Army Regulation 602–2

Soldier-Materiel Systems

Human Systems Integration in the System Acquisition Process

Headquarters
Department of the Army
Washington, DC
29 June 2022

UNCLASSIFIED

SUMMARY of CHANGE

AR 602–2
Human Systems Integration in the System Acquisition Process

This major revision, dated 29 June 2022—

o   Makes administrative changes (throughout).

o   Establishes the U.S. Army Futures Command and U.S. Army Futures Command roles and responsibilities in execution of the Human Systems Integration Program (para 2–14).

*Army Regulation 602–2

Effective 29 July 2022

Soldier-Materiel Systems

Human Systems Integration in the System Acquisition Process

By Order of the Secretary of the Army:

JAMES C. MCCONVILLE
General, United States Army
Chief of Staff

Official:

MARK F. AVERILL
Administrative Assistant to the
*   Secretary of the Army*

History. This publication is a major revision.

Summary. This regulation on Army Human Systems Integration institutionalizes Human Systems Integration standards and best practices as part of the Department of Defense Directive 5000.01 implementation.

Applicability. This regulation applies to the Regular Army, the Army National Guard/Army National Guard of the

United States, and the U.S. Army Reserve, unless otherwise stated.

Proponent and exception authority. The proponent of 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 wrting, 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 control

provisions in accordance with AR 11–2 and identifies key internal controls that must be evaluated (see appendix C).

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from Headquarters, Deputy Chief of Staff, G–1, 6648 Gunner Circle, Aberdeen Proving Ground, MD 21005.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Headquarters, Deputy Chief of Staff, G–1 via email to usarmy.apg.devcom.mbx.hq-hsi@army.mil.

Distribution. This regulation is available in electronic media only and is intended for the Regular Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

Contents (Listed by paragraph and page number)

*This regulation supersedes AR 602-2, dated 27 January 2015.

AR 602–2 • 29 June 2022
UNCLASSIFIED
i

Contents—Continued

Contents—Continued

Table List

Glossary

Chapter 1
Introduction

1–1. Purpose
This regulation establishes policy and responsibilities and assigns requirements for implementing Army Human Systems Integration (HSI) in accordance with DoDD 5000.01 and AR 70–1. It institutionalizes HSI standards and best practices for Soldier Centered Design in concepts through materiel solutions; promotes the development of Army capabilities in alignment with strategic guidance; and delivers capabilities that satisfy Soldier's and mission needs.

1–2. References and forms
See appendix A.

1–3. Explanation of abbreviations and terms
See the glossary.

1–4. Responsibilities
Responsibilities are listed in chapter 2.

1–5. Records management (recordkeeping) requirements
The records management requirement for all record numbers, associated forms, and reports, required by this regulation are addressed in the Records Retention Schedule-Army (RRS–A). Detailed information for all related record numbers, forms, and reports are located in Army Records Information Management System (ARIMS)/RRS–A at https://www.arims.army.mil. If any record numbers, forms, and reports are not current, addressed, and/or published correctly in ARIMS/RRS–A, see DA Pam 25–403 for guidance.

1–6. 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. As a systems engineering (SE) specialty, HSI accomplishes this by working within the requirements and SE processes to ensure the human factor and human performance is fully and continuously considered as part of the total system. 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. The HSI program provides Soldier Touch Point (STP) data to inform the Army Modernization Enterprise (AME) and acquisition leaders about system and system of systems usability, operational utility, and human performance.

c. 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.* The human aptitudes, skills, and capabilities required to operate, maintain, and support a system in peacetime and war.

(3) *Habitability.* The physical environment (for example, space and temperature control) and, if appropriate, requirements for personnel services (for example, medical and mess) and living conditions (for example, berthing and personal hygiene) for conditions needed to meet or sustain system performance or impact quality of life and morale.

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

(5) *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.

(6) *Safety and occupational health.* The design and operational characteristics of a system that can minimize the risks of acute or chronic illness, disability, or death or injury to operators and maintainers, damage to and loss of

equipment and property, and damage to the environment; and enhance job performance and productivity of the personnel who operate, maintain, or support the system.

(7) *Force protection and survivability.* The characteristics of a system that impose risks to personnel in terms of system design, protection from direct threat events and accidents (such as chemical, biological, and nuclear threats), including primary and secondary effects from these events and considers any special equipment necessary for egress and survivability.

d. To ensure HSI factors have the greatest positive impact on system design, HSI analysis and the management of risks will occur as part of experimentation, demonstration, and prototyping. Army HSI domain subject matter experts (SMEs) will function as dedicated or on-call core members of integrated capabilities development teams (ICDTs) and integrated product teams (IPTs). The U.S. Army Combat Capabilities Development Command (CCDC) is designated as the focal point for ensuring that appropriate HSI experts are available to support 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 are provided in applicable program documents. 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 manager (PM) (and IPT), HSI SMEs will ensure that HSI requirements are included in program documentation as programs are initiated and transferred into the acquisition process at different phases. This includes, but not limited to, HSI requirements in the initial capabilities document (ICD), abbreviated capabilities development document (A–CDD) and capabilities development document (CDD), to request for proposal (RFP), system specifications, and Test and Evaluation Master Plan (TEMP), as applicable.

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

1–7. Filing and recordkeeping
All Army organizations performing HSI activities will establish an 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 HSI is conducted throughout the systems acquisition process.
    c. Ensure key program executive officer (PEO) staff and/or program management office staff (for example, PMs, product support managers (PSMs), test and evaluation (T&E) managers, and SE) receive introductory HSI training (CLE 062).

2–2. Assistant Secretary of the Army (Installations, Energy, and Environment)
The ASA (IE&E) will—
    a. Establish guidance governing system safety and occupational health assessment programs.
    b. Provide oversight and guidance on the system safety and occupational health aspects of the Army HSI Program.

2–3. Assistant Secretary of the Army (Manpower and Reserve Affairs)
The ASA (M&RA) will—
    a. Ensure that the manpower, personnel capabilities, and training requirements to support all acquisition systems, including commercial off-the- shelf and non-developmental items, are integrated into Army long-range planning processes, including the total Army analysis, so that systems, when fielded, are adequately manned, trained, and supported.
    b. Ensure the HSI program objectives and policies, as a member of the U.S. Army, Human Dimension Research, Analysis, Studies, Science and Technology, are integrated in the development, management, and synthesis of the strategic Human Dimension research agenda in support of the Army People Strategy.

2–4. Chief Information Officer
The CIO will coordinate with ASA (ALT) to ensure cybersecurity policy, standards, and guidance are reflected in HSI throughout the acquisition life cycle.

2–5. Deputy Chief of Staff, G–1
   a. Ensure, in coordination with AFC, HSI principles are included in the development and acquisition of personnel readiness systems, policies, programs, and services that support Soldiers, Veterans, and Families.
   b. Review and monitor requirement development processes and HSI plans for personnel affordability and supportability.

2–6. Deputy Chief of Staff, G–2
The DCS, G–2 will establish guidance to integrate 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.. In coordination with AFC, develop Army policy and guidance to ensure HSI training resources are included in the Army training program.
   b. Ensure that HSI is considered in basis of issue plan and qualitative and quantitative personnel requirements information policy (see AR 71–32).

2–8. Deputy Chief of Staff, G–4
The DCS, G–4 will—
   a. Establish procedures, in coordination with AFC, to ensure HSI data informs and participates in integrated logistics assessments (ILAs) and PSM IPTs. Provide AFC, CCDC with a copy of the product supportability assessment for all systems acquisition review councils, information technology overarching integrated product team (OIPTs), and PEO in-process reviews (IPRs).
   b. Notify AFC, CCDC of upcoming product supportability reviews.

2–9. Deputy Chief of Staff, G–8
The DCS, G–8 will—
   a. Ensure that HSI is considered in policy regarding formulation of materiel objectives and requirements (see AR 71–9).
   b. Ensure HSI representation in the Army Requirements Oversight Council process to validate, approve, and prioritize Army materiel capabilities and to ensure the integration of materiel capabilities across missions and functional areas.

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 the AFC.

2–11. The Surgeon General
TSG will—
   a. Exercise primary Army Staff responsibility for the Army Health Hazard Assessment (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 CG, U.S. Army Medical Center of Excellence (MEDCoE), provide review of all HSIPs and requirements documents.

2–12. Director of Army Safety
The DASAF will—

a. Coordinate with AFC to develop, coordinate, and disseminate system safety policies defining the interface with other Army HSI domains (see AR 385–10).

b. Ensure near-miss and accident findings relating to or affecting human performance are reported to the AFC.

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. U.S. Army Futures Command

The CG, AFC will, in coordination with the ASA (ALT)—

a. Exercise primary responsibility for the Army HSI Program.

b. Serve as senior HSI technical authority/advisor on analyzing, identifying, and synchronizing HSI issues and solutions related to Army Modernization Priorities.

c. Develop, coordinate, and disseminate Army HSI Program policy, guidance, and procedures to all Army commands and agencies. Seek opportunities to integrate analyses and apply user-centered design principles.

d. Address unresolved critical HSI issues at Army Systems Acquisition Review Councils (ASARCs), Army OIPTs, and other decision reviews via the HSI assessment and provide recommendations or potential trade-offs as applicable.

e. 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.

f. Serve as the proponent for Army HSI training. Responsible for development and delivery of HSI education, per talent management strategies. Review all U.S. Army HSI workshops and training courses for quality and content, ensuring conformance with established goals, principles, policies, and procedures. Monitor and provide guidance on HSI training in all other courses of instruction within Defense Acquisition University and Joint HSI.

g. Prior to the convening of a key IPR or milestone decision review (MDR), issue an HSI assessment for applicable AME decision boards with copies to the PEO and/or PM. This HSI assessment will identify critical issues requiring resolution prior to a recommendation being made for the system to proceed to the next acquisition/Top Down Futures Development Process phase.

h. Sponsor an Army HSI Workshop approximately every 18 months to further professional coordination and collaboration among specialists in manpower, personnel, training, human factors engineering (HFE), habitability, system safety and occupational health, and force protection and survivability from Government, industry, and the academic community both in the United States and allied nations.

i. Establish the Army HSI website. Maintain it as a primary source of information on Army HSI policy, guidance, procedures, training, and events.

j. Develop guidance and processes to synchronize and optimize STPs in experimentation, prototyping, engineering design and transition throughout the CCDC and between Headquarters, AFC, the Futures and Concepts Center, and the AME. Encourage industry to initiate independent research and development projects that support and improve HSI methodology.

k. Assess HSI opportunities, challenges, and risks regarding current and future equipment designs including, but not limited to, functional, operational, and organizational concepts; concept of operations; concepts of employment; system training plans, and all Joint Capabilities Integration and Development System (JCIDS) documents.

l. Coordinate with the DCS, G–3/5/7 to develop Army policy to ensure HSI training resources are included in the Army training program.

m. Establish procedures, in coordination with DCS,G–4, to ensure HSI data informs and participates in ILAs, and PSM IPTs. Provide DCS, G–4 with a copy of the product supportability assessment for all systems acquisition review councils, information technology OIPTs, and PEO IPRs.

n. In coordination with the DCS, G–4, develop policy on how HSI and integrated logistics support (ILS) programs will complement each other.

o. Evaluate and formulate recommendations regarding the implementation of HSI and its impacts to transition agreements, knowledge transition agreements, and acquisition program data.

p. Review the application of HSI in Army models, simulations, and analyses.

q. Review applicable concept and capability documents throughout the acquisition system life cycle to ensure all HSI domain requirements have been properly addressed.

r. Coordinate with PMs and source selection authorities to ensure that HSI requirements have been coordinated for inclusion in solicitation documentation.

s. Coordinate with PMs and the test community to ensure HSI considerations have been included in test planning documentation.

t. Ensure key Army Capability Managers (ACMs) and their staff receive introductory HSI training.

u. Establish guidance for integrating HSI within the research, development, and acquisition community.

v. Ensure HSI is conducted throughout the systems acquisition process.

w. Ensure, in coordination with CIO, the resolution of HSI issues and concerns during the life cycle of information systems.

x. Ensure, in coordination with the DCS, G–1, HSI principles are included in the development and acquisition of personnel readiness systems, policies, programs, and services that support Soldiers, Veterans, and Families.

y. Notify DCS, G–4 of upcoming product supportability reviews.

z. Establish COE HSI programs that incorporate the provisions of this regulation into their acquisition programs.

aa. Ensure research findings relating to or affecting human performance are reported to the COE.

bb. Coordinate with DASAF to develop, coordinate, and disseminate system safety policies defining the interface with other Army HSI domains (see AR 385–10).

cc. In coordination with U.S. Army Training and Doctrine Command (TRADOC), update HSI content in training programs conducted by U.S. Army Logistics University. Include HSI system safety policy and procedures in coordination with U.S. Army Materiel Command (AMC), HSI.

dd. Provide system safety support and conduct safety assessments on automated information systems in planned configurations with associated support items of equipment, as required.

ee. In coordination with AMC, provide HSI support to functional users, force modernization and/or branch proponents, and PMs, as required.

ff. Ensure research findings relating to or affecting human performance are reported to MEDCOM.

gg. Provide a copy of the health hazard assessment report (HHAR) to MEDCOM.

hh. Directed by the milestone decision authority (MDA), plan and execute HSI programs in coordination with MEDCOM that will implement the provisions of this regulation in MEDCOM materiel acquisition and testing responsibilities (see AR 40–60).

ii. For AFC-managed programs, ensure research findings, issues, and risks relating to human performance, reliability, and Soldier survivability are reported to MEDCOM and U.S. Army Space and Missile Defense Command (SMDC).

jj. Ensure research findings, issues, and risks relating to human performance are reported to U.S. Army Intelligence and Security Command (INSCOM).

kk. Provide U.S. Army Test and Evaluation Command (ATEC) a copy of the system-specific safety releases, safety confirmations, and operational test reports, as appropriate.

ll. Provide U.S. Army Combat Readiness Center (USACRC) a copy of the independent safety assessment provided to the ASARC Secretary for ASARC systems. This assessment will be used by USACRC HSI as input to the HSI assessment.

mm. Analyze HSI issues and measures identified from all sources (for example, CDD, HSIP, System Evaluation Plan (SEP), and Source Selection Evaluation Board) as potential issues to be addressed across the full spectrum of system tests and evaluations. Provide results to U.S. Army Medical Department Center and School on a routine basis.

nn. In coordination with PEO, obtain HSI domain assessments in support of MDRs, program reviews (for example, preliminary and critical design reviews) and major system upgrades in accordance with this policy and other regulatory guidance.

oo. In coordination with PMs, ensure 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.

pp. In coordination with PMs, include HSI requirements in solicitation packages in sufficient detail to permit a determination of effort required by Government and industry.

qq. In coordination with PMs, identify and resolve, or provide a mitigation strategy for, critical and major HSI risks throughout the acquisition process.

2–15. Commanding General, U.S. Army Training and Doctrine Command
The CG, TRADOC will—

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

b. In coordination with AFC, update HSI content in training programs conducted by U.S. Army Logistics University.

c. Include HSI data in doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy solution assessments, analysis of alternatives (AoA) and other studies of baseline/existing equipment.

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

2–16. Commanding General, U.S. Army Materiel Command
The CG, AMC will—

a. Support the HSI program of analysis and assistance to life cycle engineering readiness in planned improvements and upgrades to equipment. Include HSI program of instructions to logisticians, where appropriate.

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

(1) Include HSI system safety policy and procedures in coordination with AFC, HSI.

(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) In coordination with AFC, provide HSI support to functional users, force modernization and/or branch proponents, and PMs, as required.

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

c. Through commanders, headquarters, and subordinate commands—

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

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

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

(b) Request HHA from Army Public Health Center in accordance with statutory and regulatory requirements.

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

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

2–17. 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 AFC.

c. Through the Director, U.S. Army Public Health Center—

(1) As an HSI system safety and occupational health domain SME, provide information and support to force modernization and/or branch proponents and PMs, IPTs, as appropriate.

(2) Conduct HHAs.

(a) An initial 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 AFC and Life Cycle Management Command (LCMC) Safety Office.

(3) Conduct toxicity clearances (TCs).

(a) The Army Toxicity Evaluation Program will provide a TC for any new chemical and other potentially toxic materials proposed for use by Army personnel in accordance with AR 40–5, AR 70–1, DA Pam 40–11, and DA Pam 70–3.

(b) TCs will be conducted early in the system life cycle to influence design changes and suggest alternate chemicals when necessary for the safety of personnel and the environment.

(4) Develop health effects criteria. Develop new or revised health effects criteria for military unique chemical exposures from the use of new and emerging technologies used in Army systems.

(5) Provide medical support for live fire T&E.

(a) Assist in developing live fire test plans to ensure appropriate data collection for a reliable medical assessment of relevant issues from the use of new and emerging technologies used in Army systems.

(b) Assist in identifying critical crew vulnerability issues and in developing the criteria for casualty assessments.

(c) Develop and improve crew vulnerability assessment techniques, to include incorporating live fire T&E lessons learned in assessment techniques and supporting databases.

(d) Assist in crew casualty assessments as required, and review the final casualty assessments in a timely manner to ensure medically relevant concerns have been adequately addressed.

d. Through the CG, MEDCoE—

(1) As the medical capability developer (CAPDEV), plan and implement an 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 HSI domain technical assistance to CAPDEV and materiel developers (MATDEVs) through the MEDCoE. 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 Development Command—

(1) As directed by the MDA, plan and execute HSI programs in coordination with AFC 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 AFC.

(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.

2–18. 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 HSI programs that incorporate the provisions of this regulation in the INSCOM systems acquisition activities.

c. Verify research findings, issues, and risks relating to human performance are reported to AFC.

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

2–19. 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 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 AFC.

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

2–20. 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. Provide AFC and LCMC Safety Office a copy of the system-specific safety releases, safety confirmations, and operational test reports, as appropriate.

c. 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.

d. Support the provision of HSI training, at a minimum, to personnel with system T&E responsibilities, as appropriate.

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

2–21. Commanding General, U.S. Army Combat Readiness Center

The CG, USACRC will—

a. Support the Army Acquisition process with independent safety advice when requested.

b. Respond in writing to any requests for advice or assistance and provide AFC a copy of the response to the ASARC Secretary for ASARC systems.

c. Provide AFC a copy of the independent safety assessment provided to the ASARC Secretary for ASARC systems. This assessment will be used by AFC HSI as input to the HSI assessment.

d. Make the Army automated safety information database accessible to HSI practitioners.

2–22. Commanding General, U.S. Army Medical Center of Excellence

The CG, MEDCoE 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 AFC 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 T&E responsibilities, as appropriate.

Section III

Army Acquisition Executive, Program Executive Officers, and Program Managers

2–23. Army acquisition executive

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

2–24. Program executive officers

PEOs will—

a. Include HSI in PM charters, work breakdown structures, or PM specific WIPTs/IPTs per the DoDI 5000.95.

b. Monitor PM and contractor execution of HSI program requirements.

c. In coordination with AFC, ensure PMs obtain HSI domain assessments in support of MDRs, program reviews (for example, preliminary and critical design reviews), and major system upgrades in accordance with this policy and other regulatory guidance.

2–25. Program managers

PMs will—

a. Implement a proactive HSI program per DoDI 5000.95 for all systems managed.

b. Require an HSIP as the official management and tracking mechanism for HSI support.

c. Determine funding and resourcing requirements for effective HSI program planning, execution, STPs, and other test events.

d. In coordination with AFC, ensure 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.

e. Include HSI data and considerations in the development of source selection and evaluation criteria.

(1) In coordination with AFC, include HSI requirements in solicitation packages in sufficient detail to permit a determination of effort required by Government and industry.

(2) Incorporate HSI provisions (planning, accomplishment, progress tracking, and documentation of required efforts) in system contracts and specifications.

f. When appropriate, charter HSI WIPTs or ensure HSI is represented other IPTs (for example, SE IPT or product supportability IPT).

g. In coordination with AFC, identify and resolve, or provide a mitigation strategy for, critical and major HSI risks throughout the acquisition process.

Chapter 3
Human Systems Integration in the Systems Acquisition Process

3–1. Introduction
a. The Army's HSI Program establishes roles and responsibilities for the AME to fully integrate the Soldier into the entire systems acquisition process.

b. Army HSI ensures developmental, non-developmental, and modified systems are effectively operated, maintained, and supported efficiently and safely.

c. The engineering approach is user-centered and data driven. Effective HSI requires iterative user engagements augmented by HSI SME analyses in requirements development, concept, design, demonstration, and fielding.

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. An Army HSI professional is a Department of Army Civilian from the CCDC with experience conducting HFE analyses, research psychology, and human performance studies to support requirements determination, concept validation, prototyping, demonstration, and experimentation.

b. 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 JCIDS 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.

3–3. Human Systems Integration in the integrated product team process
a. HSI representatives will participate in requirements, SE, product supportability, and T&E IPTs as appropriate.

b. HSI SME supporting a PM will develop an HSIP, conduct a baseline HSI assessment, and support the IPT in AoAs, trade studies, requirements reviews, experimentation, prototyping, and demonstrations.

3–4. Human Systems Integration in commercial off-the-shelf and non-developmental items
a. HSI will be used as source selection and screening criteria of any commercial off-the-shelf or non-developmental item acquisition.

b. As with other acquisition strategies, an abbreviated HSIP and scaled-down HSI assessment will be conducted to support a fielding decision.

3–5. Human Systems Integration in agile or 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 will be used by the PM to manage the Army HSI Program throughout system development, modification, and STPs in support of the SE and test processes.

3–6. Human Systems 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, A–CDD, CDD updates, RFP, SOW, AoA, SEP, system training plan, HSIP, and TEMP, particularly the critical operational issues and criteria.

b. Capabilities development for rapid transition process. Army HSI practices and policies will be included as part of urgent, emergent, and accelerated programs by the PM or acquisition authority.

3–7. Human Systems Integration domain representation

Army HSI domain representation on CAPDEV and MATDEV teams for Acquisition Category (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-

Domain	ACAT ID, IC, and II	ACAT IA (IAM, IAC)	ACAT III
Manpower	U.S. Army Futures Command, U.S. Army Combat Capabilities Development Command		
Personnel capabilities			
Training			
Habitability			
HFE			
System safety and occupational health	AMC LCMC Safety Office	U.S. Army Communications-Electronics Command	AMC LCMC Safety Office
	Army Public Health Center (lead); MEDCoE (assist)		
Force protection and survivability	U.S. Army Futures Command, U.S. Army Combat Capabilities Development Command		
Army HSI (domain integration)	U.S. Army Futures Command		

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

Assessment	ACAT ID, IC, and II	ACAT IA (IAM, IAC)	ACAT III, IIIAC, and IV
Manpower, personnel capabilities, training	U.S. Army Futures Command, U.S. Army Combat Capabilities Development Command		
Habitability			
HFE	U.S. Futures Command (lead); ATEC Test Centers (assist)		
System safety and occupational health	Combat Readiness Center[1] AMC LCMC Safety Office	U.S. Army Communications-Electronics Command	AMC LCMC Safety Office
	Army Public Health Center		
Force protection and survivability	U.S. Army Futures Command		
AFC HSI final assessment (domain integration)	U.S. Army Futures Command		

Notes:

[1] Combat Readiness Center conducts independent safety assessments.

Chapter 4
Human Systems Integration Plan

4–1. The Human Systems Integration Plan

a. DoDD 5000.01 states: "Human systems integration planning will begin in the early stages of the program life cycle. The goal will be to optimize total system performance and total ownership costs, while ensuring that the system is designed, operated, and maintained consistent with mission requirements." The HSIP is a tailored planning and management tool that documents the HSI tasks in support of technical program reviews (for example, preliminary design reviews, critical design reviews, engineering change proposals, and so forth), user concerns, and recommendations to resolve critical or major HSI issues.

(1) 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.

(2) 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 coordinated of information occurs.

b. The following HSIP elements will be included as a minimum:

(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. Analysis results provided by CAPDEV or IPT recommendations, and/or the contents of the CDD or HSIP, or directions from the CAPDEV or ACM plays a critical role in a system acquisition's source selection process. HSI issues will be identified as a factor in the selection process so contractors will address it in responses to the RFP. HSI issues will require continuous assessments and evaluations throughout the system's life cycle development, from onset of ICD development through the operations and sustainment phase.

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

5–2. Implementation

a. PMs 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 all procurement methods to include the best value trade- off analyses and lowest price technically acceptable and tradeoffs 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

Unless otherwise indicated, all Army publications are available on the Army Publishing Directorate website at https://armypubs.army.mil/.

AR 40–5
Army Public Health Program (Cited in para 2–11*b*(1).)

AR 40–10
Health Hazard Assessment Program in Support of the Army Acquisition Process (Cited in para 2–11*b*(1).)

AR 71–9
Warfighting Capabilities Determination (Cited in para 2–9*a*.)

AR 385–10
The Army Safety Program (Cited in para 2–12*a*.)

DoDD 5000.01
The Defense Acquisition System (Cited in title page.) (Available at https://www.esd.whs.mil.)

DODI 5000.95
Human Systems Integration in Defense Acquisition

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. Unless otherwise indicated, all Army publications are available on the Army Publishing Directorate website at https://armypubs.army.mil/.

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
Department of the Army Federal Advisory Committee Management Program

AR 25–1
Army Information Technology

AR 25–30
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 71–32
Force Development and Documentation Consolidated Policies

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 700–28
Ammunition Management

AR 700–127
Integrated Product Support

AR 750–1
Army Materiel Maintenance Policy

DA Pam 25–403
Guide to Recordkeeping in the Army

DA Pam 40–11
Army Public Health Program

DA Pam 70–3
Army Acquisition Procedures

DA Pam 385–16
System Safety Management Guide

DA Pam 611–21
Military Occupational Classification and Structure

SB 8–75 series
Army Medical Department Supply Information

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 (APD) website at https://armypubs.army.mil.

DA Form 11–2
Internal Control Evaluation Certification

DA Form 2028
Recommended Changes to Publications and Blank Forms

Appendix B

Human Systems Integration Tasks and Deliverables

Requirements Review
- JCIDS Requirements Review (ICD/CDD/capability production document)
- System and Sub-system Specifications
- Functional Requirements Decomposition
- Technical Requirements Decomposition
- Training Requirements Verification
- Maintainer & Maintenance Requirements

Support to Army T&E & ASA (ALT)
- Requests for Information
- Requests for Proposals (RFP)
- Logistics Demonstrations (Log Demo)
- Usability Testing
- Heuristic Evaluation
- Source Selection Evaluation Board
- Operational Suitability & Effectiveness Evals
  Limited User Tests, Initial Operational Test and Evaluations, Follow-on Operational Test and Evaluations, Live Fire Test and Evaluations, and so forth
- Test and Evaluation Master Plan
- SEP

Modeling and Simulation
- Task and Workflow Analyses
- Prototyping
- Storyboards (use-cases)
- Workload Modeling
- Physical Work Space Accommodation Modeling
- DCS, G–8 analysis of alternatives

Analysis Reports
- HSI P - Human Systems Integration Plan
- HSI A - Human Systems Integration
- MPT A - Manpower, Personnel, Training
- HFE A - Human Factors Engineering
- SS A - System Safety Assessment
- SSv A - Soldier Survivability or Vulnerability Assessment

Contract Deliverables – Data Item Description
- Human Systems Integration Report (DI–HFAC- 81833)
- Human Systems Integration Program Plan (DI–HFAC–81743A)
- Human Engineering Simulation Concept (DI–HFAC–80742B)
- Human Engineering Test Plan (DI–HFAC–80743B)
- Human Engineering Test Report (DI–HFAC–80744B)
- Human Engineering Systems Analysis Report (DI–HFAC–80745C)
- Human Engineering Design Approach Document Operator (DI–HFAC–80746C)
- Human Engineering Design Approach Document Maintainer (DI–HFAC–80747C)
- Critical Task Analysis Report (DI–HFAC–81399B)
- Human Engineering Program Plan (DI–HFAC–81742)
- Maintainability / Testability Demonstration Test Report (DI–MNTY–81603)
- Maintainability / Testability Demonstration Test Plan (DI–MNTY–81604)
- Mission / Task Analysis Report (DI–SESS–81635)
- Environment, Safety and Occupational Health Data Item Descriptions as per MIL–STD–882E

▪ HSI Domain Technical Reports (refer to DI–MISC–80508B)

Appendix C

Internal Control Evaluation

C–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.

C–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.

C–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).

C–4. Test questions
a. System acquisition planning.
(1) Are human user constraints considered in development of requirements documents (such as, ICD, A–CDD, CDD, and capability production document)?
(2) Are ease-of-use, safety, and manpower 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) Were critical tasks, system functions, and attributes identified?
(5) Can the proposed system be operated and maintained by the quantity and skills of people that will be available?
(6) Is Army HSI participating in all appropriate ICDTs and IPTs?
(7) Is there a process to manage the Army HSI Program and track and manage HSI 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?

C–5. Supersession
This evaluation replaces the evaluation for the conduct of the Army HSI Program previously published in AR 602–2, dated 27 January 2015.

C–6. Comments
Help make this a better tool for evaluating internal controls. Submit comments via email to usarmy.apg.devcom.mbx.hq-hsi@army.mil.

Glossary

Section I

Abbreviations

AAE
Army acquisition executive

ACAT
acquisition category

A–CDD
abbreviated capabilities development document

ACM
Army Capability Manager

AFC
U.S. Army Futures Command

AMC
U.S. Army Materiel Command

AME
Army Modernization Enterprise

AoA
analysis of alternatives

AR
Army regulation

ARIMS
Army Records Information Management System

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)

ASARC
Army Systems Acquisition Review Council

ATEC
U.S. Army Test and Evaluation Command

CAPDEV
capability developer

CCDC
U.S. Army Combat Capabilities Development Command

CDD
capabilities development document

CG
commanding general

CIO
Chief Information Officer

COE
Chief of Engineers

DA
Department of the Army

DASAF
Director of Army Safety

DCS
Deputy Chief of Staff

DoD
Department of Defense

DoDI
Department of Defense instruction

HFE
human factors engineering

HHA
health hazard assessment

HHAR
health hazard assessment report

HSI
Human Systems Integration

HSIP
Human Systems Integration Plan

ICD
initial capabilities document

ICDT
integrated capabilities development team

ILA
integrated logistics assessment

ILS
integrated logistics support

INSCOM
U.S. Army Intelligence and Security Command

IPR
in-process review

IPT
integrated product team

JCIDS
Joint Capabilities Integration and Development System

LCMC
Life Cycle Management Command

MATDEV
materiel developer

MDA
milestone decision authority

MDR
milestone decision review

MEDCoE
U.S. Army Medical Center of Excellence

MEDCOM
U.S. Army Medical Command

OIPT
overarching integrated product team

PEO
program executive officer

PM
program manager

PSM
Product Support Manager

RFP
request for proposal

RRS–A
Records Retention Schedule-Army

SE
systems engineering

SEP
System Evaluation Plan

SMDC
U.S. Army Space and Missile Defense Command

SME
subject matter expert

SOW
statement of work

STP
Soldier Touch Point

T&E
test and evaluation

TC
toxicity clearance

TEMP
Test and Evaluation Master Plan

TRADOC
U.S. Army Training and Doctrine Command

TSG
The Surgeon General

USACRC
U.S. Army Combat Readiness Center

WIPT
working integrated product team

Section II

Terms

Acquisition category
Categories established to facilitate decentralized decision making and execution and compliance with statutorily imposed requirements.

Force protection and survivability
The characteristics of a system that impose risks to personnel in terms of system design, protection from direct threat events and accidents (such as chemical, biological, and nuclear threats), including primary and secondary effects from these events and considers any special equipment necessary for egress and survivability.

Habitability
The physical environment (for example, space and temperature control) and, if appropriate, requirements for personnel services (for example, medical and mess) and living conditions (for example, berthing and personal hygiene) for conditions needed to meet or sustain system performance or impact quality of life and morale.

Health hazard assessment
One of the domain assessments prepared in support of the HSI assessment process. Its purpose is to apply biomedical knowledge and principles to document and quantitatively evaluate effects associated with health hazards that may be associated with the development, acquisition, operation, and maintenance of Army systems.

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.

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 MDR 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 occupational health aspects are considered throughout the system design and development processes. HFE and habitability 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 force protection and survivability considerations into that process as well (see DoDD 5000.01).

Human Systems Integration assessment
Prepared under the authority of the DCS, G–1 and address unresolved critical HSI issues to the MDA for ASARCs, information technology OIPTs, and other acquisition decision reviews. Assessments will normally assign a Red, Amber, or Green rating.

a. Red. Critical or major problems identified with little to no mitigation identified or with mitigation being implemented with less than satisfactory results projected by the next milestone date.

b. Amber. Major or minor problems identified with a successful mitigation expected to be implemented by the next major milestone.

c. Green. No critical or major issues identified, and if minor issues exist, all issues have been determined to not significantly impact operational effectiveness, suitability and sustainment, or survivability.

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 T&E 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 TRADOC capability manager for risk management, mitigation, or issue resolution. Unresolved critical issues are addressed in HSI assessments to the MDA for ASARCs, 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 DoDD 5000.01 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

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 SME 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.

Safety and Occupational Health
The design and operational characteristics of a system that can minimize the risks of acute or chronic illness, disability, or death or injury to operators and maintainers; and enhance job performance and productivity of the personnel who operate, maintain, or support the system.

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 force protection and 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.