

**United States Air Force (USAF)**  
**Human Systems Integration (HSI)**  
**Concept of Execution (CONEX)**

-----	COORD
SAF/AQH	COORD - Leong, Col, concur w/o comment, 4 Dec 13
SAF/AQPF	COORD - Greco, Col, concur w/o comment, 18 Dec 13
SAF/AQRE	COORD - Baier, Col, concur w/ comment, 29 Jan 14
SAF/AQXA	COORD - Forbes, GS-15, concur w/ comments, 7 Feb 14
AF/A5R-P	COORD - Brown, Col, concur w/ comment, 31 Dec 13
AF/SG3	COORD - Mooney, Col, concur w/o comment, 24 Jan 14
AFMC/OAS	COORD - Auletta, GS-15, concur w/o comment, 3 Feb 14
AFMC/EN	COORD - Fiebig, GS-15, concur w/ comment, 19 Dec 13
AFLCMC/EZFC	COORD - Hopkins, GS-15, concur w/o comment, 30 Jan 14
AFLCMC/EZSI	COORD - Jackson, GS-15, concur w/ comment, 17 Dec 13
AFLCMC/WNU (PEO ACS)	COORD - McGuffey, Col, concur w/o comment, 11 Dec 13
AFLCMC/WW (PEO FB)	COORD - Rutledge, GS-15, concur w/o comment, 24 Jan 14
AFNWC/EN	COORD - Green, GS-15, concur w/o comment, 18 Dec 13
SMC/EN	COORD - Davis, GG-15, concur w/o comment, 30 Jan 14
711HPW/DV	COORD - Sakulich, DR-04, concur w/o comment, 3 Dec 13
711HPW/HP	COORD - Mueller, Col, concur w/ comment, 3 Dec 13
AFOTEC A2/9	COORD - Hardy, GS-14, concur w/ comment, 11 Dec 13
AFMOA/SGP	COORD - Lowry, Col, concur w/o comment, 27 Jan 14
-----	STAFF SUMMARY

SUBJECT: USAF Human Systems Integration (HSI) Concept of Execution (CONEX)

1. **PURPOSE:** This document characterizes the selected process and participants, as determined by the HSI High Performance Team (HPT), necessary to address the human contribution to total system performance.
2. **BACKGROUND:** This document is the product of an action item from the FY13 HSI HPT.
3. **DISCUSSION:** The organizations above participated in the HSI HPT. The diversity of these organizations attests to the complexity of addressing human capabilities and limitations in capability development, procurement, operations, and sustainment. This document is but one of 15 action items resulting from the HSI HPT and should be used in context with other supporting publications, guides, pamphlets, etc. Organizations may need to further detail the information in this CONEX in unit implementing instructions, process guides, agreements, etc.
4. **VIEWS OF OTHERS:** All comments received by AFHSIO have been adjudicated.

// signed, jrl, 10 Feb 14 //  
 JAMES R. LITTLE, COL, USAF, MC, CFS  
 Chair, HSI HPT  
 Director, Air Force Human Systems  
 Integration Office

// signed, jgf, 13 Feb 14 //  
 JAMES G. FULTON, COL, USAF  
 Co-Chair, HSI HPT  
 Vice Commander, Air Force Life Cycle  
 Management Center

## 1. Purpose and Scope

This AF HSI Concept of Execution (hereafter referred to as CONEX) is the product of an action item from the FY13 Human Systems Integration (HSI) High Performance Team (HPT). The Military Deputy to the Assistant Secretary of the Air Force (AF) for Acquisition (SAF/AQ), Commander, AF Life Cycle Management Center (AFLCMC/CC), and the AF Surgeon General (AF/SG) chartered the HSI HPT to re-energize the emphasis on human systems integration in response to an AF Scientific Advisory Board (SAB) finding and recommendation. The HPT included leaders from SAF/AQH, SAF/AQPF, SAF/AQRE, SAF/AQR-AFHSIO, SAF/AQXA, AF/A5R-P, AF/SG3, AFMC/OAS, AFMC/EN, AFLCMC/ CV, AFLCMC/EZFC, AFLCMC/EZID, AFLCMC/WN (PEO ACS), AFLCMC/WW (PEO FB), AFNWC/EN, SMC/EN, 711HPW/DV, 711HPW/HP, AFOTEC A2/9 and AFMOA/SGP.

This CONEX is consistent with DoDI 5000.02, *Operation of the Defense Acquisition System*; Chairman of Joint Chiefs of Staff Instruction (CJCSI) 3170.01, *Joint Capabilities Integration and Development System* (JCIDS); Air Force Instruction (AFI) 10-601, *Operational Capability Requirements Development*; AFI 10-604, *Capabilities-Based Planning*; AFI 48-101, *Aerospace Medicine Enterprise*; and AFI 63-101/20-101, *Integrated Life Cycle Management*, AFI 99-103, *Capabilities Based Test and Evaluation*, and supplemental instructions. This CONEX is also consistent with the AFLCMC Center Level Agreements (CLA) with the AF Nuclear Weapons Center (AFNWC), AF Sustainment Center (AFSC), and [forthcoming] AF Research Laboratory (AFRL). This CONEX is designed in concert with the HSI chapter of [forthcoming] AFPAM 63-128, *Guide to Integrated Life Cycle Management*. This CONEX supplements the material in the Defense Acquisition Guidebook (DAG).

This CONEX does not levy any responsibilities beyond those already required in official publications. For example, DoDD 5000.01 already assigns responsibility for HSI to the Program Manager (PM) and the 6X-series AF publications describe responsibilities and activities that are key to integrating human system considerations throughout the Integrated Life Cycle Management (ILCM) processes such as Integrated Product Teams (IPTs), Working Groups (WGs), etc. This document characterizes the selected process and participants, as determined by the HSI HPT, necessary to address the human contribution to total system performance. Organizations may need to further detail the information in this CONEX in unit implementing instructions, process guides, agreements, etc.

For the purpose of this CONEX, the HSI HPT organized participants into five groups that provide direct and indirect support to the PM (in no particular order): (1) Major Command (MAJCOM) HSI Cells, (2) Acquisition Product and Support Centers, (3) test organizations/activities, (4) 711 Human Performance Wing (HPW), and (5) Air Force Human Systems Integration Office (AFHSIO). The HSI HPT acknowledged that there are other groups that contribute to HSI (e.g., training system developers, logisticians, environmental safety specialists, etc.) but decided to limit the scope of the CONEX to these five. Headquarters (HQ) Air Force Materiel Command (AFMC) and HQ Air Force Space Command (AFSPC) were added as participating organizations per recommendation during coordination of this document.

## **2. Organizational Participation in HSI**

**2.1. MAJCOM HSI Cells.** Currently, HQs Air Combat Command (ACC), Air Mobility Command (AMC), Air Education and Training Command (AETC), and Air Force Special Operations Command (AFSOC) have “HSI Cells” comprised of analysts and physicians specifically assigned to support HSI in requirements development. For those MAJCOMS without HSI cells, MAJCOM/SG personnel (e.g., in SGP, SGR) support HSI (e.g., human performance, health-related risks, etc.) (see AFI 48-101).

**2.2. Implementing Commands.** HQs AFMC and AFSPC ensure command-level implementation of HSI. As the single point of entry for receiving, evaluating, and responding to all requests for acquisition resources in support of pre-MDD development planning efforts, ensure HSI is addressed in all Development Planning (DP) activities in response to Core Function Lead Integrator (CFLI) documented capability needs to include performing early systems engineering and developing mature prospective materiel solutions before the AoA. HQ AFMC is the CFLI for Agile Combat Support.

**2.3. Acquisition and Product Support Centers.** HQs AFLCMC, AFNWC, AFSC, and Space and Missile Center (SMC) staffs develop standard practices and processes for systems engineering, and provide functional expertise to support the program offices in the execution of acquisition development and sustainment activities. Specific to HSI, Acquisition and Product Support Centers have functional experts to address the HSI “domains.” For example, AFLCMC has organizations responsible for training (EZJS); environment and occupational health (WNV); safety (SES); human factors engineering, survivability, and habitability (EZFC). Additionally, the Systems Design & Integration Branch (EZID) maintains, improves, and deploys key systems engineering sub-processes related to HSI such as systems integration and airworthiness certification to assure operation safety, suitability, and effectiveness (OSS&E). AFLCMC also provides this expertise to NWC (see CLA); and SMC is supported by an HSI component from Aerospace Corporation, a Federally Funded Research and Development Center (FFRDC).

**2.4. Lead Developmental Test Organization and/or Operational Test Organization (LDTO/OTO).** The LDTO/OTO provides dedicated representation to provide the human perspective during early acquisition through participation on test teams and reach back support for HPTs and program IPTs. They influence and/or produce content of the requirements documents, test strategies, plans, procedures, and deficiency reports, and make recommendations on suitability.

**2.5. 711 Human Performance Wing.** The 711 HPW is an organization in AFRL comprised of the AF School of Aerospace Medicine (USAFSAM), Human Effectiveness Directorate (711HPW/RH), and HSI Directorate (711HPW/HP). The 711 HPW provides support and specialized expertise on human performance capabilities and limitations.

**2.6. SAF/AQR-AFHSIO.** AFHSIO provides leadership focus for HSI policy, advocacy, and oversight.

### **3. HSI in ILCM Processes (*and Organizational Participants*)**

**3.1. Capability-Based Assessment (CBA).** Lead MAJCOMs identify operational capability gaps and characterize the trade space that includes the human perspective on how the capability will be used and supported in a fielded environment. (*MAJCOM functional and operational staff; HSI Cell; and other invited participants such as domain experts from Acquisition and Product Support Centers and consultants from the 711 HPW*)

**3.2. Analysis of Alternatives (AoA) and AoA Report.** Human considerations are systematically included in AoA study plans and during AoA execution. The AoA evaluates alternative solutions to determine how each alternative can meet warfighter capability needs. As a part of this evaluation, the AoA should address to what degree each alternative optimizes human performance; minimizes HSI-related costs; supports safe, suitable, and effective operations, maintenance, and support functions. Mission tasks lists identified during the CBA are developed and translated into human-related assumptions, limitations, measures of effectiveness (MOE) and measures of performance (MOP) used to evaluate solution alternatives. (*MAJCOM functional and operational staff; HSI Cell; Acquisition and Product Support Centers; OAS; LDTO/OTO; and other invited participants determined by the lead MAJCOM and OAS*)

**3.3. Capabilities Development and Documentation.** HSI considerations identified during CBA are reflected in the JCIDS documents, to include: DOTmLPF-P Change Recommendation (DCR), Initial Capabilities Document (ICD), Capabilities Development Document (CDD), and Capabilities Production Document (CPD).

**3.3.1. Capabilities Development.** Lead MAJCOMs sponsor HPTs to provide cross-functional perspectives during requirements development (see AFI 10-601). HPT core and support members ensure the elements of HSI are clearly addressed in JCIDS documents. (*MAJCOM functional and operational staff; HSI Cell; Acquisition and Product Support Centers; LDTO/OTO; 711 HPW; AFHSIO and other invited participants determined by the lead MAJCOM and AF/A5R-P*)

**3.3.2. Capabilities Documentation Review.** The HSI Cells and 711 HPW comment on JCIDS documents during formal staffing even if they were able to participate in the generation of the documents during the HPTs (see paragraph above). AFHSIO manages the HSI requirements gatekeeper process for comments from the HSI Cells and 711 HPW. AFHSIO provides an HSI Endorsement to AF/A5R-P for JCIDS documents meeting the AFROC. (*HSI Cells; 711 HPW; AFHSIO*)

**3.4. Development Planning (DP).** HSI is addressed in Development Planning and resultant Concept Characterizations and Technical Descriptions (CCTD) to ensure the human is included the trade space evaluation of emerging capability needs, science and technology resource planning, system-of-systems assessments, risk assessments, and life cycle planning. (*Acquisition and Product Support Center functional staffs, e.g., XZ, EN-EZ; MAJCOM functional staffs, including HSI Cells; SAF/AQR; and other invited participants such as consultants from 711 HPW, as determined by AFLCMC and the lead MAJCOM*)

**3.5. Contracting.** HSI-related performance requirements are communicated in contractual artifacts, e.g., the Systems Requirements Document (SRD), Source Selection Evaluation Criteria, Request for Proposal (RFP), etc. The Chief Engineer, also known as the Lead Systems Engineer, for the program is responsible to the PM for the technical content of these artifacts to ensure the appropriate design and testing requirements are specified, including the appropriate HSI considerations (see AFI 63-101). *(Acquisition and Product Support Center functional staffs; and other invited participants, such as consultants from the 711 HPW, as determined by the Program Chief Engineer)*

**3.6. Technical Reviews.** The HSI perspective is represented at technical reviews, such as System Requirements Review (SRR), System Functional Review (SFR), Preliminary Design Review (PDR), and Critical Design Review (CDR), to ensure human-related considerations are preserved in the development of derived requirements and review of planned solutions. *(Acquisition and Product Support Center functional staff; LDTO/OTO; and other independent experts, such as consultants from the 711 HPW, as invited)*

**3.7. Acquisition Documents.** Engineering and technical self-assessments and management reviews of Systems Engineering Plans (SEP), Test and Evaluation Master Plans (TEMP), Acquisition Strategies (AS), and other program artifacts are conducted in preparation for milestone decision reviews. These artifacts are reviewed for HSI equities, particularly for significant unresolved HSI-related risks that need visibility by decision makers. *(Acquisition and Product Support Center functional staff; and other independent experts, such as consultants from the 711 HPW, LDTO/OTO; SAF/AQ staff, including AFHSIO)*

**3.8. HSI in System Modifications.** Changes, modifications and upgrades to fielded systems resulting from deficiency reports, safety investigation reports, etc., can have a significant impact on the human. HSI implications are identified, addressed, and adjudicated at all stages of operations and sustainment; from the operational wing-level to the sponsoring MAJCOM to the implementing Program Office. *(MAJCOM functional and operational staff, including the HSI Cell and SG; Acquisition and Product Support Center functional staff, LDTO/OTO, and other independent experts such as consultants from the 711 HPW, as invited)*

Please contact the Air Force Human Systems Integration Office (AFHSIO) to submit change recommendations to this document.

SAF/AQR-AFHSIO  
ATTN: AF HSI CONEX  
1500 W. Perimeter Rd, Suite 3310  
Joint Base Andrews, MD 20762  
USAF.Pentagon.SAF-AQ.mbx.HSI-workflow@mail.mil