and provide copies of comments to appropriate MANPRINT domain agencies responsible for support to the system.
- p. Encourage and facilitate an integrated, cooperative working relationship among all of the MANPRINT domain agencies.
- q. The DCSPER will co-chair the MANPRINT Board of Advisors (see chap 6 for specific program responsibilities).

2-9. Deputy Chief of Staff for Logistics

The Deputy Chief of Staff for Logistics (DCSLOG) will—

- a. Establish policy, in coordination with the ODCSPER, on how the ILS and MANPRINT Programs will complement each other and interface.
- b. Provide ODCSPER (DAPE-MR) with a copy of the ILS Assessment for all ASARC, IT OIPT, and Program Executive Officer (PEO) in process reviews (IPRs).
- c. Notify ODCSPER (DAPE-MR) of upcoming ILS reviews, as applicable.

2-10. Deputy Chief of Staff for Operations and Plans

The Deputy Chief of Staff for Operations and Plans (DCSOPS) will—

- a. Ensure that MANPRINT is considered in policy regarding formulation of materiel objectives and requirements (see AR 71-9).
- b. In coordination with ODCSPER, establish Army policy and guidance to ensure MANPRINT training resources are included in the Army training program.
- c. Ensure that MANPRINT is considered in basis of issue plan (BOIP) and qualitative and quantitative personnel requirements information (QQPRI) policy (see AR 71-32).
- d. Ensure the ME is staffed with DCSPER (DAPE-MR) for review and comment.
- e. Integrate the results of MANPRINT analyses and models into force development modeling.

2-11. Deputy Chief of Staff for Intelligence

The Deputy Chief of Staff for Intelligence (DCSINT) will establish policy and guidance to integrate MANPRINT principles into the development and acquisition of intelligence and security systems over which they have direct authority.

2-12. The Surgeon General

The Surgeon General (TSG) will—

- a. Exercise primary DA staff responsibility for the Army Health Hazard Assessment (HHA) Program.
- b. Through the Commanding General, U.S. Army Medical Command (MEDCOM):
 - (1) Provide consultation and advice on medical aspects of MANPRINT (see AR 40-10 and AR 40-5).
 - (2) Establish and issue all medical policies that relate to exposure of personnel to actual or potential health hazards throughout the life cycle in support of the MANPRINT Program.
 - (3) Develop the physiological, medical, and health standards databases needed to support the MANPRINT Program.
 - (4) Through the Commander, U.S. Army Medical Department Center and School (AMEDDC&S), provide review of all SMMPs, CDEs, and requirements documents.

2-13. Chief of Engineers

The Chief of Engineers (COE) will—

- a. Establish MANPRINT programs that incorporate the provisions of this regulation into their acquisition programs.
- b. Ensure research findings relating to or affecting human performance are reported to ODCSPER (DAPE-MR).

2-14. Director of Army Safety

The Director of Army Safety (DASAF) will, in coordination with DCSPER (DAPE-MR), develop, coordinate and disseminate System Safety policies defining the interface with other MANPRINT domains (see AR 385-10).

2-15. Director of Information Systems for Command, Control, Communications, and Computers

The Director of Information Systems for Command, Control, Communications, and Computers (DISC4) will—

- a. Establish policy and guidance to integrate MANPRINT considerations into requirements documents for the development and acquisition of information technology systems.
- b. Ensure application of MANPRINT methodologies to hardware and software development, modification, and acquisition programs that come under the responsibility of information technology systems.
- c. Ensure, in coordination with ODCSPER, the resolution of MANPRINT issues and concerns during the life cycle of information systems. Ensure that MANPRINT unresolved critical issues are addressed at appropriate decision forums.
- d. Encourage PEOs and PMs to have MANPRINT training.

2-16. Functional proponents

The functional proponents (FPs) will assess and apply appropriate MANPRINT considerations during the definition and development phases of information technology (IT) systems within their area of responsibility.

Section III

Commanders of Major Army Commands

2-17. Commanding General, U.S. Army Training and Doctrine Command (CG, TRADOC)

The Commanding General (CG, TRADOC) will—

- a. Include MANPRINT as appropriate in directives and policy statements concerning system acquisitions.
- b. Ensure that MANPRINT is represented on all ICT developing system requirements and that MANPRINT issues are tracked using CDEs in applicable program documents. Inform ODCSPER (DAPE-MR) and ARL-HRED when ICTs are initiated to ensure human considerations are incorporated at the earliest possible phase.
- c. Develop and conduct MANPRINT training in accordance with guidance from the proponent, DCSPER (DAPE-MR). Updates on changes to the MANPRINT training programs conducted by ALMC will be communicated to DCSPER (DAPE-MR) for inclusion in the MANPRINT Web site.
 - (1) Ensure MANPRINT training is provided to all TRADOC system managers (TSMs), Directors of Combat Development (DCDs), Directors of Training and Doctrine (DOTDs) and appropriate combat and training development personnel.
 - (2) Manage the MANPRINT training program via Army Training Requirements and Resources System (ATRRS) and provide semi-annual status updates to ODCSPER (DAPE-MR).
 - (3) Ensure MANPRINT familiarization or awareness is part of all leader development courses.
- d. Include MANPRINT responsibilities in TSM charters.
- e. Identify the total proposed system training burden (that is, time and personnel costs) as it relates to training development, delivery, revision, and support, to include training aids, devices, simulators and simulations (TADSS), and projected trainee aptitudes.
- f. Include MANPRINT considerations in the MNS, analysis of alternatives (AoA), ORD, CAPSTONE requirements document (CRD) and critical operational issues and criteria (COIC).
- g. Ensure the timely consideration and development of MANPRINT requirements in system and non-system TADSS for which TRADOC is the proponent.

2-18. Commanding General, U.S. Army Materiel Command

The Commanding General (CG, AMC) will—

- a. Support the MANPRINT R&D program in annual program objective memorandum (POM) built processes.
- b. Through the Director, U.S. Army Research Laboratory (ARL) provide technical assistance on the integration of MANPRINT (including inputs from Manpower, Personnel, Training, Human Factors Engineering, System Safety, Health Hazards, and Soldier Survivability) into materiel research, accelerated, developmental, non-developmental, and systems modification acquisition programs.
- c. Through the Director, U.S. Army Research Laboratory-Human Research and Engineering Directorate (ARL-HRED)—
 - (1) Serve as the central MANPRINT point of contact for coordinating domain support to the ICTs and IPTs.
 - (2) Provide technical advice and assistance to ICTs and IPTs on human factors engineering (see AR 602-1).
 - (3) Conduct Human Factors Engineering Assessments for PMs.
 - (4) Conduct Manpower, Personnel, and Training Assessments for selected non-acquisition category (ACAT) I and II systems.
 - (5) Conduct Soldier Survivability Assessments for selected non-ACAT I and II systems.
 - (6) Develop DRAFT MANPRINT Assessments on all ACAT I and II acquisition systems and selected non-ACAT I and II systems (to include the integration of all of the individual domain assessments) for ODCSPER (DAPE-MR). Conduct appropriate staffing with individual MANPRINT domains and other interested parties (PM, TSM, CBTDEV). Provide DRAFT Assessments to DCSPER (DAPE-MR) not later than 30 days prior to a key IPR or milestone review.
 - (7) Provide manpower, personnel, training, and soldier survivability expertise to ICTs and IPTs on non-major systems.
 - (8) Provide MANPRINT assistance to the U.S. Army Test and Evaluation Command (ATEC) in the development of system evaluation plans (SEPs), detailed test plans (DTPs), system evaluation reports (SERs) and conduct of MANPRINT evaluations based on operational testing. Serve on ATEC system teams for selected systems.
 - (9) Conduct applied research for the development of new MANPRINT concepts, techniques and analytical tools, and research into soldier capabilities and needs driven by emerging technologies.
 - (10) Ensure that MANPRINT parameters, objectives, and thresholds have been crosswalked from the ORD to the RFP, system specification, and TEMP.
 - (11) Provide MANPRINT assistance to TRADOC to assure that MANPRINT is considered in early concept studies and analyses.
 - (12) Through the ICT and IPT process (in conjunction with TRADOC, PMs, and DCSPER (DAPE-MR)), develop plans and strategies for implementing MANPRINT in selected system acquisition processes.

d. Through the Director, U.S. Army Research Laboratory–Survivability/Lethality Analysis Directorate (ARL–SLAD)—

(1) Provide technical ((survivability/lethality/vulnerability) issues related but not limited to conventional ballistics, nuclear, biological, and chemical (NBC), NBC-contamination survivability, electronic warfare, electronic warfare vulnerability of tactical communications systems, information operations/information warfare, atmospheric/obscure, directed energy weapons, jamming, electronic countermeasures, and personnel vulnerability) advice and assistance to ICTs and PM IPTs on Soldier Survivability (SSv) of combat systems (see AR 70–75).

(2) Conduct SSv Assessments on ACAT I and II combat acquisition systems, as appropriate and required. Provide a copy to ARL–HRED as input to the draft MANPRINT Assessment.

e. Through the Director, U.S. Army Communications-Electronics Command (CECOM)—

(1) Develop implementing MANPRINT policy and procedures for information technology programs.

(2) Provide system safety support and conduct Safety Assessments on automated information systems in planned configurations with associated support items of equipment, as required.

(3) Provide MANPRINT support to functional users, functional proponents, and PMs, as required.

(4) Provide resources, including funding, for effective MANPRINT Program implementation, testing, and maintenance.

f. Through Commanders, headquarters and subordinate commands—

(1) Include MANPRINT as appropriate in policy and directives for systems acquisition.

(2) For AMC managed systems, MANPRINT should be applied as follows:

(a) Transition the ICT to appropriate IPTs, including a MANPRINT WIPT, if appropriate, to continue identification and resolution of issues.

(b) Crosswalk MANPRINT parameters, objectives, and thresholds from the ORD to the RFP and TEMP, as applicable.

(c) Request Health Hazard Assessments from U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) in accordance with statutory and regulatory requirements.

(d) Implement a proactive System Safety Program in accordance with statutory and regulatory requirements.

(3) Review and recommend changes to requirements documents, SMMPs (or SMMP-like tracking documents), support strategies (SS), materiel fielding documents, solicitation documents, other program management and supportability analysis (SA) documentation for MANPRINT and ILS considerations.

(4) Encourage PMs, scientists, engineers, logisticians and contract management personnel to receive appropriate MANPRINT training.

(5) Support the PM's System Safety Program through the AMC Safety Office.

(6) Provide resources, to include funding, for appropriate and effective MANPRINT Program implementation and maintenance.

(7) Develop and provide the Safety Assessments for all systems in support of MDRs.

(8) Evaluate IR&D proposals from industry for potential MANPRINT implications.

2–19. Commanding General, U.S. Army Medical Command

The Commanding General, U.S. Army Medical Command (CG, MEDCOM) will—

a. Include MANPRINT as appropriate in directives and policy statements concerning system acquisition.

b. Ensure research findings relating to or affecting human performance are reported to ODCSPER (DAPE–MR).

c. Through the Commander, U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM):

(1) As the MANPRINT Health Hazard Domain subject matter expert, provide information and support to ICTs and PM IPTs, as appropriate.

(2) Conduct Health Hazard Assessments (HHAs).

(a) An Initial Health Hazard Assessment Report (IHHR) will be done early in the system life cycle in order to influence early design changes to preserve and protect the health of the soldiers who will operate, maintain, and support the equipment; enhance total system effectiveness; reduce system retrofit needed to eliminate health hazards; reduce readiness deficiencies attributable to health hazards; and reduce personnel compensation.

(b) A final Health Hazard Assessment Report will be completed when appropriate data is available.

(c) Information from these reports are input to the SMMP (or SMMP-like tracking document) and the MANPRINT Assessment.

(d) Provide a copy of the HHAR to ARL–HRED as input to the draft MANPRINT Assessment.

d. Through the Commander, U.S. Army Medical Department Center and School:

(1) As the medical CBTDEV, plan and implement a MANPRINT Program for medical (Class VIII) materiel development and acquisition of systems.

(2) Provide technical assistance to medical personnel supporting the appropriate ICT or MANPRINT WIPT and provide medical input to related system acquisition documents. Provide MANPRINT domain technical assistance to

CBTDEVs and MATDEVs through the U.S. Army Medical Department Center and School (AMEDDC&S). Provide consultation and advice on medical aspects of MANPRINT (see AR 40-10 and AR 40-5).

(3) Review requirements documents during the system life cycle phases to identify potential health hazard issues. Provide health hazard issues to the ICT or the MANPRINT WIPT for inclusion in the SMMP (or SMMP-like tracking document). Participate as a member of the group as appropriate.

(4) Encourage that MANPRINT training is provided at a minimum to MEDCOM combat developers and appropriate acquisition personnel.

e. Through the Commander, U.S. Army Medical Research and Materiel Command (MRMC):

(1) As directed by the MDA, plan and execute MANPRINT programs that will implement the provisions of this regulation in MEDCOM materiel acquisition and testing responsibilities (see AR 40-60).

(2) Support System Safety Working Groups and provide Independent System Safety Assessments for MEDCOM medical system acquisitions.

(3) For MEDCOM managed programs, ensure research findings, issues, and risks relating to human performance, reliability, and SSv are reported to ODCSPER (DAPE-MR), ARL-HRED, and ARL-SLAD.

(4) Maintain research programs that—

(a) Characterize the behavioral, physiological, and toxicological responses to military unique exposures common to generic Army systems.

(b) Clarify the mechanism of treatment for hazardous exposures common to generic Army systems.

(5) Assist CBTDEVs and materiel developers (MATDEVs) in the design and execution of developer-sponsored studies to obtain biomedical data required for proper assessment of systems.

(6) For MEDCOM managed programs, transition management of the SMMP/CDE from the ICT to a MANPRINT WIPT.

2-20. Commanding General, U.S. Army Intelligence and Security Command

The Commanding General, U.S. Army Intelligence and Security Command (CG, INSCOM) will—

a. Include MANPRINT as appropriate in directives and policy statements concerning system acquisition.

b. As directed by the MDA, plan and implement MANPRINT programs that incorporate the provisions of this regulation in the INSCOM systems acquisition activities.

c. Ensure research findings, issues, and risks relating to human performance are reported to ODCSPER (DAPE-MR).

d. Encourage that MANPRINT training is provided as a minimum to personnel with system acquisition responsibilities.

2-21. Commanding General, U.S. Army Space and Missile Defense Command

The Commanding General, U.S. Army Space and Missile Defense Command (CG, SMDC) will—

a. Include MANPRINT as appropriate in directives and policy statements concerning system acquisition.

b. As directed by the MDA, plan and implement MANPRINT programs that incorporate the provisions of this regulation in the SMDC systems acquisitions.

c. For SMDC managed programs, ensure research findings and issues relating to human performance are reported to ODCSPER (DAPE-MR).

d. Encourage that MANPRINT training is provided as a minimum to personnel with system acquisition responsibilities.

Section IV

Heads of Other Army Elements

2-22. Commanding General, U.S. Army Test and Evaluation Command

The Commanding General, U.S. Army Test and Evaluation Command (CG, ATEC) will—

a. Include MANPRINT considerations in system tests and evaluations. The tests will address total system MANPRINT requirements including the requirements to operate, maintain, support, and train the system (see AR 73-1).

b. Analyze MANPRINT issues and measures identified from all sources (for example, ORD, ICT report/minutes, SMMP, SEMP, Source Selection Evaluation Board (SSEB)) as potential issues to be addressed across the full spectrum of system tests and evaluations. Provide results to DCSPER (DAPE-MR) and ARL-HRED on a routine basis.

c. Provide representation to ICTs and the MANPRINT WIPTs, as appropriate.

d. Encourage that MANPRINT training is provided as a minimum to personnel with system test and evaluation responsibilities, as appropriate.

2-23. Commanding General, U.S. Total Army Personnel Command

The Commanding General, U.S. Total Army Personnel Command (CG, PERSCOM) will—

- a.* Provide technical advice and assistance on the Manpower, Personnel, and Training (MPT) domains for new and improved ACAT I and II systems.
- b.* Participate in ICTs, MANPRINT Working IPTs (WIPT), Supportability IPTs (SIPTs), Test Integration Working Groups (TIWGs) and other MANPRINT related activities to identify and provide recommendations to resolve MPT domain issues for new and improved ACAT I and II systems.
- c.* Analyze all requirements documents and other acquisition related documents for new and improved ACAT I and II systems to ensure the MPT domains are addressed in support of the MDR.
- d.* Prepare the MPT Assessment for new and improved ACAT I and II systems at each MDR for the PM. Provide copies to all other MANPRINT domains and to DCSPER (DAPE-MR) as input for the MANPRINT Assessment. Provide assessment data to the MANPRINT Working IPT as input for the SMMP. A copy of the MPT Assessment will be furnished to ARL-HRED as input to the draft MA.
- e.* Via the U.S. Army Research Institute, provide, as required, on a reimbursable basis, subject matter expertise in areas dealing with personnel and training to PEOs and PMs for specific Army acquisition systems and/or programs.

2-24. Commanding General, U.S. Army Safety Center

The Commanding General, U.S. Army Safety Center (CG, USASC) will—

- a.* Conduct the Independent Safety Assessments (ISAs) for ACAT ID, IC, and II systems.
- b.* Provide ODCSPER (DAPE-MR), ARL-HRED, and the MANPRINT WIPT Research, Development, and Engineering Center (RDEC) safety domain SME a copy of the ISA provided to the Army Systems Acquisition Review Council (ASARC) Secretary for ASARC systems. This assessment will be used by ARL-HRED as input to the draft MANPRINT Assessment.
- c.* Make the Army automated safety information database accessible to MANPRINT practitioners.

2-25. Commanding General, U.S. Army Medical Department Center and School

The Commanding General, U.S. Army Medical Department Center and School (CG, AMEDDC&S) will accomplish the following responsibilities for medical equipment:

- a.* Include MANPRINT considerations in system tests and evaluations. The tests will address total system MANPRINT requirements, including the requirements to operate, maintain, support, and train the system.
- b.* Analyze MANPRINT issues and measures identified from all sources (for example, ORD, ICT report/minutes, SMMP, SEMP, SSEB) as potential issues to be addressed across the full spectrum of system tests and evaluations. Provide results to DCSPER (DAPE-MR) and ARL-HRED on a routine basis.
- c.* Provide representation to ICTs and the MANPRINT WIPTs, as appropriate.
- d.* Encourage that MANPRINT training is provided as a minimum to personnel with system test and evaluation responsibilities, as appropriate.

Chapter 3

MANPRINT in the Systems Acquisition Process

3-1. Introduction

- a.* MANPRINT is the Army's Human Systems Integration (HSI) strategy the PM must use for all acquisition programs. An effective MANPRINT Program enables the PM to fulfill the requirements of DOD Regulation 5000.2-R but, more importantly, facilitates the acquisition of a system that meets "total system" performance requirements.
- b.* MANPRINT is focused on influencing the design of systems and associated support requirements so that developmental, non-developmental, and modified systems can be operated, maintained, and supported efficiently and safely within the manpower structure, personnel aptitudes, and training constraints of the Army and within an affordable cost of ownership. The implementation of MANPRINT impacts total system performance (both effectiveness and availability) making explicit the role that the soldier plays and how that performance is shaped by design factors. MANPRINT also addresses the MPT resources needed to achieve the required performance and, where possible, indicates more affordable configurations of MPT resources.
- c.* The engineering design philosophy of MANPRINT is focused on optimum system performance on the battlefield, which includes up front and continuous consideration of both soldier and equipment capability. MANPRINT is a tailored, option-oriented process as opposed to an objective-oriented process. The MANPRINT process will provide decision-makers information upon which to make trade-offs in areas such as quality and numbers of people, training, technology, conditions, standards, costs, soldier survivability, safety, health hazard risks, design and interface features, and personnel assignment policy.
- d.* It is imperative that a total MANPRINT effort begin early in system acquisition, with emphasis on user feedback

(user juries), with tailoring options reserved until data-based analyses are conducted that indicate the appropriate level of MANPRINT effort. For maximum integration, it is recommended that PMs have their contractors place MANPRINT activities within the systems engineering components of their organization to ensure every design decision and modification is given MANPRINT consideration.

3-2. MANPRINT in the Integrated Concept Team and requirements determination process

a. For maximum effectiveness, MANPRINT must be considered as early as possible in the acquisition process and must be embedded in requirements documents. AR 71-9 outlines the requirements determination process.

b. A MANPRINT representative is a dedicated and/or on-call core member of the Integrated Concept Team (ICT) convened to write requirements documents. Per direction of the AAE, ARL-HRED is the focal point for the ICT to facilitate appropriate MANPRINT representation and involvement. The MANPRINT-dedicated core representative will normally be from ARL-HRED.

c. MANPRINT issues and concerns will be documented in appropriate program documentation and the ICT minutes, and reports will provide an audit trail. This audit trail will also include the CDEs (see app B-2).

d. Appropriate MANPRINT considerations will be addressed during the ICT process in order to help program sponsors identify realistic human considerations consistent with technology, affordability, cost and technical risk reduction, and accelerated development/procurement. For example, results of MANPRINT analyses may provide significant input to the analysis of alternatives (AoA).

e. The benefits of MANPRINT participation in the ICT will be most evident when the ICT transitions to an IPT after approval of a materiel requirement at Milestone A. Continuity of human considerations will be maintained throughout system development and design, from concept definition, into the PM's IPT process, system fielding, operations, and through system disposal.

3-3. MANPRINT in the Integrated Product Team process

a. MANPRINT representatives continue to participate in the Integrated Product Team (IPT) process through the transition of the ICT to the MANPRINT WIPT and will support the PM's MANPRINT implementation strategy and help the PM manage the system's MANPRINT Program.

b. The MANPRINT community will provide representation to the PM's MANPRINT WIPT as appropriate (see table 3-1 and www.manprint.army.mil). MANPRINT representatives will recommend potential areas within the MANPRINT review process for streamlining and tailoring, surface MANPRINT issues to the WIPT as soon as they are identified, and work collectively with the WIPT for resolution of all possible issues. Unresolved issues will be included in the WIPT's report to the PM and/or in MANPRINT Domain Assessments. It is strongly recommended that the PM require the development of a System MANPRINT Management Plan (SMMP) or SMMP-like tracking document to exercise management control over the MANPRINT effort (see chap 4).

c. For maximum risk reduction and cost avoidance, the PM will have MANPRINT domain SMEs working with the IPT members from the onset of the program. When a key IPR or milestone decision review is planned, the PM will task the MANPRINT domains no later than 120 days in advance for MANPRINT Domain Assessments (see table 3-2 and www.manprint.army.mil). At the PM's tasking, or on request from ODCSPER (DAPE-MR), MANPRINT domain agencies will prepare the domain assessments. These assessments will identify issues, help the PM manage and assess MANPRINT Program risks, and ensure soldier-related issues are considered and properly addressed throughout the system's life cycle. The PM and ATEC will ensure that the System Evaluation Report (SER) is provided in sufficient time for an adequate assessment of the results of the testing (for example, limited user tests (LUT), initial operational test and evaluation (IOT&E)). Prior to convening of a key IPR or MDR, a final MANPRINT Assessment will be issued by DCSPER (DAPE-MR) for the MDA, with copies to the PEO/PM. This final MANPRINT Assessment will identify the critical issues requiring resolution during the next phase of the acquisition cycle.

d. MANPRINT, and especially function/task allocation, should be a topic at all design reviews.

3-4. MANPRINT in commercial off-the-shelf and non-developmental items

a. Potential MANPRINT contributions to a commercial-off-the-shelf (COTS) or non-developmental item (NDI) acquisition are similar to those made for system development programs. The selection of this acquisition strategy does not eliminate the advantage this particular program may gain by applying the MANPRINT process. Any system must meet performance parameters and thresholds. MANPRINT considerations are crucial in the market investigation process and as an evaluation factor.

b. As with other acquisition strategies, the recommended MANPRINT management tool for the PM is the SMMP (or SMMP-like tracking document) (see chap 4).

c. As with system development programs, MANPRINT Domain Assessments and the MANPRINT Assessment should be requested by the PM in preparation for each MDR.

d. When MANPRINT-essential systems analysis (SA) data is not obtained, the MANPRINT WIPT should identify to the PM the essential MANPRINT data that is needed for transmittal to the appropriate domains.

3-5. MANPRINT in systems modifications

a. When modifying a system, MANPRINT issues and domains must be considered to ensure that configuration changes do not create new or unforeseen MANPRINT issues.

b. As in other acquisition strategies, the SMMP (or SMMP-like tracking document) is the recommended means for the PM to manage the MANPRINT Program during the systems modification (see chap 4).

c. As determined appropriate within the framework of the IPT and the tailored MANPRINT effort, a MANPRINT Assessment will be prepared for Milestone A and updated for each subsequent IPR and MDR.

3-6. MANPRINT in other systems

a. *Joint programs.* The MANPRINT equivalent for DOD and Joint Systems is Human Systems Integration (HSI). For joint programs that require Army personnel (as operators, maintainers, or supporters), MANPRINT/HSI policies apply. MANPRINT/HSI requirements must be embedded in the ORD, RFP, and TEMP, particularly the critical operational issues and criteria (COIC).

b. *Warfighting Rapid Acquisition Programs (WRAP).* WRAP is the Army accelerated procurement program for systems identified through TRADOC warfighting experiments as compelling successes that satisfy urgent needs (see AR 71-9). MANPRINT practices and policies should be made an integral part of WRAP programs by the PM or acquisition authority.

3-7. MANPRINT domain representation

MANPRINT domain representation on ICTs and IPTs for ACAT I and II and non-ACAT I and II systems are portrayed in tables 3-1 and 3-2 below.

Table 3-1
Representative MANPRINT domain subject matter expertise for ICTs and IPTs

Domain	ACAT ID, IC and II	ACAT IA (IAM, IAC)	ACAT III, IIIAC, and IV
Manpower	PERSCOM, DCD, TSM, Proponency Office	PERSCOM, DCD, TSM, Proponency Office	ARL-HRED, DCD, TSM, Proponency Office
Personnel	PERSCOM, DCD, TSM, Proponency Office	PERSCOM, DCD, TSM, Proponency Office	ARL-HRED, DCD, TSM, Proponency Office
Training	PERSCOM, TSM, Training Developer	PERSCOM, TSM, Training Developer	ARL-HRED, TSM, Training Developer
Health Hazards	CHPPM (lead), AMEDDC&S (assist)	CHPPM (lead), AMEDDC&S (assist)	CHPPM (lead), AMEDDC&S (assist)
Human Factors Engineering	ARL-HRED	ARL-HRED	ARL-HRED
System Safety	USASC, Local Safety Office (Installation, AMC, etc.)	CECOM	Local Safety Office (Installation, AMC, etc.)
Soldier Survivability	ARL-SLAD, ARL-HRED	ARL-SLAD, ARL-HRED	ARL-HRED, ARL-SLAD
MANPRINT Integration	DCSPER (DAPE-MR), ARL-HRED	DCSPER (DAPE-MR), ARL-HRED	DCSPER (DAPE-MR), ARL-HRED

Table 3-2
MANPRINT and MANPRINT domain assessment agencies by ACAT

Assessment	ACAT ID, IC, and II	ACAT IA (IAM, IAC)	AT III, IIIAC and IV
Manpower, Personnel Training	PERSCOM	PERSCOM	ARL-HRED
Health Hazards	CHPPM	CHPPM	CHPPM
Human Factors Engineering	ARL-HRED	ARL-HRED	ARL-HRED
Soldier Survivability	ARL-SLAD (lead) ARL-HRED (assist)	ARL-SLAD (lead) ARL-HRED (assist)	ARL-HRED or ARL-SLAD (lead)
System Safety	USASC* & AMC	CECOM	AMC

Table 3-2
MANPRINT and MANPRINT domain assessment agencies by ACAT—Continued

Assessment	ACAT ID, IC, and II	ACAT IA (IAM, IAC)	AT III, IIIAC and IV
Draft ODCSPER MANPRINT Assess- ment	ARL-HRED	ARL-HRED	ARL-HRED
ODCSPER MANPRINT Final Assessment	DCSPER (DAPE-MR)	DCSPER (DAPE-MR)	DCSPER (DAPE-MR)

Notes:

* USASC conducts Independent Safety Assessments (ISAs)

Chapter 4

System MANPRINT Management Plan System or SMMP-like tracking document

4-1. Introduction to the System MANPRINT Management Plan

a. DOD Regulation 5000.2-R states: “A comprehensive management and technical strategy for human systems integration shall be initiated early in the acquisition process to ensure that: Human performance; the burden the design imposes on manpower, personnel, and training (MPT); and safety and health aspects are considered throughout the system design and development processes.” Historically, successful acquisition programs have used the System MANPRINT Management Plan System (SMMP) to fulfill this requirement for a Human Systems Integration (HSI) strategy. A SMMP or SMMP-like tracking document will be utilized to identify MANPRINT issues and their recommended resolutions for all ACAT systems.

b. The SMMP is a tailored planning and management tool that outlines and documents the MANPRINT management approach, associated decision and planning efforts, user concerns, and resolution of MANPRINT issues during system acquisition. Identification and documentation of these issues early in the acquisition cycle increases the probability of their resolution, thereby enhancing total system performance, affordability, supportability, and conservation of the Army’s resources. The Defense Acquisition Deskbook recommends that the PM develop a Human System Integration Plan (HSIP) (SMMP equivalent) when the system has complex human-systems interfaces; significant manpower or training costs; personnel concerns; or safety, health hazard, or survivability issues.

c. The SMMP should be the cornerstone of the MANPRINT effort to ensure human considerations are effectively integrated into the development and acquisition of Army systems.

(1) The SMMP enhances and documents the Army’s effort to focus on total system performance. Consequently, the goal of optimizing total system performance at an affordable cost of ownership must consider military and civilian personnel (including contractor) requirements, and the feasibility and costs for operating, maintaining, repairing, training, supporting, and disposing of systems.

(2) The SMMP is a living document. It should track the current status of issues to include: Plans to address the issue; actions taken or decisions made; those responsible; and the current status. It should also contain potential or real MANPRINT data sources and MANPRINT analyses planned, underway, or completed. By recording the issues and their subsequent resolution, the SMMP provides an audit trail for subsequent system reviews.

(3) Information contained in the SMMP should flow to other documents (for example, ORD, user’s functional description (UFD), TEMP, RFP, System Training Plan (STRAP)). Likewise, new MANPRINT information contained in other documents should flow to the SMMP. To be effective, all documentation must be reviewed periodically to ensure this crosswalk of information occurs.

4-2. MANPRINT management

a. As with all MANPRINT activities, MANPRINT management should be initiated early in the process. The SMMP/CDE will be developed during the ICT and crosswalked by the ICT group leader to the TSM and PM.

b. The MANPRINT WIPT will tailor the format of the SMMP, which should contain those elements deemed essential and meaningful for use by the CBTDEV, FP, and the PM. The following potential SMMP elements, which have proven useful in past MANPRINT programs, will be considered:

- (1) System information.
- (2) Detailed target audience description (see glossary for definition).
- (3) MANPRINT issues (CDE-type data) and an issue tracking system.
- (4) Coordination to include points of contact (POCs).

c. Unresolved issues and issues that have been successfully resolved and reflect favorably on the system should be reported in the appropriate domain assessment.

Chapter 5

MANPRINT in the Source Selection Process

5-1. Treatment of MANPRINT

a. MANPRINT will be treated as a distinct major managerial and technical area based in part on the results of analyses provided by the associated ICT or IPT recommendations, and/or the contents of the ORD or SMMP, or directions from the CBTDEV or TSM. Of critical importance is the role of MANPRINT in the final source selection process. MANPRINT needs to be identified as a factor in the selection process so that contractors address it in their responses to the RFP. Once actual work begins, MANPRINT issues will be continuously addressed and evaluated throughout the life cycle of the program. This is especially important since the majority of the Army's life cycle costs for fielding are incurred for personnel and human resources.

b. Treatment of MANPRINT will be tailored appropriately to suit the nature and priorities of the program and contract effort.

5-2. Implementation

a. Program managers have a responsibility to address human systems integration (MANPRINT in the U.S. Army) as an essential part of the overall system design and acquisition process.

b. Solicitations shall require offerors to respond to all pertinent MANPRINT considerations in the statement of work (SOW), which shall reflect requirements from the ORD/mission needs statement (MNS) (and possibly enhanced through market research and/or IPT contributions). Important MANPRINT issues or opportunities identified in paragraph 4 or 5 of the ORD shall be addressed and evaluated as specific, stand-alone functional requirements in the SOW.

c. The specifications will describe how the system is to operate for the user in the operational environment, how the human influences performance parameters, and in the quality assurance paragraphs, how those requirements shall be verified. Specifications should also clearly identify any MANPRINT objectives and thresholds identified in the ORD.

d. MANPRINT deliverables under the contract should be included in the contract data requirements list (CDRL).

e. MANPRINT considerations should be included in section L, Instructions to Offerors, and section M, Evaluation Factors, for award.

f. MANPRINT considerations need to be an explicit part of the source selection planning and implementation process. All required and appropriate MANPRINT requirements and opportunities will be evaluated and considered in the best value trade-off analyses associated with source selection for acquisition of all Army systems (see fig B-4).

g. The Source Selection Evaluation Board (SSEB) should include representatives from each of the respective MANPRINT domains where appropriate.

Chapter 6

MANPRINT/HSI Practitioner of the Year Awards

6-1. Purpose

The DCSPER will recognize selected MANPRINT/HSI practitioners whose outstanding accomplishments and contributions merit special recognition by awarding a MANPRINT/HSI Practitioner of the Year Award.

6-2. Award categories

The awards will recognize selected Army MANPRINT/HSI practitioners in six categories:

- a.* Military/civilian practitioner.
- b.* Army materiel programs.
- c.* Information technology programs.
- d.* Combat developer communities.
- e.* Functional proponent communities.
- f.* MANPRINT technology research and development or studies.

6-3. Award description

Each award will consist of a—

- a.* Suitably engraved plaque for each category.
- b.* Letter of commendation signed by the DCSPER.
- c.* ODCSPER certificate.

6-4. Selection process

- a.* Announcement of the award criteria, eligibility, procedures, and suspense time frames for nominations will be

announced annually by the Personnel Technologies Directorate, ODCSPER via MANPRINT Web site at www.manprint.army.mil.

b. The DCSPER will convene a review board of general officer and senior executive service officials to consider nominations and recommend recipients.

(1) Voting members will consist of—

(a) Assistant Deputy Chief of Staff for Personnel, Board President.

(b) Deputy Chief of Staff for Combat Developments, U.S. Army Training and Doctrine Command.

(c) Director for Personnel Technologies, ODCSPER.

(d) Deputy Chief of Staff for Research, Development, and Acquisition, AMC (AMCRDA).

(e) Vice Director, Office of the Director of Information Systems for Command, Control, Communications, and Computers (DISC4).

(f) Assistant Deputy Chief of Staff for Operations and Plans, Force Development (DAMO–FD).

(g) Director, Assessment and Evaluation, Office of the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (SARD–ZD).

(2) Representatives from other military services may be called on to serve on this review board on an as needed basis.

c. The ODCSPER (DAPE–MR) will tabulate votes, prepare certificates, and letters for DCSPER signature, procure plaques, arrange presentation of the awards at an appropriate forum, and provide public affairs coverage and information.

Appendix A

References

Section I

Required Publications

AR 40-5

Preventive Medicine. (Cited in paras 2-12*b*(1) and 2-19*d*(2).)

AR 40-10

Health Hazard Assessment Program in Support of the Army Materiel Acquisition Decision Process. (Cited in paras 2-12*b*(1) and 2-19*d*(2).)

AR 70-75

Survivability of Army Personnel and Materiel. (Cited in para 2-18*d*(1).)

AR 385-10

The Army Safety Program. (Cited in para 2-14.)

AR 602-1

Human Factors Engineering Program. (Cited in para 2-18*c*(2).)

Section II

Related Publications

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

AR 5-11

Management of Army Models and Simulations

AR 5-22

The Army Proponent System

AR 11-2

Management Control

AR 15-1

Committee Management

AR 25-400-2

The Modern Army Record Keeping System (MARKS)

AR 40-60

Policies and Procedures for the Acquisition of Medical Materiel

AR 70-1

Army Acquisition Policy

AR 70-8

Soldier-Oriented Research and Development in Personnel and Training

AR 71-9

Materiel Requirements

AR 71-32

Force Development and Documentation-Consolidated Policies

AR 73-1

Test and Evaluation Policy

AR 350–10

Management of Army Individual Training Requirements and Resources

AR 350–35

Army Modernization Training

AR 350–38

Training Device Policies and Management

AR 381–11

Production Requirements and Threat Intelligence Support to the U.S. Army

AR 385–16

System Safety Engineering and Management

AR 570–4

Manpower Management

AR 570–5

Manpower Staffing-Standards System

AR 700–127

Integrated Logistic Support

AR 750–1

Army Materiel Maintenance Policy and Retail Maintenance Operations

DA Pamphlet 611–21

Military Occupational Classification and Structure

DOD Directive 5000.1

Defense Acquisition

DOD Regulation 5000.2–R

Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs

Section III

Prescribed Forms

This section contains no entries.

Section IV

Referenced Forms

DA Form 11–2–R

Management Control Review Checklist

Appendix B

Additional MANPRINT Policies and Guidance

B-1. Executive guidance

Figures B-1 through B-4 are policy statements regarding MANPRINT and its role in the acquisition process. They provide a current perspective from which key acquisition executives see MANPRINT.

B-2. MANPRINT common data elements

The MANPRINT General Officer Steering Committee (GOSC) directed that the tracking of MANPRINT issues be accomplished with other issues in the existing acquisition and program documentation. The common data elements (CDEs) are those elements of information that are required to be included in these documents. Hence, the CDEs will be recorded on the ICT reports and minutes for the purpose of ensuring continuity of issues and concerns raised during the various ICT meetings and the transferal to the materiel developer and IPT process. CDEs were determined to be—

- a. MANPRINT issues.* Includes not only issues and concerns, but also potential opportunities, such as emerging technology, to positively impact the program.
- b. Impacts.* The impacts and risks associated with the issue, opportunity, and alternative courses of action.
- c. Solutions.* Plans to address each issue or concern. This may also include potential solutions or opportunities not fully explored.
- d. Current status.* Including those actions taken, decisions/resolutions made, by whom, when, where, and how.
- e. Lead.* Who has assigned lead for specific actions and who is supporting/impacted.
- f. MANPRINT common data elements.* May be used as a tracking system by the PM but require full documentation and specification of paragraphs a–e above.

DEPARTMENT OF THE ARMY
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RESEARCH DEVELOPMENT AND ACQUISITION
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WASHINGTON DC 20310-0103
7 OCT 1997

REPLY TO
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SARD-SI

MEMORANDUM FOR SEE DISTRIBUTION

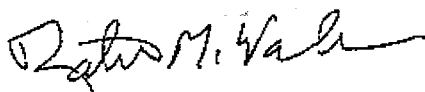
SUBJECT: Manpower and Personnel Integration (MANPRINT) Policy

Reference: Army Audit Agency Report, *Incorporating MANPRINT into Weapon Systems Development*, Report #AA 97-205, 10 June 1997.

The referenced report (Section B) highlights the need for consideration of MANPRINT for all categories of acquisition programs. This recommendation has been supported by the recent MANPRINT General Officer Steering Committee. I support the recommendation as well.

Effective this date, MANPRINT requirements and issues will be addressed for all Army acquisition programs. The MANPRINT process should begin at program conception and continue through the development and fielding phases. This includes consideration of soldier issues in the development of specifications, analysis of cost/performance tradeoffs, definition of performance criteria for test and evaluation, and the development of milestone decision criteria. The approach to MANPRINT will be tailored, as appropriate, to each program.

A key element of successful application of the MANPRINT process is the inclusion of appropriate MANPRINT domain expertise on relevant Integrated Product Teams (IPTs). The Army Research Laboratory Human Research and Engineering Directorate field elements will act as focal points for ensuring that appropriate domain experts are available to support your program. It is important that you take advantage of the unique expertise and experience of the relevant organizations on your IPTs and throughout your program activities. With their assistance, we can ensure that the end item produced is effective and safe for the soldier, our primary customer.



Robert M. Walker
Army Acquisition Executive

Figure B-1. Manpower and Personnel Integration (MANPRINT) Policy



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103 ARMY PENTAGON
WASHINGTON DC 20310-0103

12 FEB 1998

SARD-RP

MEMORANDUM FOR COMMANDER, U.S. ARMY TRAINING AND
DOCTRINE COMMAND, ATTN: ATCD-RP,
FORT MONROE, VIRGINIA 23651-5000

SUBJECT: Revised Operational Requirements Document (ORD) Format

References:

- a. Memorandum, ATCD-RP, December 22, 1997, Subject: Revised Operational Requirements Document (ORD) Format.
- b. Memorandum, ATCD-RP, December 19, 1997, Subject: Soldier Requirements in Requirements Documents.

There is no doubt that Manpower and Personnel Integration (MANPRINT) is a vital input to our considerations of ensuring the well-being of our uniformed members. The Army is totally committed to its application to ensure the survivability and effectiveness of our soldiers.

I have received and reviewed your December 22, 1997 memorandum (reference "a"). In it, you requested a change to the ORD format. The MANPRINT General Officer Steering Committee wishes to mandate placement of all seven MANPRINT domains within paragraph 4. This, in effect, equally weights every MANPRINT domain with every other make-or-break system consideration. I believe that to arbitrarily say that every MANPRINT domain is critical in every program all the time is to undermine the relative importance that individual MANPRINT concerns may have in specific instances.

All MANPRINT domains are not of equal importance in every program. As the definers of doctrine, we rely upon TRADOC to provide thoughtful priority determinations in the preparation of the ORD. This is the way you tell my materiel developers what is important in the acquisition of a new system.

Figure B-2. Revised Operational Requirements Document (ORD) Format

- 2 -

I have also received and reviewed your December 19 memorandum (reference "b"). It states that MANPRINT constraints are to be addressed in paragraph 5 of the ORD. However, it goes on to say that "Essential MANPRINT capabilities in the context of total system performance should be addressed within paragraph 4 of ORDs." Further, those critical MANPRINT capabilities that clearly meet TRADOC's published definition of Key Performance Parameters should be addressed within ORD paragraph 4a. It seems to me that this does exactly what we all want to do, which is to emphasize the totality of MANPRINT while at the same time focusing upon those aspects which are critical in each development effort.

In summary, there is total agreement as to the importance of MANPRINT. However, we must maintain flexibility in meeting our commitments. Accordingly, I believe that if we provide emphasis to the position stated in your December 19 memorandum, we will achieve our objective.

I trust this adequately addresses your concerns. If I can be of any further assistance, please do not hesitate to contact me.



Kenneth J. Oscar
Acting Assistant Secretary of the Army
(Research, Development and Acquisition)

Figure B-2. Revised Operational Requirements Document (ORD) Format—Continued



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WASHINGTON DC 20310-0103

REPLY TO
ATTENTION OF

SARD-ZT

24 JUN 1998

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Manpower and Personnel Integration (MANPRINT) Support to
Advanced Technology Demonstrations (ATDs)

References:

- a. Memorandum, Army Acquisition Executive, 7 October 1997,
SUBJECT: Manpower and Personnel Integration (MANPRINT) Policy.
- b. US Army Audit Agency Report, *Incorporating MANPRINT into Weapon
Systems Development*, Report #AA 97-205, 10 June 1997.
- c. Memorandum, Chief of Staff Army and Army Acquisition Executive, 18
May 1998, SUBJECT: Reducing Total Ownership Costs for Army Systems.

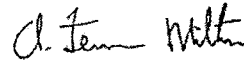
The referenced memorandum from the AAE (Ref a) directs that MANPRINT be considered in all acquisition programs, beginning at program conception and continuing through the development and fielding phases. This directive was issued in response to the referenced Army Audit Agency Report (Ref b) and the findings of the MANPRINT General Officer Steering Committee.

The referenced memorandum from the CSA and the AAE (Ref c) states policy that reducing Total Ownership Cost is a high priority. Early MANPRINT planning and resourcing can be important as we seek to identify technology solutions that enhance mission performance and capability while reducing the long term operating and support (O&S) costs of Army systems. In recognition of the role that ATDs play in reducing risk in the development of new systems, ATD Managers must ensure that their technology demonstrations include appropriate consideration of MANPRINT, tailored to the scope and nature of their program. This may involve the presence of relevant MANPRINT expertise on Integrated Product Teams and other program planning and execution teams.

Figure B-3. Manpower and Personnel Integration (MANPRINT) Support to Advanced Technology Demonstrations (ATDs)

-2-

The Army Research Laboratory Human Research and Engineering Directorate (HRED) serves at the direction of the AAE as a focal point for ensuring that relevant domain experts are available to support your program. HRED itself will provide support on a reimbursable basis. This should be taken into account in your program planning and budgeting, as necessary. The appropriate level of MANPRINT effort associated with an ATD will be determined by the ATD Project Manager.



A. Fenner Milton
Deputy Assistant Secretary
for Research and Technology

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CHIEF OF ENGINEERS
COMMANDING GENERAL, U.S. ARMY MEDICAL RESEARCH AND
MATERIEL COMMAND

CF:
DEPUTY UNDER SECRETARY FOR OPERATIONS RESEARCH

Figure B-3. Manpower and Personnel Integration (MANPRINT) Support to Advanced Technology Demonstrations (ATDs)—
Continued

Deputy Assistant Secretary For Plans, Programs
and Policy
OASA(RDA)
98 September SARD-ZR Bulletin

**MANPRINT Inclusion in Army Acquisition
Source Selection Process**

The Army Acquisition Executive, Mr. Paul J. Hoeper,
signed the above subject on August 21, 1998.

References: a. Memorandum, Army Acquisition
Executive, October 7, 1997, Subject: Manpower and
Personnel Integration (MANPRINT) Policy. (Enclosed),
b. U.S. Army Audit Agency Report, Incorporating
MANPRINT into Weapon Systems Development,
Report #AA 97-205, June 10, 1997, c. Minutes of
Manpower and Personnel Integration (MANPRINT)
General Officer Steering Committee (GOSC) Meeting
of September 29, 1997.

The purpose of this memorandum is to voice my strong
support for the MANPRINT Program and to increase
your awareness of the need to make MANPRINT
considerations and explicit part of the source selection
planning and implementation processes. MANPRINT is
a key factor in both total cost of ownership/life cycle
cost and integrated soldier machine system
performance.

Effective this date, all required and appropriate
MANPRINT requirements and opportunities will be
evaluated and considered in the best value trade-off
analyses associated with source selection for
acquisition of all Army systems. Solicitations shall
require offerors to respond to all pertinent MANPRINT
considerations in the Statement of Work (SOW), which
shall reflect requirements from the Operational
Requirements Documents (ORD)/Mission Needs
Statement (MNS) (and possibly enhanced through
market research and/or IPT contributions). Important
MANPRINT issues or opportunities identified in
paragraph 4 or 5 of an ORD shall be addressed and
evaluated as specific, stand-alone functional
requirements in the SOW.

<http://www.manprint.army.mil/manprint/PEOPMtoolbox/SourceSelection.html>

6/23/99

Figure B-4. MANPRINT Inclusion in Army Acquisition Source Selection Process

The referenced memorandum Ref. a) from the Army Acquisition Executive directs that MANPRINT be considered in all Army acquisition programs. This directive was issued in response to the referenced Army Audit Report (Ref. b) and the findings of the MANPRINT General Officer Steering Committee (Ref. c). The referenced minutes also emphasize MANPRINT compliance considerations and opportunities in the source selection process for Army systems.

Program Managers have a responsibility to address Human-System Integration (MANPRINT in the U.S. Army) as an essential part of the overall system design and acquisition process. These requirements are stated DoD Regulation 5000.2-R; AR 602-2, MANPRINT in the Materiel Acquisition Process; and Army PAM 70-3, Army Acquisition Procedures.

I expect your full cooperation in ensuring that MANPRINT is an integral part of the materiel development and acquisition/source selection processes. Our soldiers expect and deserve the safest and most efficient and user-optimized systems and equipment that we can provide. I expect no less for our primary customers.

(Mr. John Conklin/SARD-PP/DSN 761-9796)

<http://www.manprint.army.mil/manprint/PEOPMtoolbox/SourceSelection.html>

6/23/99

Figure B-4. MANPRINT Inclusion in Army Acquisition Source Selection Process—Continued

Appendix C

Management Control Evaluation Checklist for the Manpower and Personnel Integration (MANPRINT) Program

C-1. Function

The function covered by this checklist is the conduct of the Manpower and Personnel Integration Program by MANPRINT managers and other functional specialists supporting the MANPRINT Program.

C-2. Purpose

The purpose of this checklist is to assist the senior acquisition MANPRINT personnel within the MANPRINT community in evaluating the application of MANPRINT principles during the acquisition and fielding process.

C-3. Instructions

Answers must be based upon the actual testing of control (for example, document analysis, direct observation, interviewing, sampling, simulation, and/or others). Answers that indicate deficiencies must be explained, and the corrective action taken must be indicated in the supporting documentation. These management controls must be evaluated at least once every five years and then certified on DA Form 11-2-R (Management Control Evaluation Certification Statement). A copy of DA Form 11-2-R is available on the Army electronic library CD-ROM (EM0001) and on the USAPA Web site (www.usapa.army.mil).

C-4. Test questions

a. System acquisition planning.

- (1) Are resource constraints considered in development of requirements documents (such as mission needs statement (MNS), CAPSTONE requirements document (CRD), and ORD)?
- (2) Are MANPRINT requirements and constraints considered in program documents and reviews?
- (3) Is MANPRINT considered in source selection to ensure reduction in resource requirements?

b. MANPRINT considerations for Army systems before fielding.

- (1) Were relevant and justifiable MANPRINT thresholds and objectives developed during concept development?
- (2) Did performance parameters (including key performance parameters (PPS)) consider the soldier in parameter development?
- (3) Was a target audience description developed so that acquisition and design personnel are aware of the typical operators, maintainers, and supporters available for the system?
- (4) Can the proposed system be operated and maintained by the quantity and skills of people that will be available?
- (5) Is MANPRINT represented on all appropriate Integrated Concept Teams (ICTs) and Integrated Product Teams (IPTs)?
- (6) Has ARL-HRED been designated as the focal point for MANPRINT support on systems?
- (7) Is there a process to manage the MANPRINT Program and track issues on all systems?
- (8) Are MANPRINT issues being incorporated in appropriate testing and evaluation plans?
- (9) Is sufficient funding programmed to perform the MANPRINT actions planned?

c. MANPRINT after fielding.

- (1) Is the requirement for post-fielding MANPRINT analyses identified and resourced?
- (2) Are MANPRINT unresolved issues being addressed in planned system modifications and/or product improvements?

C-5. Comments

Help make this a better review tool. Submit comments to HQDA (DAPE-MR), 300 Army Pentagon, Washington, DC 20310-0300.

Glossary

Section I

Abbreviations

AMC

U.S. Army Materiel Command

ARNG

U.S. Army National Guard

ASARC

Army Systems Acquisition Review Council

BOIP

basis of issue plan

CG

commanding general

COE

Chief of Engineers

CSA

Chief of Staff of the Army

DA

Department of the Army

DCSLOG

Deputy Chief of Staff for Logistics

DCSOPS

Deputy Chief of Staff for Operations and Plans

DCSPER

Deputy Chief of Staff for Personnel

DOD

Department of Defense

DTP

detailed test plan

HFE

human factors engineering

IAW

in accordance with

ILS

integrated logistics support

INSCOM

U.S. Army Intelligence and Security Command

IPR

in process review

MBA

MANPRINT Board of Advisors

MOE

measures of effectiveness

MOS

military occupational specialty

NBC

nuclear, biological, chemical

POC

point of contact

POM

program objective memorandum

QQPRI

qualitative and quantitative personnel requirements information

RDTE

research, development, test, and evaluation

RFP

request for proposal

SOW

statement of work

SSEB

Source Selection Evaluation Board

TDA

table of distribution and allowances

TDP

test design plan

TIWG

Test Integration Working Group

TM

technical manual

TOE

table of organization and equipment

TRADOC

U.S. Army Training and Doctrine Command

TSG

The Surgeon General

USAR

U.S. Army Reserve

USASC

U.S. Army Safety Center

WBS

work breakdown structure

Section II

Terms

Functional proponent

The functional proponent (FP) is the representative of the Army Agency responsible for the subject area in which information mission area (IMA) resources are utilized.

Health hazards

The inherent conditions in the use, operation, maintenance, repair, support, storage, and disposal of a system (for example, acoustical energy, biological substances, chemical substances, oxygen deficiency, radiation energy, shock, temperature extremes, trauma, and vibration) that can cause death, injury, illness, disability, or reduce job performance of personnel.

Health Hazard Assessment

The Health Hazard Assessment is one of the domain assessments prepared in support of the MANPRINT Assessment process. Its purpose is to identify potential health hazards, which may be associated with the development, acquisition, operation, and maintenance of Army systems.

Human factors engineering

The technical effort to integrate design criteria, psychological principles, human behavior, capabilities and limitations as they relate to the design, development, test, and evaluation of systems. The HFE goals are to maximize the ability of soldiers to perform at required levels by eliminating design-induced errors, and to ensure that system operation, maintenance, and support are compatible with the capabilities and limitations of the range of fully-equipped soldiers who would be using such systems. HFE provides an interface between the other MANPRINT domains and system engineers. HFE supports the MANPRINT goal of developing equipment that will permit effective soldier-machine interaction within the allowable established limits of training time, soldier aptitudes and skill, physical endurance, physiological tolerance limits, and soldier physical standards. HFE provides this support by determining the soldier's role in the system, and by defining and developing soldier-machine interface characteristics, workplace layout, and work environment.

Human Factors Engineering Assessment

A Human Factors Engineering Assessment (HFEA) is a review of the status of HFE of a system as it approaches the end of an acquisition phase in the materiel acquisition life cycle. Its purpose is to influence and support the milestone decision review process that determines whether the system is ready to transition to the next scheduled phase. Broad areas addressed by the HFEA are HFE detail design and soldier performance considerations as they relate to the operation, maintenance, and support of the system being evaluated and how these factors might impact the system's pre-established MPT goals and constraints. A major thrust of the HFEA is to identify any design flaws which, taken singularly or collectively, may be so objectionable that, if not remedied, would warrant a decision not to transition to the next phase. The HFEA will also identify, should they exist, problems or concerns that while not serious enough to preclude transitioning should be resolved to enhance total system operational effectiveness. Last, as appropriate, the HFEA will address the HFE issues identified in the SMMP and other tracking documents. Data from this report and subsequent updates are input in the SMMP (or SMMP-like tracking document) and the MANPRINT Assessment.

Human Systems Integration

Human Systems Integration (HSI) is a comprehensive management and technical strategy, initiated early in the acquisition process, to ensure that human performance, the burden the design imposes on MPT, and safety and health aspects are considered throughout the system design and development processes. Human factors engineering requirements are also established to develop effective human-machine interfaces, and minimize or eliminate system characteristics that require extensive cognitive, physical, or sensory skills; to require excessive training or workload for intensive tasks; or to result in frequent or critical errors or safety/health hazards. The capabilities and limitations of the operator, maintainer, repairer, trainer, and other support personnel shall be identified prior to program initiation (usually Milestone A), and refined during the development process. (See DOD Regulation 5000-2-R, para 4.3.8 *Human Systems Integration (HSI)*.) MANPRINT is the Army's process for Human Systems Integration and incorporates soldier survivability considerations into that process, as well.

Independent research & development

An independent research & development effort is non-contracted, company funded technology development work initiated and performed by DOD contractors to maintain technical superiority.

Independent Safety Assessment

The Independent Safety Assessment (ISA) is one of the assessments prepared in support of the milestone decision

review process. This assessment will be used by ARL–HRED and ODCSPER in the preparation of the draft and final MANPRINT Assessment.

Manpower

The personnel strength (military and civilian) that is available to the Army. Manpower refers to the consideration of the net effect of Army systems on overall human resource requirements and authorizations (spaces) to ensure that each system is affordable from the standpoint of manpower. It includes analysis of the number of people (including contractors) needed to operate, maintain, repair, and support each new system being acquired, including maintenance and supply personnel, and personnel to support and conduct training. It requires a determination of the Army manpower changes generated by the system, comparing the new manpower needs with those of the old systems being replaced, and an assessment of the impact of the changes on the total manpower limits of the Army.

MANPRINT (Manpower and Personnel Integration)

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

MANPRINT Assessment

MANPRINT Assessments are prepared under the authority of the ODCSPER and address unresolved critical MANPRINT issues to the milestone decision authority for ASARCs, IT OIPTs, and other acquisition decision reviews. Assessments will normally assign a RED (R), AMBER (A) or GREEN (G) rating.

- a. *Red (R)*. Major problems identified (show stopper) with no solution identified or solution being implemented with less than satisfactory results projected by the next milestone date.
- b. *Amber (A)*. Significant or minor problems identified, with a solution or work-around plan expected to be completed by the next major milestone date.
- c. *Green (G)*. No problems. All actions on schedule.

MANPRINT exit criteria

MANPRINT exit criteria are specific minimum requirements that are capable of empirical and/or objective measurement that must be demonstrated before a system or program is ready to transition to the next phase of its acquisition process. MANPRINT exit criteria typically link human performance to total system performance and life cycle cost, becoming a priority subset of total system requirements for a particular acquisition phase. Other MANPRINT exit criteria may require demonstration of a particular outcome (for example, a performance-based demonstration of the feasibility of a particular training concept). MANPRINT exit criteria are normally written by the ICT or the MANPRINT Working Integrated Product Team (WIPT)—often in coordination with the T&E IPT—and documented in the SMMP or other tracking document.

MANPRINT issues

MANPRINT representatives support the IPT process by identifying and elevating MANPRINT related issues to the PM, the combat developer, and the TRADOC System Manager (TSM) for risk management, mitigation or issue resolution. Unresolved critical issues are addressed in MANPRINT Assessments to the milestone decision authority for ASARCs, IT OIPTs, and other acquisition decision reviews. The PM will address the issues, their impact on supportability, and life cycle costs, and their planned resolution in the Modified Integrated Program Summary (MIPS). Issues are defined as critical, major, or concern.

- a. *Critical*. An issue regarding one or more of the MANPRINT domains, which warrants immediate attention/resolution to preclude serious risk to the program and the Army, regarding one or more of the following areas of risk: High probability for catastrophic injury or death to the crew or other friendly personnel; seriously degraded mission performance or effectiveness; the requirement for major unprogrammed MPT resources; or jeopardized ability of the MPT community (DCSPER, TRADOC, PERSCOM, etc.) to support system fielding with trained available personnel. Critical unresolved issues will be addressed in a MANPRINT Assessment and reported to the MDA. Critical issues often result in an overall RED rating to the program (that is, a recommendation that the program not be allowed to proceed to the next phase until the issues are resolved or the risks have been mitigated).
- b. *Major*. An issue regarding one or more of the MANPRINT domains that at the time of the rating will not preclude the program from proceeding to the next acquisition phase. Major issues often differ from those deemed as critical in that the degree of severity or the probability for occurrence is lower, or there is adequate time within the program schedule to resolve the issue or mitigate the risk.
- c. *Concern*. Concerns are potential issues or areas of risk regarding one or more of the MANPRINT domains lacking sufficient supporting data or analyses. Actions to provide data and/or analyses should be accomplished as early

as possible to determine the severity of the potential issue or the degree of probability for occurrence. This will facilitate issue resolution or risk mitigation.

MANPRINT WIPT

Formerly called a MANPRINT Joint Working Group, the purpose of a MANPRINT WIPT, either as part of an ICT or IPT, is to assist in outlining and overseeing the MANPRINT strategy for an acquisition program. This may involve developing a System MANPRINT Management Plan (SMMP) or CDEs and will encompass the following: Identifying MANPRINT issues and constraints; embedding MANPRINT in requirements documents; assisting in the development of methods to resolve issues or mitigate risks; monitoring status of issues; and alerting the PM of his or her MANPRINT responsibilities in preparation for a milestone decision review.

MPT analysis

The application of formal MPT analytical tools/methodologies, or informal processes such as subject matter expert review, to a system to determine MPT constraints, identify current or potential issues, and estimate MPT requirements. Analysis results are used to prepare the MPT Assessment and/or furnish MPT data to the ICT, IPT, or MANPRINT WIPT.

MPT Assessment

The MPT Assessment is a review of the status of MPT of a system as it approaches the end of an acquisition phase in the system life cycle. Its purpose is to influence and support the milestone decision review process that determines whether the system is ready to transition to the next scheduled phase. Issues are identified and, if practical, solutions are recommended. The assessment is a result of an analysis of MPT documentation and participation in ICTs, IPTs, and WIPTs. Last, as appropriate, the MPT Assessment will address the MPT issues identified in the SMMP or other tracking documents.

Personnel

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

Program sponsor

Generic term for the manager of the program or system at its basic level; that is, combat developer, program manager, project officer, functional proponent.

Soldier

The term “soldier” in this regulation refers to military personnel as well as Government civilians and civilian contractors.

Soldier survivability

Soldier survivability addresses the characteristics of a system that can reduce fratricide, as well as reduce detectability of the soldier, prevent attack if detected, prevent damage if attacked, minimize medical injury if wounded or otherwise injured, and reduce physical and mental fatigue. It also includes those factors (that is, combat ensemble, training, or combat equipment) that enable soldiers to withstand or avoid adverse military action or the effects of natural phenomena that would result in the loss of capability to continue effective performance of the prescribed mission.

Soldier Survivability Assessment

The Soldier Survivability Assessment (SSvA) assesses the system’s effects in regard to soldier survivability. Data from this report and subsequent updates are input to the SMMP (or SMMP-like tracking document) and the MANPRINT Assessment.

System MANPRINT Management Plan

The System MANPRINT Management Plan (SMMP) is the Army’s recommended strategy and plan for tracking issues and their disposition and is designed to assist the PM in meeting the requirements of paragraph 4.3.8 of DOD Regulation 5000.2–R. It serves as a planning and management tool and an audit trail to identify tasks, analyses, trade-offs and decisions that must be made in order to address MANPRINT issues during concept development, system

development, and the acquisition process. Data from the SMMP (for example, MANPRINT issues and MPT constraints) should be used in developing requirements documents, test plans, and contractual documents.

System

A generic term that includes individual systems, systems of systems, and family of systems. In some respects, the “system” is the force (such as a Brigade Combat Team) rather than one item of equipment.

System of systems

In a growing number of acquisition actions, the Government is dealing not with single systems but with multiple systems that must interact with each other to achieve design capabilities. Illustrative is the Army Battle Command System (ABCS), which consists of a series of individual C4ISR systems that must be integrated horizontally and possess common hardware and software to ensure total system effectiveness. While milestone decision authorities are more likely to address the individual system components, growing pressures such as the Army’s Transformation Campaign Plan will mandate a total systems approach.

System safety

The application of engineering and management principles, criteria, and techniques to optimize safety within the constraints of operational effectiveness, time, and cost throughout all phases of the system life cycle.

Target audience description

The target audience description (TAD) lists occupational identifiers for personnel, who are projected to operate, maintain, train, and support a specific future Army system. Further, for each identifier, the TAD should provide an information source, which describes the characteristics of the personnel identified and estimates the number of personnel required. Describing projected system personnel early in the acquisition process increases the Army’s flexibility to achieve the best system solution in terms of design, affordability, supportability, and performance.

Total system

A total system is a composite of skilled people, procedures, materials, tools, equipment, training devices, and software that provides an operational capability to perform a stated mission (in the case of a materiel system) or a particular function or set of functions (in the case of an AIS). A total system includes manpower (the number of people required for its operation, maintenance, and support), personnel (the aptitudes, capabilities, and limitations of the designated operators, maintainers, and support personnel), the affordable school and unit training necessary to ensure that those personnel can achieve the system performance requirements, and the required support equipment and doctrine.

Total system performance

Total system performance equates to the function of the following: The performance of the equipment (that is, both hardware and software); the performance of the human (that is, the operator, maintainer, and repairer); and the environment (that is, operational, social, and physical).

Training

Consideration of the necessary time and resources required to impart the requisite knowledge, skills, and abilities to qualify Army personnel for operation, maintenance, and support of Army systems.

a. It involves—

(1) The formulation and selection of engineering design alternatives, which are supportable from a training perspective.

(2) The documentation of training strategies.

(3) The timely determination of resource requirements to enable the Army training system to support system fielding.

b. It includes analyses of the tasks performed by the operator, maintainer, and supporter; the conditions under which they must be performed; and the performance standards that must be met.

c. Training is linked with personnel analyses and actions in that availability of qualified personnel is a direct function of the training process.

Section III

Special Abbreviations and Terms

This publication uses the following abbreviations, brevity codes and acronyms not contained in AR 310–50:

AAE

Army Acquisition Executive

ACAT

acquisition category

ACTD

advanced concept technology demonstration

AIS

automated information system

ALMC

U.S. Army Logistics Management College

AMCRDA

U.S. Army Materiel Command-Research, Development, and Acquisition

AMEDDC&S

U.S. Army Medical Department Center & School

AoA

analysis of alternatives

ARI

U.S. Army Research Institute for the Behavioral and Social Sciences

ARL

U.S. Army Research Laboratory

ARL-HRED

U.S. Army Research Laboratory-Human Research and Engineering Directorate

ARL-SLAD

U.S. Army Research Laboratory-Survivability/Lethality Analysis Directorate

ASA(ALT)

Assistant Secretary of the Army (Acquisition, Logistics, Technology)

ASA(I&E)

Assistant Secretary of the Army (Installation & Environment)

ASA(M&RA)

Assistant Secretary of the Army (Manpower and Reserve Affairs)

ATD

advanced technology demonstration

ATEC

U.S. Army Test and Evaluation Command

ATRRS

Army Training Requirements and Resources System

AWE

advanced warfighting experiment

BOIPFD

basis of issue plan feeder data

CBTDEV

combat developer

CDE

common data element

CDRL

contract data requirements list

CECOM

U.S. Army Communications-Electronics Command

CEP

Concept Experimentation Program

CHPPM

U.S. Army Center for Health Promotion and Preventive Medicine

CIE

clothing and individual equipment

COIC

critical operational issues and criteria

COTS

commercial off-the-shelf

CRD

CAPSTONE requirements document

DASAF

Director of Army Safety

DCD

Director of Combat Developments

DCSINT

Deputy Chief of Staff for Intelligence

DISC4

Director of Information Systems for Command, Control, Communications, and Computers

DOTD

Director of Training and Doctrine

DUSA(OR)

Deputy Under Secretary of the Army (Operations Research)

ETP

exportable training package

FA

functional area

FD

functional description

FP

functional proponent

HHA

Health Hazard Assessment

HSI

Human Systems Integration

HSIP

Human Systems Integration Plan

ICT

Integrated Concept Team

IMA

information mission area

IOT&E

initial operational test and evaluation

IPT

Integrated Product Team

IR&D

independent research & development

IT

information technology

JWG

Joint Working Group

KPP

key performance parameter

LUT

limited user test

MAIS

major automated information system

MANPRINT

Manpower and Personnel Integration

MATDEV

materiel developer

MDA

milestone decision authority

MDR

milestone decision review

ME

manpower estimate

MEDCOM

U.S. Army Medical Command

MNS

mission needs statement

MOPPS

measures of performance parameters

MPT

manpower, personnel, and training

MRMC

Medical Research and Materiel Command

NDI

non-developmental item

O&S

operations and support

OIPT

Overarching Integrated Product Team

ORD

operational requirements document

OT&E

operational test and evaluation

PEG

Equip Program Evaluation Group

PEO

Program Executive Officer

PERSCOM

U.S. Total Army Personnel Command

PERTEC

Personnel Technologies Directorate

PM

program, project, or product manager

RDEC

Research, Development and Engineering Center

SA

supportability analysis

SEMP

System Engineering Management Plan

SEP

system evaluation plan

SER

system evaluation report

SIPT

Supportability Integrated Product Team

SMDC

Space and Missile Defense Command

SME

subject matter experts

SMMP

System Manprint Management Plan

SORD

soldier oriented research and development

SoS

system of systems

SS

support strategies

SSv

Soldier Survivability

STRAP

System Training Plan

T&E

test and evaluation

TAD

target audience description

TADSS

training aids, devices, simulators, and simulations

TEMP

Test and Evaluation Master Plan

TNGDEV

training developer

TP

test plan

TSM

TRADOC system manager

USAMEDDBD

U.S. Army Medical Department Board

WIPT

Working Integrated Product Team

WRAP

Warfighting Rapid Acquisition Program

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