

In control



Boeing is developing a common control system for its growing fleet of unmanned aerial systems

By Marguerite Norgren

PHOTO: A launcher catapults a ScanEagle unmanned aerial vehicle at a test facility in eastern Oregon. INSITU

Against a backdrop of sandy, scrub desert punctuated here and there by jagged mountaintops, a small, birdlike object is launched into billowing clouds above Fort Huachuca, Ariz.

Minutes later and miles away, an operator aboard a NATO Airborne Warning & Control System (AWACS) aircraft assumes full control of the “object,” a ScanEagle unmanned aerial system, and begins to receive real-time video feed from its onboard camera.

Although Boeing has been testing the control of unmanned aerial systems, or UAS, from manned aircraft since 2006, this test in the skies over Arizona this summer marked the first time an airborne command platform took control of an actual unmanned craft—without any simulation involved.

But Boeing is looking beyond even that significant milestone. Its Advanced UAS Mission Systems team is developing a universal command and control system for use with all of Boeing’s growing unmanned fleet.

The fleet includes the successful ScanEagle and its new big brother, the Integrator, both by Boeing subsidiary Insitu, as well as the A160T Hummingbird rotorcraft, UH-6 Unmanned Little Bird and S-100 Camcopter. Boeing’s Phantom Works organization is developing a number of unmanned aerial prototypes including the Phantom Ray, Phantom Eye and Solar Eagle.

Previously, every time Boeing designed a new unmanned aerial system, it would have to design a command and control system to go along with it, said Randy Rothe, the team’s senior manager. “Our new common system allows us to more easily and quickly create prototypes as well as realize efficiencies and reduce costs,” he said. “Our customers appreciate the greater flexibility it affords, not to mention the elimination of redundant systems and reduction in training requirements.”

Whether the mission is intelligence, surveillance and reconnaissance (ISR) or strike, the common command and control system enables operators on the ground or in the air to autonomously manage and task unmanned aerial systems with missions, and route them as required.

Rothe’s 30-person team is developing the new system in Irvine, Calif., Tukwila, Wash., and St. Louis.

“It’s exciting to work with an emerging technology that significantly improves the capabilities of our warfighters,” said team member and software engineer Aaron Camac.

The capability to integrate unmanned aerial systems with manned aircraft illustrates what John Hearing, senior manager, Next-Generation ISR Aircraft, calls “the value of the high ground.”

“Pairing a high-altitude, manned aircraft like AWACS that can see long distances with a UAS that’s closer to targets—without putting aircrews at risk—yields more accurate and actionable intelligence that can be used to counter threats,” Hearing said.

What’s next for Rothe and his team?

They are working to provide other Boeing-built aircraft such as the P-8 Poseidon and the Airborne Early Warning & Control aircraft—both of which are based on the 737 commercial jet—with the capability to control unmanned aerial systems. The team also has its sights on future programs such as the U.S. Navy’s Unmanned Carrier-Launched Airborne Surveillance and Strike program.

As Rothe noted, “There’s a world of possibilities out there.” ■

marguerite.o.norgren@boeing.com