

## Robots fly into the limelight as military drone market grows

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WASHINGTON -- New robot aircraft are flying into view along with a burgeoning market for unmanned aerial vehicles, as defense contractors race to meet Pentagon demand.

A slate of drones appeared in public for the first time this week at a big industry trade show. These systems, once developed in secret, are now competing for funds, publicity and the inside track on lucrative long-term contracts.

Robot aircraft also need to prove they're more than an experimental technology. Right now, drones can't be always trusted to talk to each other, transmit data when needed or fly without crashing into other airplanes. In the future, drones need to become more reliable and more compatible with other aircraft and military systems.

Contractors flocked to St. Inigoes, Md., for all-day demonstrations Monday at Patuxent River Naval Air Station's Webster Field Annex, in hopes of putting some of those concerns to rest. Trade show events continue the rest of the week in downtown Washington.

New aircraft, control stations and data transmission packages were all put through their paces, often while making their public debut. Developers said they pulled out all the stops for what they considered to be a watershed event.

For example, Raytheon Co. (RTN) officials decided just eight weeks ago to show off their new "universal control system" for drone operators, said Mark Bigham, Raytheon's director of business development for tactical intelligence systems.

The system, designed as a user-friendly interface for ground-based pilots, had only flown simulated aircraft until last week, when it flew a live test run at Maryland's Aberdeen Proving Ground. On Monday, it controlled Raytheon's experimental Cobra aircraft on public display.

The Cobra is one of the first drones to receive Federal Aviation Administration certification for commercial flight, Raytheon officials said. The company built it as a low-cost test bed for new sensors and software, but expects to supplement its internal demand with orders from universities and government research agencies, the company said.

Also Monday, Northrop Grumman Corp. (NOC) showed off the latest model of its Fire Scout unmanned helicopter, in development for the U.S. Navy. The new Fire Scout looks a lot like earlier models but flies much faster -- 70 knots versus 30 knots, according to company officials at the demo. And in another public debut, L-3 Communications Holdings Inc. (LLL) showcased a new miniature payload for its Viking 100 unmanned aircraft.

Defense officials welcomed the surge in drone technology, while also flagging some of the challenges in expanding its use. For example, the military has struggled to find enough bandwidth for all of the systems it uses to transmit data without jamming each other. Also, companies have only recently started to build systems that can work together and share data.

Lt. Gen. Donald Hoffman, the Air Force's chief weapons buyer, said air traffic control issues are becoming a big problem for battlefield managers. Small, low-flying drones compete with helicopters for the same airspace over a battlefield, while larger and higher-flying drones present a different set of coordination issues. As the Department of Homeland Security and other public safety agencies start adding their own fleets, even more challenges have emerged.

"This problem just continues to expand," Hoffman said in a Tuesday presentation.

Some of the new aircraft on display were so new they haven't even hit the skies. Aerocross Systems, a three-man company based in McKinney, Texas, brought the Echo Hawk drone it's developing for the Air Force using a \$750,000 small business contract.

The Echo Hawk is a converted ultralight commercial plane, designed to collect data over missile ranges where it would be too dangerous for manned aircraft to fly. Flight tests for the new system are scheduled for next year, company president Tam Pho said.

Even stealth drones were on display. Northrop Grumman brought a full-sized model of its X-47B, which the Navy selected last week for an aircraft carrier demonstration program. At 38 feet long with a 61-foot wingspan, the "low observable" drone cut a very visible profile.

The new public focus was a welcome change for the Association for Unmanned Vehicle Systems International, the industry organization that sponsored this week's demonstration and trade show. Executive director Daryl Davidson on Tuesday praised the annual event's expansion, as well as its rise as a media attraction.

"The messages, the images and things that come out of this event are going to hit the world in an unprecedented sense," Davidson said. "That's a little bit of hype but still, it's pretty effective and I think it's very true."

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