

Project uses unmanned 'smart' boats to track subs

By Sam Fellman
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Sub harassment may soon be outsourced to robots — a fleet of intelligent, oceangoing unmanned boats. That's if a state-of-the-art computer design, proposed by Spatial Integrated Systems, works.

The North Carolina-based defense contractor started work Sept. 27 under an \$800,000 contract from the Defense Advanced Research Projects Agency to design an "artificial intelligence engine" to steer the small boats. It's the same guidance system used in the Mars rover, said Rich Simon, a retired captain who is director of Navy programs at SIS.

"We take the brain from NASA, the eyes and ears off the shelf, and we mate that to a boat," Simon said, explaining that his company will use the software developed by NASA's Jet Propulsion Laboratory to run a 40-foot-long research boat. A small team from the lab is an SIS subcontractor for the design.

The goal of the DARPA project, according to Simon, is to build a vessel capable of finding and tracking foreign diesel-electric submarines for months at a time. The project is in its first phase; later phases will build and test a prototype, wrapping up in 2014. But the first hurdle for Simon and his 18-man team, including subcontractors, is to prove that their guidance system works. And that means showing the ability to juggle multiple missions.

"We're real experienced at putting on top of the Mars rover software the military mission behaviors. So not only does it know, 'Hey, don't run into an object like that buoy out there,' but it also knows, 'Hey, I'm supposed to do a lawn mower track to look for mines,' or 'I'm supposed to go up this river and take every contact on the river and do a contact report on it and send it back to my control center.'"

SIS was selected, in part, because it has developed previous "smart" sea robots. One appeared at the annual Navy design competition, Trident Warrior, in 2009. Its challenge was to navigate up the James River in Hampton Roads, Va., steering around river traffic while obeying rules of the road, then report back.

The challenge ramped up this year, when the sea experiment was held in San Diego. The mission was to defend a fixed asset, like an oil terminal, Simon said.

The boats were programmed with what Simon calls a "play yard": a set

of GPS coordinates for the boats to play in, surrounding the platform. The two boats "talked to each other, and when an intruder ran into their

box, the boats would decide who was closest to the intruder and then they would go block that intruder from coming in close to the asset

that was being protected."

"It was neat — these boats were making decisions," he said.

If it works, the robots could be a

low-cost, low-risk means of tracking the types of quiet submarines used by North Korea, Iran and China. □



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