

# Drones delivering pizza? Not such a far-fetched idea

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Aeryon Scout UAV in flight.

If someday soon it's possible to have a hot pizza delivered to your door by a drone, it may be because of work now underway on the remote and sandy shores of the Texas Gulf Coast.

There, where the extra-salty waters of the Gulf of Mexico push their way onto the fertile fields of the historic Kenedy Ranch along Laguna Madre,

a team of acclaimed scientists and engineers is carefully researching how to fly airplanes without pilots. They're conducting their research on behalf of the Federal Aviation Administration in this unpopulated area, mainly so no one gets hurt.

To be clear, they're not there to expedite an order of pepperoni with extra cheese to your house. In fact, many of the researchers bristle at the suggestion that in just a few years the work they're doing with unmanned aircraft could lead to drones buzzing among birds, treetops and tall buildings, making restaurant and retail deliveries in major metro areas such as Dallas-Fort Worth, 500 miles to the north.

Instead, they say, the real benefit of unmanned aircraft will be in police work, firefighting and other public services - in which remote-control machines can gather intelligence without putting humans at risk.

"There's so many needs for these things today - the forest fires, hurricanes," said John Hugeley, mission commander for a series of unmanned test flights conducted last week by Texas A&M University-Corpus Christi. "But I'd rather see us crawl, then walk, then run."

But the urgency behind their work is clear. Federal regulations or not, drones are exploding in popularity.

Many people with an entrepreneurial spirit - and often a background in remote-control hobbies - are already buying drones for commercial uses. They are opening businesses that specialize in aerial photography, surveillance and thermal imaging - even though they don't yet have FAA certificates to operate their machines for profit.

Meanwhile, the FAA, urged on by Congress, is scrambling to set up guidelines for unmanned aircraft by 2015, before the situation gets worse.

It's now possible to buy an unmanned aircraft for a few hundred dollars and mount a high-definition camera on it that transmits dazzlingly clear images, several drone owners said.

For those willing to invest \$10,000 or more, flying machines are available that have up to eight propellers and can travel several miles. There are also fixed-wing aircraft that can stay in the air for more than a half-hour on one battery charge.

"The technology is already here," said Glen Hiemstra, who founded Futurist.com and often speaks to business groups and government agencies about emerging trends. Hiemstra said he wouldn't be surprised if "millions" of flying devices are floating above cities worldwide within 15 years.

"So the next question is, 'Is it economically viable?' I think it is," he said. "Then it's only a matter of, 'Will people accept it, and will there be a regulatory system devised to make it possible?' I think it will, because it will be seen as an economic engine of its own."

On a limited basis, remote-control aircraft already patrol the U.S.-Mexico border. And in a few cities, they serve as an eye in the sky for police working car wrecks and missing-persons cases.

The city of Arlington, Texas, has used its unmanned helicopter twice - once after a fatal crash in May and again during a standoff with a homicide suspect in October, police spokeswoman Tiara Ellis Richard said.

Hobbyists can fly remote-control aircraft as long as they don't go higher than 400 feet. Also, the FAA has allowed at least 327 research and law enforcement agencies to operate unmanned aircraft under specific conditions.

Otherwise, expanded drone use is being somewhat discouraged by federal and state officials. It's illegal to fly for commercial purposes without a certificate of authorization, an official said.

The FAA isn't aggressively pursuing those who lack certificates but could issue a cease-and-desist order to anyone operating without one.

Late last year on CBS' "60 Minutes," Jeff Bezos, CEO of the online retailer Amazon.com, unveiled plans to launch door-to-door deliveries within 10 miles of select markets, using eight-propeller "octocopters" to ferry packages weighing 5 pounds or less.

While skeptics question whether the program can begin by 2015, researchers at Texas A&M-Corpus Christi, the University of Texas-Arlington and other universities say they must take steps to prepare for new drone uses.

Those researchers say it's increasingly likely that the onslaught will happen in months, not years. Other groups offer more conservative estimates. The National Association of Criminal Defense Lawyers projects that 30,000 drones will be deployed in the U.S. within 20 years.

The trend of cheaper, more sophisticated drones is already spawning a wave of airborne ingenuity.

In clubs such as the North Texas Drone User Group, which has more than 100 members who gather monthly in rural spots to fly their craft, many people have taken steps to open businesses that specialize in aerial photography, thermal imaging and surveillance.

"People used to have to hire a Cessna to photograph real estate," said group member Ian McDougal of Denton, Texas. "This really brings it down to the layman, the person who says, 'You know what, I've got

\$1,000 to kill, and let's see if I can get this thing started.' "

By day, McDougal works for the University of North Texas information technology department. In his spare time, he flies a DJI Phantom, a white four-propeller machine that he bought used for about \$400. Not much bigger than a dinner plate, it can fly about two-thirds of a mile - shooting video all the while.

McDougal hopes to open his own drone-based business, perhaps specializing in aerial photography. Group members boast that they can get 30 to 60 minutes of flight time with some drones, depending on the model and the type of batteries.

"I think this is where the technology is headed," McDougal said, "and I wanted to get in on the ground level."

The drone group met on a recent afternoon at a ranch north of Decatur, Texas. Kevin Rowe of Dallas was flying arguably the most impressive drone in the group - a \$17,000 beast with eight propellers that makes a quiet hissing sound as it levitates upon his command.

Rowe's CineStar drone can hover in GPS mode, about 7 feet off the ground, making it possible for him to walk under it and adjust the GoPro camera and its gimbal pivot - which provides video images so stable that they look almost like a computer-generated artist's rendering.

Rowe has opened Flycam Productions, which has been hired to shoot aerial video inside an auto show, as well as outdoor video of property for real estate companies.

Rowe said the ability to network with others who share his drone interests has been one of the biggest benefits of joining the group.

"I was able to network with an actual drone pilot fresh out of Afghanistan," he said. "Instead of me having to do all the technical stuff, I can now concentrate on the operation of the gimbal, the camera, which is really my expertise, and let him do the hard stuff - keep it in the sky."

Wes Ewing of Arlington, a technical company network administrator, flies a white four-propeller DJI Phantom equipped with a video camera and capable of zipping around at 35 mph.

"I've flown over Cowboys Stadium and bothered the men on the roof," he said, laughing. "You never know when we'll need our own drones to look at the other guy's drones."

FAA officials caution against forming businesses before the rules are written.

"Developing regulations and standards is the FAA's biggest challenge in integrating unmanned aircraft into the nation's airspace," FAA spokesman Les Dorr said in an email. "The key integration issues include solutions for 'detect and avoid,' command and control, ground control station standards and human factors, airworthiness ... and the interface with the air traffic control system.

"We expect the research finding from the six ... test sites we recently selected will help us develop the appropriate regulations. While the expanded use of (unmanned aircraft) presents great opportunities, it also raises questions as to how to accomplish integration in a manner that is consistent with privacy and civil liberties considerations."

Even members of Congress are getting in on the act. Sen. Dianne Feinstein, D-Calif., testified last week that she spotted a drone outside her window during a recent demonstration outside her house, according to news reports. She urged a Senate committee seeking comments on

[drone](#) policy to proceed with caution.

The remote Kenedy Ranch is a good spot for the trial and error of unmanned-aircraft research, officials said. It's 70 miles south of the nearest major airport, in Corpus Christi, and about 40 miles north of the Mexican border.

Researchers are test-flying drones that they say will soon scour the Gulf of Mexico for oil spills. Late last year, the FAA selected the researchers from six Texas universities to help write the rules for unmanned aircraft. It didn't include any federal funding.

The main mission in Texas will be developing safety systems for drones. Meanwhile, researchers in Alaska, North Dakota and other states will work on subjects such as the reliability of links between unmanned aircraft and pilots in other planes and the risks of drones losing their connection with controllers.

The research potentially represents 100,000 jobs and \$82 billion in economic activity, the Association for Unmanned Vehicle Systems International says.

At Texas A&M in College Station, research into unmanned vehicles has actually been underway for about 15 years, said John Valasek, an aerospace engineering professor.

Valasek believes that one of the biggest short-term uses will be in agriculture. With unmanned aircraft, farmers and ranchers can more accurately determine which acres need pesticide and can locate leaks in irrigation systems. Agricultural uses could be a \$260 million business, just in Texas, within five years, he said.

Inspecting bridges and other hard-to-reach infrastructure is expected to

be another early use of drones within five years, he said.

A key will be to develop a way for manned aircraft and [unmanned aircraft](#) to "talk" to each other and to equip both with "sense and avoid" technology so each machine can avoid the other.

Until that complicated work is done, pizza delivery will still be done the old-fashioned way - by a human driver. And don't forget the tip.

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