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Anteon photo

Lessons learned on the ground in Iraq are incorporated into live training exercises for armor and infantry in the United States.

Behind the virtual battle line

Latest conflicts take training combat to new heights

BY WILLIAM WELSH

When a homemade bomb explodes in downtown Baghdad, its reverberations are felt as far away as Fort Polk, La., where U.S. soldiers train for duty in Iraq. The lessons learned on the ground about how insurgents use improvised explosive devices are transmitted immediately to Fort Polk's Joint Readiness Training Center.

"We get feedback virtually every day," said Gerald Dinkel, president and chief executive officer of Cubic Defense Systems in San Diego. The company, a unit of Cubic Corp., provides realistic combat training systems to the Army as well as the Joint Forces Command.

"There are times at Fort Polk, for example, where we receive input on something that happened in Iraq, and it's incorporated into the next day's scenario," Dinkel said.

Cubic's work at Fort Polk exemplifies the growing role of contractors in providing training and simulation services to the military. The market, estimated at $3 billion to $6 billion, has the attention of both large and small systems integrators focused on the defense industry.

The integrators chasing the simulations and training market include many of the top integrators, such as Anteon International Corp., General Dynamics Corp., Lockheed Martin Corp., L-3 Communications Inc., Northrop Grumman Corp. and Science Applications International Corp., and the number is growing.

"You're going to see more and more companies" coming into this area, said Beverly Kitaoka, business unit manager with SAIC's Training and Simulation Solutions.

A variety of forces are driving the military's increased use of simulations and training. First, the services are placing heavier emphasis on training than in previous conflicts.

The services also are trying to reduce training costs through a networked approach that takes advantage of new technologies.

Another driver is the unpredictable nature and constantly changing tactics of today's foe, which forces the services to continually update their doctrine and training.

"During the Cold War, there was a consistent, static view of the enemy relative to what we have today," Dinkel said. "But in the case of today's environment, there is a constantly changing set of dynamics for which troops must train."

SIMULATING COMBAT

At one end of the spectrum, live training prepares soldiers for battle by firing weapons as they move through a training course or facility.

At the opposite end of the spectrum are two types of computer-based training: constructive and virtual training. Constructive training uses computer programs to train military personnel in military tactics and situational response. Virtual training creates a replica of the weapon systems or command or operation center that looks, feels and operates like the actual equipment.

Although constructive and virtual systems can save money and facilitate large-scale training, there is no substitute for live training, according to analysts and industry officials.

Fairfax, Va.-based Anteon specializes in integrating audio and visual data into live training that is used for after-action review by soldiers, said Dick Coltman, group vice president of Anteon's Integrated Instrumentation Division.

Anteon integrates the digital recording features into either its ranges and facilities or those deployed by other contractors. The work is an

outgrowth of solutions that Anteon developed for the prison industry more than a decade ago, Coltman said.

Anteon builds a sophisticated urban warfare training system known as the Military Operations on Urban Terrain. These live training facilities are composed of structures resembling those encountered in urban settings where soldiers conduct patrols or missions.

The larger, fixed sites can accommodate battalion-sized operations; the smaller, mobile sites are geared for squad-level training. They let soldiers hone both individual and collective skills on the training field and through review of after-action reports.

"The most valuable commodity is the video and the audio associated with it," Coltman said.

The digital video provides a frame-by-frame analysis of how the soldiers performed in the facilities, he said. Should a soldier "die" during the training, then the video is used to discover what went wrong.

"The video tells all," he said.

In March, the company announced that it had won a $350 million contract from the Army's Program Executive Office for Simulation, Training and Instrumentation to design and build more facilities for armor and infantry training.

Anteon has about 25 fixed and mobile training facilities deployed at military installations throughout the United States, including at the Aberdeen Proving Ground in Maryland; Fort Benning, Ga.; Fort Bragg, N.C.; Fort Campbell, Ky.; Fort Drum, N.Y.; Fort Polk; and Fort Wainwright, Ark.. In addition, mobile facilities are deployed in Afghanistan, Germany, Korea and Kuwait.

The company declined to disclose how much of its business is devoted to such work.

Military training and simulations accounts for about two-thirds of Cubic's defense work, Dinkel said. The company's defense sales this past year were about $453 million, almost two-thirds of the company's $722 million annual revenue.

Cubic's largest training-related contract is with the Joint Readiness Training Center (JRTC) at Fort Polk, Dinkel said. The company won a contract worth $80 million over five years from the Army Training and Doctrine Command Acquisition Center to provide mission support for training joint task forces at JRTC, he said.

The company in January announced it won a five-year contract worth about $113 million from the Army to produce and field next-generation, laser-based simulation equipment for infantry weapons known as the Multiple Integrated Laser Engagement System Individual Weapon System. The Miles IWS is based on Cubic's Miles 2000 system.

Anteon builds an urban warfare training system known as the Military Operations on Urban Terrain. These live training facilities are made of structures resembling those encountered in urban settings where soldiers conduct patrols or missions.

Left: Soldiers conducting live training exercises in mobile and fixed training facilities can review video of their performance.

Below: Mobile terrain facilities are deployed overseas in areas such as Afghanistan and Kuwait.

Anteon photos

In addition, the company in April announced two new contracts: a $16 million deal for additional laser engagement systems for dismounted and anti-tank weapons at Fort Polk; and a five-year contract to produce and field Homestation Instrumentation Training Systems for Army, Army Reserve and National Guard sites. The system, which uses modular components, offers exercise control, battle tracking, data collection and streamlined after-action review.

Live training helps soldiers feel less stress when they engage in actual combat, Dinkel said. "We would like people to feel that Iraq is a piece of cake compared to JRTC," he said.

REALITY BYTES

The rapid mobilization of U.S. forces for the conflicts in Afghanistan and Iraq has made the services rely more on technology to train troops than in past conflicts, experts said.

The ability to conduct constructive and virtual training on laptop computers in the field has cut training time considerably, said David Fraley, director of federal consulting for market research firm Gartner Inc. of Stamford, Conn., and a training officer with the Army Reserve.

These days, mobilization time frames are substantially different than they were in the past, he said. Training now can take days or weeks, where before it might have taken as long as 18 months. "There are no 18-month windows anymore," he said.

Constructive training, especially large-scale training, is particularly useful for military leaders and their staffs, Fraley said.

SAIC sees the integrating of all three types of training as a trend, Kitaoka said. Although it is impossible to completely substitute virtual training for live training, it is possible to substantially augment live training with virtual and constructive training, she said.

SAIC is deploying the One Semi-Automated Forces Objective System, a constructive simulation system, for the Army Training and Doctrine Command. The OneSAF,software system, which will be fielded throughout the service by March 2006, will let Army users compose tailored simulation environments on desktop or laptop computers.

The system will give Army trainers and research scientists the tools they need to compose a variety of realistic battle scenarios.

SAIC also creates virtual training solutions for the individual soldier. In October 2004, the company won a 15-month contract worth $6.9 million from the Army's Program Executive Office for Simulation, Training and Instrumentation to design, develop and deliver common driver trainer system components for the Stryker combat vehicle being fielded at Fort Knox, Ky., and Fort Leonard Wood, Mo.

"This is our first big virtual trainer [project] that we are building as a prime contractor," Kitaoka said.

Virtual training has become so sophisticated and realistic, the soldiers are experiencing the next best thing to live training, she said.

"We're getting to the point where these guys actually often climb out of the simulators sweaty," she said. ■

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