

- Langley Research Center
- Langley Home
- About Langley
- Doing Business With Us
- Langley Research
- Langley History
- Multimedia
- News & Events
- The Researcher News**
- Education



Feature

Text Size
 Tweet 5
 Like 5
 +1 2
 Pin it

UAVs Answer the Call of Duty 09.17.12

Three loud bangs echoed from the front door of Insitu's headquarters building in Washington state as a woman waited to be let inside.

"I want to talk to the President," she said. Steve Sliwa, former CEO of Insitu, agreed to meet her in his office.

"My son is a marine and he was on a mission last night," the woman explained to Sliwa. "During that mission, the group was ambushed and they sent a ScanEagle over. Using ScanEagle, they were able to get away and everyone's lives were saved."

She found out that the ScanEagle, a quiet, long-endurance unmanned aerial vehicle (UAV) with a 10-foot wing span, was built near their hometown, and she wanted to hug some of the people responsible for developing the technology that saved their lives.

"As an engineer, It doesn't get any better than that, where you have to go and design something, make it and do these experiments, and then hear how someone can take your tool and go off and make a difference like that," Sliwa said at the September 11 Colloquium at NASA's Langley Research Center.

A few years prior to that visit in 2001, Silwa was approached by a friend and former classmate to join the Insitu team. He was the fourth employee. When he sold Insitu to Boeing in 2008, Insitu employed about 850 people with about \$500 million in sales.

Sliwa initiated his career at NASA, starting as a researcher in control theory and aircraft design and ultimately becoming deputy chief for the Guidance & Control Division at NASA Langley.

Unlike most other UAVs, those produced by Insitu do not require a runway because they are launched by a pneumatic catapult launcher, and are recovered by flying the UAVs into a vertically suspended cable, which captures the aircraft by hooks located at the end of the wings. This allows the aircraft to be launched and recovered from a truck, zodiac, small ship, or other area where a traditional runway is unavailable or impractical.

Originally, Silwa thought that Insitu would, primarily, be a UAV business used mostly for civilian purposes. But UAVs only account for 22 percent of the revenue. Insitu has also matured their business through launchers, retrievers and ground control stations.

After 9/11, the main interest for the technology became surveillance. With the onset of the Iraq war in 2003, Insitu became focused on military applications and partnered with Boeing to develop ScanEagle.



Click to enlarge

On Tuesday, Sept. 11, at NASA's Langley Research Center in Hampton, Va., Steven Sliwa presented, "Aeronautical Entrepreneuring with UAVs." Sliwa is a former NASA Langley employee and former CEO of Insitu, a developer of miniature robotic airplanes or UAVs for military and civilian applications. Credit: NASA/Sean Smith



Click to enlarge

A ScanEagle in its catapult launcher. Credit: U.S. Marines

After Hurricane Katrina in 2005, ScanEagle helped with evacuation efforts when helicopters were grounded.

In April 2009, a ScanEagle launched by the US Navy was used during the stand-off between the US Navy and a lifeboat controlled by pirates holding Capt. Richard Phillips of the MV Maersk Alabama in the Indian Ocean after a failed hijack attempt.

"All of the video you saw from that was from our UAV," Sliwa said.

According to Sliwa, the military was given authorization by President Obama to take action if the Captain was being threatened. So, as soon as guns were aimed at the Captain, the Navy Seals went in and rescued him.

When U.S. Marines asked for night vision capabilities, the device went through five generations of design within four and a half years to become NightEagle. Originally, it wasn't possible to put a 80-pound night sensor on a 40-pound UAV. But as technology progressed, they were able to use a 2-pound night sensor, which provided clear images from the night sky.

According to Silwa, Insitu and Boeing made 375 major improvements to the ScanEagle in the first three and a half years. The new generation UAV is known as the Integrator, which carries a camera, an infrared camera and a radar at the same time.

"That's what happens when business and technology work together," Silwa said.

According to Sliwa, civilian applications for UAVs have been limited because of the Federal Aviation Administration's (FAA) concerns about how to mix unmanned aircraft and manned aircraft. Some commercial uses for ScanEagle have included spotting whales, icebergs and pollution or debris. ScanEagle is mostly used commercially in Australia.

One challenge is that UAVs range in size from six ounces, the size of a postage stamp, up to 80,000 pounds at 60,000 feet.

"Trying to come up with one rule that covers all of that is difficult," Sliwa said.

The UAVs built by Insitu were designed to have a lifetime of about 2,000 hours, compared to airliners that are designed closer to 20,000 to 30,000 hours.

"Places like NASA Langley, in the past were instrumental in developing all of the rules that the airplanes are designed with, are now in a position where they are trying to help with all of the guidelines and rules to help people decide the best way to grow that space," Sliwa said. "I like to say that UAVs now are like in the 1940s, when there were hundreds of airplane companies and it was like the 'Wild Wild West.'

"There's lots of companies out there and people are trying to figure out the best way to develop them and regulate them."

Until then, Sliwa will sit back and watch the technology continue to take off.

"When you develop technology, you never know all of its uses," Sliwa said.

He also did not know when an exciting opportunity, and a grateful mother, would come knocking on his door. But, he's glad they did.

By: [Denise Lineberry](#)

The Researcher News

NASA Langley Research Center

Editor & Curator: [Denise Lineberry](#)

Executive Editor & Responsible NASA Official: [Rob Wyman](#)

[› Back To Top](#)

	NASA Official: Brian Dunbar	<ul style="list-style-type: none">› Budgets, Strategic Plans and Accountability Reports› Equal Employment Opportunity Data Posted Pursuant to the No Fear Act› Information-Dissemination Policies and Inventories	<ul style="list-style-type: none">› Aerospace Safety Advisory Panel› Inspector General Hotline› Office of the Inspector General› NASA Communications Policy	<ul style="list-style-type: none">› Open Government at NASA› Help and Preferences
--	-----------------------------	---	--	--