Future US Navy: Robotic sub-hunters, deepsea pods

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The robotic revolution that transformed warfare in the skies will soon extend to the deep sea, with underwater spy "satellites," drone-launching pods on the ocean floor and unmanned ships hunting submarines.

Officials at the US military's research agency outlined new programs this week that include a number of potentially groundbreaking technologies that could alter the way naval battles are fought, in the same way that robotic aircraft have altered warfare on land and in the air.

One proposed system envisages robot pods on the ocean floor that would be activated when needed.

The pods could launch surveillance drones in the air or at sea or provide a communications link when American forces are facing electronic jamming, said Jared Adams, spokesman for Defense Advanced Research Projects Agency (DARPA).

"The motivation is to enable timely deployment of unmanned distributed systems to distant locations by pre-deploying the assets years in advance and then triggering their release for rapid effects at future times of our choosing," Adams told AFP.

The program has been dubbed "Upward Falling Payloads," or UPF. And officials said the robot pods floating to the water's surface to release various payloads could perform some roles now carried out by submarines, which are much more expensive to operate.

With America's technological edge shrinking, researchers are looking at how to create and build new weapons quickly, instead of the drawn-out process that usually prevails at the Pentagon.

DARPA Deputy Director Steven Walker said the agency is "rethinking how we develop new military systems" to be more agile and "cost-effective."

"Some of our systems today are extremely capable, the most capable in the world, but they are very complex, they are costly. They take a long time to develop and field," he said.

The UPF program of undersea pods poses serious technological challenges, including how to trigger the launchers, how to make them rise to the surface and how to secure a power supply deep under the ocean for more than a year at a time, Walker said.

Eyes in the water

DARPA, known for breakthrough experiments over the years that helped create the Internet, stealth aircraft, drones, "smart" bombs and micro-technologies, is also keen on some other maritime research.

One program envisages spying "eyes" on the ocean floor, including mobile and fixed systems, that would act as satellites or "sub-ulites," allowing the US military to spot other countries' submarines.

Researchers with the Distributed Agile Submarine Hunting (DASH) expect the "sub-ulites" would have "a detection envelope that's pretty broad," Walker said.

DARPA's scientists also are working on passive sonars deep under sea that would listen out for the "acoustic signatures" of submarines.

Another maritime program at DARPA is moving closer to reality, potentially revolutionizing submarine warfare.

The project would deploy unmanned vessels on the ocean's surface to track enemy submarines, a "ghost ship" that could free up naval warships for other tasks.

Sub-hunting is a notoriously time-consuming and expensive task, particularly diesel submarines that have extremely quiet engines.

If the project succeeds, it could prove a "game-changer" for the navy, officials said.

Robot 'Sea Hunter'

The program, known as ACTUV or Anti-submarine Warfare Continuous Trail Unmanned Vessel, is developing a 132-foot (40-meter) robotic boat dubbed the "Sea Hunter."

A smaller experimental vessel recently passed a key six-week test in waters off Mississippi without crashing and the next test with a full-sized prototype will reportedly attempt to follow another boat at a 0.6-mile (one-kilometer) distance.

"The navy is working with us to do a sea trial in the fall," Walker said.

The system is relatively inexpensive compared to the cost of a modern submarine, but offers a potentially effective way to track an enemy's sub.

"It's basically turning the cost equation on its head," Walker added.