Military looks for more 'fear factor' in training simulators

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The group of Marines sprang into action and raced into combat position, with weapons aimed, as they assaulted a possible terrorist stronghold. Moments later, they were sipping sodas and chatting with friends about weekend plans.

For them it was just another exercise in a war-game training simulation - a computer-generated virtual world that can take them to remote war zones, help them learn combat tactics and terrain, and have them home in time for dinner.

The Dismounted Soldier Training System and other snazzy training simulators were on display recently at a trade show in Orlando. Defense contractors' high-resolution animation and 3D graphics provided compelling visuals for the industry's "immersive" military-training systems.

But training simulators, despite their apparent realism and sophisticated technology, still lack one key element, some military experts said: the fear factor.

"Despite all they do well, simulators still can't simulate fear," Air Force Capt. Matt Tarnowski said during a trade-show forum in the Orange County Convention Center. "No matter how much of a thrill ride it may be, at the end of the day, I still know I'm in a simulator and I'll be walking away when it's over."

Industry officials acknowledged that Tarnowski, a military pilot, had touched on a perennial issue in the development of training simulations: How far do you go in a training "game" to make warfighters afraid as you try to create a combat-like experience?

In Central Florida, known as the nerve center of the country's training-simulation industry, engineers through the years have contemplated adding various types of "threats" to give simulations a greater fear factor: controlled explosions for virtual tanks, electrical jolts for weapons-training systems, and collisions for vehicle trainers.

But aside from a few experiments, few, if any, have become part of the mainstream training simulators used by the military, local experts say.

"In jest, we once thought we could compensate for the lack of 'fear' in a simulator by placing an explosive charge in the simulator such that, upon crashing, it would blow up," said Henry Okraski, a veteran industry executive and former business-development manager for the Navy's simulation-training agency, which is based in Orlando.

"But we realized that the presence of fear is not absolutely necessary for soldiers to learn individual and team procedures or develop good decision-making skills," Okraski said. "And you will routinely see trainees get absorbed in the simulator exercise to the point they have high brain activity, generate adrenaline, experience increased heart rate and leave the simulator in a sweat."

Training engineers say some of the newest simulation technologies - such as the Dismounted Soldier Training System - are getting closer to producing the kind of tension or fear that could make a real difference in soldiers' experience.

In the dismounted-soldier system, for example, developers have

programmed "fatal shooting scenarios" into the training exercise.

"Sometimes, the trainees might go into this exercise in a sort of routine or casual way," said John Carswell, an Orlando-based simulation engineer for Quantum 3D Inc. of San Jose, Calif., a program subcontractor. "But the first time they get 'killed,' you can see their expression change. Suddenly, they're really, really into it."

In many instances, whether a soldier actually experiences fear in a simulator depends on the individual and the system being used, said John Williams, spokesman for the National Training and Simulation Association, a Washington trade group. More expensive simulators - of aircraft carriers, jet fighters and other "big platforms" - often produce experiences that are nearly "indistinguishable" from the real thing, he said.

"Some individuals can get totally immersed in these things, and they get pretty close to the actual feeling, while others are more resistant to it," Williams said. "But in simulation, you want them to suspend disbelief enough to learn, not to put people in actual harm's way where they could be killed."

Even skeptics - such as Tarnowski, the Air Force pilot - acknowledge that some state-of-the-art simulators can achieve that intended effect.

"The best flight simulators give you the true, full-motion, seat-of-the-pants feeling," he said during the Interservice/Industry Training, Simulation & Education Conference in early December. "It achieves a realism that translates directly into our ability to execute our missions."

At the end of the day, simulators can complement live training but can never replace it, said Okraski, the industry consultant.

"Realistically, in a military environment, a simulator cannot substitute completely for time in the aircraft," he said. "There are no real threats, no G-forces, no comrade with his feet blown off lying next to you. Simulators save time, money and lives, but the trainee in a benign environment can always retreat to the 'potted plant' in the room - not possible in the combat skies over Iraq or elsewhere."