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## Virtual Warriors Push Envelope at 9th Annual MOVES Research Summit

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Article By: *Barbara Honegger*

Posted September 8, 2009

The Naval Postgraduate School Modeling, Virtual Environments and Simulations (MOVES) Institute opened its doors to envelope bursting virtual warriors from the military, defense industry and academe at its 9th Annual MOVES Research Summit.



"This is the main MOVES event of the year, whose purpose is to showcase what's new in using modeling and simulation to create compelling virtual environments for computer-based military training," said Institute Director Cmdr. Joe Sullivan. "We're on the cutting edge of a fundamentally interdisciplinary, rapidly evolving field that senior NPS leadership has called a 'crown jewel' because of our ability to evolve academic and research programs in concert, a well defined mission and international reputation."

The bottom line of the conference: at the end of the game, the force with the best virtual reality training games wins.

"Because the future of warfare is no longer kinetic force on force, but a battle for hearts and minds, we need much better computer simulations of the 'humans in the loop' and synthetic environments that include people as an integral part of technological systems for assessment in the acquisition process," said keynote speaker Dr. John Tangney, Director of the Human and Bioengineered Systems Division at the Office of Naval Research. "Advances in modeling, simulation and synthetic environments enable us to significantly improve readiness; have a more flexible, adaptive force; reduce risk much earlier in the acquisition process; and choose design elements for leap-ahead capabilities without having to buy everything of value."

"It's valuable that these conferences happen here, because NPS doesn't exist within a naval stovepipe, but serves all the Naval enterprises, other services and international partners with advanced science and technology," Tangney stressed.

"I've been trying to get to this research summit for three years," said Dr. Paul Roman of Canada's Royal Military College, Directorate of Land Synthetic Environments, a conference speaker who is the policy adviser to the

Canadian Army on modeling and simulation. "I'm not a gamer and, in the beginning, didn't think games had any serious use in a training environment – I thought gamers were from Mars and trainers were from Venus," he said. "But then we adapted a tank simulator game for a training exercise, and the results startled me. We went from 75 percent to 95 percent effective in only about half the time it would have taken for live training alone. We now see virtual world training as the road to high readiness, and that we're at the beginning of an experiential learning renaissance."

Marine Corps Maj. Ben Brown and Lt. Cmdr. Rob Betts, now Fleet Synthetic Training Group Commander/Joint Coordinator for the Navy's Tactical Training Group, Pacific, presented the current student and graduate perspectives on the value of MOVES' educational and research program.

"Through MOVES, I got to work with all the Navy training system commands, and the knowledge and expertise I gained here is invaluable for what I now do on a daily basis," said Betts, whose master's thesis was on user and system requirements for an F-18 fighter jet mobile cockpit training simulator. "I use what I learned about generating training requirements and training task analysis to beat other aviators over the head with every day," he said with a wink. "I graduated just this past September, but the Summit is already very beneficial, because of the breadth of information and introduction to a wide range of topics."

One of the most exciting MOVES projects is an open, online, highly interactive three-dimensional model of the entire planet, called X3D Earth.

"X3D Earth makes [Undersea Warfare Associate Professor of Applied Science] Don Brutzman the guy with the whole world literally in his hands," said Doug Maxwell of the Naval Undersea Warfare Center, Newport Division, who attended the three-day summit and is interested in becoming a MOVES doctoral student. "Don's doing really phenomenal work with X3D Earth. Virtual reality has been around for 20 years, but only recently has computing become both powerful and inexpensive enough to make really major advances, like X3D Earth."

"The progress that our SAVAGE [Scene Authoring for Virtual Graphical Environments] Group students and faculty are making on X3D Earth using NPS' new Hamming supercomputer is really exciting," agreed Brutzman, who received a Ph.D. from NPS in 1995. "In general, MOVES is making great advances in deploying Extensible 3D [X3D] graphics models and visualization to create interoperable, three-dimensional, state-of-the-art simulations on the World Wide Web. What's really exciting is that virtual environments can connect all models and simulations together, so we can begin to simulate the more comprehensive reality and see the big picture."

A highlight of the Research Summit was the MOVES Demo Night. Featured projects included a "LIDAR [Light Detection and Ranging] Truck/Panoramic Augmented Reality for Persistent Information in Counterinsurgency Environments"; using robotics and enhanced 3D visualization to modernize expeditionary warfare; integrating intelligence activities and building teams using an infantry immersive trainer; and human social-culture behavior modeling.

For speaker presentations and demo night abstracts from the MOVES Summit, go to <http://www.movesinstitute.org/events.html>. To experience X3D Earth, visit <http://x3d-earth.nps.edu>. To inquire about next year's special 10th Anniversary Research Summit, contact Sullivan at [Sullivan@nps.edu](mailto:Sullivan@nps.edu).

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