TRACER: Sailors use augmented-reality to train for combat

25 July 2019, by Bobby Cummings

190613-N-PO203-0147 CHESAPEAKE, Virginia (Jun. 13, 2019) Sailors assigned to the Center for Security Forces detachment in Chesapeake, Va., demonstrate the Office of Naval Research Global (ONRG) TechSolutions-sponsored Tactically Reconfigurable Artificial Combat Enhanced Reality (TRACER) system. TechSolutions partnered with Naval Surface Warfare Center Dahlgren Division to develop the TRACER package, which consists of a virtual-reality headset, a backpack, a state-of-the-art simulated weapon designed to deliver realistic recoil, and a software package that creates multiple and adaptable simulation scenarios for security personnel to experience. ONRG TechSolutions allows Sailors and Marines to submit technology requests directly to the development community for rapid response prototyping. Credit: John F. Williams

The Sailors file into the room, their weapons ready and their adrenaline flowing. They operate as a team in a seamless manner. Their mission: to secure an active-shooter situation and apprehend the holographic perpetrator. Commands are given to the shooter, within the augmented-reality (AR) headset. The shooter surrenders, and the Sailors' mission is accomplished.

The Office of Naval Research (ONR) Global TechSolutions initiative has teamed with Naval Surface Warfare Center (NSWC) Dahlgren, U.S. Army Combat Capabilities Development Command and industry partners, Magic Leap Horizons and Haptech Inc., to develop a breakthrough AR training environment. The Tactically Reconfigurable Artificial Combat Enhanced Reality (TRACER) project was recently tested at the Center for Security Forces (CENSECFOR) Detachment Chesapeake, on Naval Support Activity Northwest Annex, in Currituck County, North Carolina.

TechSolutions is ONR Global's rapid-response science and technology initiative that develops prototype technologies, to address problems voiced by Sailors and Marines, within approximately 12 months.

The TRACER system consists of the Magic Leap One AR headset, a backpack processor and a Haptech Inc., state-of-the-art instrumented weapon, designed to deliver realistic recoil. More importantly, TRACER leverages and builds upon software developed by Magic Leap Horizons as part of the U.S. Army's Augmented Reality Dismounted Soldier Training (ARDST) project, providing advanced weapons tracking and allowing trainers to create multiple and adaptable simulation scenarios for security personnel to experience.

"Our training system is built mostly from commercial-off-the-shelf products, so we are using widely available gaming gear," said Dr. Patrick Mead, TRACER project lead from the Human Systems Research and Development branch at NSWC Dahlgren. "All of these technologies combine together to give us extremely accurate weapon and movement tracking capabilities as well as highly immersive simulation visual, auditory and haptic (relating to the sense of touch) feedback. Ultimately, TRACER provides Sailors with dynamic, engaging and less predictable training scenarios that would otherwise be too costly or time consuming to create in the real world."

The mission at CENSECFOR is to train Sailors from divergent career fields in U.S. Navy security force fundamentals, code of conduct, anti-terrorism and expeditionary warfare training—in order to achieve maritime-interdiction and irregular-warfare superiority.

"We can integrate this AR, virtual training environment into our existing curriculum, and it allows us to be very reconfigurable," said Cmdr. Kim Littel, CENSECFOR director of training innovation. "We can go in and we can change the scenarios, or we can change the opposition forces and the threat that they pose."

For Sailors who often have to train and remain proficient while at sea, flexibility is crucial.

According to Littel, the necessary space required to conduct training operations on a ship are limited and the opportunity to conduct training without impeding on regular operations is scarce. TRACER will help mitigate those issues and help increase proficiency and currency in more expansive training scenarios.

"In an environment where we're taking students from the fleet, from their primary jobs, to train them; we need to maximize the limited time we have to make them as proficient as possible," said Littel. "This technology provides a huge advantage by being quickly adaptable to different scenarios, geographic locations and opposition forces. Using this technology, we can conduct training almost anywhere, anytime."

TRACER earned rave reviews during the demo at CENSECFOR.

"I would say it's going to bring a lot of value to our training because you can immediately redo a training operation," said Senior Chief Thomas Pruter, who is assigned to CENSECFOR and helped design scenarios for the demo. "We underwent two to three hours of training and we were creating scenarios, putting people into them, getting sailors to run through those scenarios, rebuilding them and executing."

He continued. "I think if we continue to submit our ideas, and ONR can continue to build off them and improve, it will be good for our Sailors and our security forces."

Provided by Office of Naval Research