



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE MATERIEL COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

02 FEB 2011

MEMORANDUM FOR ALHQCTR/CC/CL
ALHQSTAFF

FROM: AFMC/CC
4375 Chidlaw Road
Wright-Patterson AFB OH 45433-5001

SUBJECT: Human Systems Integration (HSI) Implementation

1. AFMC acquisition and sustainment processes must assure that each system accomplishes the warfighter mission while meeting user (operators, maintainers, and support personnel) requirements. This is best achieved by providing focused attention on the human and associated interfaces early and often throughout the system life cycle. Human Systems Integration (HSI) is a comprehensive process that can be used effectively to optimize total system performance and reduce system ownership costs. It integrates the nine domains of manpower, personnel, training, environment, safety, occupational health, survivability, habitability, and human factors engineering. While many of these domains overlap other technical areas, the Program Manager is charged with defining roles and responsibilities to ensure the human is properly and effectively integrated in each and every system.

2. To ensure user compatibility and cost efficiency for all our systems, systems engineers, working with their program managers, shall:

a. Incorporate HSI planning, methods, and practices in all AFMC acquisitions, in accordance with the AFMC Implementation Plan for HSI and higher Headquarters policy.

b. Actively work with the functional communities (e.g., Test and Evaluation, Logistics, Manpower, Personnel, Training, Human Factors, Medical, Intelligence, Communications, and Safety) to verify human-centered requirements are included in system design and documentation.

c. Document Systems Engineering/HSI trade space decisions to communicate design considerations, facilitate future system modifications, and support personnel transitions.

3. Compliance shall be documented in each program's Systems Engineering Plan and verified through Inspector General Compliance Inspections and Program Support Reviews.

4. For HSI policy related queries contact Mr. Brian Strizak, HQ AFMC/ENS, DSN 787-4311 or brian.strizak@wpafb.af.mil and for technical HSI queries contact Mr. John Plaga, 711 HPW/HP, DSN 785-1166 or john.plaga@wpafb.af.mil. Additional online resources can be found at the AF HSI CoP at <https://afkm.wpafb.af.mil/community/views/home.aspx?Filter=HP-HS-01>.

DONALD J. HOFFMAN
General, USAF
Commander

Attachment:
AFMC Implementation Plan for HSI (January 2011)

War-winning capabilities ... on time, on cost

Air Force Materiel Command

**Implementation Plan
for
Human Systems Integration**

(Version 1.0)



AFHSIO (Strategic)
HQ AFMC/EN (Operational)
711 HPW/HP (Tactical)

January 2011

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1.0. Introduction.

1.1. Background.

Human Systems Integration (HSI) evolved as a systems acquisition process within the Joint Services beginning in 1982. HSI has received increasing attention from Congress and the Office of the Secretary of Defense (OSD) and is now reflected in policy and guidance within OSD and the Services. HSI provides a comprehensive process to ensure the human contribution to total systems performance is recognized and advocated throughout the system life cycle. This human contribution is addressed through the various domains of HSI which include Manpower, Personnel, Training, Environment, Safety, Occupational Health, Human Factors Engineering, Survivability, and Habitability and is an integral part of Systems Engineering. Successful applications of the HSI process have occurred within a number of Air Force (AF) programs, but there are no current repeatable, measurable, and executable AF plans to apply HSI processes across the acquisition and sustainment enterprise.

The AF Vice Chief of Staff provided the framework for HSI planning, implementation, and execution with the *AF HSI Management Plan*, a part of the larger *OSD HSI Management Plan*. This AF Management Plan implements and supports HSI requirements per Department of Defense Instruction (DoDI) 5000.02, *Operation of the Defense Acquisition System*; Chairman of Joint Chiefs of Staff Instruction (CJCSI) 3170.01G, *Joint Capabilities Integration and Development System*; Air Force Instruction (AFI) 10-601, *Operational Capability Requirements Development*; AFI 10-604, *Capabilities-Based Planning*; AFI 63-101, *Acquisition and Sustainment Life Cycle Management*; and AFI 63-1201, *Life Cycle Systems Engineering*. The HSI Management Plan is consistent with and supports current initiatives in revitalizing (early) systems engineering, development planning, acquisition improvement, capability-based assessments, requirement improvement and other initiatives to improve the acquisition, fielding, and sustainment life cycle management process.

In light of fiscal constraints with increasing operational and sustainment challenges, the AF is mandated to do a better job of designing, developing, and sustaining systems. Commanders should consider both the near-term and the long-term impacts an effective HSI process will bring to bear upon increasing mission capabilities, system performance, effectiveness, and ownership costs. Human-related costs can constitute 30-80% of all system ownership costs and must be addressed to optimize future expenditures. HSI provides a comprehensive process to integrate operators, maintainers and support personnel with systems. Early HSI applications have demonstrated a return on investment on the order of 200-300 times that of other systems. Later HSI interventions, i.e., after system deployment, are more expensive and complex but still demonstrate returns on investment of 30-50 times (See Appendix A for references). These improvements are demonstrated by improved total systems performance, improved interface design, better risk management, fewer modifications, and overall reduced ownership costs. The savings across these areas can be channeled from the operations and sustainment accounts, back to the development accounts to better support the recapitalization and modernization of Air Force systems.

This Air Force Materiel Command (AFMC) Implementation Plan (I-Plan) for HSI contains key provisions for AFMC to work closely with the Assistant Secretary of the Air Force for Acquisition (SAF/AQ) to ensure HSI guidance is provided to the Program Executive Officers

(PEOs) and Program Managers (PMs). The Air Force Human Systems Integration Office (SAF/AQ-AFHSIO) joined with AFMC in sponsoring an Air Force Smart Operations for the 21st Century (AFSO21) workshop to evaluate and remove barriers to effective HSI implementation. This I-Plan is in accordance with HSI policy, Headquarters Air Force and Major Command (MAJCOM) recommendations, and the results of the AFSO21 workshop.

1.2. Purpose.

The goal of this I-Plan is to generate effective HSI practices throughout AF program life cycles. In particular, it will help bring awareness to the decision makers and action officers to facilitate execution through tools (i.e., HSI Statusboard, Acquisition Sustainment Toolkit (ASTK)), methods (i.e., MAJCOM HSI Cell Representatives, AFMC HSI Working Group (WG), HSI program lead), and processes (i.e., HSI Planning, Air Force Requirements Oversight Council (AFROC) HSI endorsement, lessons learned). It will integrate HSI as an enabling process in the design, development, fielding, and sustainment of all Air Force systems. The AFMC HSI I-Plan is intended to bring AFMC into compliance with existing and evolving HSI policy, instructions, and guidance. This is a step in further institutionalizing the human into AFMC business practices. The I-Plan lays the foundation for building the resources and appropriate program products to ensure long term success.

1.3. Scope.

This I-Plan is generated by Headquarters (HQ) AFMC Directorate of Engineering and Technical Management (EN) and endorsed by the AFMC Commander in memo and policy. It provides “what and who” not the specific “how” on the overall approach for HSI. It is supported by the following documents: Department of Defense Directive (DoDD) 5000.01, *The Defense Acquisition System*; DoDI 5000.02; CJCSI 3170.01G; the Defense Acquisition Guidebook (DAG); The Manual for the Operation of the Joint Capabilities Integration and Development System (JCIDS) process; Air Force Policy Directive (AFPD) 63-1/20-1, *Acquisition and Sustainment Life Cycle Management*; AFI 10-601; AFI 10-604; AFI 63-101; AFI 63-1201; Air Force Pamphlet (AFPAM) 63-128, *Guide to Acquisition and Sustainment Life Cycle Management*; the 2009 AF HSI Management Plan; HSI-related materials such as Air Force HSI guides; and Air Force Institute of Technology (AFIT) courses.

2.0. AFMC Implementation.

AFMC is pivotal to successful HSI implementation because of its role in supporting technology readiness and the design, development, and sustainment of systems for the operating commands. The successful implementation of this I-Plan within the Command will support the AF HSI Management Plan and will be supported by future Operating Command HSI Implementation Plans.

2.1. Key areas to be addressed.

The AFMC HSI I-Plan addresses two key areas for process improvement: a) continuity of HSI representation and b) support for program offices and systems engineering.

2.1.1. Continuity of HSI representation.

For HSI to be properly translated within the acquisition process it must be initiated during capability identification. Early and continuous identification of HSI issues/considerations

within system acquisition enhances warfighter capabilities and reduces life cycle costs. AFMC sponsors HSI participation in other MAJCOM processes via the 711th Human Performance Wing, Human Performance Integration Directorate (711 HPW/HP) and MAJCOM HSI Cells. The role of human operators, maintainers, and support personnel are identified in the systems level Concept of Operations (CONOPS), in the subsequent Capability-Based Assessments (CBA), and in alternative concepts being evaluated, matured, and then explored for adoption. HSI should be explicitly expressed in formal JCIDS capability documents (per AFI 10-601) and then carried completely through systems acquisition. User needs should be validated and preserved to the greatest extent practical in program management trade-off decisions. The human performance requirements need to be translated from user needs, comprehensively addressed, and not traded off without proper justification (commensurate with the hardware and software trade-off analysis processes).

2.1.2. HSI support to program offices and systems engineering.

Integration of the nine AF HSI domains (Manpower, Personnel, Training, Environment, Safety, Occupational Health, Human Factors Engineering, Survivability, and Habitability) must be incorporated in the business practices across the AFMC organizations. Absent an integrated approach, the various staff organizations and implementing communities will lack the synergy to comprehensively address lessons learned, fielded systems deficiencies, and relevant HSI issues emerging across the domains. The HSI process must effectively deliver these domain concerns to customers translated to an actionable format for that community. An example would be HSI concerns translated into program risk and associated mitigation strategies to support a PM. The DAG provides high-level guidance on how to effectively implement HSI within the systems engineering process; this I-Plan provides additional detail. Each acquisition program within AFMC will have HSI as a part of its Systems Engineering Integrated Product Team (IPT) or a HSI IPT commensurate with the size and needs of the organization, with a HSI lead identified by the PM.

2.2. Proposed process improvements/changes.

In addressing weapon system deficiencies, process changes have been identified as an outcome of the May 2009 AFSO21 HSI Implementation Workshop. These process changes can be grouped into five areas: Overarching Functions, Early Planning, HSI in Documentation, HSI Tools, and Special Cases. Although human capabilities and limitations are considered in the design and development phases, they need to be implemented in capabilities-based planning to enhance life cycle savings. (**Note: Organizations that should participate in the efforts are identified in parentheses with actionable items in the following sections*).

2.2.1. Overarching HSI Functions.

HSI building blocks include embracing the strategic Air Force vision, training for HSI personnel, coordination between AFMC Headquarters and Center-Level organizations, and determining the appropriate number and expertise of HSI personnel supporting AFMC programs. The establishment of an AFMC enterprise working group will form a basis for coordination across other key enablers. The scope of HSI spans the Acquisition Life Cycle for emerging, developmental, and fielded programs.

2.2.1.1. Coordination across key enablers.

Several key enablers affecting human performance face similar challenges to effective implementation. In order to provide optimum mission support these enablers leverage each other and provide synergistic benefit, representation, and coordination amongst each other. Without coordinated consideration of key enablers, gaps, redundancy, and suboptimal effects typically occur. Communities within AFMC should work together to effectively plan for the human in system design and development. (HQ AFMC Directorates, 711 HPW)

2.2.1.2. Establishment of an AFMC enterprise working group.

The HSI domains are represented by AFMC Headquarters and Centers and should be focused on integration of lessons learned, challenges, and initiatives to ensure a comprehensive treatment and advocacy for HSI across the Command. The HQ AFMC Systems Engineering Division (ENS) will establish a HSI working group with HQ Staff and technical community membership to advise the AFMC leadership about shortcomings across the Command in dealing with resource requirements and process improvements for implementing HSI. (HQ AFMC/EN, HQ AFMC/A2/5, HQ AFMC/A3, HQ AFMC/A4, HQ AFMC/A6/7, HQ AFMC/A8/9, ASC, ESC, AAC, OO-ALC, OC-ALC, WR-ALC, AFGLSC, AFNWC, AEDC, AFFTC, AFRL)

2.2.1.3. Tailored HSI training.

PMs and chief engineers (CEs) are responsible by policy for the implementation of HSI. Therefore, the PM or CE needs to designate a HSI Point of Contact (POC) or lead for each program. This POC should be dedicated to the program(s) and can be supported by the HSI community (AFHSIO, HQ AFMC/EN, 711 HPW/HP and MAJCOM HSI cells). The designated POC should receive a minimum introductory HSI training from DAU/AFIT. The POC should also be an HSI subject matter expert (SME) or utilize 711 HPW/HP SMEs as available. (AFHSIO and 711 HPW/HP can also provide tailored HSI training to supplement DAU/AFIT). (SAF/AQ, AFHSIO, HQ AFMC/EN, 711 HPW)

2.2.1.4. HSI assessment process.

HSI considerations and implementation are a part of the assessment of Systems Engineering and logistics management. As an integral part of systems engineering, HSI can provide tremendous leverage in the enabling of systems capability and in reducing ownership costs. AFHSIO has developed an endorsement process for HSI within the requirements process at the AFROC, and SAF/AQ has asked for a similar process for assessing HSI in preparation for program reviews (including Program Technical Assessments and Program Support Reviews). In order to be of most benefit to the program office, the HSI assessment should be accomplished prior to various milestones and program reviews. HSI assessments capture human systems integration issues that may require mitigation/resolution before potentially causing a major system redesign. (SAF/AQ, AFHSIO, HQ AFMC/EN, 711 HPW)

2.2.1.5. HSI Resource Requirements.

Primary responsibility for providing HSI reach back at AFMC rests with the 711 HPW/HP; therefore, manning must be assessed to effectively implement the HSI mission. Prioritization of efforts and resulting allocation of resources should be coordinated between PEOs and 711 HPW/HP. Further assessment will be required as the process moves forward. (PEOs, 711 HPW)

2.2.2. HSI Planning.

It is essential that planning for HSI be conducted early in the system life cycle. Effective HSI planning should be demonstrated through documentation first identified during the CBA via the JCIDS process and included throughout the weapon system life cycle. The HSI planning process supports program activities, such as the writing of acquisition documents (i.e., Systems Engineering Plan (SEP) and the Life Cycle Management Plan (LCMP)).

2.2.2.1. Early Acquisition Processes.

Full consideration of human capabilities and limitations in the decision models will result in better systems alternatives for both materiel and non-materiel solutions. Capability-Based Planning (CBP) and Development Planning (DP) should provide comprehensive treatment of the operators and sustainment personnel as a vital contributor to total systems performance. Considering HSI early in the life cycle during CBPs, Analysis of Alternatives (AoAs), and operational requirements High Performance Teams (HPTs) will proactively improve the design and enhance performance. Reacting to the design is more costly and design modifications are difficult to implement. Technology development across both industry and Department of Defense (DoD) needs to address improved and innovative human interfaces to facilitate an increase in systems performances and a reduction in ownership costs. There are key processes supporting the transition of requirements from operational commands to the implementing Command (AFMC). Processes that need to incorporate HSI include the following:

2.2.2.1.1. [Early Systems Engineering.](#)

Early systems engineering focuses on systems engineering efforts prior to Milestone A, with a concentration on CBAs, Materiel Development Decisions (MDDs), AoAs, and Concept Characterization & Technical Descriptions (CCTDs). As an integral part of systems engineering, HSI must be considered in these documents and processes, to identify the risks and trade-offs for decision makers. (AFMC Centers)

2.2.2.1.2. [Development Planning \(DP\).](#)

HSI requirements need to be specifically addressed in the DP process to ensure the human is given equal treatment with the hardware and software in the evolution of the capability. DP is a collaborative process bridging warfighter-identified capability needs and planning for acquisition of materiel solutions. HSI provides trade space considerations for the operators and maintainers with emerging capability needs. DP includes early systems engineering, early test and evaluation strategy development, life cycle analysis studies, and life-cycle cost estimates in pursuit of new capabilities. (Operational MAJCOMs, HQ AFMC/A2/5, AFMC Centers, 711 HPW)

2.2.2.1.3. [Capability-Based Planning \(CBP\)](#).

CBP continues to be a major focus for the Command to fulfill AFMC responsibilities for pre-Milestone A activities and support Capabilities Review and Risk Assessment (CRRA) objectives. HSI activities should be aligned to support Air Force CBP/CRRA priorities and include traceability of activities to Joint Capability Areas (grouped DoD capabilities supporting analysis and planning). The 711 HPW/HP will assist in performing the Capability-Based Analysis to specifically identify the human component for operations and maintenance aspects of initiating a weapons system. (Operational MAJCOMs, HQ AFMC/A2/5, AFMC Centers, 711 HPW)

2.2.2.1.4. [Capability-Based Assessment \(CBA\)](#).

The CBA develops potential materiel and non-materiel concepts to address capability gaps and shortfalls, or to exploit new capabilities provided by new technologies. Since the CBA information flows into the capability requirements documents and the AoA, HSI drivers should be identified for each prospective solution. (Operational MAJCOMs, AFMC Centers, 711 HPW)

2.2.2.1.5. [Analysis of Alternatives \(AoA\)](#).

HSI should be systematically included in the study plan and execution of AoAs. At the request of the Office of Aerospace Studies (OAS) or AoA study leads, 711 HPW/HP will provide support for the AoA and cost analysis working groups. (SAF/AQ, Operational MAJCOMs, OAS, AFMC Centers, 711 HPW)

2.2.2.2. Translation from Requirements to Acquisition.

HSI needs to be effectively translated from the capabilities requirements documents into the program documentation (i.e., cost estimation, Test and Evaluation Master Plan (TEMP), System Requirements Document (SRD), Request for Proposal, Contracts, airworthiness certification requirements, etc.) to ensure human considerations in system design and development are carried through to the contractor for implementation. User requirements must be considered at major milestones in the acquisition framework to ensure consistent and continuous HSI representation throughout the system life cycle. HSI focal points should be included in reviews on all JCIDS and acquisition documents to ensure HSI-related considerations are included. (SAF/AQ, Operational MAJCOMs, AFMC Centers, 711 HPW)

2.2.2.3. Test & Evaluation for HSI domains.

The developmental test and evaluation (DT&E) community addresses issues directly related to the requirements and derived from system specifications. The HSI and T&E communities should coordinate on verifiable requirements in the JCIDS and acquisition documentation, such as the TEMP. Thus, HSI requirements flow to the DT&E community during formal T&E planning and provide more proactive support to the warfighter. The T&E community should provide lessons learned feedback to the 711 HPW/HP, and the 711 HPW/HP will provide HSI expertise to the T&E community. Developing appropriate measures of performances (MOP) and measures of effectiveness (MOE) support evaluation of the HSI components of each identified Critical Operational Issue. (HQ AFMC/A3, Center Test Authority, AFOTEC, 711 HPW)

2.2.2.4. Human Readiness Planning.

Human readiness planning (in development) is, at its core, a master list and Work Breakdown Structure of Milestone-sensitive HSI-specific management and analysis activities that are intended to:

2.2.2.4.1. Form a basis for HSI-related investment cost-estimation in the AoA process to ensure that critical HSI activities are supported as funded requirements.

2.2.2.4.2. Form a process framework for HSI WGs to elaborate specific HSI studies/analyses/modeling activities into HSI planning to rollup into requirements and acquisition processes and to track outcomes into appropriate language in documents for Requirements Managers and PMs.

2.2.2.4.3. Provide an explicit framework for HSI-related program risk management to include assessment, mitigation, and reporting.

2.2.2.4.4. Form a basis for a process to incentivize and facilitate the early incorporation of HSI considerations into the negotiation and execution of Technology Transitions.

2.2.3. HSI in Documentation.

OSD and Air Force policy require the implementation of HSI. This is done through the identification of human-related risks, viewing the HSI domains holistically, and performing trade-offs. Although HSI is performed during the design and development of a system, overarching HSI and the domain considerations are identified in requirements and acquisition documentation. AFI 10-601, *Capabilities-Based Requirements Development* ensures that HSI is included in “all capabilities-based development documents,” and AFI 63-1201, *Life Cycle Systems Engineering* directs HSI to be included in “all key acquisition documents.”

2.2.3.1. HSI in Requirements Documents.

HSI should begin prior to Materiel Solution Analysis (MSA) and requirements definition in order to take advantage of all opportunities for non-materiel applications in the various HSI domains. HSI should be identified in the capability requirements documents since this is where the initial capability needs are identified (generally by operational MAJCOMs). The level of HSI detail will vary depending on the level of specificity of each document. There are three key capabilities documents that need to address HSI considerations: Initial Capability Document (ICD), Capability Development Document (CDD), and Capability Production Document (CPD). Although a materiel solution has not been determined at the ICD stage, it is important to create HSI placeholders for inclusion in future capabilities and requirements documents.

2.2.3.2. HSI in Acquisition Documents.

HSI must be included in all key acquisition documents (reference AFI 63-1201). To effectively implement HSI throughout the entire acquisition effort, HSI requirements must be accurately translated into acquisition documents and processes from the capability requirements documents. The PM is responsible for ensuring HSI planning is iteratively

documented. HSI must be described in adequate detail to ensure hardware, software, and human considerations are captured. These documents include the following:

2.2.3.2.1. [Concept Characterization and Technical Description \(CCTD\)](#).

A CCTD captures the technical and programmatic knowledge of a concept at a given point in time. It provides a summary of the technical planning that has been accomplished, and it generally identifies areas of further work needed to mature the concept. HSI references should include information on the expected frequency of use of the system, the level of safety-criticality, and the characterization of the expected use population. Other information that may affect the system users should also be included.

2.2.3.2.2. [Life Cycle Management Plan \(LCMP\)](#).

The LCMP is a top-level consolidated program plan: combining both the acquisition and sustainment strategies for a program, guiding the program execution from initiation to disposal, consolidating all other program plans, and identifying required approvals. The LCMP summarizes HSI from a design/systems engineering approach and sustainment perspective. Sufficient details must be provided to ensure awareness and consideration of human capabilities and limitations during program decision-making in an integrated manner with respect to total system design, operational performance goals, safety, and cost. The LCMP identifies program risks and summarizes mitigation plans, those that are human-related.

2.2.3.2.3. [Systems Engineering Plan \(SEP\)](#).

The SEP captures a program's systems engineering approach and integrates HSI as a subset of systems engineering processes. Individual HSI domains are included among design considerations. The SEP (reference OSD SEP Preparation Guide) summarizes requirements and includes plans for staffing and organization through baseline management, technical reviews, and links with other program management processes.

2.2.3.2.4. [Risk Management Process/Plan \(RMP\)](#).

The program office establishes the basic approach and working structure it will use to execute a risk management program in an RMP. A comprehensive and consistent approach ensures all human-related risks are captured. Early efforts establish the purpose and objective, assign responsibilities for specific areas, identify additional technical expertise needed, describe the assessment process, delineate mitigation planning, and define a rating scheme. Risk Management, like HSI, is integral to overall program planning and systems engineering.

2.2.3.2.5. [Test and Evaluation Strategy and Master Plan \(TES & TEMP\)](#).

The TES describes the concept for test and evaluation activities throughout the program life cycle and provides the basis for the TEMP. The TEMP describes the total T&E planning from component development through operational T&E into production and acceptance. It identifies the required type and amount of test and evaluation events, along with their resource requirements. The TEMP must include HSI to ensure effective implementation throughout the T&E process.

[2.2.3.2.6. Technology Development Strategy \(TDS\).](#)

The TDS is an acquisition document that is approved at Milestone A to guide the conduct of the Technology Development phase. It contains a preliminary description of how the potential acquisition program will be divided into increments based on mature technologies. It describes a preliminary program strategy to include cost, schedule, and performance goals with exit criteria. It also describes the approach for management of data assets, a list of known or probable critical program information and potential countermeasures, and a time-phased workload assessment. The TDS is the forerunner for the program's Acquisition Strategy required at Milestone B and should address the HSI approach.

[2.2.3.2.7. Manpower Estimate/Manpower Estimate Report \(MER\).](#)

The MER validates and explains estimating methodologies used in earlier cost estimates and refines the manpower estimate based on operational requirements spelled out in the CONOPS or CDD. All HSI domains should be addressed to ensure accurate manpower estimates are included in program life cycle cost estimates.

[2.2.3.2.8. System Training Plan \(STP\).](#)

The STP documents the overall strategy for individual, unit, institution, and new equipment training needed to introduce a new or displaced system. HSI concerns are identified through the performance requirements for the training systems and their associated schedule and cost elements. The process to develop the STP flows from the system requirements, training requirements, and training system requirements analysis. Although the STP focuses on the training elements, the other HSI domains, especially manpower and personnel should be documented in the strategy.

[2.2.3.2.9. System Requirements Document \(SRD\).](#)

The SRD (reference MIL-HDBK 520) establishes the acquisition functional program baseline through the documentation of acquisition requirements translated from capabilities-based requirement documents (CDD). It forms the basis for system and subsystem specifications in a detailed, measurable format. Because this document is used by the contractor to develop their program baseline, it is important to include the HSI requirements so they are not traded off in the system development.

[2.2.3.2.10. Programmatic Environment, Safety & Health \(ESOH\) Evaluation \(PESHE\).](#)

The PESHE, supporting Milestone B, serves as a management tool to assist the PM in identifying and managing ESOH hazards and risks to determine how best to meet ESOH regulatory requirements and DoD standards. The Program's IPTs are responsible for integrating effective ESOH and HSI requirements into the design, production, deployment, maintenance, and demilitarization/disposal of the system.

[2.2.3.2.11. Request for Proposal \(RFP\)/Source Selection Criteria.](#)

For system acquisitions, the RFP is the formal document used to communicate requirements to industry and solicit proposals to implement the acquisition strategy. The government should provide a complete, well-integrated, clear solicitation with a roadmap highlighting the interrelationships among the acquisition documents. Since the contractor

bases the system design and requirements on the RFP, human-related requirements and issues must be identified as integral to the systems engineering process.

2.2.4. HSI Tools.

The HSI community has begun to develop tools for use within the acquisition process. They are owned and operated by a variety of communities and support system design, development, and tracking. HSI is being integrated into existing tools and processes to more effectively institutionalize human considerations throughout the system life cycle.

2.2.4.1. HSI in the Acquisition Sustainment Toolkit.

The Acquisition Sustainment Toolkit (ASTK) is a mandatory tool owned and operated by the logistics community. It provides an actionable entry for HSI implementation and execution within programs. As a component of the ASTK, HSI is a part of the Compliance Inspection (CI) procedures established through the AFMC Inspector General (IG). Practitioners from the 711 HPW or MAJCOM HSI cells will serve as SMEs for the IG teams. (HQ AFMC/A4, Operational MAJCOMs, 711 HPW)

2.2.4.2. HSI in the Systems Engineering Assessment Model.

HSI will be included within the Systems Engineering Assessment Model (SEAM) and used to support the revitalization and improvement of the systems engineering processes within acquisition. SEAM is used as a self-assessment tool to complement policy. (HQ AFMC/EN)

2.2.4.3. HSI Statusboard.

AFHSIO has sponsored the development of a HSI Statusboard. The Statusboard will display the various program documents and processes that should include HSI. It will enable PMs to see risks/opportunities associated with implementing HSI considerations. Information to populate the Statusboard will be automatically pulled from various repositories (Information and Research Support System, Comprehensive Cost and Requirement System, System Metric and Reporting Tool) and manually populated by the HSI community. It will be used by AFHSIO and 711 HPW/HP to prioritize limited HSI resources. (SAF/AQ, HQ AFMC/EN, 711 HPW)

2.2.5. HSI in Special Cases.

In many cases there are extenuating circumstances that call for a special acquisition. Generally these non-standard acquisitions are initiated through an urgent need, a new technology, or a needed modification of an existing program.

2.2.5.1. Urgent Operational Needs.

The Urgent Operational Need (UON) process is intended to rapidly put a capability into the user's hands. HSI should be part of the AoAs for the UON process. The short time line requires focused HSI involvement to ensure a "best possible" HSI application within the given constraints. In cases of limited initial involvement, all HSI considerations should be addressed as a follow-up during the formal acquisition. Failure to apply sound HSI principles could result in costly redesigns and even casualties/mishaps. (AFMC Centers, Operational MAJCOMs, AFRL)

2.2.5.2. HSI insertion in Joint Capability Technology Demonstration.

HSI considerations need to be included in the technology development process for Joint Capability Technology Demonstrations (JCTDs) to ensure human requirements have been appropriately considered. Technologies should include human-related research products to ensure the acquisition life cycle members take advantage of data, analyses and enabling technologies. (AFRL)

2.2.5.3. HSI in Advanced Technology Demonstrations.

Due to the condensed time line for rapid acquisition, it is critical to provide up front HSI considerations in the technology transition. Advanced Technology Demonstrations (ATDs) and related programs should be supported by HSI and human performance considerations during development and transition to the field. (AFRL)

2.2.5.4. System Modifications.

System modifications are the majority of Air Force acquisition programs and are often initiated through an Air Force Form 1067, *Modification Proposal*. Modifications and subsequent increments of capability for fielded systems provide opportunities for correcting HSI deficiencies and enhancing total systems performance. Failure to consider HSI and the overall impact on all humans that touch the system could result in modifications creating additional integration problems with greater negative impact and increased life cycle costs. HSI risks and benefits need to be identified in each Form 1067 to better inform modification tradeoffs through the Configuration Control Board. HSI provides an opportunity to positively influence modifications and subsequent increments of capability to employ advanced technology, efficiency, and value to fielded systems. Special focus should be given to increase usability, safety, effectiveness, availability, and overall performance.

3.0. Participants Roles and Responsibilities.

3.1. Assistant Secretary of the Air Force for Acquisition (Appropriate SAF/AQ offices).

SAF/AQ-AFHSIO provides strategic HSI policy and guidance to AFMC and other MAJCOMs. They will work with PEOs and PMs, through the HSI POC in the program office, to ensure HSI inclusion in program design and development. They facilitate and support the assessment of a program's HSI considerations, as appropriate. AFHSIO provides endorsement for HSI, through SAF/AQ, within the JCIDS process to support AF/A5, and provides endorsement to SAF/AQ for assessing HSI in preparation for program reviews.

3.2. Air Force Materiel Command.

AFMC will provide Command direction and oversight for HSI implementation and will work with the SAF/AQ through the AFHSIO to build a sustainable process that will institutionalize HSI. AFMC and SAF/AQ will ensure Air Force HSI Acquisition Regulations and Program Management Directives are embraced by PEOs and PMs. Included within the implementation effort is the responsibility to collectively develop, provide, and sustain AFMC HSI resources (i.e., 711 HPW/HP, HSI training). AFMC efforts will be focused on enhancing warfighter

performance and reducing total ownership costs by supporting early and often systems engineering/HSI considerations (hardware, software, humans, and interfaces).

3.2.1. AFMC Vice Commander.

The AFMC Vice Commander (CV) will act as the senior AFMC executive for HSI to ensure HSI is implemented within the Command. AFMC/CV will ensure that HSI is included as a frequent topic for existing senior acquisition leadership forums to discuss process challenges and recognize significant successes. AFMC/CV will also ensure HSI is executed in agreement with the guidance found in the Defense Acquisition Guidebook and is consistent with OSD and AF direction.

3.2.2. AFMC Engineering Directorate.

The Engineering Directorate (EN) will serve as the operational lead for HSI implementation within AFMC. They will organize and lead the AFMC HSI WG (affiliated with the Systems Engineering WG) from components throughout the Command. The HSI WG will be used to advise and mature the HSI process within AFMC. The HSI working group will also be used to inform the HSI members of the acquisition executive forums and support higher level HSI inquiries, as desired. HQ AFMC/EN will coordinate with 711 HPW/HP for HSI activities (i.e., program consultation, education, research initiatives, and IG support) across AFMC components. HQ AFMC/EN will review HSI progress through Program Support Reviews and IG documents/CI processes. HQ AFMC/EN will champion AFMC HSI and the inclusion of it in other processes (i.e., ASTK, Early Systems Engineering, SEAM, Development Planning, technology readiness, and other initiatives).

3.2.3. Air Force Research Laboratory (AFRL 711 HPW).

The 711 HPW was stood up to ensure that human considerations are researched and implemented across the Air Force. HQ AFMC/EN has identified 711 HPW/HP as their tactical organization to support HSI execution. The 711 HPW/HP will participate in the AFMC Systems Engineering/HSI WGs. The 711 HPW/HP will consult with acquisition professionals (program managers, systems engineers, IPTs, etc.) to ensure HSI inclusion in AFMC programs. Strategic prioritization will determine the level of 711 HPW/HP support to HSI program POCs (i.e., opportunity/risk identification, program milestone reviews). 711 HPW/HP will collect and maintain AF HSI lessons learned and provide feedback to HQ AFMC/EN and Operational MAJCOMs.

3.2.4. AFMC Staff Organizations (A1, A2/5, A3, A4, A6/7, A8/9, A10, SE, SG, IG).

The AFMC Staff organizations will name a lead representative to serve as a liaison to the AFMC HSI WG. Each staff organization will work with HQ AFMC/EN to implement and mature the AFMC HSI I-Plan with the long-term goal of establishing a sustainable, comprehensive HSI process within AFMC and all acquisition components. Each organization will facilitate the integration of HSI across core processes and initiatives to ensure humans are considered early and often throughout the system life cycle.

3.2.5. AFMC Product Centers, Test Centers, Logistics Centers, Specialized Centers, and Laboratory (ASC, ESC, AAC, AEDC, AFFTC, OC-ALC, OO-ALC, WR-ALC, AFGLSC, AFNWC, AFRL).

Product Centers, Test Centers, Logistics Centers, Specialized Centers, and the Laboratory will provide representatives to the AFMC HSI WG. These organizations will identify HSI representatives to work with the 711 HPW/HP and ensure Center resources provide integrated HSI support to their respective efforts/programs. Each program HSI lead will have the opportunity to elevate issues and concerns to their AFMC HSI WG representative.

3.3. Operational MAJCOMs (AMC, ACC, AFSOC, AETC, AFSPC, AFGSC).

Operational MAJCOMs should include HSI considerations in the capability documents with support from 711 HPW/HP and MAJCOM HSI Cells. This will drive HSI involvement in systems via associated acquisition documentation throughout the entire system life cycle. AFMC resources will consult with operational MAJCOM HSI cells to increase coordination between entities and translate operational requirements to acquisition and sustainment processes.

3.4. Individual Roles.

3.4.1. Program HSI Lead.

Based on the program resources, the roles of this individual will vary. At a minimum, the HSI POC will be responsible for providing the PM, CE, and 711 HPW/HP technical information, opportunities, risks, and lessons learned on the status of HSI prior to each milestone decision. The HSI lead is responsible for receiving HSI training. The 711 HPW/HP provides SMEs to supplement the HSI lead's knowledge base.

3.4.2. Chief Engineer.

The CE should ensure HSI issues are properly addressed. The CE is responsible for HSI technical content presented in the SEP, milestone decision inputs, and technical reviews. In addition, the CE should provide HSI support through the HSI lead for the program IPTs and will reach back to the 711 HPW/HP for additional consultation and validation. The CE will flow HSI opportunities and risks up to the Director of Engineering, Center Level Technical Authority, and Chief Systems Engineer in support of the PEO and milestone decisions.

3.4.3. Program Manager.

Per DoDD 5000.01 and DoDI 5000.02, the PM is responsible for the inclusion of HSI in system design and development. The PM or higher authority will identify a program HSI lead/POC and provide support/training for that individual. The PM will implement either a HSI IPT or include the HSI lead in the Systems Engineering IPT.

3.4.4. MAJCOM HSI Cell Representative.

The cell represents his/her MAJCOM with respect to HSI and is responsible for coordinating with AFHSIO, HQ AFMC/EN, and 711 HPW/HP. MAJCOM HSI cells may perform an independent evaluation of HSI efforts. Their inputs and evaluations will feed the SAF/AQ and 711 HPW/HP Statusboard. The MAJCOM cells have reach back to AFMC/EN and the 711 HPW/HP.

4.0. Implementation of HSI Efforts.

Human considerations have been an important aspect of system design for many years within the Air Force; however, the interdependencies and trade-offs among the HSI domains are not always effectively accomplished. The 2004 HSI Scientific Advisory Board Report has revitalized the HSI effort within the AF. The overarching accomplishments are identified in the strategic and operational/tactical timelines below. Future efforts from the FY11 Air Force HSI Management Plan are notionally identified to support the execution of this I-Plan. Key activities are summarized with associated metrics.

4.1. Strategic Timeline.

2004:

United States Air Force Scientific Advisory Board Report on Human Systems Integration in Air Force Weapon Systems Development and Acquisition Released.

2005:

Establishment of HSI support office at 311 Human Systems Wing/Performance Enhancement

2006:

Space and Missile Center HSI Policy Memo released
Air Force Human Systems Integration Office established under Vice Chief of Staff of the Air Force
Establishment of International Council on Systems Engineering (INCOSE) HSI Working Group
311 HSW/PE integrated into the new 711 Human Performance Wing

2007:

Establishment of HSI Cells at Air Force Major Commands (led by Pilot Physicians)

2008:

Congress directed establishment of senior Office of the Secretary of Defense (OSD) official to oversee HSI in Joint Services

2009:

OSD HSI Management Plan (including Service plans) delivered to Congress
AFHSIO realigned to SAF/AQ
Held Air Force HSI Implementation Workshop
HSI endorsement of programs at Air Force Requirements Oversight Council

2010:

- Q1 Air Force 711 HPW/HP FY12 POM submission for HSI resources
HSI in Concept Capability Technical Description Draft Guide
HSI in Development Planning Draft Guide
- Q2 AFMC HSI Implementation Plan
- Q3 Development of HSI Statusboard/Dashboard to track AF HSI programs
Develop cost estimation baseline for performing HSI processes
- Q4 Establishment of HSI Assessment process
Revision of AFI 63-101 and AFI 63-1201 to include additional HSI reference

2011:

- Q1 Revision of OSD SEP Preparation Guide to include additional HSI reference
Quantify level of effort for including HSI in ACAT I, ACAT II, and ACAT III programs

- Q2 Resource 711 HPW/HP with BRAC move to WPAFB
- Q3 Release HSI procedures for technology transition coupled to Human Readiness Levels
Refine cost estimation baseline for performing HSI processes
- Q4 Release Operational Major Command Implementation Plans

2012:

- Q1 Complete integration of HSI into ACAT I programs
- Q2 Support DoD, OSD, and AF policy and Guidance
Updated AFMC HSI Implementation Plan
- Q3 Complete integration of HSI into ACAT II programs
- Q4 Complete integration of HSI into ACAT III programs

4.2. Operational/Tactical Timeline.

2005:

Insertion of HSI considerations in capabilities requirements documents

2006:

Established AF HSI Community of Practice

2007:

Inclusion of HSI in INCOSE Handbook

2008:

HSI courses developed for Air Force Institute of Technology (AFIT)

Development of AF HSI Handbook

Development of AF HSI Requirements Guide

2009:

Development of HSI Requirements Pocket Guide

Increased insertion of HSI considerations in capability documents

HSI in Acquisition Life Cycle Systems Engineering

Development of Operational MAJCOM HSI Execution

HSI Guide for Contracts (used by Joint Services)

Development of Air Force IMPRINT modules

HSI courses developed for DAU and AFIT courses updated

MAJCOM Support effort to complement MAJCOM HSI Cells

2010:

- Q1 HSI support for AoAs

Review System Modification Forms for HSI considerations

Include HSI in Development Planning Process

- Q2 Acquisition and Sustainment Toolkit HSI revision

Establish HSI Working Groups

Coordinate with other key enabling functions across acquisition process

- Q3 Establish HSI Lead/Point of Contact for each program

Identify HSI in Test and Evaluation

Guidance for integrating HSI into SEP and LCMP

- Q4 Establish Center/Wing level HSI Working Groups

Develop AF version of a HSI military standard

2011:

- Q1 Establish HSI as a criterion within the Air Force Systems Engineering Model

HSI considerations in Capability-Based Assessments

- Q2 Career development plans for HSI POCs (tailored training)
Establish HSI planning for each Center
Terms of Reference/Rules of Engagement for Air Logistics Centers
- Q3 Develop HSI Guide for System Performance Specifications
HSI Guide for Evidenced Based Analysis (using Lessons Learned databases)
- Q4 Fully develop manpower estimate for HSI organizations/resources throughout the AF
Insert HSI language into technology transition

2012:

- Q1 HSI in Capability-Based Planning process
Develop Human View for architectures
- Q2 Review Advanced Technology Demonstrations for HSI considerations
- Q3 Fully integrate HSI into Urgent Operational Needs process
- Q4 Operational HSI Weapons System Assessment tool

4.3. HSI Metrics.

The I-Plan identifies a number of efforts and processes in which the HSI community is working to become involved. The following table summarizes short-term activities required to support AFMC’s implementation of Air Force policy for HSI.

Item	Responsible Organization	Metric	Measurement Detail
HSI Planning	Effort/Program Office	HSI inclusion in documentation	Include HSI planning in: a. Early Systems Engineering b. Development Planning c. Capability-Based Planning d. Analysis of Alternatives
HSI Endorsement	Effort/Program Office	HSI Evidence	HSI data provided to 711 HPW/HP and AFHSIO before each Milestone Decision
	711 HPW/HP	HSI Assessment	Review program data for HSI content
	AFHSIO	HSI Status	Provide recommendation for AFROC endorsement to SAF/AQ
	SAF/AQ AFROC Representative	AFROC Decision	Program endorsement for HSI
HSI Working Group (WG)	HQ/Center	Quarterly Meetings	a. Provide primary and secondary POCs to AFMC/ENS b. Identify proposed topics for WG meetings c. Participate in WG
HSI POC	Program Office	Person	Individual identified by PM and available as requested for reviews/milestone decisions
HSI Seat on IPT	Program Office	Slot	HSI seat on program IPT (can be combined with other function, i.e. Systems Engineer)

Document Insertions	Program Office	HSI inclusion in documentation	HSI inclusions in acquisition documents a. Concept Characterization and Technical Description b. Life Cycle Management Plan c. Systems Engineering Plan d. Risk Management Process/Plan e. Test and Evaluation Strategy and Master Plan f. Technology Development Strategy g. Manpower Estimate/Manpower Estimate Report h. Training System Plan or System Training Plan i. System Requirements Document j. Programmatic Environment, Safety & Health Evaluation k. Request for Proposal/Source Selection criteria
Statusboard	AF	Program Status	Inclusion of HSI in program documents a. Initial Capability Document b. Capability Development Document c. Capability Production Document d. Analysis of Alternatives e. Systems Engineering Plan f. Life Cycle Management Plan g. Test and Evaluation Strategy h. Test and Evaluation Master Plan
Lessons Learned	Center/Program Office	Request for Information Providing Information	a. Obtain lessons learned from 711 HPW/HP at beginning of solution development b. Feed 711 HPW/HP successes, opportunities, and risks at Milestone decisions

5.0. AF HSI Resources.

5.1. Air Force Human Systems Integration Office.

Vision: Integrate Air Force people and technology to ensure total systems performance to support Air Force missions at affordable life cycle costs.

Mission: Ensure all Air Force warfighting systems are designed, built, operated, and sustained in a manner that optimizes total system performance at every Warfighter level.

Location and Organizational Contact Information:

AFHSIO

5201 Leesburg Pike

Skyline 3, Suite 1401

Falls Church, VA 22041

Telephone: DSN 761.6300; Commercial 703.781.6300

Email: HSI.workflow@pentagon.af.mil

5.2. Headquarters Air Force Materiel Command Engineering Directorate.

Vision: Leading, integrating, and equipping the world's premier Scientific & Engineering team...laying the technical foundation for our nation's Air Force to fly, fight, and win – today and tomorrow!

Mission: Enable technically sound execution of the AFMC mission by:

- Sustaining a world-class technical workforce

- Ensuring robust engineering processes/policies
- Providing sound technical advice to the Commander

Location and Organizational Contact Information:

HQ AFMC/ENS

4375 Chidlaw Rd, Bldg. 262

WPAFB, OH 45433

Telephone: DSN 787.2259; Commercial 937.257.2259

Email: afmc.en.workflow@wpafb.af.mil

5.3. 711th Human Performance Wing Human Performance Integration Directorate.

Vision: Human Systems Integration is an embedded business practice in Air Force acquisition.

Mission: Advocate, facilitate and support the application of human systems integration principles to optimize operational capabilities.

Location and Organizational Contact Information:

711 HPW/HP

2485 Gillingham Drive, Bldg. 170

Brooks City-Base, TX 78235

Telephone: DSN 240.4457; Commercial 210.536.4457

Email: 711hpw.hp.hsi.workflow@brooks.af.mil

5.4. HSI-Related Websites.

[711 Human Performance Integration Directorate Website](http://www.wpafb.af.mil/afrl/711hpw/hpi.asp)

(<http://www.wpafb.af.mil/afrl/711hpw/hpi.asp>)

[HSI Community of Practice](https://wwwd.my.af.mil/afknprod/ASPs/CoP/ClosedCoP.asp?Filter=HP-HS-01)

(<https://wwwd.my.af.mil/afknprod/ASPs/CoP/ClosedCoP.asp?Filter=HP-HS-01>)

[DoD Human Factors Engineering Technical Advisory Group](http://www.hfetag.com/)

(<http://www.hfetag.com/>)

[Army MANPRINT Website](http://www.manprint.army.mil/)

(<http://www.manprint.army.mil/>)

[Naval Sea Systems Command \(NAVSEA\)](http://www.navsea.navy.mil/default.aspx)

(<http://www.navsea.navy.mil/default.aspx>)

[NASA Human System Integration Division](http://human-factors.arc.nasa.gov/)

(<http://human-factors.arc.nasa.gov/>)

[System Engineering Tools and Guidance](http://www.acq.osd.mil/se/pg/guidance.html)

(<http://www.acq.osd.mil/se/pg/guidance.html>)

[HSI Education and Training Links](http://www.wpafb.af.mil/library/factsheets/factsheet.asp?id=13924)

(<http://www.wpafb.af.mil/library/factsheets/factsheet.asp?id=13924>)

AFMC/SE CoP

(<https://afkm.wpafb.af.mil/community/views/home.aspx?Filter=OO-AQ-AE-SE>)

5.5. HSI-Related Tools.

Human System Integration Handbook

(<http://www.wpafb.af.mil/shared/media/document/AFD-090121-054.pdf>)

Human Systems Integration Requirements Pocket Guide

(<http://www.wpafb.af.mil/shared/media/document/AFD-090121-055.pdf>)

Human Systems Integration in Acquisition - Acquisition Phase Guide

(<http://www.wpafb.af.mil/shared/media/document/AFD-100122-034.pdf>)

Human Systems Integration in Acquisition - Domain Guide

(<http://www.wpafb.af.mil/shared/media/document/AFD-100122-035.pdf>)

Human Systems Integration in Acquisition - Management Guide

(<http://www.wpafb.af.mil/shared/media/document/AFD-100122-036.pdf>)

ASTK

(<https://afkm.wpafb.af.mil/ASPs/CoP/OpenCoP.asp?Filter=MC-LG-01-82>)

SEAM

(<https://afkm.wpafb.af.mil/ASPs/docman/Process/ProcessDOCFUNCTIONS.asp?DocID=9862754&Function=ViewDocument&FolderID=OO-AQ-AE-SE-27-5&Filter=OO-AQ-AE-SE>)

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Appendix B: Acronym List

311 HSW/PE	311th Human Systems Wing/Performance Enhancement
711 HPW	711th Human Performance Wing
711 HPW/HP	711th Human Performance Wing, Human Performance Integration Directorate
A1	Manpower, Personnel and Services
A2/5	Intelligence, Surveillance, Reconnaissance and Requirements Directorate
A3	Air, Space, and Information Operations
A4	Directorate of Logistics
A6/7	Communications, Installations and Mission Support
A8/9	Strategic Plans, Programs and Analyses
A10	Strategic Deterrence and Nuclear Integration Office
AAC	Air Armament Center
ACAT	Acquisition Category
ACC	Air Combat Command
AEDC	Arnold Engineering Development Center
AETC	Air Education and Training Command
AFFTC	Air Force Flight Test Center
AFGLSC	Air Force Global Logistics Support Center
AFGSC	Air Force Global Strike Command
AFHSIO	Air Force Human Systems Integration Office
AF	Air Force
AFI	Air Force Instruction
AFIT	Air Force Institute of Technology
AFMC	Air Force Materiel Command
AFMC/EN	Air Force Materiel Command/Directorate of Engineering and Technical Management
AFMC/ENS	Air Force Materiel Command/Systems Engineering Division
AFNWC	Air Force Nuclear Weapons Center
AFOTEC	Air Force Operational Test and Evaluation Center
AFPAM	Air Force Pamphlet
AFPD	Air Force Policy Directive
AFRL	Air Force Research Laboratory
AFROC	Air Force Requirements Oversight Council
AFSO21	Air Force Smart Operations for the 21st Century (AFSO21)
AFSOC	Air Force Special Operations Center
AFSPC	Air Force Space Command
AMC	Air Mobility Command
AoA	Analysis of Alternatives
ASC	Aeronautical Systems Center
ASTK	AcquisitionSustainment Toolkit
ATD	Advanced Technology Demonstration
BRAC	Base Realignment and Closure
CBA	Capability-Based Assessments
CBP	Capability-Based Planning
CCTD	Concept Characterization and Technical Description

CDD	Capability Development Document
CE	Chief Engineer
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CONOPS	Concept of Operations
CPD	Capability Production Document
CRRA	Capabilities Review and Risk Assessment
CSAF	Chief of Staff of the United States Air Force
CV	Vice Commander
DAG	Defense Acquisition Guidebook
DAU	Defense Acquisition University
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DP	Development Planning
ESC	Electronic Systems Center
ESOH	Environment, Safety and Occupational Health
HPTs	High Performance Teams
HPW	Human Performance Wing
HQ	Headquarters
HRL	Human Readiness Level
HSI	Human System Integration
ICD	Initial Capabilities Document
IG	Inspector General
IMPRINT	Improved Performance Research Integration Tool
INCOSE	International Council on Systems Engineering
I-Plan	Implementation Plan
IPT	Integrated Product Team
ISR	Intelligence, Surveillance, and Reconnaissance
JCIDS	Joint Capabilities Integration and Development System
JCTD	Joint Capability Technology Demonstration
JUON	Joint Urgent Operational Need
LCMP	Life Cycle Management Plan
MAJCOM	Major Command
MDD	Materiel Development Decision
MER	Manpower Estimate Report
MOA	Memorandum of Agreement
MOE	Measures of Effectiveness
MOP	Measures of Performance
MRL	Manufacturing Readiness Level
MS	Milestone
OO-ALC	Ogden Air Logistics Center
OAS	Office of Aerospace Studies
OC-ALC	Oklahoma City Air Logistics Center
OSD	Office of Secretary of Defense
PDR	Preliminary Design Review

PEO	Program Executive Officer
PESHE	Programmatic Environment, Safety & Occupational Health Evaluation
PM	Program Manager
POC	Point of Contact
POM	Program Objective Memorandum
RFP	Request for Proposal
RMP	Risk Management Plan
SAF/AQ	Assistant Secretary of the Air Force for Acquisition
SE	Safety
SEAM	Systems Engineering Assessment Model
SEP	Systems Engineering Plan
SG	Surgeon General
SME	Subject Matter Expert
SRD	System Requirements Document
STP	System Training Plan
T&E	Test and Evaluation
TDS	Technology Development Strategy
TEMP	Test and Evaluation Master Plan
TES	Test and Evaluation Strategy
TRL	Technology Readiness Level
TSP	Training System Plan
UCI	Unit Compliance Inspections
UON	Urgent Operational Need
WG	Working Group
WR-ALC	Warner Robins Air Logistics Center
WPAFB	Wright-Patterson Air Force Base