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University of Iowa sends Cold War jets to air show



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By DENNIS MAGEE, dennis.magee@wfcourier.com | Posted: Sunday, August 21, 2011 3:00 pm | (0)

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WATERLOO, Iowa --- Herky has always had wings, but it took Tom "Mach" Schnell to get the University of Iowa's mascot in the air.

His team will visit the Thunder in the Valley Air Show on Saturday and next Sunday, offering a lesson on close air support tactics and providing a glimpse of technology available nowhere else in the world.

And all of it comes packaged with a Hawkeye logo.

How Schnell got to this level started at a conference in 1998 in Ohio. He got an invitation.

"Someone tapped my shoulder and said, 'You should come to Iowa.' I said, 'OK.'"

Schnell, an academician, was initially involved in ground transportation issues, studying pavement markings and reflective signs along highways. However, he also happened to hold a commercial pilot's license, and not much time passed before Schnell was pursuing that passion as well.

Pilot Tom "Mach" Schnell turned two L29 fighter jets made in

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Czechoslovakia into high-tech research vehicles for the Operator Performance Laboratory at the University of Iowa. His team will participate in the Thunder in the Valley Air Show on Aug. 27-28 at the Waterloo Regional Airport. (DENNIS MAGEE / Courier)

"My heart was in aviation," he said.

He founded the Operator Performance Laboratory within the university's Center for Computer Aided Design. Partners, sponsors and patrons over the years have included NASA, Rockwell Collins of Cedar Rapids, Caterpillar, 3M, Honda and research divisions of the U.S. Air Force and U.S. Navy.

What Schnell's team investigates is less easily defined.

"The Operator Performance Laboratory conducts research on human-in-the-loop and intelligent autonomous systems to increase efficiency, interoperability and safety," according to its website.

In English, that means studying pilots and drivers to see how machines and humans might work together.

"Having your head down in a dashboard is probably not a good idea while trying to avoid bicycles and pedestrians and such," Schnell said.

His arsenal of tools includes a Lexus LS 430 sedan, a 737 flight simulator and two Aero Vodochody L-29 Delfin jet fighters. A Humvee is being outfitted as well.

To get the needed information, researchers attach sensors to humans to measure brain activity and other physiologic data, like heart rate. Sensors track eye movement, and computers record everything else.

That's reality.

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Schnell's technologies, however, also create a virtual world.

The aircraft at the Thunder in the Valley Air Show are actually capable of being in two places at once.

"Think of this as a flying flight simulator," Schnell said.

"We're in the airspace over Iowa, but it looks like airspace over Afghanistan," he added.

The university's fighters may be at 25,000 feet over snow-covered fields. But that's not what the aviator will see.

"What he experiences in his simulator is 500 feet over rough terrain in Afghanistan," Schnell said.

Or an ocean. Or Iraq. Or wherever the pilot needs to be well versed.

The equipment can also link to a simulator in a hangar, allowing two pilots to participate. And all of it can be connected to computers and virtual displays monitored by a soldier, who on the battlefield would be the one requesting close air support.

"This guy needs training opportunities, too," Schnell said.

He added, "If you let regular soldiers call in air strikes, friendly guys are going to die."

History

Schnell and his team created a unique flying laboratory.

"There's not anything like it in the world, let alone two of them," he said.

At the research program's heart are a pair of Aero Vodochody L-29 Delfin fighters, which date back to the Cold War and the Warsaw Pact. Member nations, including the Soviet Union, Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland and Romania, were looking for a modern jet fighter.

The L-29, designed in the Czech Republic, beat out competitors from Russia and Poland based on its superior features and durability. About 3,500 were manufactured between 1963 and 1977.

The wings span more than 33 feet, and the aircraft is 35 feet long. An L-29 is capable of topping 400 mph and reaching more than 36,000 feet.

"It's the perfect airplane --- obsolete," Schnell said. "We didn't feel bad about tearing it all out and putting in new stuff."

Beyond that, the aircraft is relatively easy to maintain.

"These were designed to be worked on by low-level mechanics with a screwdriver and a hammer," Schnell said.

Dan Sussna of Chicago is an undergraduate at Iowa. He is studying engineering and is part of Schnell's team. Not surprisingly, he's a fan of the L-29 and simulators.

"It's a spectacular display of well-integrated technology," he said. "And it helps save taxpayer dollars by making better training and better pilots."

The planes also give Iowa a leg up on Iowa State University, Sussna noted.

"They don't have fighter jets."

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