

New wireless network may cut through the 'fog of war'

By Charles Osolin

NEWSLINE STAFF WRITER

From the mountains of Afghanistan to the city streets of Iraq, U.S. military forces increasingly rely on high-tech devices to answer three key questions: "Where am I?" "Where are my buddies?" "Where's the enemy?" Timely answers to these questions are the key to success on the modern battlefield, allowing commanders to stay one step ahead of their adversaries.

As the demand for more and better information increases, both the number and type of modern information systems is growing rapidly. These systems produce an overwhelming amount of data, much of it routine or "house-keeping" in nature. To be fully useful in combat, the systems must perform such house-keeping functions automatically — organizing, monitoring and repairing themselves in the background, without human intervention, so commanders can focus their effort on fighting and winning the battle.

In addition, the wealth of information generated in this new electronic environment — by satellites, unmanned aircraft, ground vehicles and submarines, ground sensors and troops in the field — must be pulled together and sent over a secure, reliable and accessible communications network for delivery in time to help shape the battle.

Progress in developing just such "self-forming, self-healing" wireless networks was described last week at a Laboratory seminar presented by the Naval Postgraduate School's Center for Defense Technology and Education for Military Services.

NPS professors Dave Netzer and Alex Bordetsky and graduate student Chris Manuel told of their efforts to integrate a wide range of electronic technologies to form a Surveillance and Target Acquisition Network (STAN) for use by forces of the U.S. Special Opera-



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From left: NPS graduate student Chris Manuel and NPS professors Alex Bordetsky and Dave Netzer discuss the impact of network information systems on combat.

tions Command. The system, the topic of Manuel's graduate thesis, is being tested at the NPS facility at Camp Roberts, Calif., north of San Luis Obispo.

Manuel said the project's goal is to achieve "real-time situational awareness" for troops in combat using compact, lightweight "field computing devices" called Rovers — military versions of the ubiquitous personal digital assistants, or PDAs, used by civilians. The devices will be able to access satellite data, live video from unmanned aircraft such as the Predator and other unmanned vehicles, data from unattended acoustic and seismic ground sensors, automatic target recognition software, and even "cognitive blending/modeling" simulations used to gain insights into an enemy's thinking and behavior.

Netzer said the project began two years ago as an effort to improve the military's ability to rescue

downed pilots. It has since grown into a combat-oriented program that will enable soldiers to "find, fix and identify" enemy personnel and equipment with greater precision from further away — while also avoiding U.S. casualties from "friendly fire."

Manuel demonstrated another capability that could prove useful in dealing with insurgencies, such as the clashes now occurring in Iraq. A soldier equipped with goggles containing a miniature video camera can scan a crowd of demonstrators and transmit the images to a command post, where facial recognition software or informants can spot known insurgency leaders.

"In effect, it makes every operator a sensor," he said.

Tawny Koncher of the Lab's National Security Office said the STAN project is "a good example of how NPS students bring practical experience

and real military problems to the NPS research faculty, and how NPS adapts its R&D efforts to provide needed solutions." Manuel will graduate from NPS in July and plans to take the network into the field to continue its development and evaluation.

The seminar was the fourth in a series of reciprocal talks hosted by the Laboratory and the NPS after a memorandum of understanding between the two organizations was signed March 31. The next talk, "New Challenges for Radiation Detection Equipment for Homeland Security" by Arden Dougan, deputy director of the Laboratory's Radiation Detection Center, is scheduled for July 23 at the NPS campus in Monterey.

For more information, contact Harry Radousky of the University Relations Program at 2-4478.