

Army Regulation 602-2

Soldier-Materiel Systems

Human Systems Integration in the System Acquisition Process

**Headquarters
Department of the Army
Washington, DC
27 January 2015**

UNCLASSIFIED

SUMMARY of CHANGE

AR 602-2

Human Systems Integration in the System Acquisition Process

This rapid action revision, dated 27 January 2015--

- o Changes the name of this regulation from "Manpower and Personnel Integration in the System Acquisition Process" to "Human Systems Integration in the System Acquisition Process" (cover).
- o Removes sentence "Ensure application of MANPRINT methodologies to hardware and software development, modification, and acquisition programs that come under the responsibility of information technology systems" (formerly para 2-4b).
- o Replaces the term "Manpower and Personnel Integration" with the term "Human Systems Integration" (throughout).
- o Replaces the term "MANPRINT" with "HSI" or "Army HSI" where appropriate (throughout).
- o Changes the office symbol from "DAPE-MR" to "DAPE-HSI" (throughout).
- o Changes the term "System Manpower and Personnel Integration Management Plan (SMMP)" to "Human Systems Integration Plan (HSIP)" (throughout).
- o Changes "U.S. Army Combat Readiness/Safety Center" to "Combat Readiness Center" (throughout).

Soldier-Materiel Systems

Human Systems Integration in the System Acquisition Process

By Order of the Secretary of the Army:

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General, United States Army
Chief of Staff

Official:



GERALD B. O'KEEFE
Administrative Assistant to the
Secretary of the Army

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

Summary. This regulation on Army Human Systems Integration implements Department of Defense Instruction 5000.02.

Applicability. This regulation applies to the Active Army, the Army National

Guard/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, G–1. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency in the grade of colonel or the civilian equivalent. Activities may request a waiver to this regulation by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25–30 for specific guidance.

Army internal control process. This regulation contains internal controls and

identifies key internal controls that must be evaluated (see appendix B).

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from Deputy Chief of Staff, G–1 (DAPE–HSI), 300 Army Pentagon, Washington, 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 Deputy Chief of Staff, G–1 (DAPE–HSI), 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/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 establishes policy, responsibilities, and documentation requirements for implementing and supporting Army Human Systems Integration (Army HSI) – formerly known as Manpower and Personnel Integration (MANPRINT) – responsibilities in accordance with Department of Defense instruction (DODI) 5000.02, emphasizes front-end planning of Soldier-system design for optimum total system performance as part of Army regulation (AR) 70–1; and describes Army HSI support available to, and identifies support organizations for, the force modernization and branch proponent capability developers (CAPDEVs), materiel developers (MATDEVs), test and evaluation personnel, and milestone decision authorities (MDAs).

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 terms used in this regulation are explained in the glossary.

1–4. Responsibilities

Responsibilities are listed in chapter 2.

1–5. The Army Human Systems Integration Program

a. The Army's HSI Program focuses on the integration of human considerations into the system acquisition process to enhance Soldier-system design, reduce life cycle ownership costs, improve safety and survivability, and optimize total system performance. HSI 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 contribute to enhanced total system performance and could help reduce life cycle ownership costs.

b. It is imperative that a total HSI effort begins as early as possible in system acquisition and that user feedback is used to maximize the influence on system design. HSI integrates and facilitates trade-offs among seven domains, listed below, but does not replace individual domain activities, responsibilities, or reporting channels. Army HSI domains may be described as follows (see glossary):

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

(2) *Personnel capabilities*. 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 HSI considerations have the greatest positive impact on system design, they will be integrated into the system acquisition process as early as possible. HSI analyses accomplished early in the program are especially valuable in identifying potential error-prone or problem-prone design features. To ensure HSI is embedded in the system acquisition process, analytical tools will be applied when they can provide the greatest influence to the total system. HSI assessments will be conducted prior to milestone decision reviews (MDRs) to ensure HSI has been properly applied and to identify acquisition impacts.

d. Army HSI domain subject matter experts will function as dedicated or on-call core members of integrated capabilities development teams (ICDTs) and integrated product teams (IPTs). The U.S. Army Research Laboratory Human Research and Engineering Directorate field elements have been designated to act as focal points for ensuring that appropriate domain experts are available to support ICDTs and IPTs. The HSI representatives on the ICDT will

transition to the HSI working integrated product team (WIPT) and other IPTs, to include overarching integrated product teams (OIPTs). As the Army Staff proponent for HSI, the Deputy Chief of Staff, G-1 (DCS, G-1) (DAPE-HSI) will play a role, as appropriate, in the identification of HSI subject matter experts to work on ICDTs and IPTs. The HSI representatives on the ICDT will ensure that Army HSI constraints are identified, HSI is embedded in requirements documents as applicable, dependencies with other programs are identified and assessed, and an audit trail of HSI issues and concerns is provided in applicable program documents such as the ICDT report or minutes. The audit trail will include the information in the Human Systems Integration Plan (HSIP), HSIP-like tracking document, or common data elements. As the system responsibility transitions from the ICDT to the program, project, and/or product manager (PM) (and IPT), HSI representatives will ensure that HSI requirements are documented in the crosswalk from initial capabilities document (ICD) to request for proposal (RFP), the system specification, and Test and Evaluation Master Plan (TEMP), as applicable. The HSI WIPT will assist the PM in ensuring that HSI requirements are met and issues resolved. The HSIP and the System Engineering Plan (SEP) are excellent managerial tools to facilitate planning, organizing, and managing HSI activities.

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

1-6. Filing and recordkeeping

All Army organizations performing HSI activities will establish a HSI case file in accordance with AR 25-400-2.

Chapter 2 Responsibilities

Section I Headquarters, Department of the Army Elements

2-1. Assistant Secretary of the Army (Acquisition, Logistics and Technology)

The ASA (ALT) will—

- a.* Establish guidance for integrating HSI within the research, development, and acquisition community.
- b.* Ensure the application of HSI practices are considered throughout the system design and development processes for acquisition systems.
- c.* Include research, development, test, and evaluation funds for HSI in budget submissions provided by the ASA (ALT) Science and Technology Battlefield Operating System. Such resourcing will address development of new HSI tools, techniques, methodologies, and support for HSI subject matter experts during capabilities development activities and IPT meetings and reviews.
- d.* Ensure PEO and/or PMs receive appropriate HSI training.
- e.* Ensure the manpower estimate is staffed with DCS, G-1 (DAPE-HSI) for review and comment.

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

The ASA (IE&E) will—

- a.* Establish Army guidance governing system safety and health hazard assessment (HHA) programs.
- b.* Provide oversight and guidance on the system safety and HHA aspects of the Army HSI Program.

2-3. Assistant Secretary of the Army (Manpower and Reserve Affairs)

The ASA (M&RA) will—

- a.* Provide secretariat level oversight to the DCS, G-1 in management of the Army HSI Program.
- b.* Coordinate with the Deputy Chief of Staff, G-3/5/7 (DCS, G-3/5/7), DCS, G-1, Deputy Chief of Staff, G-4 (DCS, G-4), Chief Information Officer/G-6 (CIO/G-6), and appropriate Army commands to ensure that the manpower, personnel capabilities, and training requirements to support all acquisition systems, including commercial off-the-shelf and nondevelopmental items, are integrated into 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 (required by Title 10, United States Code, 2434 (10 USC 2304)) provided by ASA (ALT). Transmit the approved manpower estimate to the Office of the Assistant Secretary of Defense (Personnel and Readiness).

2-4. Chief Information Officer/G-6

The CIO/G-6 will—

- a.* Establish guidance to integrate HSI considerations into requirements documents for the development and acquisition of information technology systems.

- b.* Ensure, in coordination with DCS, G–1, the resolution of HSI issues and concerns during the life cycle of information systems. Ensure that HSI unresolved critical issues are addressed at appropriate decision forums.
- c.* Encourage program executive officers (PEOs) and PMs to have HSI training.

2–5. Deputy Chief of Staff, G–1

The DCS, G–1 will—

- a.* Exercise primary Army Staff (ARSTAF) staff responsibility for the Army HSI Program.
- b.* Develop, coordinate, and disseminate DA Army HSI Program policy, guidance, and procedures to all Army commands and agencies.
- c.* Address unresolved critical HSI issues at Army systems acquisition review councils, Army OIPTs, and other acquisition decision reviews via the HSI assessment and provide recommendations or potential trade-offs to the MDA, as applicable.
- d.* Serve as the Army’s focal point for Army HSI Program interfaces with other Department of Defense (DOD) services, Government agencies, and international programs regarding policy, standards, and research and development.
- e.* Serve as the proponent for the Army HSI Training Program. Review the U.S. Army Logistics University’s HSI workshops and training courses for quality and content, ensuring conformance with established goals, principles, policies, and procedures. In the case of the latter, via the Army HSI Web site (<http://www.armyg1.army.mil/HSI>), support U.S. Army Logistics University by providing updated HSI training to prior graduates of HSI training courses. Monitor and provide guidance on HSI training in all other courses of instruction (DA and DOD).
- f.* Prior to the convening of a key in-process review (IPR) or MDR, issue a HSI assessment for the MDA with copies to the PEO and/or PM. This final HSI 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 HSI assessments on those systems acquisitions being monitored.
- h.* Sponsor an Army HSI Workshop approximately every 18 months to further professional coordination and collaboration among specialists in manpower, personnel capabilities, training, human factors engineering (HFE), system safety, health hazards, and Soldier survivability from Government, industry, and the academic community both in the United States and allied nations.
- i.* Establish the Army HSI Web site. Maintain it as a primary source of information on Army HSI policy, guidance, procedures, training, and events.
- j.* In coordination with the DCS, G–3/5/7, develop Army policy and guidance to ensure HSI training resources are included in Army training programs.
- k.* Serve as the proponent for the HSI Technical Base Research and Development Program to identify and prioritize research needs. Coordinate the HSI Technical Base Program with the Soldier-Oriented Research and Development Program under AR 70–8. Encourage industry to initiate independent research and development projects that support and improve HSI methodology.
- l.* In coordination with the DCS, G–4, develop policy on how Army HSI and integrated logistics support (ILS) programs will complement each other.
- m.* Review the application of HSI in Army models, simulations, and analyses.
- n.* Review applicable concept and capability documents throughout the acquisition system life cycle to ensure all Army HSI domain requirements have been properly addressed. Coordinate with PMs and source selection authorities to ensure that HSI requirements have been cross-walked for inclusion in solicitation documentation. Coordinate with PMs and the test community to ensure HSI considerations have been included in test planning documentation.
- o.* Encourage and facilitate an integrated, cooperative working relationship among all of the Army HSI domain agencies.
- p.* Review all manpower estimates.

2–6. Deputy Chief of Staff, G–2

The DCS, G–2 will establish guidance to integrate Army HSI principles into the development and acquisition of intelligence and security systems over which they have direct authority.

2–7. Deputy Chief of Staff, G–3/5/7

The DCS, G–3/5/7 will—

- a.* Ensure that HSI is considered in policy regarding formulation of materiel objectives and requirements (see AR 71–9).
- b.* In coordination with DCS, G–1, develop Army policy and guidance to ensure HSI training resources are included in the Army training program.
- c.* Ensure that HSI is considered in basis of issue plan and qualitative and quantitative personnel requirements information policy (see AR 71–32).
- d.* Integrate the results of HSI analyses and models into force development analyses.

2-8. Deputy Chief of Staff, G-4

The DCS, G-4 will—

- a.* Establish procedures, in coordination with the DCS, G-1, on how the ILS and Army HSI Programs will complement each other.
- b.* Provide DCS, G-1 (DAPE-HSI) with a copy of the ILS assessment for all Army systems acquisition review councils, information technology OIPs, and PEO IPRs.
- c.* Notify DCS, G-1 (DAPE-HSI) of upcoming ILS reviews, as applicable.

2-9. The Surgeon General

TSG will—

- a.* Exercise primary ARSTAF responsibility for the Army HHA Program.
- b.* Through the Commanding General (CG), U.S. Army Medical Command (MEDCOM)—
 - (1) Provide consultation and advice on medical aspects of HSI (see AR 40-5 and AR 40-10).
 - (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 Army HSI Program.
 - (3) Develop the physiological, medical, and health standards databases needed to support the Army HSI Program.
 - (4) Through the Commander, U.S. Army Medical Department Center and School (AMEDDC&S), provide review of all HSIPs and requirements documents.

2-10. Chief of Engineers

The COE will—

- a.* Establish Army HSI 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 DCS, G-1 (DAPE-HSI).

2-11. Director of Army Safety

The DASAF will, in coordination with DCS, G-1 (DAPE-HSI), develop, coordinate, and disseminate system safety policies defining the interface with other Army HSI domains (see AR 385-10).

2-12. Human Systems Integration practitioner

An HSI practitioner will—

- a.* Conduct a proactive Army HSI Program for all systems assigned.
- b.* Support the assessment of domain-specific and cross-domain HSI issues using methods that support the evaluation of the impact of HSI considerations on total system ownership and/or life cycle costs, Soldier safety and survivability, and the integrated Soldier-system performance.
- c.* Support the inclusion of all required and appropriate HSI requirements and opportunities in the best value trade-off analyses associated with source selection.
- d.* Conduct technical and programmatic tasks necessary to resolve HSI issues and concerns to the greatest extent possible before each MDR.
- e.* Apply HSI methodologies to hardware and software development, modification, and acquisition programs.
- f.* Maintain an Army HSI issues log in order to resolve HSI issues and concerns during the acquisition program life cycle.
- g.* Support the identification of HSI-related program dependencies on other systems.
- h.* Lead HSI working groups. In cases where an HSI working group is not necessary, represent Army HSI on another appropriate IPT.
- i.* Crosswalk HSI performance parameters, objectives, and thresholds from the capabilities documents to the RFP and TEMP.
- j.* Develop funding and resourcing requirements for effective Army HSI Program implementation, testing, and maintenance.

2-13. Force modernization and branch proponents

The force modernization and branch proponents will assess and apply appropriate HSI considerations during capabilities development activities within their area of responsibility.

Section II

Commanders of Army Commands

2-14. Commanding General, U.S. Army Training and Doctrine Command

The CG, TRADOC will—

- a.* Include HSI, as appropriate, in directives and policy statements concerning system acquisitions.

b. Ensure that HSI is represented during all capabilities development activities and that HSI issues are tracked using applicable program documents. Inform DCS, G-1 (DAPE-HSI) and U.S. Research Laboratory Human Research and Engineering Directorate when ICDTs are initiated to ensure human considerations are incorporated at the earliest possible phase.

c. Develop and conduct HSI training in accordance with guidance from DCS, G-1 (DAPE-HSI). Updates on changes to the HSI training programs conducted by U.S. Army Logistics University will be communicated to DCS, G-1 (DAPE-HSI) for inclusion in the Army HSI Web site (<http://www.armyg1.army.mil/HSI>).

(1) Ensure HSI training is provided to all U.S. Army Training and Doctrine Command capability managers (TCMs), directors of capabilities development integration directorates, directors of training and doctrine, and appropriate development personnel.

(2) Manage the HSI training program via Army Training Requirements and Resources System and provide semi-annual status updates to DCS, G-1 (DAPE-HSI).

(3) Ensure HSI familiarization or awareness is part of all leader development courses.

d. Include HSI responsibilities in TCM 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, and projected trainee aptitudes.

f. Include HSI considerations in the analysis of alternatives (AoA); doctrine, organization, training, materiel, leadership, education, personnel, and facilities integrated capabilities recommendation; ICD; capability development document (CDD); critical operational issues and criteria; capability production document (CPD); and nonmateriel solutions.

g. Ensure the timely consideration and development of HSI requirements in system and nonsystem training aids, devices, simulators, and simulations for which TRADOC is the proponent.

2-15. Commanding General, U.S. Army Materiel Command

The CG, AMC will—

a. Support the Army HSI Research and Development Program in annual program objective memorandum processes.

b. Through the Director, U.S. Army Research Laboratory, provide technical assistance on the integration of Army HSI (including inputs from manpower, personnel capabilities, training, HFE, system safety, health hazards, and Soldier survivability) into materiel research, accelerated (for example, urgent operational needs), developmental, nondevelopmental items, and systems modification acquisition programs.

c. Through the U.S. Army Research Laboratory Human Research and Engineering Directorate—

(1) Serve as the central Army HSI point of contact for coordinating domain support to the CAPDEVs and IPTs.

(2) Provide technical advice and assistance to CAPDEVs and IPTs.

(3) Conduct human factors engineering assessments for PMs.

(4) Conduct manpower, personnel capabilities, and training assessments for PMs.

(5) Conduct Soldier survivability assessments for selected non-acquisition category (ACAT) I and II systems.

(6) Develop draft HSI assessments on all ACAT I, II, and III acquisition systems (to include the integration of all of the individual domain assessments) for DCS, G-1 (DAPE-HSI). Conduct appropriate staffing with individual Army HSI domains and other interested parties (PM, TCM, CAPDEV). Provide draft assessments to DCS, G-1 (DAPE-HSI) not later than 30 days prior to a key IPR or milestone review.

(7) Provide manpower, personnel capabilities, training, and Soldier survivability expertise to force modernization and/or branch proponents and IPTs on nonmajor systems.

(8) Provide HSI assistance to the U.S. Army Test and Evaluation Command (ATEC) in the development of system evaluation plans, detailed test plans, test reports, and conduct HSI evaluations based on operational testing.

(9) Conduct applied research for the development of new HSI concepts, techniques, and analytical tools, and research into Soldier capabilities and needs driven by emerging technologies.

(10) Ensure that Army HSI parameters, objectives, and thresholds have been cross-walked from the CDD to the RFP, system specification, and TEMP.

(11) Provide HSI assistance to TRADOC to assure that Army HSI is considered in early concept studies and analyses.

(12) Through the capabilities requirements determination and IPT process (in conjunction with TRADOC, PMs, and DCS, G-1 (DAPE-HSI)), develop plans and strategies for implementing HSI in selected system acquisition processes.

d. Through the Director, U.S. Army Research Laboratory Survivability and Lethality Analysis Directorate—

(1) Provide technical advice and assistance (related to survivability, lethality, and vulnerability issues related but not limited to conventional ballistics; chemical, biological, radiological, and nuclear survivability; electronic warfare; electronic warfare vulnerability of tactical communications systems; information operations and/or information warfare; atmospheric and/or obscurants; directed energy weapons; jamming; electronic countermeasures; and personnel vulnerability, for example) to CAPDEVs and PM IPTs on Soldier survivability of combat systems (see AR 70-75).

(2) Conduct Soldier survivability assessments on ACAT I and II combat acquisition systems, as appropriate and required. Provide a copy to U.S. Army Research Laboratory Human Research and Engineering Directorate as input to the draft HSI assessment.

e. Through the Commander, U.S. Army Communications-Electronics Command—

(1) Develop implementing Army HSI system safety policy and procedures in coordination with U.S. Army Research Laboratory Human Research and Engineering Directorate, Capability Development Integration Directorate, TCM proponent office 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 HSI support to functional users, force modernization and/or branch proponents, and PMs, as required.

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

f. Through Commanders, headquarters and subordinate commands—

(1) Include Army HSI, as appropriate, in policy and directives for systems acquisition.

(2) For AMC-managed systems, Army HSI will be applied as follows:

(a) Transition the ICDT to appropriate IPTs, including an HSI WIPT, if appropriate, to continue identification and resolution of issues.

(b) Crosswalk HSI parameters, objectives, and thresholds from the CDD and CPD to the RFP and TEMP, as applicable.

(c) Request HHA from Army Public Health Command 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, HSIPs or HSIP-like tracking documents, support strategies, materiel fielding documents, solicitation documents, other program management, and supportability analysis documentation for HSI and ILS considerations.

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

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

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

(7) Develop and provide the safety assessments for all systems in support of MDRs.

(8) Evaluate independent research and development proposals from industry for potential HSI implications.

2-16. Commanding General, U.S. Army Medical Command

The CG, MEDCOM will—

a. Include Army HSI, as appropriate, in directives and policy statements concerning system acquisition.

b. Ensure research findings relating to or affecting human performance are reported to DCS, G-1 (DAPE-HSI).

c. Through the Commander, U.S. Army Public Health Command—

(1) As the Army HSI health hazard domain subject matter expert, provide information and support to force modernization and/or branch proponents and PM IPTs, as appropriate.

(2) Conduct HHAs.

(a) An initial health hazard assessment report (HHAR) 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 HHAR will be completed when appropriate data are available.

(c) Information from these reports is input to the HSIP or HSIP-like tracking document and the HSI assessment.

(d) Provide a copy of the HHAR to U.S. Army Research Laboratory Human Research and Engineering Directorate as input to the draft HSI assessment.

d. Through the Commander, AMEDDC&S—

(1) As the medical CAPDEV, plan and implement an Army HSI Program for medical (Class VIII) materiel development and acquisition of systems.

(2) Provide technical assistance to medical personnel supporting the appropriate force modernization and/or branch proponents or HSI WIPT and provide medical input to related system acquisition documents. Provide Army HSI domain technical assistance to CAPDEV and MATDEVs through the AMEDDC&S Provide consultation and advice on medical aspects of HSI (see AR 40-5 and AR 40-10).

(3) Review requirements documents during the system life cycle phases to identify potential health hazard issues. Provide health hazard issues to the force modernization and/or branch proponents or the HSI WIPT for inclusion in the HSIP or HSIP-like tracking document. Participate as a member of the team, as appropriate.

(4) Ensure the provision of HSI training, at a minimum, to MEDCOM CAPDEVs and appropriate acquisition personnel.

e. Through the Commander, U.S. Army Medical Research and Materiel Command—

(1) As directed by the MDA, plan and execute Army HSI 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 Soldier survivability are reported to DCS, G–1 (DAPE–HSI), U.S. Army Research Laboratory Human Research and Engineering Directorate, and U.S. Army Research Laboratory Survivability and Lethality Analysis Directorate.

(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 CAPDEVs and 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 HSIP from the force modernization and/or branch proponents to HSI WIPT.

2–17. Commanding General, U.S. Army Intelligence and Security Command

The CG, INSCOM will—

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

b. As directed by the MDA, plan and implement Army HSI 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 DCS, G–1 (DAPE–HSI).

d. Ensure that HSI training is provided, as a minimum, to personnel with system acquisition responsibilities.

2–18. Commanding General, U.S. Army Space and Missile Defense Command

The CG, SMDC will—

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

b. As directed by the MDA, plan and implement Army HSI 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 DCS, G–1 (DAPE–HSI).

d. Encourage the provision of HSI training, as a minimum, to personnel with system acquisition responsibilities.

2–19. Commanding General, U.S. Army Test and Evaluation Command

The CG, ATEC will—

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

b. Analyze HSI issues and measures identified from all sources (for example, CDD, HSIP, SEP, and Source Selection Evaluation Board) as potential issues to be addressed across the full spectrum of system tests and evaluations. Provide results to DCS, G–1 (DAPE–HSI) and U.S. Army Research Laboratory Human Research and Engineering Directorate on a routine basis.

c. Provide representation to ICDTs and the HSI WIPTs, as appropriate.

d. Encourage the provision of HSI training, at a minimum, to personnel with system test and evaluation responsibilities, as appropriate.

2–20. Commanding General, Combat Readiness Center

The CG, USACRC will—

a. Conduct the independent safety assessments for ACAT IC, ID, and ACAT II systems.

b. Provide DCS, G–1 (DAPE–HSI), U.S. Army Research Laboratory Human Research and Engineering Directorate, and the HSI WIPT subject matter expert a copy of the independent safety assessment provided to the Army Systems Acquisition Review Councils Secretary for Army Systems Acquisition Review Councils systems. This assessment will be used by U.S. Army Research Laboratory Human Research and Engineering Directorate as input to the draft HSI Assessment.

c. Make the Army automated safety information database accessible to practitioners.

2-21. Commanding General, U.S. Army Medical Department Center and School

The CG, AMEDDC&S will accomplish the following responsibilities for medical equipment—

- a.* Include HSI considerations in system tests and evaluations. The tests will address total HSI requirements, including the requirements to operate, maintain, support, and train the system.
- b.* Analyze HSI issues and measures identified from all sources (for example, CDD, HSIP, SEP, and Source Selection Evaluation Board) as potential issues to be addressed across the full spectrum of system tests and evaluations. Provide results to DCS, G-1 (DAPE-HSI) and U.S. Army Research Laboratory Human Research and Engineering Directorate on a routine basis.
- c.* Provide representation to force modernization and/or branch proponents and the HSI WIPTs, as appropriate.
- d.* Ensure the provision of HSI training, at a minimum, to personnel with system test and evaluation responsibilities, as appropriate.

Section III

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

2-22. Army Acquisition Executive

The AAE will include Army HSI, as appropriate, in directives and policy statements concerning system acquisition.

2-23. Program executive officer

PEOs will—

- a.* Include in PM charters the responsibility for funding and executing the Army HSI Program.
- b.* Monitor PM and contractor execution of Army HSI Program requirements.
- c.* Rate assigned PM execution of Army HSI responsibilities and consider rating in PM performance appraisals and efficiency reports.
- d.* Ensure PMs obtain HSI domain assessments in support of milestone decision reviews and major system upgrades in accordance with this policy and other regulatory guidance.

2-24. Program, project, and/or product managers

PMs will—

- a.* Implement a proactive Army HSI Program for all systems managed.
- b.* Exercise managerial control over the HSI effort. Require a HSIP as the official management and tracking mechanism.
- c.* Determine funding and resourcing requirements for effective Army HSI Program planning, execution, and test events.
- d.* Provide resources and proper funding for effective Army HSI Program planning, execution, and test events.
- e.* Use the field element designated by U.S. Army Research Laboratory Human Research and Engineering Directorate as the focal point to coordinate the Army HSI Program and the efforts of the other Army HSI domains.
- f.* Apply Army HSI methodologies to hardware and software development and modification, and acquisition programs.
- g.* Compare Army HSI performance parameters, objectives, and thresholds from the ICD to the RFP to the TEMP (across the system life cycle), to verify that each has been addressed as intended.
- h.* Include HSI considerations as an explicit part of the source selection planning and implementation processes. Emphasize use of measurable HSI criteria with respect to requirements from relevant capabilities documents.
- i.* Include all required and appropriate HSI requirements and opportunities in the best value trade-off analyses associated with source selection as determined by the AAE.
 - (1) Include HSI requirements in solicitation packages in sufficient detail to permit a determination of effort required by Government and industry.
 - (2) Incorporate Army HSI provisions (planning, accomplishment, progress tracking, and documentation of required efforts) in system contracts and specifications.
- j.* When appropriate, charter HSI WIPTs or ensure Army HSI is represented on another appropriate IPT (for example, Supportability IPT).
- k.* Charter contractor and Government HSI working groups to guide, coordinate, oversee, and assess progress of the system's Army HSI Program.
- l.* Identify and resolve, or provide a mitigation strategy for, critical and major HSI risks throughout the acquisition process.
- m.* Coordinate with DCS, G-1 and the U.S. Army Research Laboratory Human Research and Engineering Directorate, the resolution of HSI risks, issues, hazards, and concerns during the acquisition program life cycle.
- n.* Initiate requests for the conduct and preparation of HSI assessment and domain assessments and provide results to

DCS, G-1, the PM, and the AAE. Initiate requests not later than 120 days prior to a milestone decision or full-rate production (FRP) decision.

- o.* Provide HSI training for the team that is implementing the PM's Army HSI Program, plans, and execution.

Chapter 3

Human Systems Integration in the Systems Acquisition Process

3-1. Introduction

a. The Army's Human Systems Integration Program is the strategy that the PM will use for all acquisition programs. An effective Army HSI Program enables the PM to fulfill the HSI requirements in DOD and ARs. More importantly, an effective Army HSI Program facilitates the acquisition of a system that meets total system performance requirements.

b. Army HSI is focused on influencing the design of systems and associated support requirements so that developmental, nondevelopmental, 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 HSI affects total system performance (both effectiveness and availability), making explicit the role that the Soldier plays and how that performance is shaped by design factors. Army HSI also addresses the manpower, personnel, and training resources needed to achieve the required performance and, where possible, indicates more affordable configurations of manpower, personnel, and training resources.

c. The engineering design philosophy of HSI is focused on optimum system performance on the battlefield, which includes up front and continuous consideration of both Soldier and equipment capability. Army HSI is a tailored, option-oriented process as opposed to an objective-oriented process. The Army HSI process will provide decision-makers with 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 HSI effort begins early in system acquisition, at the development of the ICD Phase, with emphasis on user feedback. For maximum HSI, PMs will have their contractors place HSI activities within the supportability and systems engineering components of their organization to ensure every design decision and modification is given HSI consideration in accordance with the seven domains. Additionally, special attention will be given to HSI efforts as a system approaches Milestone C decisions, specifically low rate initial production and FRP.

3-2. Human Systems Integration in the capabilities requirements determination process

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

b. An Army HSI representative is a dedicated and/or on-call core member of the capabilities document team or force modernization and/or branch proponent team convened to write requirements documents. Per direction of the AAE, U.S. Army Research Laboratory Human Research and Engineering Directorate is the focal point for the force modernization and/or branch proponent to facilitate appropriate HSI representation and involvement. The HSI-dedicated core representative will normally be from U.S. Army Research Laboratory Human Research and Engineering Directorate.

c. HSI issues and concerns will be documented in appropriate program documentation and the ICDT minutes, and reports will provide an audit trail. Appropriate HSI considerations will be addressed during the Joint Capabilities Integration and Development System process in order to help program sponsors identify realistic human considerations consistent with technology, affordability, cost and technical risk reduction, and accelerated development and/or procurement. For example, results of HSI analyses may provide significant input to the AoA.

d. The benefits of HSI participation in the capabilities development process will be most evident when the lead transitions to a MATDEV 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. Human Systems Integration in the integrated product team process

a. Army HSI representatives continue to participate in the IPT process through the transition to the HSI WIPT and will support the PM's HSI implementation strategy and help the PM manage the system's Army HSI Program.

b. The Army HSI community will provide representation to the PM's HSI WIPT, as appropriate (see table 3-1). Army HSI representatives will recommend potential areas within the HSI review process for streamlining and tailoring surfaced HSI 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 HSI domain assessments. The PM will require the development of a HSIP or HSIP-like tracking document to exercise management control over the HSI effort (see chap 4).

c. For maximum risk reduction and cost avoidance, the PM will have Army HSI domain subject matter experts working with the IPT members from the onset of the program. When a key IPR or MDR is planned, the PM will task the Army HSI domains no later than 120 days in advance for Army HSI domain assessments (see table 3–2 and <http://www.armyg1.army.mil/HSI>). At the PM's tasking, or on request from DCS, G–1 (DAPE–HSI), Army HSI domain agencies will prepare the domain assessments. These assessments will identify issues, help the PM manage and assess Army HSI 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 test reports are provided in sufficient time for an adequate assessment of the results of the testing (for example, limited user tests, initial operational test and evaluation). The principal products generated from integrated test and evaluation activities are the Operational Test Agency milestone assessment report, OTA evaluation report, or the OTA follow-on evaluation report. The OTA milestone assessment report is provided to the decisionmaker at Milestone B and C while the OTA evaluation report is provided at the FRP decision. Prior to convening of a key IPR or MDR, a final HSI assessment will be issued by DCS, G–1 (DAPE–HSI) for the MDA, with copies to the PEO, ATEC (CSTE–HR) and/or PM. This final HSI Assessment will identify the critical issues requiring resolution during the next phase of the acquisition cycle.

d. HSI, and especially function and/or task allocation will be a topic at all design reviews.

e. HSI will receive special attention as the system nears Milestone C decisions (low-rate initial production and FRP).

3–4. Human Systems Integration in commercial off-the-shelf and non-developmental items

a. Potential HSI contributions to a commercial off-the-shelf or nondevelopmental item 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 HSI process. Any system must meet performance parameters and thresholds. HSI considerations are crucial in the market investigation process and as an evaluation factor.

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

c. As with system development programs, Army HSI domain assessments and the HSI assessment will be requested by the PM in preparation for each IPR and MDR.

d. When HSI-essential systems analysis data are not obtained, the HSI WIPT will identify to the PM the essential HSI data that are needed for transmittal to the appropriate domains.

3–5. Human Systems Integration in evolutionary acquisition

a. When making an incremental change, HSI issues and domains will be considered to ensure that configuration changes do not create new or unforeseen HSI issues.

b. As in other acquisition strategies, the HSIP or HSIP-like tracking document will be used for the PM to manage the Army HSI Program during the systems modification (see chap 4).

c. As determined appropriate within the framework of the IPT and the tailored HSI effort, an HSI Assessment will be prepared for systems modification decisions and updated for each subsequent IPR and MDR. All HSI issues will be resolved, or risk accepted prior to Milestone C. The Army HSI process should focus on the development and implementation of modifications throughout the life cycle of the system.

3–6. Manpower and Personnel Integration in other systems

a. *Joint programs.* For Joint programs that require Army personnel (as operators, maintainers, or supporters), HSI policies apply. HSI requirements will be embedded in the ICD, CDD, CPD, RFP, SOW, AoA, SEP, System Training Plan, HSIP, and TEMP, particularly the critical operational issues and criteria.

b. *Capabilities development for rapid transition process.* The Army often accelerates procurement programs for urgent needs, often identified through TRADOC warfighting experiments as compelling successes (see AR 71–9). Army HSI practices and policies will be made an integral part of these programs by the PM or acquisition authority.

3–7. Human Systems Integration domain representation

Army HSI domain representation on CAPDEV and MATDEV teams for ACAT I and II and non-ACAT I and II systems are portrayed in tables 3–1 and 3–2.

**Table 3–1
Representative Human Systems Integration domain subject matter expertise for integrated capabilities development teams and integrated product teams**

Doman	ACAT ID, IC, and II	ACAT IA (IAM, IAC)	ACAT III
Manpower	U.S. Army Research Laboratory Human Research and Engineering Directorate; Capability Development Integration Directorate; TCM; proponency office		
Personnel capabilities	U.S. Army Research Laboratory Human Research and Engineering Directorate; Capability Development Integration Directorate; TCM; proponency office		
Training	U.S. Army Research Laboratory Human Research and Engineering Directorate; TCM; training developer		
Health hazards	Army Public Health Command (lead); AMEDDC&S (assist)		
HFE	U.S. Army Research Laboratory Human Research and Engineering Directorate		
System safety	Combat Readiness Center; AMC Life cycle Management Command (LCMC) Safety Office	U.S. Army Communications-Electronics Command	AMC LCMC Safety Office
Soldier survivability	U.S. Army Research Laboratory Survivability and Lethality Analysis Directorate, U.S. Army Research Laboratory Human Research and Engineering Directorate		
Army HSI (domain integration)	DCS, G–1 (DAPE–HSI); U.S. Army Research Laboratory Human Research and Engineering Directorate		

**Table 3–2
Human Systems Integration domain assessment agencies by acquisition category**

Assessment	ACAT ID, IC, and II	ACAT IA (IAM, IAC)	AT III, IIIAC and IV
Manpower, personnel capabilities, training	U.S. Army Research Laboratory Human Research and Engineering Directorate		
Health hazards	Army Public Health Command		
HFE	U.S. Army Research Laboratory Human Research and Engineering Directorate		
Soldier survivability	U.S. Army Research Laboratory Survivability and Lethality Analysis Directorate (lead); U.S. Army Research Laboratory Human Research and Engineering Directorate (assist)		
System safety	Combat Readiness Center*	U.S. Army Communications-Electronics Command	AMC LCMC Safety Office
Draft DCS, G–1 HSI Assessment (Domain Integration)	U.S. Army Research Laboratory Human Research and Engineering Directorate		
DCS, G–1 HSI final assessment (domain integration)	DCS, G–1 (DAPE–HSI)		

Notes:

¹ Combat Readiness Center conducts independent safety assessments.

Chapter 4 Human Systems Integration Plan or Human Systems Integration Plan-Like Tracking Document

4–1. Introduction to the Human Systems Integration Plan

a. DODI 5000.02, Enclosure 8 states: “The PM shall have a plan for HSI in place early in the acquisition process to optimize total system performance, minimize total ownership costs, and ensure that the system is built to accommodate the characteristics of the user population that will operate, maintain, and support the system.” Historically, successful acquisition programs have used the HSIP to fulfill this requirement for an HSI strategy. An HSIP or HSIP-like tracking document will be used to identify HSI issues and their recommended resolutions for all ACAT I and II systems. It is strongly recommended that the HSIP or HSIP-like tracking device be used on all ACAT systems.

b. The HSIP is a tailored planning and management tool that outlines and documents the HSI management approach, associated decision and planning efforts, user concerns, and resolution of HSI 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. DODI 5000.02 and The Defense Acquisition Guidebook recommend that the PM develop a Human System

Integration Plan (HSIP 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 HSIP will be the cornerstone of the HSI effort to ensure human considerations are effectively integrated into the development and acquisition of Army systems.

(1) The HSIP 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 HSIP is a living document. It will 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 will also contain potential or real HSI data sources and HSI analyses planned, underway, or completed. By recording the issues and their subsequent resolution, the HSIP provides an audit trail for subsequent system reviews.

(3) Information contained in the HSIP will flow to other documents (for example, CDD, user's functional description, TEMP, RFP, and System Training Plan). Likewise, new HSI information contained in other documents will flow to the HSIP. To be effective, all documentation will be reviewed periodically to ensure this cross-walk of information occurs.

4-2. Human Systems Integration management

a. As with all HSI activities, Army HSI management will be initiated early in the process.

b. The HSI WIPT will tailor the format of the HSIP, which will contain those elements deemed essential and meaningful for use by the CAPDEV and the PM. The following potential HSIP elements, which have proven useful in past Army HSI Programs, will be considered:

(1) System information.

(2) Detailed target audience description (see glossary for definition).

(3) HSI issues and an issue tracking system.

(4) Coordination to include points of contact.

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

Chapter 5

Human Systems Integration in the Source Selection Process

5-1. Treatment of Human Systems Integration

a. Army HSI will be treated as a distinct major managerial and technical area based in part on the results of analyses provided by the associated CAPDEV or IPT recommendations, and/or the contents of the CDD or HSIP, or directions from the CAPDEV or TCM. Of critical importance is the role of HSI in the final source selection process. HSI will be identified as a factor in the selection process so contractors will address it in responses to the RFP. Once actual work begins, HSI issues will be continuously addressed and evaluated throughout the life cycle of the program, starting at the development of the ICD through the operations and sustainment phase. 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 HSI 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 HSI as an essential part of the overall system design and acquisition process.

b. Solicitations will require offerors to respond to all pertinent HSI considerations in the SOW that will reflect requirements from the CDD (and possibly enhanced through market research and/or IPT contributions). Important HSI issues or opportunities identified in appropriate paragraphs of the CDD will be addressed and evaluated as specific, standalone 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 will be verified. Specifications will also clearly identify any HSI objectives and thresholds identified in the CDD.

d. HSI deliverables under the contract will be included in the contract data requirements list.

e. HSI considerations will be included in solicitation documents especially section C, SOW, section L, Instructions to Offerors, and section M, Evaluation Factors.

f. HSI considerations will be an explicit part of the source selection planning and implementation process. All

required and appropriate HSI 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.

g. The Source Selection Evaluation Board will include representatives from each of the respective HSI domains, where appropriate.

Appendix A References

Section I Required Publications

AR 40-5

Preventive Medicine (Cited in paras 2-9b(1), 2-16d(2).)

AR 40-10

Health Hazard Assessment Program in Support of the Army Acquisition Process (Cited in paras 2-9b(1), 2-16d(2).)

AR 70-75

Survivability of Army Personnel and Materiel (Cited in para 2-15d(1).)

AR 71-9

Warfighting Capabilities Determination (Cited in paras 2-7a, 3-2a, 3-6b.)

AR 385-10

The Army Safety Program (Cited in para 2-11.)

Defense Acquisition Guidebook

Human Systems Integration (HSI), chapter 6 (Cited in para 4-1b.) (Available at <https://acc.dau.mil/CommunityBrowser.aspx>.)

DODI 5000.02

Operation of the Defense Acquisition System (Cited in paras 1-1, 4-1a, 4-1b.) (Available at <http://www.dtic.mil/whs/directives/>.)

Section II Related Publications

A related publication is 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 Force Modernization Proponent System

AR 11-2

Managers' Internal Control Program

AR 15-1

Boards, Commissions, and Committees - Committee Management

AR 25-1

Information Management Army Information Technology

AR 25-30

The Army Publishing Program

AR 25-400-2

The Army Records Information Management System (ARIMS)

AR 40-60

Army Medical Materiel Acquisition Policy

AR 70-1

Army Acquisition Policy

AR 70–8

Soldier-Oriented Research and Development in Personnel and Training

AR 71–32

Force Development and Documentation

AR 73–1

Test and Evaluation Policy

AR 350–1

Army Training and Leader Development

AR 350–38

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

AR 381–11

Intelligence Support to Capability Development

AR 570–4

Manpower Management

AR 700–127

Integrated Product Support

AR 700–142

Type Classification, Materiel Release, Fielding, and Transfer

AR 750–1

Army Materiel Maintenance Policy

DA Pam 70–3

Army Acquisition Procedures

DA Pam 385–16

System Safety Management Guide

DA Pam 611–21

Military Occupational Classification and Structure

DODD 5000.01

The Defense Acquisition System (Available at <http://www.dtic.mil/whs/directives/>.)

Supply Bulletin 8–75 series

Available at http://www.usamma.amedd.army.mil/supply_bulletins.cfm.

10 USC 2434

Independent cost estimates; operational manpower requirements (Available at <http://uscode.house.gov>.)

Section III

Prescribed Forms

This section contains no entries.

Section IV

Referenced Forms

Unless otherwise indicated, DA Forms are available on the Army Publishing Directorate Web site at <http://www.apd.army.mil>.

DA Form 11–2

Internal Control Evaluation Certification

Appendix B Human Systems Integration Practitioners' Evaluation

B-1. Function

The function covered by this evaluation is the conduct of the Army HSI Program by HSI managers and other functional specialists supporting the Army HSI Program.

B-2. Purpose

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

B-3. Instructions

Answers will be based upon the actual testing of control (for example, document analysis, direct observation, interviewing, sampling, simulation, and/or others). Answers that indicate deficiencies will be explained, and the corrective action taken will be indicated in the supporting documentation. These management controls will be evaluated at least once every 5 years and then certified on DA Form 11-2 (Internal Control Evaluation Certification).

B-4. Test questions

a. System acquisition planning.

- (1) Are resource constraints considered in development of requirements documents (such as, ICD and CDD)?
- (2) Are HSI requirements and constraints considered in program documents and reviews?
- (3) Is Army HSI considered in source selection to ensure reduction in resource requirements?

b. Human Systems Integration considerations for Army systems before fielding.

- (1) Were relevant and justifiable Army HSI thresholds and objectives developed during concept development?
- (2) Did performance parameters (including key performance parameters) 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 Army HSI represented on all appropriate ICDTs and IPTs?
- (6) Has U.S. Army Research Laboratory Human Research and Engineering Directorate been designated as the focal point for Army HSI support on systems?
- (7) Is there a process to manage the Army HSI Program and track issues on all systems?
- (8) Are HSI issues being incorporated in appropriate testing and evaluation plans?
- (9) Is sufficient funding programmed to perform the Army HSI actions planned?

c. Human Systems Integration after fielding.

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

B-5. Supersession

Not applicable.

B-6. Comments

Help make this a better review tool. Submit comments to the DCS, G-1 (DAPE-HSI), 300 Army Pentagon, Washington, DC 20310-0300.

Glossary

Section I Abbreviations

AAE

Army Acquisition Executive

ACAT

acquisition category

AMC

U.S. Army Materiel Command

AMEDDC&S

U.S. Army Medical Department Center and School

AoA

analysis of alternatives

AR

Army regulation

ASA (ALT)

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

ASA (IE&E)

Assistant Secretary of the Army (Installation, Energy, and Environment)

ASA (M&RA)

Assistant Secretary of the Army (Manpower and Reserve Affairs)

ATEC

U.S. Army Test and Evaluation Command

CG

commanding general

CIO/G-6

Chief Information Officer/G-6

COE

Chief of Engineers

CDD

capability development document

CPD

capability production document

DA

Department of the Army

DASAF

Director of Army Safety

DCS, G-1

Deputy Chief of Staff, G-1

DCS, G-2

Deputy Chief of Staff, G-2

DCS, G-3/5/7

Deputy Chief of Staff, G-3/5/7

DCS, G-4

Deputy Chief of Staff, G-4

DOD

Department of Defense

DODI

Department of Defense instruction

FRP

full-rate production

HFE

human factors engineering

HHA

health hazard assessment

HHAR

health hazard assessment report

HIS

human systems integration

HSIP

Human Systems Integration Plan

ICD

initial capabilities document

ICDT

integrated capabilities document team

INSCOM

U.S. Army Intelligence and Security Command

ILS

integrated logistics support

IPR

in-process review

IPT

integrated product team

LCMC

Life cycle Management Command

MANPRINT

Manpower and Personnel Integration

MATDEV

materiel developer

MDA

milestone decision authority

MDR

milestone decision review

MEDCOM

U.S. Army Medical Command

OIPT

overarching integrated product team

OTA

Operational Test Agency

PEO

program executive officer

PM

program, project, and/or product manager

RFP

request for proposal

SEP

System Engineering Plan

SMDC

U.S. Army Space and Missile Defense Command

SOW

statement of work

TCM

TRADOC capability manager

TEMP

Test and Evaluation Master Plan

TRADOC

U.S. Army Training and Doctrine Command

TSG

The Surgeon General

USACRC

Combat Readiness Center

USC

United States Code

WIPT

working integrated product team

Section II**Terms****Acquisition category**

Categories established to facilitate decentralized decisionmaking and execution and compliance with statutorily imposed requirements.

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

One of the domain assessments prepared in support of the HSI assessment process. Its purpose is to identify potential health hazards that 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 supports the Army HSI 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 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 assessment 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 manpower, personnel, and training goals and constraints. A major thrust of the assessment 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 assessment 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. Lastly, as appropriate, the assessment will address the HFE issues identified in the HSIP and other tracking documents. Data from this report and subsequent updates are input in the HSIP or HSIP-like tracking document and the HSI assessment.

Human systems integration

A comprehensive management and technical strategy, initiated early in the acquisition process, to ensure that human performance, the burden the design imposes on manpower, personnel, and training, and safety and health aspects are considered throughout the system design and development processes. HFE 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 and/or health hazards. The capabilities and limitations of the operator, maintainer, repairer, trainer, and other support personnel will be identified prior to program initiation (usually materiel development decision and/or Milestone A), and refined during the development process. Army HSI incorporates Soldier survivability considerations into that process as well (see DODI 5000.02).

Human Systems Integration assessment

Prepared under the authority of the DCS, G-1 and address unresolved critical HSI issues to the MDA for Army systems acquisition review councils, information technology OIPs, and other acquisition decision reviews. Assessments will normally assign a RED, AMBER, or GREEN rating.

- a. *Red.* Critical 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.* Significant, major or minor problems identified, with a solution or work-around plan expected to be completed by the next major milestone date.
- c. *Green.* No problems. All actions on schedule.

Human Systems Integration exit criteria

Specific minimum requirements that are capable of empirical and/or objective measurement that will be demonstrated before a system or program is ready to transition to the next phase of its acquisition process. HSI 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 HSI exit criteria may require demonstration of a particular outcome (for example, a performance-based demonstration of the feasibility of a particular training concept). HSI exit criteria are normally written by the force modernization and/or branch proponent or the HSI WIPT, often in coordination with the test and evaluation IPT, and documented in the HSIP or other tracking document.

Human Systems Integration issues

Issues identified and elevated by Army HSI representatives to the PM, the CAPDEV, and the TCM for risk management, mitigation, or issue resolution. Unresolved critical issues are addressed in HSI assessments to the MDA for Army systems acquisition review councils, information technology 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. Issues are defined as critical, major, or minor.

a. Critical. An issue regarding one or more of the Army HSI domains which warrants immediate attention and/or 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 manpower, personnel, and training resources; or jeopardized ability of the manpower, personnel, and training community (DCS, G-1, TRADOC, and Human Resources Command) to support system fielding with trained available personnel. Critical unresolved issues will be addressed in an HSI 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 Army HSI 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. Minor. Minor issues are potential issues or areas of risk regarding one or more of the Army HSI domains lacking sufficient supporting data or analyses. Actions to provide data and/or analyses will 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.

Human Systems Integration plan

Required for ACAT I and II programs. It is the Army's recommended strategy and plan for tracking issues and disposition and is designed to assist the PM in meeting the requirements of DODI 5000.02 for all programs. 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 HSI issues during concept development, system development, and the acquisition process. Data from the HSIP (for example, HSI issues and manpower, personnel, and training constraints) will be used in developing requirements documents, test plans, and contractual documents.

Human Systems Integration working integrated product team

Formerly called a MANPRINT working integrated product team, assists in outlining and overseeing the HSI strategy for an acquisition program. This may involve developing a HSIP and will encompass the following: identifying HSI issues and constraints; embedding HSI in requirements documents; assisting in the development of methods to resolve issues or mitigate risks; monitoring status of issues; and alerting the PM of responsibilities in preparation for a MDR.

Independent research and development

A noncontracted, company-funded technology development work effort initiated and performed by DOD contractors to maintain technical superiority.

Independent safety assessment

One of the assessments prepared in support of the MDR process. This assessment will be used by U.S. Army Research Laboratory, Human Research and Engineering Directorate, and DCS, G-1 in the preparation of the draft and final HSI 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.

Manpower, personnel, and training analysis

The application of formal manpower, personnel, and training analytical tools and/or methodologies or informal processes, such as subject matter expert reviews, to a system to determine manpower, personnel, and training constraints, identify current or potential issues, and estimate manpower, personnel, and training requirements. Analysis

results are used to prepare the manpower, personnel, and training assessment and/or furnish manpower, personnel, and training data to the ICDT, IPT, or HSI WIPT.

Manpower, personnel, and training assessment

A review of the status of manpower, personnel, and training 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 MDR 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 manpower, personnel, and training documentation and participation in ICDTs, IPTs, and WIPTs. As appropriate, the manpower, personnel, and training assessment will address the manpower, personnel, and training issues identified in the HSIP 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 person or entity that advocates, funds, or supports the Program being executed by a PM.

Soldier

In this regulation refers to military personnel.

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 (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

Assesses the system's effects in regard to Soldier survivability. Data from this report and subsequent updates are input to the HSIP or HSIP-like tracking document and the HSI assessment.

System

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

Multiple systems that must interact with each other to achieve design capabilities. Illustrative is the Army Battle Command Systems, which consist of a series of individual command, control, communications, computers, intelligence, surveillance, and reconnaissance systems that must be integrated horizontally and possess common hardware and software to ensure total system effectiveness.

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

Lists occupational identifiers for personnel who are projected to operate, maintain, train, and support a specific future Army system. Further, for each identifier, the target audience description 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 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 automated information system). 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

Equates to the function of the following: the performance of the equipment (both hardware and software), the performance of the human (the operator, maintainer, and repairer), and the environment (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 section contains no entries.

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