HAPTICS-ENHANCED AR TRAINING SYSTEM FOR CARE UNDER FIRE

(US Army CCDC STTC)

AR + Haptics CUF

U.S. Army Research Laboratory - HRED – STTC awarded a Small Business Innovation Research (SBIR) Phase I contract for a six-month project effort titled Haptics-enhanced Augmented Reality Training System for Care Under Fire. The research and development team included Engineering & Computer Simulations, Inc. (ECS), Quantum Improvements Consulting (QIC), and VRgluv (haptic glove manufacturer).

The research team followed a nine-step process to address the research questions and to ultimately create a CUF training flow concept reflective of a systematic process for placement of immersive technologies in the CUF training curriculum. The process began with a front-end analysis to determine what training was currently available and how it had been addressed in the past. The steps allowed for a detailed understanding of CUF training and how technological application could enhance it. This ultimately resulted in our CUF training flow concept which we used to create the feasibility demonstration.

The favorable results from the feasibility demonstration supported the team's hypothesis that optimal placement of technologies within a CUF training should be based on a systematic analysis of role-specific tasks and the identification of sensory and information intake required to make decisions when executing those tasks, rather than through arbitrary assignment or use of technology for technology's sake. Positive statements to support the findings included "the haptic feel of the weapon is very realistic" and "this provides the ability to simulate multiple different CUF scenarios with dynamic elements to surprise/confuse/test trainee response." Stakeholders provided insight into some challenges to consider with implementing this solution such as costs and durability of equipment, ease of use, buy-in from all users, fielding of the haptic-based weapon to training sites, and multiplayer/multi-instructor capabilities. With this new knowledge from the research, we were able to expand our knowledge of application with haptic technology which furthers our abilities in additional haptic and medical work in other contracts.

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