

The War Room

Inside the fully immersive proving ground where tomorrow's soldiers are being trained by coalition forces of the Pentagon, Hollywood, and Silicon Valley.

By Steve Silberman

"I keep two measures of success in mind for JFETS," he tells me. "Number one, I want guys who have been to the Middle East to go into those rooms and have their hair stand on end. And number two, to have the project be an election-year trophy for Donald Rumsfeld and Paul Wolfowitz so they can say, We're transforming the Army."

The backbone of military training for centuries was rote learning. The goal of the punishing routines and endless drills was to replace thinking with instinct so that at the sound of gunshots, a soldier would automatically return fire. But this kind of schooling, the Pentagon now believes, is inadequate to prepare soldiers for hot spots like the Sunni Triangle, where it's not enough to be a good marksman. These days, grunts fresh out of basic training must also be versed in the nuances of street-level diplomacy with an increasingly hostile citizenry in densely populated neighborhoods where allies can turn into opposing forces overnight.

To teach recruits how to navigate complex situations, ICT's virtual training packages are built around the oldest form of immersive experience: storytelling. "Instead of moving the classroom into the field, we're moving the field into the classroom," says Randy Hill, the institute's deputy technology director. An ICT software package for desktop PCs called *Think Like a Commander* engages captains-in-training in conflict scenarios derived from interviews with senior officers who served in Bosnia or Afghanistan. In one story line, warlords descend on a food-distribution outpost, and the trainee must quickly determine who to trust and how to build alliances with the locals. The roles of the coalition soldiers, tribal leaders, and villagers are played by lifelike avatars programmed with megabytes of artificial intelligence, Army doctrine, and speech-and-text recognition software.

ICT's realistic scenarios have also made an impact on the world of mainstream gaming. A training package called *Full Spectrum Warrior*, developed with Pandemic Studios, was the sleeper hit of last year's E3 gaming showcase, winning awards for Best Original Game and Best Simulation - not bad for a doctrinally

correct teaching tool intended for military use. The commercial version, released in June for the Xbox, earned rave reviews for its "shock-and-awe realism." Within days of its release, gamers figured out the cheat code to unlock the Army-only version hidden on the commercial discs, featuring less flashy graphics but smarter opponents.

What makes the breakout commercial popularity of *Full Spectrum Warrior* particularly impressive is that it's not a standard-issue first-person shooter. The game emphasizes tactics, strategy, and teamwork. The notable lack of opportunities for an individual soldier to bust out the gnarliest hunk of ordnance and let 'er rip reflects the changing nature of combat. ICT's programs are designed to train the individual soldier in a decentralized, networked model of warfare in which even the lowest-ranking officer can call in an air strike or a tank battalion. The institute calls its products "first-person thinkers."

"The bumper sticker version is, 'Everyone's a general,'" explains Jim Korris, a veteran TV producer who is now the creative director of ICT. "The Army decided that it needed to think less about educating people on the physics of artillery tubes and start teaching them how to make smart discriminations very quickly in close urban fights - training in cognitive decision-making rather than skills."

In a graphics lab at ICT headquarters two blocks from the boatyards of Marina del Rey, California, researcher Paul Debevec is developing techniques that will enable the Army to re-create the harsh glare of the Iraqi sun. He laser-scans a page from a 15th-century monastic manuscript. The *D* in *Domine* is embossed in gold leaf, and the reflectivity of the metal plus the roughness of the paper present a complex set of technical puzzles involving albedo and specular scattering. By figuring out how to represent these lighting conditions accurately onscreen, Debevec will ensure that the landscapes and people rendered in JFETS appear authentic enough that recruits will feel like they're really in the middle of the war.

"If you jump out of a tank at midday in the desert, your eyes are hit with a 20,000-fold increase in light levels," he explains. "We need to teach people how to move around in that five seconds of blindness."

Bearish and self-effacing, Debevec is an old hand at crafting digitized environments that pass for the real thing. The Bullet Time sequences in the original *Matrix* were inspired by his achievements in architectural modeling and rendering, and his algorithms are hardwired into the new generation of Nvidia and ATI graphics cards.

A floor above Debevec's lab, programmers are developing a crucial part of the JFETS process known as the after-action review. When recruits emerge from the simulated battlefield, they'll sit down in front of videoscreens on which avatars representing senior officers will grill them on the specifics of their performance, debrief them on the rules of engagement, and answer questions. Troops will also be able to pose questions to enemy officers, represented by darker-skinned avatars with vaguely Middle Eastern accents. The institute touts JFETS as the first military-

grade people simulator.

The tech for running the wall-sized displays at Fort Sill was developed in a warehouse a few blocks from ICT headquarters. The director of this project, known as FlatWorld, is Diane Piepol, a Hollywood f/x veteran whose film credits include *True Lies* and *Tank Girl*. She explains that the military needed to come up with its own display technology because the headmounted virtual reality future that everyone expected didn't arrive quickly enough. Her solution was to embrace hardware from the most mundane fixture of corporate life - boardroom presentations. A set of Proxima conference projectors and a handful of Dells enable the screens of FlatWorld to be populated with a cast of characters rendered by a Gamebryo 3-D graphics engine. "In the morning you could be training in Baghdad, and in the afternoon you could be in Korea," she says.

Or on Mars. One moment, the windows of FlatWorld look over a simulacrum of the Iraqi desert; when Piepol dials in stereoscopic images from Pathfinder, the flood plain of Ares Vallis extends to the red horizon. Her off-the-shelf approach ensures that the technology for synthesizing elaborate battle environments will run on the armed forces' heap of legacy antiqueware at bases anywhere in the world.

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