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## NAVAL POSTGRADUATE SCHOOL USING HOLLYWOOD WIZARDRY TO CREATE INSTRUCTIONAL VIDEO GAMES



# Virtual Battlefields

**"It has to be so realistic it makes you sweat. And that's what Hollywood is good at: pushing emotional buttons."**

**Michael Kapp**  
MOVES adviser



**Above: A virtual-reality headset is tested that puts the wearer in the middle of things. Top: A video capture from a battlefield simulation created by NPS specialists.**

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Still think video games are kid stuff? Tell that to the military. It sees them as the ultimate training tool.

And with the help of Hollywood, it's making them eerily realistic.

Naval Postgraduate School technologists discussed at an open house this week how Tinseltown technology is helping them plunge soldiers into virtual battlefields. They want to train warriors to deal with harrowing new situations and weapons — and even see how they fare under the stress.

The virtual-reality scenarios they paint are stunning. An infantryman will be able to practice keeping the peace in a simmering village in Kosovo. A nine-man squad could infiltrate and clear an enemy-infested building. A helicopter pilot dealing with engine problems and heavy winds could try to rescue a downed comrade.

"We're trying to build the next generation of video game," said Michael Zyda, director of the school's Modeling Virtual Environments and Simulation Institute, also known as MOVES. With a budget of \$7.2 million, the 5-month-old institute taps the minds of its 43 paid engineers as well as the academic projects of 45 NPS students.

Computer simulations are actually nothing new in military training. Pilots have used flight simulators for decades. Tacticians plot strategy using

computers. And Marines have been blasting away with a modified version of the gory video game Doom since 1996.

But modified games are usually inferior to the originals, and creating games from scratch has been clunky and expensive. And one crucial element is lacking: emotion. After all, how can a soldier take a simulation seriously when he knows he's in no danger?

That's why NPS engineers are looking to Hollywood — and such special-effects gurus as those at Lucasfilm — to make games look and sound like the real thing.

The aim: Immerse the soldier in a virtual world where he confronts emergencies and close-up combat. Don't just make him feel the thump of the helicopters. Put him up against new weapons and soldiers he's unfamiliar with. Give him computerized comrades who refuse to follow his orders.

"It has to be so realistic it makes you sweat," said Michael Kapp, a MOVES adviser and retired Time Warner executive. "And that's what Hollywood is good at: pushing emotional buttons."

Just look at the 1998 World War II blockbuster "Saving Private Ryan." The realism of its special effects helped make the movie so compelling that it actually *boosted* military recruitment.

Please see **Virtual page A14**

## Virtual

From page A1

MOVES officials hope to tap into Hollywood's bag of tricks, so they're talking with companies such as Lucasfilm, owned by "Star Wars" director George Lucas. They've also hired game engineers from industry leaders like Sony and Electronic Arts.

Zyda says MOVES should have a leg up on other designers of military software. Competitors are usually contracted commercial firms that revise existing games for the military — but know nothing about it.

MOVES, by contrast, lets its military experts and commercial designers work side by side — with unfettered access to military hardware — and so should produce the most realistic software available.

By using the basic "platform," or mechanics of existing video games, and then putting in their own stories and graphics, MOVES engineers should be able to produce top-quality simulations for less money than it takes to build them from scratch.

"We think we have couple of years over civilian institutions," said MOVES technical director Michael Capps.

These are just three of the cool gizmos at a Tuesday lab demonstration:

► A flight trainer featuring customized cockpits, interchangeable scenery and realistic radio chatter that the pilot must monitor.

"So if you're flying by the Statue of Liberty, you can look to the side (window) and see it," said Marine Capt. Mark Lennerton, the simulator's student developer. Or a helicopter pilot flying a rescue mission can look down through the bottom

window, see his comrade rush out of the bushes, and then land next to him.

"He can also hear bogus radio calls, and it can be stressful trying to pay attention to them," he said. "For the pilot, there's a lot of mental juggling, which can create internal stress."

► A combat simulator that places a soldier in a large booth with multiple screens showing terrain. The soldier must "traverse" the virtual landscape

and engage enemy soldiers. Engineers are working on how to simulate the walking process — possibly by putting a soldier on a treadmill — so that the terrain moves as the soldier does.

► A system to produce "three-dimensional" sounds for simulators. Soldiers should be able to tell where computer characters are in a room by listening to voices. Or hear where a shot is coming from and how it's ricocheting.

This week, MOVES presented its newest baby, the NPSNET-V. It's a "dynamic" virtual environment that allows engineers to constantly update the virtual world with new soldiers and weapons that our soldiers have never seen before.

"If you want to test a new type of gun, you load it in," said Zyda. For example, "if you've never been shot by a shotgun before, you learn what it's like and what it can do."

The MOVES conference

tackled a number of other topics, including: how to link up virtual environments so soldiers in different locations can interact; improving the "intelligence" of computer characters in a simulation; and even how to simulate the movement and environment of the ocean.

"We're one of the few places that sits down and thinks about where this is going," Zyda said.

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