

DoD HFE TAG SubTAG Final Report

SubTAG Name: Human Factors in Training

TAG Meeting Number: 64

SubTAG Chair/co-chair Information

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U.S. ARI/U.S. Joint Forces Command J9, 115 Lake View Industrial Parkway, Suffolk,
VA 23435

Number of members present: 29

Organizations represented: University of Central Florida, ARL, The Aerospace Corporation, NASA Ames Research Center, NSWC, AFRL, NASA Johnson Space Center, BAH, Lockheed-Martin, ARI, DHS, AFIT, NAWCTSD, NASC, NRL

Agenda

- a. Title of presentation Determining the Appropriate Level and Modalities of Technical Training for Use with Virtual Worlds
- b. Name of presenter(s) John Plaga and Karen Griffith
- c. Agency or organization employing presenter(s) AFRL and MYMIC LLC

Abstract Information

- a. Who presented: Karen Griffith
- b. What was presented: In this Air Force Research Lab Project, 29 participants were trained in the use of a virtual world in order to participate in a simulation related the training of Expeditionary Medical Teams (EMEDS) Teams. The focus of this presentation is the effectiveness of an evaluation methodology constructed to assess the effectiveness of the implementation of virtual worlds to conduct distributed simulated training events. One important question regarding the evaluation process is to determine the appropriate modality and amount of user training to supply in relationship to alternate training systems so that the use of the technology does not impede the primary training objectives. This evaluation methodology was the subject of an initial "use case" at the Patriot Exercise at Volk Field in July of 2010. In this experiment, three teams of EMEDS were gathered from an official live yearly training event conducted in Wisconsin. Although the virtual training system was designed for use in a distributed environment (i.e. the individual participants were not co-located), it was convenient and expedient to conduct the experiment while the potential participants were congregated at the Patriot Exercise. Initially the teams were trained in the use of the virtual world in a one hour instructor-led session that acquainted them with the basics of the virtual world, and subsequently participated in a one hour GaMex with an authentic experience of triaging and treating patients resulting from a car bomb and attack at the gates of a military installation. The results of the evaluation process revealed that participants were able to conduct a realistic replication of their work as a forward medical rescue team. Further evaluation outcomes showed that even though participants successfully navigated the virtual environment, they did not necessarily feel that all of their

technical needs were met. This entire experience begs the question of what type and how much initial support distributed teams require to be successful in participating in simulated events implemented in virtual worlds. The presentation will briefly review the circumstances of the experiment and analysis of the evaluation results. Additionally, some recommendations for readying teams for participation in virtual training will be made.

Agenda (cont.)

- a. Title of presentation Applying HSI Principles to Military Curricula Design: A Combat Hunter Use-Case
- b. Name of presenter(s) Sae Schatz
- c. Agency or organization employing presenter(s) UCF, Institute for Simulation and Training

Abstract Information

- c. Who presented
- d. What was presented: The Marine Corps' innovative Combat Hunter program was first conceived in 2007 to meet a training gap in small unit close combat war fighting. Since that time, the skills taught by this course have been recognized as mission critical, particularly those related to perceptual abilities and combat profiling. However, the behavioral science and training research communities have had limited opportunity to analyze these unique subject matters or devise a systematic curriculum of study. In spring 2010, US Northern Command requested a special "graduate level" version of Combat Hunter be administered to US Soldiers and Border Patrol Agents. This one-time exercise, called Border Hunter, was conducted by Joint Task Force North (JTF-N). More than a dozen behavioral researchers, sponsored US Joint Forces Command (USJFCOM), attended. They observed the entire 20-day course and collected extensive data from the instructors and trainees. These results have greatly enhanced our understanding of Combat Hunter and its underlying knowledge, skills, and attitudes (KSAs) (see Fautua, Schatz et al., 2010, *Border Hunter Research Technical Report*). Now that the Border Hunter research has provided objective insight into the Combat Hunter course, the next step is generalize Combat Hunter training and to determine strategies for integrating such instruction throughout the training cycle. More specifically, this means applying empirical inquiry and analytic tools to investigate human perceptual capabilities, perceptual training strategies and technologies, and the methodical integration of perceptual training across the range of military specialties and throughout the pre-deployment, deployment, and inter-deployment training cycles. That is, we intend to apply a human-systems integration approach to the development of an advanced perceptual skills curriculum. The authors of this presentation will report on the findings from the Border Hunter study and then discuss this new research endeavor, sponsored by the Office of Naval Research (ONR). The present initiative's goal is to more systematically understand advanced perceptual skills training, such as combat profiling, and then identify strategies and technologies to support the broad training of these skills throughout the USMC. Although the outcomes of this effort directly impact the USMC, the broader Defense community should also find the discussion highly relevant to their respective organizations.

Agenda (cont.)

- a. Title of presentation Training Needs Identification and Training Tool Development for Company Intelligence Support Teams (CoIST)
- b. Name of presenter(s) William Sanders
- c. Agency or organization employing presenter(s) ARI

Abstract Information

- e. Who presented William Sanders
- f. What was presented: The experiences of the U.S. Army operating as a counterinsurgency force have demonstrated a compelling need for military intelligence sections within the company-sized maneuver force. The mission of the Company Intelligence Support Team (CoIST) is to describe the effects of the weather, enemy, terrain, and local population upon friendly operations in order to reduce the commander's uncertainty and aid in his decision making. The company must man and train the CoIST with available personnel and limited training resources. Personnel turbulence, new technology insertion, and the rapidly changing threat environment challenge traditional training approaches. This presentation describes the completed research efforts to identify CoIST training requirements and innovative training methods and strategies. A training needs assessment was conducted employing interviews, focused surveys, and performance observations to gather data on tasks performed and training effectiveness from Soldiers participating in unit training exercises at the Joint Readiness Training Center. Results of the research were used to inform and guide a follow-on effort to develop methods and tools for CoIST team training. The training products developed in this research effort which will also be described.

Agenda (cont.)

- a. Title of presentation Intelligent Tutoring Systems Adapted to Satellite and Space Robot Training Simulation
- b. Name of presenter(s) Bettina Babbitt
- c. Agency or organization employing presenter(s) The Aerospace Corporation

Abstract Information

- d. Who presented Bettina Babbitt
- e. What was presented: The term Intelligent Tutoring System (ITS) is broadly understood to mean a computer training (or educational) program that contains intelligence, and the ITS is used to help people learn a content area. ITS have been applied in education, industry, and the military. Examples of ITS applications include semiconductor chip-manufacturing equipment repair, naval radar operating skills, and tactical decision-making skills for command and control of distributed networks. However, this technology has not been applied to ground control stations for orbiting or landed space assets. Application of ITS to aid the operators and maintainers of Satellite and Space Robot Ground Control Stations would provide each trainee with a "personal trainer" who pays attention to his/her individual learning needs, assesses and diagnoses the learner's problems, and provides assistance as required. Technical approaches for developing ITS typically follow the Instructional Systems Development process used by the Air Force for the design, development, and production of training programs. The ITS design process includes a heavy emphasis on knowledge elicitation and representation, and the use of expert system software. ITS design and development teams need to be interdisciplinary. Teams need to be made up of people such as software engineers, human factors engineers, cognitive psychologists, graphical designers, and subject matter experts to name a few. Of course, Instructional Systems Developers would be important members of the team. Several cognitive engineering methods exist that can be used to assist in producing an Intelligent Tutoring System. Selection of an appropriate cognitive methodology, and the availability of highly skilled Subject Matter Experts are key in the process.

Agenda (cont.)

- a. Title of presentation Issues in Training Design for Human-Robotic Interaction

- b. Name of presenter(s) Tina Beard
- c. Agency or organization employing presenter(s) NASA Ames Research Center

Abstract Information

- d. Who presented Tina Beard
- e. What was presented:

Session Highlights

- a. Issues or concerns discussed during the meeting, the results of the discussion and recommendations for action, if any. None
- b. The results of any elections held (if none, please state "n/a")
 - i. Candidates nominated for position. n/a
 - ii. Name, organization, phone number, address, and email of incoming chair(s). n/a
- c. SubTAG open actions, if any, and the target date for completion. None
 - i. Title of concern/problem
 - ii. Advocate or organization that raised the issue
 - iii. Group discussion summary related to the topic
 - iv. Actions to be taken, if necessary
 - v. Target date for issue resolution
- d. Changes made to the subTAG, other than the chair. None
 - i. Name change
 - ii. Charter change
 - iii. Other changes
- e. Please also state if you will be meeting at the next TAG. Yes