Virtual training for real combat

September 28 2011, By Pete Carey

I zipped up the flak jacket, put on an Army helmet and snapped a pair of goggles over my eyes.

Suddenly I was crouching with a squad of infantrymen on a dusty street in a village somewhere in Afghanistan.

Or my avatar was. But I bear witness - it felt like I was there.

If I turned my head, the 3-D scene and point of view changed. I could walk in any direction, kneel or stand up and the scene would change as I moved. I could fire my weapon - a realistic M4 rifle replica loaded with electronics - and see the bullets hit their target.

Glancing up at the building a hundred yards away that our intelligence said contained seven bad guys, I spotted a sniper on the roof.

Shouldering my rifle, I fired.

"You took him out!"

That was the voice of Pratish Shah, marketing director of Quantum3D, a San Jose company that makes the virtual reality system for training combat troops. The company recently announced that it and a partner firm, Intelligent Decisions of Virginia, had won a competition to provide the Army with a 3-D infantry training system.

The system - a kind of flight simulator for soldiers - offers a vision of

what gaming software might be like a few years from now when the technology becomes more affordable.

Shah was instructing me in the use of the system, dubbed ExpeditionDI, in a conference room in Quantum3D's South San Jose headquarters.

ExpeditionDI is the first wearable infantry simulator training platform that immerses wearers in combat situations, according to the company. It comes with a high-resolution head-mounted display, a battery-powered computing backpack and a microphone headset for communicating with other squad members. A gaming-type engine controls a vivid virtual reality world.

Designed for a squad of nine or more soldiers to train together, the simulator can be set up anywhere in four hours. The idea is to teach soldiers collaboration, communication and the lay of the land before they head out on a mission.

The most dangerous time for soldiers is when they're in a new environment, according to Quantum3D President Arthur Yan.

"The first goal is to save lives," Yan said. "Nearly 40 percent of fatalities occur during the first three months."

Yan said the simulator has obvious applications for civilian first responders. Police SWAT squads could use it to practice for dangerous confrontations, or firefighters could practice entering burning buildings.

"We plan to go into law enforcement and firefighting in the future," Yan said. But for now, the company's customers for ExpeditionDI are the military forces.

Because I tried the simulator gear by myself, I was at a bit of a

disadvantage. The rest of my virtual squad remained behind while I approached the bad guys' hideout.

Keeping close to the foliage on the edge of the road, I move forward and circle into an open area next to the building. Within a few minutes I knock out three more enemy, including one hiding behind a doorway.

Then - big mistake - while Shah described how the system works, I walk through a second doorway without looking to either side.

"Artificial intelligence helps control the actions of the other folks in there," Shah was saying, "so the level of realism - Oh, you got shot!"

Darn. But I got four of them before one got me.

The enemy combatant behind the second door is put there to train soldiers in how to properly enter a building. "You can't go at it alone," said Shah. "You have to work as a team. It's physically impossible to walk in that building (without getting shot) if you don't have that team."

Yan said the system was designed to precisely mirror "how the soldiers would react, hold a weapon and interact with each other. And every action is recorded, so after the training they can play it back."

The system can be programmed to reflect the physical characteristics and abilities of the soldiers using it, including their skill with a rifle and their walking speed. It also includes two other weapons - an M4 carbine equipped with a grenade launcher and an M249 heavy machine gun.

The training scenes are provided by the government and are based on actual towns.

Quantum3D has developed simulation software to help train pilots,

vehicles operator, and helicopter pilots. The company has been developing ExpeditionDI since 2003.

ZAPPING THE VIRTUAL ENEMY:

-What: A first-of-its-kind virtual reality system to train infantry soldiers for combat missions

-Why: To reduce the nearly 40 percent of casualties that occur during first three months of deployment

-Maker: Quantum3D of San Jose

-Customer: U.S. Army Program Executive Office for Simulation, Training and Instrumentation