

Human Factors Standardization SubTAG

Minutes

May 2010

TAG #63

The Human Factors Standardization (HFS) SubTAG met on May 4, 2010 with 32 attendees. Following the introduction of attendees, the SubTAG continued with its agenda.

Status Reports:

a. MIL-STD-1472, Human Engineering. Dr. Daniel Wallace stated that the draft of the G revision has been completed. The document is in technical editing; minor changes are being made to comply with the requirements of MIL-STD-962, the standard that specifies the format and content of military standards. It is expected that the draft will be sent to the Preparing Activity in a month or so to be circulated for formal review and comment.

b. MIL-STD-2525, Common Warfighting Symbology. Dr. Jake Wetzel was unable to attend the meeting, but indicated that the schedule has slipped a bit. The "D" revision is now scheduled for release in March 2011. The aim is to significantly reduce the size of the 1170-page document. The goal is to create a "cookbook version" which will provide all the ingredients necessary to design a symbol as well as provide the rules for making a legal construction of the symbol.

c. NASA-STD-3001, NASA Space Flight Human System Standard. Ms. Barbara Woolford provided a status update on the NASA standard. NASA-STD-3001 is intended as an agency-level standard that applies to anything that is to be integrated. The standard, and its accompanying handbook, provide both specific and general design criteria which are to be tailored for the particular program. Volume 1, Crew Health, of NASA-STD-3001 was approved in March 2007. Volume 2, Human Factors, Habitability and Environmental Health, is currently under a NASA-wide review. The accompanying Human Integration Design Handbook (NASA/SP-2010-3407) has been released and is accessible at

http://ston.jsc.nasa.gov/collections/TRS/_techrep/SP-2010-3407.pdf

d. Federal Aviation Administration (FAA). Mr. Alan Poston indicated that the FAA is in the process of updating its Human Factors Design Standard. The goal is to have an updated version by 2013. The initial task is the generation of an approach plan which is due the end of next month.

e. MIL-STD-1787, Aircraft Display Symbology: Mr. Jim Kinzig reported that MIL-STD-1787D is currently in technical editing at Wright-Patterson Air Force Base and has been for quite some time. The biggest change in the D revision is the inclusion of a rotary wing section based on the Apache helicopter. Mr. Kinzig noted that documents are to be reviewed every five years. As a result, there has been a big push to have documents go through technical editing. This coupled with few people to accomplish the editing task, leaves a large backlog.

Mr. Kinzig mentioned that he has a pilot available to him and that he asked this individual to review the document, just to see if the provisions make sense. A number of inconsistencies were found. These are being corrected as the document goes through the editing process. MIL-STD-1787 is a limited distribution document. Within those constraints, Mr. Kinzig offered to make it available for informal review.

f. MIL-HDBK-46855, Human Engineering Program Process and Procedures. Mr. Alan Poston reported on an effort to reinstate MIL-STD-46855; the standard was converted to a handbook during acquisition reform. A revised standard was drafted and circulated for formal review and comment in September 2009 under project HFAC-2009-001. All comments were adjudicated and the final document was sent to the Preparing Activity in February 2010.

As MIL-STD-46855 was converted to a handbook as a result of acquisition reform, reinstatement as a standard requires approval by the Departmental Standardization Council; it was noted that this will be the first document that is seeking reinstatement. A preliminary step before the Council is approval by the Departmental Standardization Offices (DepSOs); they were briefed on April 27. The response from the DepSOs was mostly positive; at least there were no objections. They all recognized the shortfall and supported the need for a standard specifying human engineering requirements. There was a brief discussion on human systems integration versus human engineering. A paragraph was drafted for inclusion in the standard to clarify and strengthen the relationship between human systems integration and human engineering. Additionally, a statement regarding Section 508 requirements was added. The next step is to have the DepSOs brief their respective service Standardization Executives in advance of the Council meeting.

Presentations:

An Approach to Integrate Human Computer Interface Design Criteria Into MIL-STD-1472: Mr. Brian Shaw indicated that the Human Systems Integration (HSI) program at the Space and Missile Systems Center (SMC) is well-developed and well-supported. A formal standards program is well-established at SMC. Mr. Shaw indicated that using proven design criteria is critical for requirements and design. For space systems, MIL-STD-1472 is levied on all applicable contracts, but tailored to fit the item being acquired. However, the human computer interface chapter of MIL-STD-1472 is replaced by the Common Operating Environment (COE) User Interface Specification (UIS) (Rev 4.3) and by Human Computer Interface Display Convention for Space System Operation (SMC HM-RB-2002-1). The human computer interface update at SMC eliminates the requirements of outdated initiatives yet retains proven criteria. Mr. Shaw noted that precise, accurate, and verifiable requirements are essential.

Mr. Shaw recommended that the current SMC human computer interface design criteria be integrated into MIL-STD-1472. The benefits of using alternative human computer interface criteria for MIL-STD-1472 are that the input sources are more recently maintained, they directly address the wide breadth of modern graphical user interface techniques and widgets, it provides a better functional organization of the information, the information is familiar to DoD human computer interface implementers, the information is based on empirical research and practical experience, it directly addresses common DoD computer platforms, and it facilitates integration of differing graphical user interface implementations.

Military Symbolology: A Human Factors Perspective: Ms. Tina Brown discussed the increased demands placed on operators (new missions, tactics, and concept of operations; increased volume of information; and manpower reductions) as well as their changing roles (increased vehicle autonomy, control of multiple platforms, and multi-mission tasking). We are constantly receiving information to assist us in our interactions with the world. However, symbols are only as good as their ability to convey the information needed to complete the task. Military symbols provide the warfighter with information needed to accomplish missions and/or interact within this unique environment.

MIL-STD-2525 provides basic building blocks for a common symbolology with each "building block" providing additional detail. As such, MIL-STD-2525 should be complied with whenever possible and used as the foundation for "building" symbols. The designer is urged to think beyond the symbolology set required for the system under design. There may not be an operator dedicated for each system, therefore commonality is imperative. Symbolology may be shared between systems. Additionally, the level of detail required for each system may be different.

There are a number of challenges ahead. Among these are standardization of symbolology between legacy and emerging systems, message format standardization, extending communication ranges, and information security.

Translating English to English: Converting of the UK Human Factors Integration Defence Standard for Air Force Human-Systems Integration Use. Dr. Bill Kosnik and Ms. Becky Singer gave an update of the Air Force's adoption of the UK Ministry of Defence (MoD) Human Factors Integration (HFI) standard, Defence Standard 00-250, Human Factors for Designers of Systems, published in May 2008. Defence Standard 00-250 is the major source of human factors data and guidance for the implementation of HFI within UK military acquisitions. It should be noted that human factors integration in the UK is the same as human systems integration (HSI) in the US. A comprehensive HSI standard currently does not exist in the Air Force. Hence, HSI practitioners and policy makers lack a standard that sets uniform requirements for HSI implementation. The goal is to provide a standard to set uniform human systems integration requirements, design guidance, and associated human factors data for acquisition programs Air Force wide.

Dr. Kosnik indicated the thrust of this effort is to use the UK Defence Standard 00-250 as a prototype for rapid transition to a US HSI document. The overall plan is to convert UK HFI language into DoD HSI language, convert references to US standards using "pointers" to the comparable US and DoD human factors research, references, and standards, and collaborate with the other services and the international community. The task is scheduled for one year.

The first objective is to convert DEF STAN 00-250 into an Air Force HSI reference document. The content would initially be Air Force only. Other activities are to change the "Queen's English" to "US speak", change MoD acquisition language to DoD acquisition language, change UK terms to DoD terms, change metric units to imperial units, change references to UK standards to reference US standards, ensure consistency and compatibility with DoD HSI reference material, and document gaps.

The initial document will come out in a two-column format; one column will reflect the provision in DEF STAN 00-250, the other column will reflect the US translation. This format was chosen to allow reviewers to track changes between the two documents.

Subsequent objectives include converting the reference document to a MIL-STD in cooperation with the other services. It was noted that DEF STAN 00-250 is textbook-like in its content; it reads similar to a tutorial. As such it is very difficult to contractually cite its provisions. The team is now in its seventh month of a 12-month effort so the remaining work needs to be prioritized.

Data Item Description for a Human Systems Integration Report. Mr. Steve Merriman presented an update on the development of a new data item description (DID) for a Human Systems Integration Report (HSIR). The purpose of the HSIR would be to communicate the approach, metrics, status, issues, risk, and mitigation plans for the human-systems integration program; provide the developing organization with critical information to support program milestone reviews; provide documentation of human-systems integration for upper management; and facilitate consistent implementation of human-systems integration on DoD programs. The proposed HSIR DID will be a companion to the Human Systems Integration Program Plan DID which was published in April 2007 (DI-HFAC-81743).

A draft of the HSIR DID was circulated at the Fall 2009 SubTAG (TAG 62). Comments received have been incorporated. The updated DID generally improved wording; added planned activities; shortened the tailoring section; added non-required standards which may provide guidance information; strengthened the summary of issues, risks, and concerns; strengthened the compliance matrix; and added a new paragraph on test and evaluation.

The revised DID will be distributed to the SubTAG attendees for one last review. Following incorporation of any additional comments, the DID will be forwarded to the Preparing Activity for formal distribution.

Other Business:

Update of the Index of Government Standards. The Index of Government Standards was prepared by the SubTAG in November 2004. It is recognized that any index of this type is only a snapshot in time; documents are always be added, deleted, and revised. As evident by the recent activity in the human factors standardization arena, an update to the Index seems in order. A draft revision is near completion. The revised Index will be circulated through the TAG listserve. Following incorporation of any changes, the revised Index will be posted to both the TAG's and SubTAG's list of products.

Update of the Human Engineering Data Item Descriptions (DIDs): Mr. Alan Poston noted that many of the human engineering DIDs have not been reviewed for currency for over 30 years; in most cases, the A revision was cosmetic. Even the most recent DID, the Human Systems Integration Program Plan (DI-HFAC-81743) contains numerous typos and other editorial errors. Additionally, many of the provisions could be rewritten to improve its clarity. To that end, it has been proposed that the human engineering DIDs be reviewed and updated as necessary. Anyone interested in participating in the update should contact Mr. Poston.

ATTENDEES

Anglero, Antonio	Navy
Armstrong, Dick	BCI, Inc.
Bolton, Amy	Office of Naval Research
Booher, Clete	HFES Liaison
Brattin, Lori	NAVAIR Human Systems
Brown, Tina	MITRE Corp.
Chandler, Faith	NASA
Clemmons, Terrence	Office of Naval Research
Cole, Darren	Air Force Flight Test Center
Grubb, Jefferson	NAMI
Humphrey, Curtis	Army Joint Systems Integration Laboratory
Keillor, Jocelyn	National Research Council of Canada
Keller, David	NSWC - Dahlgren
Kinzig, James	Air Force ASC/ENFC
Kosnik, William	Air Force, 711 th HPW/HPO
Merriman, Steve	Boeing
Miller, Stephanie	Air Force Research Laboratory
Novak, Bonnie	U.S. Coast Guard
Null, Cynthia	NASA Engineering and Safety Center
Orr, Sarah	Booz Allen Hamilton
Parker, Chris	BMT Designers and Planners
Plaga, John	Air Force 711 th HPW/HP
Poston, Alan	HFES Liaison
Rice, John	Society for Simulation in Healthcare
Rudd, Rahel	303 rd Aeronautical Systems Wing
Shaw, Brian	The Aerospace Corp. SMC EA
Singer, Becky	Booz Allen Hamilton
Wallace, Daniel	Navy, NAVSEA
Warner, John	Army MANPRINT Office
Wesler, Mary	836 th AESG/SYE
Whitener, Connie	Army, Yuma Proving Ground
Woolford, Barbara	NASA