Virtual reality, real ingenuity

Marines in need of a virtual trainer create their own

The Office of Naval Research recently helped solve a simple, yet serious, problem facing Marines deployed overseas: How do you train on weapons systems when live-fire training opportunities and ammunition are at a premium? With ingenuity, virtual reality, and a blowtorch.
The armament on assault amphibian vehicles (AAVs), the Marine Corps' basic armored personnel carrier, sometimes is the only protection for Marines in vulnerable convoys or patrols. The AAV's machine gun and grenade launcher are designed for combating foes the old-fashioned way--up close, within line of sight--which makes practicing marksmanship critical.

Without live-fire training as an option, Marines at Marine Corps Base Camp Pendleton in California came up with an innovative solution (with a little help from that blowtorch). They mounted a simulated M2 .50-caliber machine gun and Mk-19 grenade launcher from an existing training system that combines lasers and computer-generated imagery onto a surplus AAV turret and maintenance stand.

This creative, yet haphazard, invention led to a multidisciplinary effort by a Navy-Marine Corps team headed by Lieutenant Commander Dylan Schmorrow from ONR's virtual technology and environments program. The group improved on the Marines' original effort and created a dedicated virtual-reality training system intended for the AAV as well as its successor, the expeditionary fighting vehicle. From identification of the initial requirement to deployment of the first prototype, development took just six months.

The resulting Virtual Environment Assault Amphibian Vehicle (VEAAV) training system is composed of an instructor operator station, a driver's station, and an actual AAV turret. The trainer uses commercial Windows and Linux PCs and government-owned software. Naval Air Systems Command Orlando, BMH Associates, VRSonic, and Lockheed Martin collaborated with ONR and the Marine Corps on the project.

"These new systems will allow the Marine Corps AAV community to accomplish training that was not previously possible due to both range and ammunition supply constraints," said Schmorrow. "This effort is an example of the synthesis of basic science and technology application that ONR champions regularly to bring about a transformation of our naval forces' capabilities."

Based on the success of the prototype, the Marine Corps is procuring 16 systems to meet the urgent training needs of the AAV community. The first unit was delivered to Camp Lejeune in North Carolina at the end of March.

Source: Office of Naval Research