Program Promotes Improved Small-Craft Surveillance

By Donna Miles
American Forces Press Service

MONTEREY, Calif., Sept. 21, 2011—In their quest to halt proliferation and prevent weapons of mass destruction from falling into enemy hands, U.S. and international militaries and police forces face a quandary.

International laws and enhanced monitoring capabilities have made it easier to track larger vessels and in many cases, identify any illicit materials among their cargo.

But what about smaller vessels capable of transporting radiological or nuclear materials or their components – and often don't report to any authorities?

"The question is, if it is hard to detect this maritime traffic, how can we improve our awareness of what is going on?" said Alex Bordetsky, an associate professor here at the Naval Postgraduate School's Department of Information Services. "How do we know if a suspicious vessel is in the area? And when there is one, what does the boarding team do?"

Bordetsky leads a team of NPS researchers that are working with their counterparts in U.S. Special Operations Command, the Navy, Homeland Security and Energy departments and international community to get to the bottom of this issue.

NATO, Sweden, Germany, Denmark and Greece have joined the effort, with strategically important Singapore signing on in September, Bordetsky reported.

Maritime interdiction operation research and experiments conducted since 2002 are showing promise in the development of tools to better identify, tag, track and monitor high-value small and underwater craft, Bordetsky reported.

Annual NPS-led exercises are providing a test bed for new detection and communications technologies and search tactics, as well as interagency and international communications to support maritime interdiction operations, he said.

The heart of the effort is a network that enables partners to collaborate and share data that they can relay in real time

directly to first responders and patrol crews in a position to interdict.

That requires an elaborate system of sensors, unmanned systems, screening portals, modeling and simulation and unconventional networking capabilities being advanced through the MIO program, Bordetsky explained.

Part of the challenge, he said, is detecting and tracking targets while on the move – often at high speeds.

“We need to put every step of the process on an ad hoc mobile, self-forming network,” Bordetsky explained. “That way, no matter how people move around on patrol boats or as combat swimmers approaching the target covertly, all are connected.”

“This is a task that has not been tackled before,” he said.

The initiative, once completed, it will enable analysts to put together a more complete operational picture. “You can associate the findings with other events that seem to be completely separate,” Bordetsky said. “And in that way, you can increase your awareness on the threat better, and you can come up with rapid response measures better.”

An integrated MIO network is vital for providing instant expert reach-back for boat patrols and boarding parties, he said.

For example, boarding parties, including combat swimmers, could relay data in real time to analysts with access to supercomputers at the Lawrence Livermore National Laboratory in California, and elsewhere.

“They can crunch that model quickly and determine what kind of material or residue this might be, then advise the boarding team,” Bordetsky said.

At that point, teams will be in a position to provide additional details and capture more samples, as required.

“Having the whole process networked and connected from the level of detector-operator and patrol boats to the major expert centers and having knowledge and findings generated and the flow both ways creates a good level of awareness,” Bortetsky said. “That is the net result.”

Bortetsky called the program an example of a "classic, applied research project," with many of its elements already developed and deployed. The next step, he said, is getting them to work together – a goal he said could be reached in about five years.

"The elements exist," he said. "The solutions that link them up could be implemented through software, training and more robust equipment components."

The goal, he said, is to achieve the MIO program's potential as quickly as possible, before catastrophe strikes. "We don't want to wait until the threat is already delivered. That is too late," he said. "We want to do this when the threat is just in the initial stage of development."

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