

23 November 2009

Trip Report
Department of Defense
Human Factors Engineering Technical Advisory Group
(DOD HFE TAG) Meeting #62 – Key West Florida
2-5 November 2009

The 62nd meeting of the DoD HFE TAG was held in Key West Florida and co-hosted by the Department of Homeland Security and the US Navy. The meeting was chaired by Mr. Darren Cole, Edwards Air Force Base, CA. (Darren.cole@edwards.af.mil). The theme of the meeting was *Inter-Agency Interoperability and Cooperation*. Approximately 115 people attended the meeting, representing Office of the Secretary of Defense (OSD), Army, Navy, Air Force, NASA, FAA, Coast Guard, Dept of Homeland Security, North Atlantic Treaty Organization (NATO), Federal Bureau of Investigation (FBI), Drug Enforcement Agency (DEA), National Research Council of Canada, academia, several human factors-related technical societies and industry associations. Additional personnel representing industry and academia attended as invited speakers. Selected briefings from TAG-62 will be available on the DoD HFE Tag website: <http://www.hfetag.com/>.

Five items are attached:

- DoD HFE TAG Background, attachment (1)
- TAG-60 Theme, Attachment (2)
- Program Summary, attachment (3)
- DoD HFE TAG Operating Board, attachment (4),
- TAG attendees, attachment (5) <to be provided when available>
- DoD HFE TAG Policies, attachment (6)

Monday 2 Nov 2009

Plenary Session Presentations

The DoD HFE TAG Chair for the 62nd meeting, Mr. Darren Cole, welcomed attendees to the meeting and elaborated briefly on the meeting theme. Dr. Collie noted that the Department of Homeland Security and US Navy co-sponsored this meeting. The keynote speaker was then introduced.

RADM Ronald Hewitt, USCG, Assistant Commandant for Human Resources.

RADM Hewitt (ronald.t.hewitt@uscg.mil) welcomed the TAG membership to Key West, a major hub of US Coast Guard activity. He invited everyone to participate in a tour of USCG Key West ships and witness a Search and Rescue operation. later in the week and then highlighted three areas of special interest that apply to human engineering professionals:

- Design Standards: needed to ensure the compatibility and usability of user interfaces
- Design for Ease of Maintenance: to make the sailors' jobs easier
- Design Efficiently: ensure that human engineering is done as an integral part of the engineering process.



Trish Hamburger, Director, Human Systems Integration (HSI) and Warfare Systems Engineering, and, Technical Director, Program Executive Office for Integrated Warfare Systems, Naval Sea Systems Command. Ms. Trish Hamburger described several Navy programs where advancements have been made in HSI. She described the new Virginia Class Submarine, with 134 sailors and officers aboard. The Virginia has 64 flat screen displays and employs a common operating picture and other standard features to minimize training. She also described the DDG 1000 Zumwalt-class destroyer as America’s next generation, multi-mission, naval destroyer, and serving as the vanguard of an entire new generation of advanced multi-mission surface combat ships. This ship is the first program to employ Human Systems Integration (HSI) as an integral part of the engineering development program. The DDG1 1000 is manned with 148 sailors and officers, as compared to its predecessor ship which is manned with 300 personnel.

DD 21 The First of the SC-21 Family

"LEAP AHEAD" TECHNOLOGIES

- SUB-LIKE SURVIVABILITY
- 95 PERSON CREW
- 30% LIFE CYCLE COST OF DDG-51

Ms Hamburger then “shifted gears” to provide a detailed, and personal, discussion the 1988 Vincennes inadvertent shoot-down of an Iranian airliner. In addition to the well known stories about misinterpreting whether the airliner was ascending or descending...Ms. Hamburger

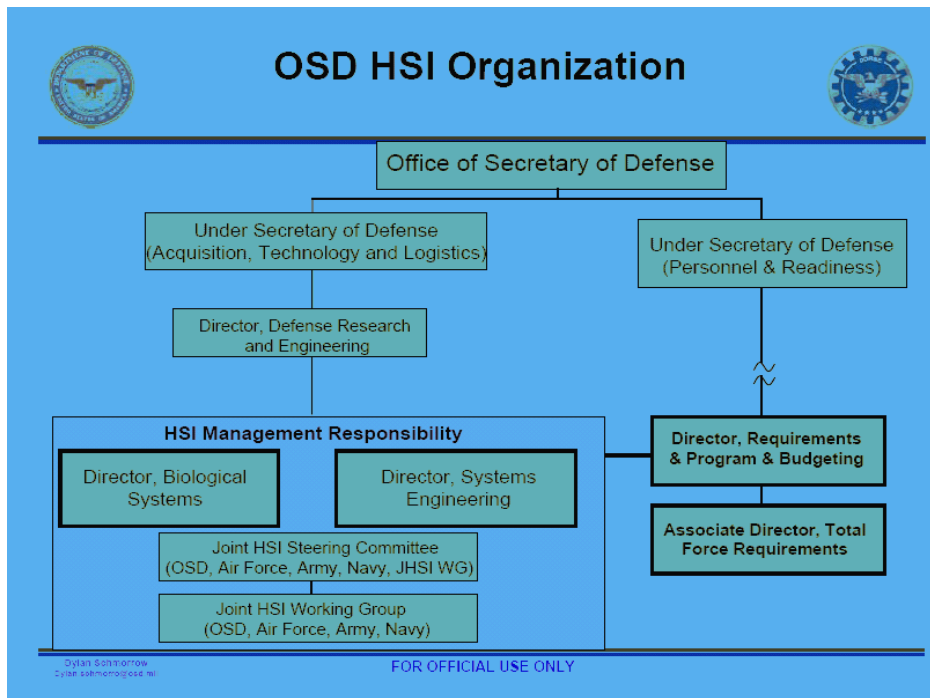
indicated that there was confusion over who had identified the contact. This may have been due to elevation in voice pitch due to stress and also due to personnel not identifying themselves on the intercom every time they spoke. Ms Hamburger participated in the Vincennes investigation and interviewed several of the crew. She used the story to underscore the extreme importance of “getting it right” when weapon systems are designed and procedures are developed.

Dr. Sharla Rausch, Director, Human Factors and Behavioral Sciences Division, Department of Homeland Security. Dr. Rausch provided an overview of the scope of activities of the Human Factors and Behavioral Sciences Division, including:

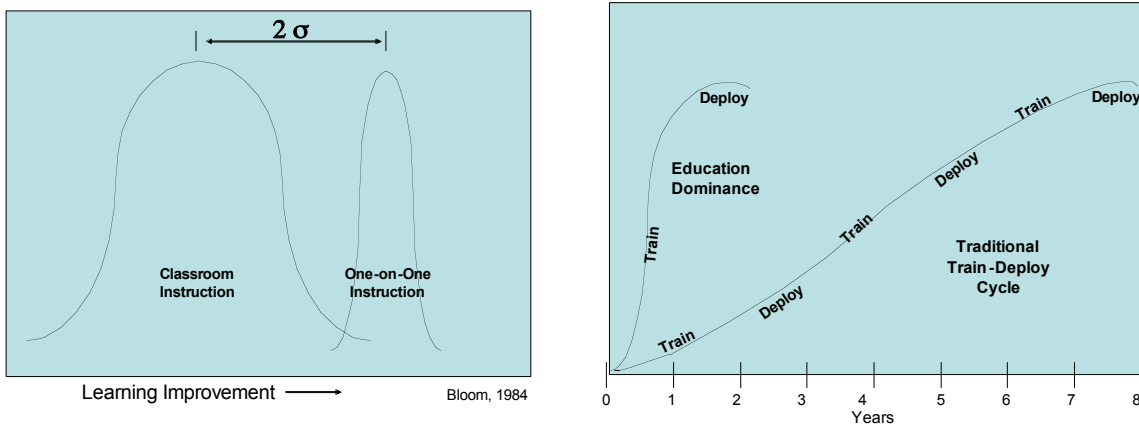
- Motivation and Intent
- Suspicious Behavior Detection
- Personnel Identification Systems (bio-metrics)
- Community Preparedness and Resilience
- Human Technology Integration

CDR Dylan Schmorrow, MSC, USN; Office of the Director, DDR&E. CDR Schmorrow (dylan.schmorrow@osd.mil) summarized the Human Systems programs in the DoD, emphasizing three areas:

- **Human Systems Community of Interest (COI):** The COI provides a framework for coordination; sharing of information, ideas, best practices; and reporting on HSI health. It also provides a forum for the exploration of Human Systems in Hybrid Warfare.
- **Human Systems Integration:** The Congress directed OSD to strengthen their leadership in the HSI area in 2009. An HSI Steering Committee has been established as well as an HSI Working Group. OSD-level HSI policy development is in progress.
- **Human Systems SBIR/STTR:** Small Business Innovative Research and Small Business Technology Transfer programs provide an excellent opportunity to explore novel HS solutions to military problems. The concept of Cognitive Readiness is being reinvigorated within the DoD at this time. <http://www.acq.osd.mil/osbp/sbir/index.htm> is the current SBIR/STTR website.

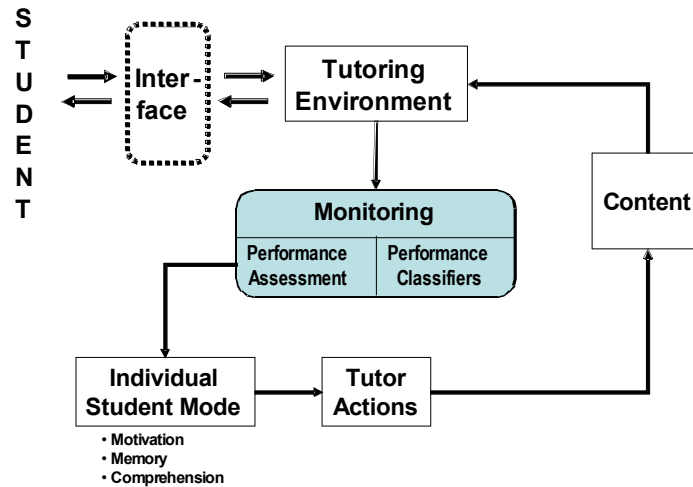


LCDR Joseph Cohn, MSC, USN; Program Manager, Defense Sciences Office, DARPA. LCDR Cohn spoke on the Education Dominance program at DARPA. This program is based on the knowledge that one-on-one instruction provides a superior learning experience and results, as compared to traditional classroom instruction. It is also based on the fact that computer-based training is significantly less costly than instructor-based training.



Education dominance will deliver a digital tutor, combining the benefit of one-on-one instruction and the cost benefit of computer-based training. The plan is to demonstrate that education dominance can deliver a fully capable, trained sailor in 11 weeks, as compared to 36 weeks using the traditional training model. In a pilot study, students educated one-on-one (in IT) performed better than Navy ITs with an average of seven years of experience. Next, DARPA will build a complete digital tutor over the next year and a half. The goal is that 2011 classes will be 100% digital tutor trained. If 2,000 students can be trained in 16 weeks (as compared to seven years) for 10 years, about \$800 million could be saved.

Education Dominance



Approach:

1. Prove: That best instructors can create experts quickly
2. Create: Digital tutor for IT that replicates best instructor techniques
3. Demonstrate: That Digital Tutor creates experts quickly

Dr. Robert Foster, Director, Biological Systems, DDR&E. Dr. Robert Foster (robert.foster@osd.mil) has been the proponent for the DoD HFE TAG for more than a decade. Via telephone link from Washington, DC, he provided an overview of the scope of HSI in the Department of Defense, emphasizing the readiness of people in Defense systems, both cognitively and physically. The basic issue is: “How do we enable warrior readiness?” The current themes in DoD HSI are:

- Human Systems COI
- DoD Combat Feeding Research and Engineering Program
- Human Systems Integration
- OSD IW Modeling and Simulation Coordination Group
- Human Systems SBIR/STTR
- Defense Language Program
- DoD HFE TAG

HSI is a new systems engineering element in DDR&E. The HSI office has, thus far, made contact with over 120 different DoD programs. Dr. Foster posed a number of questions to the DoD HFE TAG, including...

- Are the SubTAGs ready to support HSI in the acquisition process? (What should be done? What could be done? What can be done?)
- Have we adequately implemented the DoD Acquisition Framework (DODAF)?
- What is the current state of science and implementation of human factors in military service-oriented architectures?

He also encouraged the TAG to preserve the continuity that has been maintained over the past 32 years. He solicited a one-page white paper from the TAG identifying areas requiring attention with high payoff. Dr. Foster also passed on to the TAG attendees that NSPS is now “dead.” That means that psychologists are no longer classified as “administrative” personnel (a good thing).

Training:

Spatial Analysis Link Tool (SALT) Training, Brian Woods, Sonalysts Inc. On Monday morning, Mr. Woods (woodb@Sonalysts.com) described a tool used to create and analyze interactions (links). The development of this tool was sponsored by NAVSEA; it was built on Java and Open Frameworks and can be fully customized. It is free to the Government, and to Government contractors if sponsored. The SALT user first creates a space and then adds operators and defines links between them. Defined entities occupy xyz space (SALT4). There are six different kinds of links of four types –visual, auditory, organizational and proximity. Links are of a default criticality and frequency; these can be easily adjusted. Directionality and blockages may be entered. Link health is assessed and displayed; link scores are determined by frequency, criticality and weight. All graphics can be exported as JIF files. All animations can be exported as Flash files. For more information, please visit: hsi.tools@sonalysts.com.

Cognitive Readiness Interest Group. Cognitive readiness is a measure of potential, not a measure of effectiveness. After 10 years, each of the areas contributing to cognitive readiness have worked on their own. Dr. Foster believes it is now time to integrate these activities: Human Computer Interaction, Cognitive Engineering, Decision Making, Artificial Intelligence and Cognitive Readiness. This interest group has been established to advise DDR&E (Dr. Foster) on current research and trends. The focus of this work should be on Irregular or Hybrid Warfare.

Tuesday-Wednesday, 3-4 November 2009

Sub-Group Meetings Attended at the DOD HFE TAG:

Technical Society/Industry SubTAG. The Technical Society/Industry (TS/I) Sub TAG met twice during the TAG meeting on Tuesday and Thursday morning. Ms Barbara Palmer (Booz Allen Hamilton, barbara_palmer@bah.com) served as the new TS/I SubTAG chair. The first topic addressed was “How to keep the TS/I SubTAG and the TAG relevant and visible.” Some of the ways that members distribute TAG information to their respective professional societies and organizations are:

- Authoring Journal and Newsletter articles about the TAG and TAG topics
- Distribution of TAG minutes to organization boards of directors
- Provide TAG and TS/I web links to interested parties

Some of the ways that the TS/I organizations contribute to the DoD HFE TAG are:

- Provide feedback from society/organization membership on TAG initiatives
- Contribute to the development/update of DoD specifications, standards and handbooks
- Contribute to the development/update of DoD Data Item Descriptions (DID)
- Provide feedback on DoD and Service policies, regulations, etc.
- Provide direct feedback to TAG speakers at SubTAG meetings
- Participate in Standardization SubTAG meetings
- Assist with Newcomer briefings/meetings
- Provide input/feedback directly to the DoD HFE TAG proponent as appropriate
- Gather ideas from students to bring out at the DoD HFE community
- Increase exposure about DoD HFE TAG to all HFE societies

Human Factors Standardization (HFS) SubTAG: The Human Factors Standardization SubTAG meeting was chaired by Mr. Alan Poston (aposton86@comcast.net).

- MIL-STD-1472: The tri-service group has completed efforts for MIL-STD-1472G. It is in coordination and will be circulated to industry professional/engineering organizations for comment at the end of 2009 or early in 2010. Several military programs (i.e. FCS & etc.) have interest in reviewing the revised MIL-STD-1472.
- MIL-STD-2525D: The new revision is scheduled to be released in late 2010 or early 2011. The objective is to reorganize the document and significantly shorten it. Jake Wetzel at NAVSURWEPCEN Dahlgren is the primary point of contact.
- FAA Standards: HF-STD-003 covers alarms and alerts. HF-STD-004 is similar to MIL-STD-46855. Appendix B of the HF design standard on Anthropometry was completed in October 2009.
- HFES Institute – HSI Interest Group: Alive and well. ListSrvs were recently approved.
- MIL-STD-46855: Interest has been expressed in resurrecting MIL-STD-46855. The plan is that anthropometry information in DOD-HDBK-763 would be rolled into the Standard and then the handbook would be cancelled.
- DIDs: The US Navy is currently custodian of the HEPP and HSIPP DIDs. Army is custodian for the remaining DIDs.
- Index of Government Standards: An update is underway.
- HFE Best Practices Guide: NAVSEA raft completed in June 2008 - currently in review.
- Human-System Integration Guide for Contracts: Mr. Curtis Fey (USAF, 711th HPW) reported that the HSI Guide has been completed. It provides templates for suggested contractual language for RFPs, SOWs, etc. Copies of the guide were distributed at the meeting (S. Merriman has one hard copy).
- UK Defence Standard DEF STAN 00 250 Conversion to USAF Reference Document: William Kosnic (711th HPW) reported that DEF STAN 00 250, released in May 2008 is being converted into a USAF reference document. A one-year contract for \$276,000 was awarded to SURVIAC (Booz Allen Hamilton) for the effort. Following publication, it is possible that the USAF may pursue conversion to a DOD or international standard.
- DID for Human Systems Integration Report: Mr. Steve Merriman (The Boeing Company, stephen.c.merriman@boeing.com) proposed creation of a Data Item Description (DID) for a Human Systems Integration Report. The purpose of the HSI Report would be to:
 - Communicate Approach, Metrics, Status, Issues/Risks and Plan forward for HSI / MANPRINT Program; e.g.,
 - Analyses and trade studies
 - Modeling, mock-ups and simulation (e.g., IMPRINT)
 - Design Support
 - HSI/MANPRINT Assessments and formal verification activities
 - Provide the developing agency with information critical to program milestone reviews (e.g., SRR, SFR, PDR, CDR)
 - Provide documentation of HSI / MANPRINT progress for higher-ups

Content for the HSI Report would include:

- Program & System Overview (e.g., scope and description)
- References and Requirements (e.g., Contract SOW, WBS, Specifications, HSI program Plan), policies and standards)
- HSI/MANPRINT Activities, Results and Impacts
 - HSI/MANPRINT-level activities (e.g., issues/risks, trades)
 - Manpower, Personnel and Training activities
 - Human Factors Engineering activities
 - Personnel Survivability activities
 - Safety activities
 - Health Hazard activities
- HSI/MANPRINT progress versus program milestone expectations
- Status of HSI/MANPRINT requirement compliance verification
- Conclusions, recommendations
- Issues, risks and concerns
- Plan forward
- Appendices (e.g., requirement compliance matrices, assessment reports)

Mr. Merriman distributed hard copies of the proposed HSIR DID and requested comments.

User-Computer Interaction SubTAG: The User-Computer Interaction (UCI) Sub TAG meeting was co-chaired by Mr. Adrian Salinas (USAF 711 Human Performance Wing, Adrian.salinas@brooks.af.mil) and Stephen Merriman (stephen.c.merriman@boeing.com). Mr. Salinas introduced the meeting agenda, consisting of presentations and a business meeting. Approximately 15 attendees participated in this SubTAG meeting. There were four presentations scheduled for this SubTAG but three were presented. No changes were made in SubTAG leadership or charter.

The first presentation was made by Ms. Laura Major (Group Leader, Human-System Collaboration, C.S. Draper Laboratory, lmajor@draper.com) on “*Resurrection Workflow Analysis for Littoral Combat Ship (LCS) Mine Counter Measure (MCM) Operations.*” Fifteen crewmembers are responsible for all MCM activities, including control of three unmanned watercraft. The Office of Naval Research funded an effort to investigate automation because initial studies indicated that more than 20 crew would be needed. They assessed current MCM operations, analyzed workflow, identified bottlenecks, identified automation opportunities, and identified manning and scheduling changes and training changes. They concentrated on examining the impacts of automation on sortie rate; based on their analysis, additional automation was estimated to yield a 30% improvement in sortie rate.

The next presentation was made by Dr. Candace Eshelman-Haynes, Human Factors Scientist for the Technology Coordination branch of the Strategic Allied command Transformation for the North Atlantic Treaty Organization (NATO) on “*Sense-Making and Information Sharing in a Multi-National Networked Environment.*” Dr. Shelman-Haynes described several new technical capabilities under development to support multinational maritime information sharing and sensemaking. She examined how operators interacted with the technology and with each other to identify potential threats at sea. The objective of the research was to develop a better understanding of tool, training, and organizational requirements supporting maritime situation

awareness. The results showed that operators require visibility of data sources and automated processing in order to avoid confusion and misinterpretation of the data. Operators were often frustrated by a lack of flexibility in query capabilities and by the traditional displays that did not support the tasks operators were attempting to complete. Further, they were heavily influenced by local factors when assessing information and determining the need to pass that information along. Ultimately, these problems led to operator fixation and prevented successful completions of tasks. Recommendations were made to improve technical capabilities and to support improved information sharing decisions by operators.

The last presenter, Mr. Brian Shaw, Senior Project Leader, Aerospace Corporation was unable to attend the meeting and was rescheduled for the next DoD HFE TAG meeting. The titled of his presentation was “An Approach to Integrate HCI Design Criteria into MIL-STD-1472”. His briefing was about experiences (difficulties) implementing the Human Computer Interface requirements in MIL-STD-1472, and the alternative criteria being used by USAD SMC. This will be at the next DoD HFE TAG in May 2010.

Workload and Stress SubTAG: *Four presentations were scheduled for this SubTAG session. Notes were obtained for only one of them.* The second presentation was made by Dr. Sae Schatz, CF-IST Active Lab, University of Central Florida – Institute for Simulation & Training, on Individual Differences in Stress Reactivity. The gist of the presentation was that stress significantly contributes to first term attrition as well as the manifestation of mental health disorders, both during and after deployment. To help mitigate these problems, it was suggested that adaptive pre-deployment resilience training and adaptive post-trauma intercessions are necessary. Both of these interventions must be adaptive (i.e., personalized to the individual military personnel) because (1) it is inefficient and less effective to deliver broad resilience training and (2) post-trauma intercessions can actually escalate negative outcomes if they are applied inappropriately (e.g., in a broad, one-size-fits-all approach). Further, it was suggested that the current operational environment (i.e., Irregular Warfare) includes novel stressors (which should be accounted for and when possible controlled), but IW also offers new opportunities for giving warfighters tools/opportunities to insulate themselves against stress (e.g., more decision-making opportunities). She urged other researchers to examine stress reactivity and resiliency training in the context of IW, to continue to work towards complete models of stress etiology and resilience, and to investigate analogues of psychological constructs and neurobiology.

Controls and Displays SubTAG: There were six presentations made at this session; notes were obtained from three of them. The third presenter was made by David Rozovski, User Centrix LLC, on “*Redesign of the V-22 Osprey Thrust Control Lever for Congruent Control Mapping.*” The Rotational Throttle Interface (RTI) was developed to allow continuous and congruent mapping of both the thrust vector direction and commanded power magnitude in tiltrotor and thrust vectoring aircraft. Prior to the RTI, tiltrotor aircraft utilized either a fixed-wing throttle or rotary-wing collective inceptor. Utilizing these previous designs in tiltrotor aircraft can and has caused problems such as control reversals and negative transfer of training due to the orthogonal control strategies employed by the pilot when the nacelles are not aligned with the power inceptors axis of travel. Current estimates suggest military rotary-wing pilots undergo 10-100 hours of simulator training to “un-learn” their previous power control strategies in order to operate the V-22 TCL (Cantrell). The RTI addresses these control mapping issues by mirroring the thrust vector's

direction and magnitude. In addition, preliminary analysis have shown potential weight savings and improved maintainability with little to no additional learning curve when implemented with novice and experienced aircrews.

The fifth presenter was made by Mr. Carlos Cardillo, EyeCom Corporation, on ***“Online Oculometric Measures an Index of Operator Distraction, Inattention, Drowsiness, and Sleep Onset.”*** He gave a brief introduction of the Eye-Com system which included its previous and current technical specifications and capabilities, previous and current validation studies and previous and current grant support. The Eye-Com Biosensor, Communicator and Controller System (EC), developed by the Eye-Com Corporation (ECC), is an eye-frame mounted system that uses dynamic monocular measures to capture subtle changes in pupil position, pupil diameter and eyelid closure among several other oculometric measures. He also presented basic method and some of the results and conclusions of a joint research with the US Department of Defense and US department of Transportation related to drowsiness detection in a drive simulator environment. He provided a general description of current and future developments and how they are using results from all validation studies to develop fatigue, distraction and inattention detection systems that will be implemented in different operational scenarios.

The last presenter was made by Mr. Samuel Kuper, Wright-Patterson AFB, on “Concept to Support Coordinated and Synchronized Distributed Team Work.” The presentation discussed results of field research we performed studying distributed C2 teams and a work support concept to support coordinated and synchronized product development. The research concluded that a key leverage point in supporting these teams was supporting more efficient coordination and synchronization in the context of developing team-produced products, such as COAs or Crisis Action Planning products - such as Commander's Update Briefs. They developed a work aiding concept - called Adaptable Distributed Activity Process Toolkit (ADAPT) - to reduce the burdens associated with coordination and synchronization and free more time for thinking, problem solving and product production. They performed evaluations with operators at multiple C2 centers and found significant increases in performance when using ADAPT for COA work. Additional versions under development will support Crisis Action work.

Human Factors in Training SubTAG: Notes were obtained on four of the presentations made at this SubTAG session. The first presentation was made by Mr. Oscar Garcia, Research Psychologist, Air Force Research Laboratory, on ***“AOC T-Rex Building a Training Program from the Ground Up.”*** The briefing addressed: 1) the key aspects of designing a training event/program, 2) the concept of the dynamic effects cell and the importance of multi service, multi agency coordination, 3) the physical set-up of the training event using distinct capabilities suited to each of the participants, 4) the method used for scenario design, 5) the tools and process models used for performance measurement and assessment, 6) the comparison of results between two exercises, which used different methods of training delivery, and 7) future applications of the methodology and implications for current training programs.

The next presentation was made by Dr. Peter Crane, Senior Research Scientist, Air Force Research Laboratory, on ***“Distributed Simulation Training for Coalition Exercises.”*** In different years, the RAF and the Swedish AF were invited to coalition Red Flag exercises. Both groups wanted to use distributed simulation to prepare their pilots. Since the senior pilots from the UK had been to Red Flag before and understood all the complex ground and airspace procedures, they

focused their training on combat operations. Since nobody from the Swedish AF had participated in a Red Flag, they focused on ground and airspace procedures plus area familiarization. Both training programs significantly enhanced the warfighters' readiness, demonstrating the value of careful analysis of training needs and tailoring training events to meet specific needs.

The next presentation was made by Dr. Brooke Schaab, Research Psychologist, US Army Research Institute for the Behavioral and Social Sciences, on “***Semi-Training events/experiments at JFCOM.***” The presentation was part of a panel discussion on training for interoperability. Dr. Schaab gave a brief description of a series of experiments at JFCOM with interagency information sharing for homeland defense. The primary organization could use their own system and develop their own user-define view and not a COP. The experiment was very successful.

The last presentation was made by Nelson (Spider) Stephens, Operations Analyst (GDIT), Air Force Research Laboratory, on “***Human Factor Elements in Command and Control Training Event.***” Over the course of several recent decades, the development of various air defense Command and Control (C2) exercises achieved a modicum of success with an urgent need to adapt to current threats and adversarial domains. In particular, the desire to amend (but more often to append) doctrine to address an asymmetric and irregular, yet obstinate and persistent enemy is forcing the DoD to play catch up to develop decisive methodologies to defeat today’s elusive threat. C2 exercises morphed from ensuring the annihilation of a soviet bomber attack to defeating the cartels in the war on drugs to homeland protection to prevent another 911 catastrophe. The air defense C2 exercises directed by NORTHCOM and 1 Air Force reveal a need to ensure successful lessons are captured and incorporated into current doctrine while the failures are learned but yet discarded or improved upon. Perhaps the most critical theme of current designed exercises and deliberate plans developed by the strategists is the need for ***interagency cooperation*** and effective ***interoperable processes***. This discussion presented some of those successes and point to areas of improvement for our C2 forces of the future.

Design Tools and Techniques SubTAG: SubTAG co-chairs are Mr. Steve Merriman (The Boeing Company, stephen.c.merriman@boeing.com) and Mr. Jeffrey Thomas (US Army Research Lab., Aberdeen Proving Ground, MD, jathomas@nps.edu.) There were approximately 15 participants in the meeting. The meeting was chaired by Steve Merriman. There were no changes in SubTAG leadership proposed or made. There were no changes made to the SubTAG charter. Four presentations were made as follows:

The first presentation was made by Ms. Faith Chandler, NASA Headquarters (faith.t.chandler@nasa.gov), who spoke on “***Getting Down to the Root Cause: Analyzing Human Error and Actions as a Part of the Systems Approach.***” NASA has developed a root cause analysis method and tool that incorporates a systems approach, including human error analysis, as an integral part of the overall evaluation. The NASA Root Cause Analysis Tool (RCAT) was designed to facilitate the analysis of anomalies, close calls, and accidents and the identification of appropriate corrective actions to prevent recurrence. NASA developed the RCAT because existing tools did not provide the capabilities NASA needed. After extensive review, NASA found that none of the commercially available tools and methods would support a comprehensive root cause analysis of all the unique problems and environments NASA faces on the Earth, in the ocean, in the air, in space, and on moons and planetary bodies. Existing tools were designed for a specific domain (e.g., aviation), a specific type of activity, a specific type of human error (e.g.,

errors of omission) or had a limited set of cause codes. The NASA RCAT, a paper-based tool with companion software (now available free to government Agencies and contractors), was designed to address the shortcomings identified in existing tools. The NASA RCAT was designed with the whole system in mind, so that all potential types of activities and all potential causes of accidents, whether they be initiated by hardware, software, humans, the environment, weather, natural phenomenon, or external events, could be accommodated and incorporated into the timeline, fault tree, and event and causal factor tree. The RCAT aids users by providing a step-by-step guide, intuitive logic diagramming capability, standard terminology, standard definitions and standard symbols. Rather than conducting a stand-alone analysis or investigation for the human, users can now do an integrated analysis and look at all the system interactions, causes and contributors.

The second presentation was by Mr. Dennis Alejandro (The Boeing Service Company, dennis.r.alejandro@boeing.com) on “**Human Systems Integration – Compliance Analysis Tool (HSI CAT).**” The Army’s Future Combat Systems (FCS) program developed a methodology called “Soldier-Machine Interface Compliance Analysis – (SMICA).” More generically, the spreadsheet tool used to capture all of the compliance analysis results provides a structured approach to document HSI compliance with MIL-STD-1472 and other MANPRINT/HSI requirements. Many FCS contractors are using this tool and it has been generally accepted by the FCS Army leadership. This presentation is a follow-up to the initial presentation made at TAG-60 in November 2008. The presentation illustrated use of the tool using a simple toaster. This tool supports development of Appendix A of the new Human Systems Integration Report DID proposed at the Standardization SubTAG meeting by Mr. Steve Merriman.

The third presentation was by Mr. Brian A. Wood, Sonalysts, Inc. (woodb@Sonalysts.com) who spoke on “**The Human Performance Analysis Tool 4.5: Features, Upgrades, and Current Projects.**” The Human Performance Analysis Tool (HPAT) was presented at the May 2009 HFE TAG in Seattle during the plenary session. In the six months since then, HPAT has completed a significant upgrade to the Analyzer mode. In addition, HPAT has been used on several projects, including work for NAWCTSD Orlando, and the CREW UTS program. HPAT is government-owned software, designed to facilitate the planning, observation, data collection, and analysis of test events, scenarios, exercises, and training events. This briefing will present the latest version of HPAT, highlighting the major changes and upgrades to the data analysis components of HPAT, as well as giving examples of the usage of the product in real world programs. Information and copies of the Software are available to government personnel.

The last presentation was by Mr. Richard Lineback, Program Advisory at The University of Iowa (rlinebac@engineering.uiowa.org), who spoke on “**Santos: A Digital Human Modeling & Simulation Environment for HSI.**” This presentation, populated with several excellent animation sequences, described work conducted over the past seven years by the University of Iowa Center for Computer-Aided Design in the development of the Santos model. Santos is a high-fidelity, bio-mechanically-accurate predictive human model. The development of Santos has been funded by US Army TACOM, the Natick Soldier Research, Development and Engineering Center, the Office of Naval Research, the Naval Health Research Center, and several corporate partners. The presentation highlighted the technical basis for the work and current applications of digital human modeling and simulation technology to the challenges of Human Systems Integration. Hopefully, the TAG will hear about continued Santos model development and applications in the future.

Human Factors Engineering/Human Systems Integration: Management and Applications. The meeting was chaired by Janae Lockett-Reynolds, PhD, Department of Homeland Security. There were three presentations at this meeting. The first presentation was by Mr. Adrian Salinas (USAF, 711th HPW, Adrian.salinas@brooks.af.mil) on “*Air Force HSI Execution.*” There are four core objectives to the USAF HSI thrust:

- Integrate HSI
- Institutionalize HSI
- Sustain HSI
- Improve the HSI process

The second presentation was by Mr. Darren Wilson (Department of Homeland Security, Darren.wilson@dhs.gov) on “*A Vision for Human Systems Integration in the Department of Homeland Security.*” Human Factors/Behavioral Sciences started three years ago, two years after DHS was formed. Approximately \$600,000 in research funding is available on an annual basis. Mr. Al Poston is working with DHS on an HSI standard; this is a four-year effort.

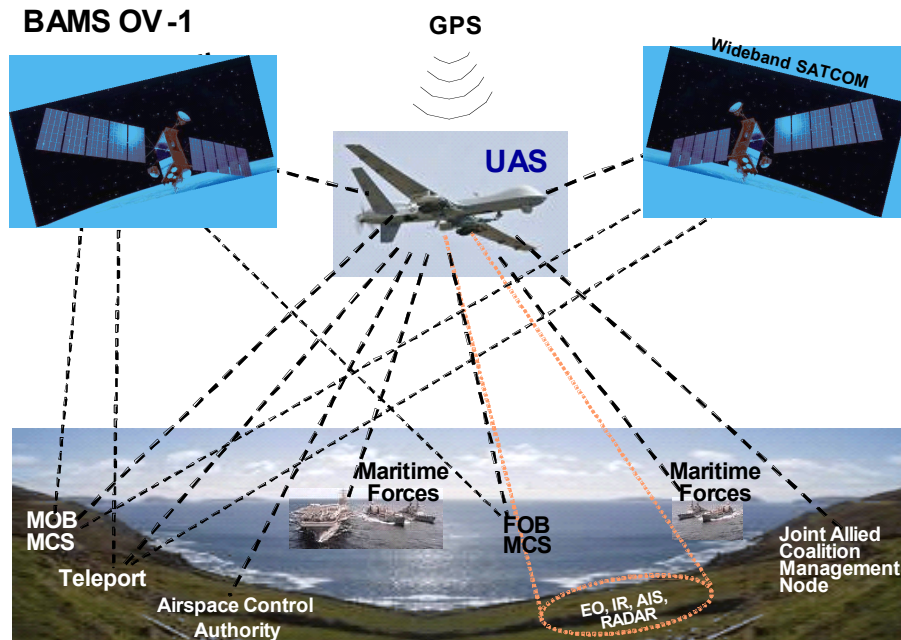
Ms. Marcie Langelier (NAVAIR Human Systems Department, Pax River, MD, marcie.langelier@navy.mil) spoke on “*Putting the “I” in HSI,” Using the Broad Area Maritime Surveillance (BAMS) program as an example.*” The US Navy's BAMS Unmanned Aircraft System (UAS) program provides persistent maritime Intelligence, Surveillance, and Reconnaissance (ISR) data collection and dissemination capability to the Maritime Patrol and Reconnaissance Force (MPRF). The BAMS UAS is a multi-mission system to support strike, signals intelligence, and communications relay as an adjunct to the MMA/P-3 community to enhance manpower, training and maintenance efficiencies worldwide.

The UAS will provide persistent surveillance using the following sensor suite:

EO/IR = 360 degree coverage	EO/IR FOR = 15 degrees
RADAR = 360 degree coverage	RADAR FOR = +/- 45 degrees
ESM = 360 degree coverage	ESM FOR = 360 degrees

Ms Langelier is leading a 4-5 year HFE/HSI effort within the Navy. She maintains an informed and supportive relationship with the program office. Some of the issues being worked currently include how long operator shifts should be and how many operators will be required. Time-on-station will drive the timing. The number of operators required is considered a risk. Number of control stations required is also a concern.

The contract was awarded two years ago. The PDR is in January 2010. Training system development is concurrent with UAS development. CDRL items are required based on current DIDs. Task analysis will provide rationale for designs. The contractor has authored a SAMP in response to the Government SEP. Some of the “hammers” available to HSI include HSI participation in the systems engineering technical review process, participation in the system safety and flight clearance process and the risk management process. Workload studies are planned, using use cases as input. Personnel survivability issues are the responsibility of ESOH specialists. The following figure illustrates how the UAS fits into the overall BAMS operational structure.



BAMS OV-1 Structure

Human Factors Test and Evaluation SubTAG: Notes were obtained for one of the presentations. The presentation was made by Dr. Carlotta Boone, MCOTEA, BAE SYSTEMS, on *“Human Factors and the Marine Corp Operational Test and Evaluation Activity.”* The Marine Corps Operational Test and Evaluation Activity (MCOTEA) have recently renewed its focus on the role of human factors and safety in the testing and evaluation process. This presentation explored the testing and evaluation process at MCOTEA, the incorporation of human factors into this process, and the tools used to examine human factors issues. The briefing also included examples of the application of human factors to Marine Corps programs of record.

Human Factors in Unmanned Systems Interest Group. Mr. Ajoy Muralidhar (NAVSURWEPCEN Warfare Systems Dept, ajoy.muralidhar@navy.mil) led this session. The first presentation was by Reagan Reid (303rd AESG, WPAFB, Dayton, OH) who spoke on *“Global Hawk Ground Segment Fault Detection and Electronic Flight Manual Integration Prototype and Usability Study.”* Global hawk Block 20 is currently in flight testing; Block 40 is in the planning stage. The Global Hawk operator uses two screens. On the left are flight control and status displays; on the right is a “God’s-Eye” view map. Currently, if an operator clicks on an alert, several pages of engineering data are displayed, some of which is difficult to interpret. A study was performed focusing on pilot alerting, since the sensor operator and maintainer have few alerts to deal with in the system. Phase I consisted of site visits and familiarization in order to define the problem. Phase II explored alternatives using prototype development. A dry run study was first performed using seven subjects with a wide experience base; comments were collected on electronic flight manuals (EFM) and alerts. The main study (Usability study 2) was conducted at Beale AFB using three different prototypes and nine subjects. The subjects were asked to respond to various emergency alerts while flying the three different prototype control station

configurations. Primary areas of focus were on the EFM, alerts, and master caution alert with secondary focus on engine displays, communications, and other areas.

The second presentation was by LT. Shaun Sucillon (711th HPW/RHA, Mesa, AZ, shaun.sucillon@mesa.afmc.af.mil) who spoke on ***“Unmanned Aircraft Systems in the USAF: Training for a Future of Interoperability.”*** This past year, the Air Force trained more unmanned aircraft pilots than manned aircraft pilots (for the first time). Once unmanned aircraft pilots have been trained, there is little opportunity for them to receive re-training due to the 24/7 nature of current operations. Modeling and simulation were studied as a possible approach to investigate a number of issue areas, such as effects of limited practice, coordination with Army and Air Force ground forces for ISR/CAS, impacts of poor visualization, ability to control multiple unmanned aircraft and the impact of using two different keyboards at each control station. The issue of Teamwork, Collaboration and Coordination at a Distance was also investigated. Currently there is no mission coordination outside of the immediate team – a capability is needed to integrate and coordinate with other groups. Also there is no standardized concept of operations for different UAS platforms. To date, a competency survey has been conducted and preliminary recommendations have been made to the ‘schoolhouse’ at Creech AFB. Focus of next efforts will be on improving coordination between UAS platform groups.

Sustained/Continuous Operations (SUSOPS/CONOPS) SubTAG. The first presentation was by Peter Roma, PhD, Institutes for Behavior Resources & Johns Hopkins University, proma@ibrinc.org) who spoke on ***“Technologies for Participant Management, Data Collection and Information Processing for Large-Scale Field Studies: Lessons from the CAMI Flight Attendant Fatigue Project.”*** This flight attendant field study was mandated by the US Congress and performed by CAMI, FAA and Institutes for Behavior Resources; NASA Ames was involved also. Airlines had reduced rest periods for longer routes and unions had lobbied the Congress for a study. Flight attendants often do not have breaks in flight and it is difficult to eat properly. Two hundred ten subjects were used. There were three types of carrier studied and three levels of seniority. Five thousand flight attendants applied to participate in the study! Data were maintained in an excel database and information was obtained via telephone, email, etc. Each subject participated for one month. SurveyMonkey.com was used to conduct the surveys. A pedometer was used by each subject. Subjects also wore a 24-hour actigraph (www.fatiguescience.com) and actigraph data were extracted and compiled. A PDA was used to manually log activities (e.g., sleep, break, nap, in-flight, commute, etc) and there was an area provided to enter notes. All PDA data were up-loaded to a secure FTP site. Four times a day, each subject performed a psychomotor task. Five randomly ordered fatigue sensitive phrases were uttered. A visual analog scale, drug use question and post duty questionnaire were also used. Performance modeling was developed by Hursh. FAST (Fatigue Avoidance Scheduling Tool) was used to compare predicted to actual performance based on schedules. The next study will be conducted for long-haul carriers. Lessons learned during this study include:

- Lots of off-the-shelf computer-based tools exist for use (filezilla, excel, surveymonkey, etc.)
- Actigraphy and the PDA worked well
- Fatigue modeling was broadly applicable

The next presentation was made by LCDR Walter Carr, MSC, USN (National Institutes of Health / NIDCD and Naval Medical Health Research Center, Bethesda, MD, walter.carr@med.navy.mil) who spoke on ***“Neurophysiological Effects of Sleep Deprivation During Response Inhibition***

and Language.” The overall objective was to use neural imaging to examine language changes with sleep deprivation. This area of research is resurging due to advances in processing technology. Sleep deprivation had been found to interfere with making sense of sentences. Reading comprehension has also been found to suffer (Pilcher, 2000). Other, more basic abilities did not suffer due to sleep deprivation. LCDR Carr’s work involved 18 subjects. Functional MRI (fMRI) was used on each subject three times: before being awake all night and day, after being awake all night and day, and after the subject had been allowed to sleep. A psychomotor response time test (PRT) was used to measure elevated latency following extended wakefulness and this was seen to have recovered following sleep. In summary:

- Language production and comprehension – no major changes in fMRI
- Language comprehension –less affected
- Language production – more affected

The next presentation was by Ms. Elena Polejacva National Medical Research Center, Neurotrauma Department, who spoke on **“Language, Speech, and Voicing Under Conditions of Sleep Loss: A Preliminary Review.”** Morris (1960) found that sleep loss causes speech to be slower and softer, with breaks in rhythm. There were also several studies cited from 1997-2005. She examined the time to fall asleep following different levels of sleep loss, looking at eight different characteristics (e.g., energy, waveforms). Another study conducted by NASA with mountain climbers over the past 10 years showed that, at high altitude, vowel duration was longer and comprehension levels were lower. Technologies for analyzing voice include:

- (S.T.A.R.) Landmark Analysis
- (Shiomi) Chaotic Analysis of Vowels (Japanese)
- (Greely) LEPSTUM Coefficient (using neural networks)
- (Krejewski) Acoustic Analysis (9 acoustic features)

Eventually, these techniques could be used to analyze effects of sleep deprivation. LCDR Carr is currently meeting with these speech analysts to explore ways of working together.

The last presentation was by Thomas Nesthus, PhD, FAA Civil Aerospace Medical Institute, Oklahoma City, OK, tom.nesthus@faa.gov, who spoke on **“Duty/Rest and Fatigue Mitigation During Ultra Long-Range Flights.”** Current government regulations do not cover 16+ hour duration operations. Ultra-Long Flights were requested by a carrier in 2006. The FAA developed a non-standard operation specification (para. A332) that is basically a waiver that could be granted, given enough rationale/evidence presented by the requesting carrier. The Op Spec was designed to mitigate crew member fatigue. For ultra-long flights, four pilots are required –with change-over for rest breaks. The Op Spec also covers flight attendants. Areas covered include crew requirements, training, scheduling, maximum schedule deviations and sleep/rest facilities. Acceptable plans for rest breaks are required. The Op Spec has been tentatively approved but requires data collection to verify safety. A test protocol was developed by CAMI and data have been collected from 23 pilots over 6 trips (JFK-Mumbai) in December 2007 and from 20 flight attendants over 4 trips in January 2008. The SAFTE (Sleep Activity Fatigue & Task Effectiveness) tool was used as well as in-flight actigraphy, PVT (four times per subject), subjective measures (mood, sleep quality, fatigue symptoms). Flight attendants had very negative ratings on the item “Falling asleep and now feel _____”. Significant negative ratings were also obtained on the visual analog scale and PVT. The MotionLogger® SleepWatch was not very good – it produced very noisy data in flight. Cabin crew results prompted a change in crew rest scheduling. Rather than taking one sleep block per flight, this was changed to two sleep blocks.

This also assisted with a problem of having to get dressed to use the bathroom if needed during sleep times. Three carriers now fly ultra-long flights (Newark-Mumbai, Newark-Hong Kong). Significant changes are anticipated in the future with regard to the scheduling of crews.

Personnel Selection and Classification SubTAG: Notes were obtained on two of the presentations. The first presentation was made by M. Eric Middleton, Lockheed Martin, on “*DIF Testing and Parameter Estimation of Items on the ASTB.*” Eric discussed the methodology and benefits of item response theory for evaluating test bias of the Aviation Selection Test Battery (ASTB) and computer adaptive testing. He presented the results from their analysis of the ASTB. He updated parameters for items on the current ASTB forms, evaluated the current items for bias, and estimated parameters for a new library of test items to be used in the development of new static parallel forms and in support of a computer-adaptive format. All item parameters were scaled in the metric of the 1992 ASTB form items.

The last presentation was made by Dr. Cheryl Bolstad, SA Technologies, on “*Team Cognitive Readiness Survey Tool (T-CREST).*” The tool was developed by SA Technologies for the U.S. Army Medical Research and Materiel Command under funding from an Office of Secretary of Defense (OSD) Phase II SBIR. T-CREST is an automated decision support system designed to help supervisors in making better decisions about personnel readiness for action by clearly defining individual team member cognitive readiness issues needing attention, and providing focused, tailored suggestions for improvement. In this presentation, Dr. Bolstad described the design, development, and initial user testing of the Team Cognitive Readiness Survey Tool (T-CREST).

Operational Panel: An operational panel of specialists operating in an integrated fashion in the Key West area was assembled to describe their activities and answer questions. Last year, the Joint Interagency Task Force (JIATF) was credited with interdicting 261 metric tons of drugs! The JIATF has been in existence for 20 years. There are approximately 10,000 visitors to JIATF.

- **CDR Bob Henderson, Commanding Officer USS Mohawk:** Lots of interagency operations in the Key West area: drugs, humanitarian ops, and anti-terrorism. The keys to interagency operations are:
 - Doctrine
 - Capabilities/Limitations
 - Communications
 - Common Operational Picture
 - Information Sharing

Secure communications/key mat and frequency management are essential. COP (Link 11, Link 16, Link 22, CENTREX, CDCOP, SCCS Build/Share). What works: on scene coordination program (CG/CBP), JIATF-P Coordination, PNN/Ship rider Programs. Problems: CGCOP, Links 11/16/22 (too few ships have them), no secure communications with other agencies (everyone depends on SIPRNET and if it breaks, everyone is out of business).

- **Operational Specialist Shane Carroll, USS Mohawk:**
- **Mike Clark, Special Agent, FBI:** Mike joined the FBI in 1988 and spent time in Iraq, San Juan, Jordan, Russia, Bulgaria. The Joint Interagency Task Force Agency (JIATFA) – South really works.

- **Richard Booth, Customs and Border Protection (CBP):** About 2,000 people in the CBP. The CBP is getting ready to deploy a maritime Predator system for surveillance. There are lots of challenges to interagency cooperation, such as agency cultures and traditions, and classification of information (information with high classifications can't be shared). When an agency sends pictures via link, they become classified and the sender can't access them anymore. The CBP currently operates P-3 aircraft in South America and the DoD helps them out.
- **Dan Scott, Special Agent, Drug Enforcement Agency (DEA):** The DEA goal is to prosecute organizations for illegal operations. For example, if the USCG wants to interdict a shipment the DEA may want to trace the contraband back to its source. Often differences in agency goals make coordination and cooperation strained.
- **Jeff Barker, Immigration and Customs Enforcement (ICE) [formerly US Customs Service]**

Discussion topic: Information management challenges and tools that might help.

- **DEA** – Two or more agencies can be working the same person of interest and not know it.
- **FBI** – Depends on what violation you are working. The joint task force really helps. 9-11 changed a lot and made it easier to work more closely. There are still barriers, but they are not so impenetrable now.

Discussion topic: Good Technologies / What works

- RTRG – Real time regional gateway
- Intelligence Directive ODNI-501 requires interagency information sharing
- Cloud computing
- Link analysis tools
- DEA/DOD relationship around the world really extends DEA effectiveness

Things to work on:

- JIATF takes in so much information; we need to look at how to better structure the information in order to make sense of it.
- Linkage of the different agency databases (being worked currently)
- Work-arounds waste considerable amounts of time and, in the end, you may have not really communicated! (Communications, especially secure communications, must be improved!)
- Law enforcement and DoD cultures don't integrate well.
- People roll in and roll out too frequently; they leave just when they are beginning to understand how to work with the other agencies (nothing replaces personal relationships)
- It is difficult (impossible) to tell if an aircraft or boat track represents a criminal act or a national defense threat (or neither). Until someone is on the scene, it is not clear what the primary issue is or which agency should take the lead!
- The USCG has only 45 minutes or so to conduct a boarding so they need information quickly if they are going to take any action.

Human Modeling and Simulation SubTAG: Not attended

Human Factors in Extreme Environments SubTAG: Not attended.

System Safety/Health Hazards/Survivability SubTAG. No meeting was held.

Thursday, 5 November 2009

DOD HFE TAG Operating Board Meeting:

The Department of Homeland Security (DHS) and US Navy were thanked for hosting the 602nd DoD HFE TAG meeting. SubTAGs and Service caucuses briefed their attendance numbers, charter changes, leadership changes and significant issues.

Caucus Reports:

DHS: Very pleased with meetings

USAF: Will host the next TAG meeting.

USN: Suggested conversion of the HFE Tag name to “Human Systems” A discussion ensued without there being any agreement being reached. S. Merriman changing the name to the “DOD–Interagency HFE TAG” to reflect post 9-interagency coordination.

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Army: 10 people attended caucus. No comments

FAA: Exploring how to increase FAA participation in meetings

NASA: Ready for November 2010 meeting and tours at Ames Research Center

SubTAG Reports:

Controls and Displays: 25 attendees, new chair elected.

Design Tools and Techniques: 15-20 attendees, no changes in charter or leadership.

HSI: 30 attendees; good mix of people; new chair elected

Extreme Environments: NASA presentations this meeting

Standardization: Maximum crowd. MIL-STD-1472 update underway, MIL-HDBK-46855 changes; new HSIR DID proposes, NASA 3001 update, new USAF document on HSI contract language

T&E: 25 attendees

Modeling and Simulation: 9 attendees; new chair elected

Sustained/Continuous Ops: 15 attendees and 4 papers

Safety/Health Hazards/Survivability: Didn’t meet. Ben Gibson to co-chair with Barbara Palmer

UCI: 12 attendees; no changes in charter or leadership

Workload and Stress: 15 participants

Interest Group Reports:

Cognitive Readiness Interest Group: 15 participants

Mission Performance Interest Group: Good attendance

Unmanned Systems Interest Group: Two sessions, average of 22 participants at each.

SubTAG Reports: A new process will be tried beginning with the next meeting where SubTAG chairs will complete reports prior to leaving the meeting.

Attendance at individual meetings: There are so many interest groups, etc. that three sessions are sometimes in parallel. This draws down attendance at the SubTAG meetings. This should be addressed.

Facebook Page: The TAG Facebook page is up and operational.

TAG 62 Attendance: A total of 113 attended Tag-62. Monday's social event was attended by 38 people and the tour of the Key West USCG base was attended by 63 people.

Future TAG Meetings: The next TAG meeting will be in Tempe, AZ in the Spring of 2010. It is tentatively scheduled to be hosted by NASA Ames in the San Francisco area next November.

TAG Products: It was stressed that the TAG should emphasize products that are built by the TAG, including responses to requests from Dr. Foster, Persistent concerns lists, etc.

Other Possible TAG Sponsors: Interest has been expressed for the NRC to become a TAG sponsor. The Tag leadership should touch base with other Federal agencies (e.g., FBI, ICE, DEA) to determine their level of interest in joining.

Submitted by:

Stephen C. Merriman

DoD HFE TAG, TS/I Credentialed Representative of EIA, SAFE and AsMA/HFA

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ATTACHMENT (1)

DOD HFE TAG Background

The DoD HFE TAG was begun via memorandum of agreement signed by the Service Secretaries in November 1976. Goals of the TAG were established as follows:

- Provide a mechanism for exchange of technical information in the development and application of human factors engineering.
- Enhance working level coordination among Government agencies involved in HFE technology research, development and application.
- Identify human factors engineering technical issues and technology gaps.
- Encourage and sponsor in-depth technical interaction, including subgroups as required in selected topical areas.
- Assist as required in the preparation and coordination of Tri-Service documents such as Technology Coordinating Papers and Topical Reviews.

The TAG addresses research and technologies designed to impact man-machine system development and operation throughout the complete system life cycle. Topics include:

- Procedures for use by HFE specialists, system analysts and design engineers in providing HFE support during system development and modification
- Methodologies to identify and solve operator/maintainer problems related to equipment design, operation and cost/effectiveness
- Mechanisms for applying HFE technologies, including formal and informal approaches to validation and implementation, and the determination of time windows for application.

The TAG comprises technical representatives from Government agencies with research and development responsibilities in the topical areas mentioned above. Additional representatives from activities with allied interests affiliate with the TAG as appropriate. Technical experts in special topic areas may augment attendance at specific meetings. Also participating in the TAG are official representatives of technical societies (e.g., Human Factors and Ergonomics Society, SAFE Association) and industrial associations (e.g., Government Electronics and Information Technology Association) with a stated interest in HFE. These representatives may attend subgroup and general plenary sessions and they must be credentialed by the TAG prior to attending any meetings.

To facilitate detailed technical information exchange, the TAG is composed of committees and subgroups, or "SubTAGs." Committees are established to address specific issues or problems and are disestablished upon completion of their tasks. SubTAGs address problems of a general or continuing nature within a specific field of HFE technology. Membership in SubTAGs and committees may include non-government personnel involved in research, development and application. Attendance by non-government individuals is possible if the person is either sponsored by a government agency or if accepted by the TAG chair prior to the meeting. Chairing of the various subgroups and committees is rotated among the Services, NASA, FAA, DHS and TS/I members, as provided in individual charters.

The current sub-groups typically meeting at the HFE TAG meeting were as follows.

Sub-TAGs:

- **Controls and Displays/Voice Interactive Systems**
- **Design: Tools and Techniques**
- **HFE/Human Systems Integration: Management and Applications**
- **Human Factors in Extreme Environments**
- **Human Factors in Training**
- **Human Factors Standardization**
- **Human Factors Test and Evaluation**
- **Human Modeling and Simulation**
- **Personnel Selection and Classification**
- **Sustained/Continuous Operations Core Competencies**
- **System Safety/Health Hazards/Survivability Core Competencies**
- **Technical Society/Industry**
- **User-Computer Interaction**
- **Workload and Stress**

Affiliated Groups:

- **Mission Centric Human Performance Measurement Interest Group**
- **Unmanned Systems Interest Group**
- **Cognitive Readiness Interest Group**

ATTACHMENT (2) Meeting Theme

Inter-Agency Interoperability and Cooperation

The events of September 11, 2001 highlighted the need for exchange of information between US Government agencies and the need for inter-agency operational cooperation. Special Operations forces, US Navy Fleet, Customs and Border Protection, Immigration and Customs Enforcement, and the US Coast Guard may all be involved in a given action. Different agencies may cooperate in other activities (e.g., FAA and Secret Service). In each of these cases, how do we ensure that all of the relevant information is made available without overloading the decision maker? Policies, procedures, training, selection, and technology can all be applied to address facets of the challenges of inter agency cooperation and the related problem of information overload.

--Co-hosted by the US Navy and US Coast Guard --

ATTACHMENT (3)

Department of Defense Human Factors Engineering Technical Advisory Group Meeting 62: 2-5 November 2009, Key West FL

Monday, 2 November

0800 – 0930 Executive Committee meeting
0930 – 1000 New member orientation
1000 – 1200 SALT Training (brown bag lunch)
1200 – 1300 Luncheon Break
1300 – 1700 Plenary Session
1700 – 1800 Cognitive Readiness Interest Group
1800 – 2000 Mixer

Tuesday, 3 November

0730 – 0830 Technical Society/Industry
0730 – 0830 Mission Centric Human Performance Interest Group
0830 – 1100 Human Factors Standardization
0830 – 1100 User-Computer Interaction
0830 – 1100 Workload and Stress
0930 – 1000 Networking, coffee
1100 – 1200 Luncheon Break
1200 – 1400 Controls and Displays
1200 – 1400 Human Factors in Training
1200 – 1400 Design: Tools and Techniques
1400 – 1430 Networking, coffee
1430 – 1630 Human Factors Engineering/Human Systems Integration: Management and Applications
1430 – 1630 Human Factors Test and Evaluation
1430 – 1630 Human Modeling and Simulation
1700 – 2000 Social

Wednesday, 4 November

0730 – 0830 Mil Std 1472
0730 – 0830 Unmanned Systems Interest Group
0830 – 1100 Sustained/Continuous Operations
0830 – 1100 Personnel Selection and Classification
0830 – 1100 Human Factors in Extreme Environments
0930 – 1000 Networking, coffee
1100 – 1230 Luncheon Break
1230 – 1700 Tour and Operational Panel

Thursday, 5 November

0830 – 0930 Service Caucuses
0930 – 1100 Operating Board
1100 – 1230 Luncheon Break
1230 – 1430 Adjourn

ATTACHMENT (4)
DoD HFE TAG Operating Board
Executive Committee

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Human Factors Engineering/Human Systems Integration: Management and Applications

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User-Computer Interaction

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Affiliated Groups

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Cognitive Readiness Interest Group

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ATTACHMENT (5) DoD HFE TAG Attendees

< Will be provided when available >

ATTACHMENT (6)

DoD HFE TAG Policies

1. Membership (General membership policies are outlined in the Operating Structure, under "Group Composition.")

1.1 Individuals who are not affiliated with Government agencies (but who are associated with technical societies or industrial associations with a stated interest in human factors engineering) wishing to affiliate with the TAG may contact the current Technical Society/Industry SubTAG Chair to ascertain eligibility under the TAG Operating Structure. Once eligibility has been ascertained, the individual should submit a letter on the organization's letterhead, confirming his/her status as the organization's representative, to the current Chair of the Technical Society/Industry SubTAG.

1.2 Emeritus Membership may be approved by the Executive Committee on a case-by-case basis for a former TAG member who is retired from government service or defense industry. Emeritus Membership is automatically deactivated during any period of re-employment with the government or defense industry.

2. Meeting Sites (Sites are recommended by the service caucus whose turn it is to host the TAG with a view toward a balance in geographic location and meeting facilities.)

2.1 TAG members are encouraged to recommend potential meeting sites.

2.2 Organizations who wish to host the TAG should contact their Service Representative or the current TAG Chair.

3. Agenda (The agenda is determined approximately three months before the scheduled meeting. The Chair Select selects the topics from those recommended by the Service Representatives, hosting agency and the TAG Coordinator.)

3.1 TAG members are encouraged to suggest potential agenda topics or topics suitable for tutorial sessions to their Service Representative, the current TAG Chair, or the TAG Coordinator.

4. Registration (Registration fees and the date of the close of registration are announced in an information letter sent approximately two months before the scheduled meeting.)

4.1 All attendees are expected to pre-register and prepay by the announced close of registration.

4.2 Only individuals receiving late travel approvals may pre-register on-site. Payments made at the meeting site must be in cash.

5. Minutes (The Minutes of each meeting serve as the principal mechanism for the reporting of TAG activities. The Minutes will be published as a draft document on the website.)

5.1 Individuals or agencies desiring to be included on the distribution list for a specific meeting should contact the TAG Coordinator.

6. SubTAGs and Committees (See the Operating Structure, section entitled "TAG SubTAGs," for specific information regarding the purposes and operating procedures of SubTAGs and committees.)

- 6.1 All SubTAGs and committees are encouraged to meet in conjunction with the TAG at least once each calendar year.
- 6.2 All SubTAGs and committees meeting in conjunction with the TAG are required to provide a chairperson for the specific meeting.
- 6.3 All SubTAG and committee chairpersons are to submit a brief report of each meeting to be included in the set of TAG Minutes covering the SubTAG/committee meeting time frame.
- 6.4 All SubTAGs and committees are required to provide the TAG Coordinator with an up-to-date list of their membership for use in the distribution of TAG announcements.
- 6.5 All SubTAGs are required to submit to the Executive Committee a Charter including, but not limited to, statements regarding:
 - objectives
 - membership policies
 - meeting schedule
 - scope
 - chair selection/tenure
- 6.6 Committees are required to submit to the Executive Committee a document including, but not limited to, brief statements regarding:
 - objectives
 - membership policies
 - chair selection/tenure
- 6.7 Rotation of the chair position is determined by SubTAG charter. If the position cannot be filled by the appropriate service at the election meeting, the SubTAG may progress to the next service willing to chair the SubTAG

7. SubTAG Establishment

- 7.1 Groups interested in addressing technical areas not covered by existing SubTAGs may request the TAG Chair to provide meeting time.
- 7.2 Formal SubTAGs and committees may be established by recommendation of the Executive Committee.

8. Chair/Representative Selection (General selection procedures are outlined in the Operating Structure under "Conduct of Business.")

- 8.1 A Service caucus may be called by the TAG Chair or the current Service Representative.
- 8.2 Methods of determining the Chair Select and Service Representatives are Service dependent.
- 8.3 Unexpired terms of office will be filled by appointment by the Executive Committee, until a caucus of the Service can be called at the next regularly scheduled TAG meeting.

9. Funding The funding required for the organization, conduct, franking, and documentation of all TAG meetings shall be done jointly by the three Services and other selected agencies. The specific mechanisms to obtain and allocate funding from the Services/agencies shall be arranged by the Current Chair, Chair Select, and Immediate Past Chair.

10. Policy Changes

10.1 Additions to or amendments of the above policies may be recommended by submitting the suggested change(s) in writing to the TAG Chair.

10.2 Policies may be amended by a majority vote of those Operating Board members in attendance at the Operating Board meeting at which amendments have been proposed.

Amended 14 November 1989 at TG-23, Killeen, Texas.

Amended 3 May 1994 at TAG-32, Oklahoma City, Oklahoma.

Amended 8 May 1996 at TAG-36, Houston, Texas.

Amended 7 November 2002 at TAG-48, Alexandria, Virginia.