



Advanced Haptics Development (SBIR Phase II)

Integrating Haptic Devices to Improve Human Performance and Training Effectiveness

ECS has been awarded Advanced Haptics Development to Support Medical Simulated Training Environments, a direct to Phase II Small Business Innovation Research (SBIR) project with the Defense Health Agency (DHA). This project will design and develop haptics-based virtual reality (VR) training systems to support combat medicine within the U.S. Army's Synthetic Training Environment (STE) with potential expansion to the broader medical community. Our team has partnered with HaptX to build a VR multiplayer (instructor and student) training system to address Tactical Casualty Combat Care (TC3) and broader emergency medical procedures using haptic devices. This type of haptics integration offers a sense of touch and natural interactions within VR scenarios. When applied in a medical environment, this integration with TC3 will provide our Warfighters and healthcare professionals the tools that they need to improve their quality of training and retention to potentially save more lives.

The project focuses on multiplayer haptics integration, scaffolded training on relevant emergency medical procedures using instructor intervention in a VR environment, and STE integration to include Care Under Fire (CUF) and weapon integration. From a research perspective, the project includes the design and execution of a usability study and a training effectiveness evaluation (TEE). ECS is working with Mayo Clinic in Jacksonville, Florida to coordinate a usability study with medical instructors and students to capture feedback on the technology and training approach based on a prototype training scenario. For the TEE, the prototype will include CUF training, and the research team will work with Army Combat Medics to determine whether the multi-player VR with haptics training prototype is more effective for training than the current methods.

Our team is excited to contribute to this body of research related to human performance and training effectiveness for both the military and the medical community. By collaborating with HaptX, our haptics technology partner, and Mayo Clinic, this type of innovative work advances high-fidelity VR integration by blending state-of-the-art hardware and software solutions to deliver enhanced training to our Soldiers and to the broader medical community.