

# Assessment Framework for Human Factors Process Improvement

Assessment Area	iCMM Practices	R	Y	G	FAA HF Job Aid Best Practices	R	Y	G
<b>FEEDBACK FOR ACQUISITION PROGRAM</b>								
<b>1. HF Program Management</b>	21. Establish policy 2.2 Allocate adequate resources 2.3 Assign responsibility 2.4 Ensure training (Supported by iCMM HF Addendum Base Practice 24.01)				<ul style="list-style-type: none"> <li>Has a Human Factors Coordinator (HFC) been appointed?</li> <li>Does the HFC have the appropriate human factors expertise and training?</li> <li>Does the Human Factors Working Group (HFWG) membership represent all activities having significant human factors interest in the system?</li> <li>Have HFWG Operating Procedures been established?</li> <li>Is there an adequate procedure for all significant unresolved human factors issues to be brought to the attention of the program leadership?</li> <li>Has a strategy for the Human Factors Program been developed that is consistent with the size, cost, and complexity of the system being acquired?</li> <li>Are procedures established for revising the Human Factors Program when necessary?</li> </ul>			
<b>2. Identification of HF Risks and Requirements</b>	(Supported by iCMM HF Addendum Base Practices 24.01, 24.02, and 24.03)				<p><b><u>Concepts of Operation and Maintenance</u></b></p> <ul style="list-style-type: none"> <li>Have operation and maintenance concepts been adequately reviewed for human factors implications?</li> <li>Has the operator and maintainer target population been adequately described?</li> <li>Have the performance parameters of operator and maintainer tasks been adequately identified?</li> </ul> <p><b><u>Formulating Human Factors in System Specifications</u></b></p> <ul style="list-style-type: none"> <li>Has the Human Factors Working Group had the opportunity to review and comment on the system specification?</li> <li>Have human capabilities and limitations been considered in developing total system performance requirements?</li> <li>Have human performance characteristics, physical characteristics, human engineering, safety, staffing and training requirements been specified?</li> <li>Has human performance data collection and analysis been identified to verify compliance with human factors requirements?</li> <li>Have measures of performance been identified to quantify human performance?</li> <li>Have appropriate human factors documents been referenced in the specification?</li> </ul>			

				<p><b><u>Developing Human Factors Inputs for Acquisition Documentation</u></b></p> <ul style="list-style-type: none"> <li>• Is the human performance element addressed in the mission analysis?</li> <li>• Does the Mission Need Statement input describe the human performance limitations associated with the capability shortfall or human performance enhancements associated with the new technology opportunity?</li> <li>• Is the human considered part of the total system in addressing the capability shortfalls or technological opportunities in the Mission Need Statement?</li> <li>• Does the Requirements Document input ensure that the human is considered as part of the total system when addressing the required capabilities and system performance?</li> <li>• Do operations and maintenance concepts in the Requirements Document adequately describe the role of the operators, maintainers, and support personnel?</li> <li>• Does the Investment Analysis Report input address the human factors lifecycle cost and benefits in terms of staffing, training, skills, safety, health, and human-system performance and interfaces for each alternative being considered?</li> <li>• Does the Investment Analysis Report baseline cost and schedule include considerations for suitable human factors design trade-offs, test and evaluation, and in-service operations and maintenance?</li> <li>• Does the Acquisition Program Baseline input identify the level of human performance and resources (e.g., personnel, training) necessary to meet the system performance requirements for the selected solution?</li> <li>• Does the Acquisition Strategy Paper human factors input employ a strategy to ensure the system is well designed and appropriate for the workforce that will operate and maintain it?</li> <li>• Does the Integrated Program Plan input identify the specific human factors tasks and activities that must be planned and executed to support the system design and development?</li> <li>• Are the human factors tasks and activities scheduled such that output products will be available in a timely manner?</li> <li>• Have constraints, limitations, and unique or specialized training requirements, staffing levels, or personnel skill requirements been addressed?</li> </ul>			
<b>3. Conduct HF Mitigation &amp; Integration</b>	2.8 Manage configurations 2.14 Coordinate within the project 3.4 Coordinate with all affected groups			<ul style="list-style-type: none"> <li>• Have all appropriate human factors tasks, activities, and objectives been identified and resourced?</li> <li>• Has the human engineering effort been planned as an integrated portion of the overall system effort?</li> <li>• Has the human engineering effort been coordinated with other</li> </ul>			

	<p>affected groups (Supported by iCMM HF Addendum Base Practices 24.01 and 24.02)</p>			<p>system engineering functions?</p> <ul style="list-style-type: none"> <li>• Has a functional analysis been conducted to determine information flow and processing required?</li> <li>• Have the system functions been properly allocated between the hardware/software and the human?</li> <li>• Does the design configuration conform to human engineering design criteria?</li> <li>• Have the results of task and workload analyses been used to influence system design?</li> <li>• Have required human performance analyses and studies been identified?</li> <li>• Does the human engineer review all drawings that have a human interface or impact human performance?</li> <li>• Does the system design reflect expected environmental conditions?</li> <li>• Is system software subjected to a human engineering review?</li> <li>• Has the Human Factors Coordinator reviewed and provided comments on program documentation?</li> <li>• Have HFWG team members cooperated in developing inputs to the Screening Information Request?</li> <li>• Have HFWG team members reviewed contractor proposals to ensure that the Government is only procuring the minimum essential data?</li> <li>• Have HFWG team members reviewed the results of human factors analyses and used them to improve system design, training, staffing, and operational and maintenance concepts?</li> </ul> <p><b><u>Generating Human Factors Requirements in the Statement of Work Documentation</u></b></p> <p><u>Statement of Work (SOW)</u></p> <ul style="list-style-type: none"> <li>• Are the human factors requirements consistent with the nature, complexity, and degree of human involvement of the program?</li> <li>• Do the human factors requirements cite the appropriate specifications or standards?</li> <li>• Have all human factors-related tasks and analyses to be performed by the contractor been identified in the SOW?</li> </ul> <p><u>Contract Data Requirements List (CDRL)</u></p> <ul style="list-style-type: none"> <li>• Has a human factor data requirement been prepared for each human factor deliverable cited in the SOW?</li> <li>• Are the human factors-related organizations included on the distribution for the delivered product?</li> <li>• Have the human factors data requirements been coordinated with other disciplines to eliminate redundancy of data deliverables?</li> <li>• Is the Human Factors Coordinator responsible for participating in the</li> </ul>			
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				<p>approval or rejection of the delivered product?</p> <p><b><u>Data Item Description (DID)</u></b></p> <ul style="list-style-type: none"> <li>• Has the DID been tailored to include only the information that is necessary?</li> <li>• Are the data item requirements consistent with the nature and complexity of the program?</li> </ul> <p><b><u>Specifying Human Factors in Source Selections</u></b></p> <p><b><u>Evaluation Criteria</u></b></p> <ul style="list-style-type: none"> <li>• Have human performance criteria or standards been identified for the system and quantified in the SIR?</li> <li>• Does human factors (as a separate criterion or as embedded criteria in other primary factors) adequately represent the user performance, risks, complexity, consequence, and exposure?</li> <li>• Are offerors required to develop a human factors program management plan?</li> <li>• Are offerors required to demonstrate technical competence in human factors?</li> </ul> <p><b><u>Source Selection Plan</u></b></p> <ul style="list-style-type: none"> <li>• Have human factors criteria been adequately and clearly identified in the source selection plan?</li> <li>• Are human factors criteria adequately weighted for this system (considering degree of human interface with hardware and/or software)?</li> </ul> <p><b><u>Source Selection Teams</u></b></p> <ul style="list-style-type: none"> <li>• Is there a human factors member on the source selection team or supporting panel(s)?</li> <li>• Is the human factors member technically qualified to evaluate human factors aspects of the proposals?</li> <li>• Where human factors criteria are embedded with other criteria, is human factors expertise represented in those other criteria evaluations?</li> <li>• Is the source selection team adequately apprised on the evidence necessary to demonstrate vendor capability and compliance?</li> </ul>			
<b>4. Conduct HF Verification, Validation, &amp; Evaluation</b>	2.10 Verify work products 2.11 Measure the process 2.12 Review status 2.13 Take corrective action			<p><b><u>General</u></b></p> <ul style="list-style-type: none"> <li>• Have human engineering testing requirements been incorporated into the system test and evaluation requirements?</li> <li>• Have unfavorable outcomes during test and evaluation been subjected to a human engineering review?</li> </ul>			

	3.3 Perform reviews with peers (Supported by iCMM HF Addendum Base Practice 24.03)				<p><b><u>Determining Human Factors Requirements in System Testing</u></b></p> <ul style="list-style-type: none"> <li>• Has a front-end analysis adequately identified the human performance issues for test planning?</li> <li>• Have human performance critical operational issues and criteria been identified?</li> <li>• Have human performance Measures of Effectiveness (MOEs) and Measures of Performance (MOPs) been identified?</li> <li>• Are data requirements identified that will satisfy the MOEs and MOPs?</li> <li>• Have the resources necessary to support the collection of human performance data been identified and made available?</li> <li>• Has the human factors data collection effort been integrated with the system data collection effort(s)?</li> <li>• Have options been identified for human performance data collection if the primary data collections plans are not feasible or practical?</li> <li>• Are human performance data collected in terms of task performance time and accuracy?</li> <li>• Are data collectors trained to identify and report potential human performance issues?</li> <li>• Are other sources of data (such as user comments) being reviewed for human performance issues?</li> <li>• Have human performance data been analyzed with respect to training effectiveness, task overloading, skill creep, safety, health hazard or procedural inadequacy issues?</li> <li>• Has feedback been provided to appropriate members of the program?</li> </ul>			
<b>5. Other</b>	(As appropriate)				(As appropriate)			
<b>FEEDBACK FOR ACQ. PROGRAM/ ORGANIZATION MANAGEMENT</b>								
<b>6. HF Process Improvement</b>	2.5 Document the process 2.6 Plan the process 2.7 Use a repeatable process 2.9 Assess process compliance 3.1 Standardize the process 3.2 Use defined process				<ul style="list-style-type: none"> <li>• Have the conduct of program activities enabled the assessments of the human factors processes?</li> <li>• Have weaknesses or opportunities for improvements in the human factors process been included in process improvement mechanisms?</li> <li>• Are changes to the process improvement approach needed to facilitate human factors integration in the program?</li> </ul>			