



UAS and SmallSat Weekly News

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30Mar19

FAA enacts new enforcement action protocols against drone pilots Paul Aitken Mar. 29th 2019



Drone pilots may be facing more scrutiny and enforcement actions, as the FAA has released new protocols for investigations, including new surveillance rules. The [document states](#):

“Additional potential risks were identified from noncompliant operations for firefighting, law enforcement, and emergency response. Specific conditions and targeting mechanisms were determined to be the best risk-based approach to expanding UAS surveillance as part of a broader oversight strategy.” The FAA further outlines the requirements of surveillance activities by enforcement personnel and instructs investigators to surveil areas where numerous illegal operations have been taking flight.

While some drone pilots may be shaking in their shoes, veteran pilots are aware of the FAA’s “Compliance philosophy” when it comes to investigating pilots. One major benefit is that if you’re unknowingly breaking federal law, inspectors will give you a chance to correct it and move on with your business without consequences. It is only if you’re egregious, aggressive or combative that you’ll likely find yourself in the crosshairs of the FAA and staring down the gunsights of massive fines. <https://dronedj.com/2019/03/29/new-enforcement-actions-against-drone-pilots/#more-15827>

Your Drone-Delivered Coffee Is (Almost) Here Christopher Mims March 30, 2019



On a not-so-blustery day in Reykjavik, a drone rises above a treeless Icelandic landscape. It’s carrying a package, likely someone’s dinner. Once rare and exotic, sorties like this have become **routine** in just two years.

These deliveries are made by Icelandic subsidiary Aha, the equivalent of DoorDash or Postmates in the U.S. Its drones can carry food and small consumer goods in a 2.5-mile radius, soon to expand to **5 miles** with the introduction of more powerful drones from China’s DJI. Aha’s drone-delivery service is one of only a handful in the world. Another is [Alphabet](#) Inc.’s subsidiary Wing, whose most recent trial delivered coffee and other necessities like sunscreen and chocolate to 160 households in Canberra, Australia.



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Drones might never make it in the big city: too many concrete canyons, errant pedestrians and unpredictable truck drivers, not to mention too few backyards to serve as drop points. That's why drone developers have their sights on the suburbs, where other forms of delivery are [still generally unprofitable](#). This week, UPS [claimed](#) it is breaking new ground for drone delivery in the U.S. as it starts to charge for a service to transport medical supplies. Meanwhile, Wing already performed the first U.S. autonomous delivery, in Blacksburg, VA., and Flytrex, the company providing Aha's drone guidance and delivery technology, is [gearing up for a trial](#) in Holly Springs, N.C. <https://www.wsj.com/articles/your-drone-delivered-coffee-is-almost-here-11553918415>

How were drones utilized to inspect the Salesforce Tower? March 27, 2019 Jeremiah Karpowicz



A [recent drone inspection of the Salesforce Tower](#) in San Francisco took place over the course of **two weekends as opposed to four to five months** but could also define a new standard around how building inspections should be approached.

The 1,070-foot Salesforce Tower became the tallest skyscraper in the San Francisco skyline when it was completed in 2018, surpassing the Transamerica Pyramid which had dominated the Skyline of San Francisco for decades. Insights about the condition of the building are the result of an inspection process that traditionally takes 400 to 500 hours over the course of many months. Inspectors are exposed to the elements and the extreme height of the building since they're forced to use the same swing stages that window washers utilize. The company saw the opportunity for drones to make the inspection faster, cheaper and safer.

That led Boston Properties to [SiteAware](#), which created the drone software used in the Salesforce Tower inspection. SiteAware then formed a partnership with [DroneHive](#) to perform the actual inspection tasks. With a nationwide network of 700 professional drone consultants and operators, DroneHive helps corporations integrate aerial data collection into their business models. That made them an ideal partner for the inspection itself, but also for the many details that needed to be sorted out before and after the inspection.

https://www.expouav.com/news/latest/drones-inspect-salesforce-tower-dronehive/?mkt_tok=eyJpIjoiTTJKaFpqRTRaVFI5WIRNeSIsInQiOiJyUWNPk1dxY0s4ejRBakp0OWJwWFVpdTBpVG12WnRSRXY2MHphcUFvSXBkZnN1bjh4M3BYWIRQRTJJb1JraWpudnd2TVNXajZzaWhKUzNDUTNla0JndVI4TVhvUjZzYzIYYIVGcG9WYjMybHIXTnA4N0srUIRiT3VRQlwwTWZyQUUifO%3D%3D



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The Marines' Plywood Supply Drone takes a Page from DIYers Everywhere Harry McNabb March 29, 2019



It's not quite a paper airplane drone. But this DARPA-funded plywood drone is low-cost and disposable – and shows a lot of promise for commercial uses, too.

Reminiscent of the wooden construction of the PT boats of WWII, the drone featured in this video released by [Logistics Gliders](#) shows a test flight in January 2019 of a plywood constructed glider, developed under contract with the Defense Advanced Research Project Agency (DARPA), and the Marine Corp. Warfighting Laboratory (MCWL). PT boats in WWII were created of wood at low cost and in large numbers.

It is described as a “*Low cost, single use, autonomous disposable glider-based logistics resupply system.*” It can be deployed from a helicopter sling or from a cargo plane with compatible skid plates where the wings deploy upon release. The glider can be flown with either RC or FPV glasses or can be flown **autonomously**. The glider can land vertically using a parachute with a honeycomb paper nose help to cushion the landing. This aircraft can fly at **25,000 feet** and carry an impressive **payload of up to 1,800 lbs.**

While not discussed in the promotional video, civilian uses for this type of craft are easy to imagine: for disaster relief or delivery of high value goods to remote areas with no landing fields. <https://dronelife.com/2019/03/29/the-marines-plywood-supply-drone-takes-a-page-from-diyers-everywhere/>

Citadel Defense Launches Anti-Drone Solution to Prevent Future Drone Attacks

March 28, 2019 Counter UAS



After over 6 months of government and military testing, [Citadel Defense Company](#) is announcing the launch of their counter-drone solution, [Titan](#). Designed and developed alongside U.S. warfighters and security experts, the Titan provides real-time information, identifying and classifying an approaching unmanned aerial vehicle or swarm, and applying countermeasures to induce the UAV to land or return to its home base. It uses machine learning, artificial intelligence, and software-defined hardware technology to rapidly address new threats.



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The system's ability to operate where communications are critical, like cities, airports or ships, provides users with a flexible solution for many missions. Citadel's **escalating** countermeasure approach can detect, identify, and defeat drones with limited collateral effects to other important signals like WiFi and Bluetooth communications.

Citadel Defense has participated in **ten** successful government-hosted evaluations where counter-drone technologies were compared against each other. Success from these has helped the company secure **six government contracts**. <https://uasweekly.com/2019/03/28/citadel-defense-launches-anti-drone-solution-to-prevent-future-drone-attacks/>

ADAMA Partners With Tactical Robotics: Elevating Farming to New Heights March 26, 2019 News



Global crop protection company ADAMA Ltd. has partnered with Tactical Robotics Ltd., an innovative Israeli aerospace company, in a feasibility study for a High-Payload, Unmanned Aerial Vehicle for Aerial Spraying.

Tactical Robotics has developed the Cormorant, a multi-role, compact, high payload, unmanned Vertical-Take-Off-and-Landing aircraft that can carry a payload of more than **500 KG**. It does not require an airstrip and can be transported by truck. The Cormorant is capable of multiple tasks, ranging from logistics and cargo services to fire-fighting and aerial spraying.

The Ag-Cormorant's unmanned operation and unique design eliminates the risks of pilot injuries and exposed rotor accidents. With a low acoustic signature and 24/7 flying capabilities, it will increase the available window for application. The Ag-Cormorant's ability to adjust flight height and speed according to the mission enables better canopy penetration, drift reduction and variable rate application. <https://uasweekly.com/2019/03/26/adama-partners-with-tactical-robotics-elevating-farming-to-new-heights/>

1Apr19

Indian military satellite, 20 more Planet imaging CubeSats launched by PSLV April 1, 2019 Stephen Clark

An Indian Polar Satellite Launch Vehicle blasted off and successfully deployed a military electronic surveillance satellite and **28 nanosatellites** for companies in the United States,



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Lithuania, Spain and Switzerland at two different altitudes Monday, before the rocket's upper stage began an extended mission as a solar-powered experiment platform in low Earth orbit.



The 145-foot-tall PSLV lifted off at 0357 GMT Monday (11:57 p.m. EDT Sunday) from the Satish Dhawan Space Center, an Indian spaceport on the country's southeast coast around 50 miles north of Chennai.

The PSLV is the workhorse rocket for India's space program, launching several times a year, often with an Indian government satellite and a collection of smaller spacecraft built by organizations and companies in other countries.

But the mission that launched Monday morning — liftoff occurred at 9:27 a.m. Indian Standard Time — debuted a new configuration of the PSLV with four solid rocket boosters mounted around the rocket's core stage. Previous PSLVs launched with zero, two, or six boosters.

In **another first**, the PSLV's liquid-fueled fourth stage carries solar panels to generate electricity in space, providing power to three payloads that will use the spent rocket body as a hosting platform in orbit. <https://spaceflightnow.com/2019/04/01/indian-military-satellite-20-more-planet-imaging-cubesats-aboard-successful-pslv-launch/>

Facebook axed scheme to provide free internet using bird-sized drones March 31, 2019 Feilidh Dwyer



In 2017, Facebook imagined a scheme that used fixed-wing, bird-sized drones to provide high-speed internet to people living in remote areas.

[Business Insider reports](#) that the project, named Catalina (named after an island in California that uses pigeons to ferry messages back to the mainland) was shut down in 2018. The aim of the project was to make it easier for people living in isolated places to stream videos or undertake other data-intensive tasks on their mobile devices.

The drones proposed for the Catalina project were to be the size of sparrows and would have contained solid-state drives laden with media. They were to be the go-between step for the signal for cellphone towers and peoples' mobiles. It is unclear whether prototypes of the sparrow drones were ever completed or whether the company simply decided it was not feasible to continue.



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Around the same time, Facebook also canned the development of drones for the Aquila project that envisioned giant solar-powered drones flying at altitudes of between 58,000 – 85,000 feet, completing three-miles circuits for months on end while broadcasting free internet to billions of people in developing countries who do not have ready access to the internet.



Google similarly abandoned its project to use giant drones to broadcast internet to the masses. Called Titan, the concept was ditched by Google in 2017, following a number of failed tests. https://www.wetalkuav.com/facebook-axed-scheme-to-provide-free-internet-using-bird-sized-drones/?utm_source=WeTalkUAV&utm_campaign=db81d2a310-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_1d410cb84d-db81d2a310-83653711

Drone innovation central to illegal dumping clean up costing millions APPLICATION CRIME EUROPE HEADLINE NEWS POLITICS SURVEILLANCE ALEX DOUGLAS APRIL 1, 2019



Richard Bruton, minister for communications, climate action and environment has pledged funding of €3m to the Anti-Dumping Initiative.

“Illegal dumpers are poking their finger in the eye of communities all over the country. We can only stamp it out if we work together. This money will step up the chances of catching the offenders and will provide help to those who want to do the right thing. Innovation, surveillance using drones, special collections for awkward items like mattresses, spreading awareness among young people and recognizing the work of volunteers can all pay a role.”

The increase to €3m this year is a **50% increase** on last year, a boost which authorities hope will help them use drone technology for monitoring and surveillance purposes.

https://www.commercialdroneprofessional.com/drone-innovation-central-to-e3m-illegal-dumping-clean-up/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-297140-Commercial+Drone+Professional+DNA+-+2019-04-01

NASA’s Mars Helicopter Completes Flight Tests at JPL March 30, 2019 News



In late January 2019, all the pieces making up the flight model of NASA’s Mars Helicopter were put to the test. Weighing in at no more than 4 pounds, the helicopter is a technology demonstration project currently going through the verification process certifying



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it for Mars.

First, the team created a vacuum in JPL's Space Simulator that sucks out all the nitrogen, oxygen and other gases from the air inside the mammoth cylinder. In their place, the team **injected carbon dioxide**, the chief ingredient of Mars' atmosphere.

"Getting our helicopter into an extremely thin atmosphere is only part of the challenge," said Teddy Tzanetos, test conductor for the Mars Helicopter at JPL. "To truly simulate flying on Mars we have to take away **two-thirds of Earth's gravity**, because Mars' gravity is that much weaker."

The team accomplished this with a motorized lanyard attached to the top of the helicopter to provide an uninterrupted tug equivalent to two-thirds of Earth's gravity. "We only required a 2-inch hover to obtain all the data needed to confirm that our helicopter flies autonomously as designed in a thin Mars-like atmosphere; there was no need to go higher. It was a heck of a first flight." <https://uasweekly.com/2019/03/30/nasas-mars-helicopter-completes-flight-tests-at-jpl/>

2Apr19

C-ASTRAL Launches Long Endurance BVLOS Drone 31 Mar 2019 Mike Rees



Following months of integration testing and optimization, C-ASTRAL Aerospace has announced that the new **BRAMOR mSX** long endurance beyond visual line of sight (BVLOS) enabled fixed wing unmanned aircraft system is now available worldwide.

Equipped with a state-of-the-art Micasense ALTUM sensor, the **three-hour** endurance UAS is designed for the acquisition of data in the multispectral, visible and thermal remote sensing space for precision agriculture, advanced research, remote sensing and surveying. It fills the gap between satellite data acquisition and short endurance drone platforms that typically cover small areas.



The all-electric drone is capable of covering 3,000 acres in one flight, with a multispectral GSD of 2 inches, orders of magnitude higher than currently available from satellite sensing. It enables plant-level monitoring, enhancing ecological and agricultural analytics. [https://www.unmannedsystemstechnology.com/2019/03/c-astral-](https://www.unmannedsystemstechnology.com/2019/03/c-astral-launches-long-endurance-bvlos-drone/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=0b597534bb-eBrief_2019_Apr_02&utm_medium=email&utm_term=0_6fc3c01e8d-0b597534bb-111778317)

[launches-long-endurance-bvlos-drone/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=0b597534bb-eBrief_2019_Apr_02&utm_medium=email&utm_term=0_6fc3c01e8d-0b597534bb-111778317](https://www.unmannedsystemstechnology.com/2019/03/c-astral-launches-long-endurance-bvlos-drone/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=0b597534bb-eBrief_2019_Apr_02&utm_medium=email&utm_term=0_6fc3c01e8d-0b597534bb-111778317)



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UK Ministry of Defence Funds Drone Swarm Project 29 Mar 2019 Mike Rees



The [United Kingdom Ministry of Defence](#) has announced that its Defence and Security Accelerator (DASA) has awarded **£2.5M** to a consortium led by [Blue Bear Systems Research Ltd](#) to develop drone swarm technology. The funding will steer the project for around 20 unmanned aerial systems into the final stage of development, which will ultimately be managed by the Defence Science and Technology Laboratory.

UAS are currently in widespread use around the world, but the ability to employ a swarm of these systems to operate **collaboratively** to achieve a common goal will be of great benefit to Defence. A swarm could support:

- Situational awareness
- Medical assistance
- Logistics resupply
- Explosive ordnance detection and disposal
- Confusion and deception

Defence Minister Stuart Andrew said: "Drone swarm technology can revolutionize how we conduct intelligence gathering, humanitarian aid, disposal of explosives and supply our troops on the battlefield." https://www.unmannedsystemstechnology.com/2019/03/uk-ministry-of-defence-funds-drone-swarm-project/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=0b597534bb-eBrief_2019_Apr_02&utm_medium=email&utm_term=0_6fc3c01e8d-0b597534bb-111778317

3Apr19

Video impression of drone future according to Amazon Haye Kesteloo Apr. 2nd 2019



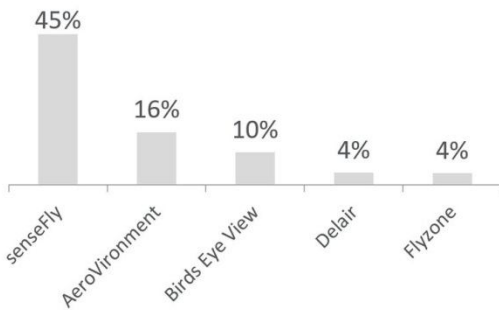
Back in December 2013, Jeff Bezos famously announced on '60 Minutes' that deliveries by drone would be routine by 2018. And, even though [that scenario hasn't quite panned out](#), a lot of progress has been made in the drone industry, including deliveries by drone. [Amazon](#) has been one of the most active companies to file for drone-related patents. One of which includes an "airborne fulfillment center" such as an airship or blimp that would float around with drones to complete the last mile delivery. Well, a computer-generated video was circulated online that shows just what such a drone future according to Amazon might look like.



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It includes a massive Amazon blimp. Now, this video is computer generated imagery, but it is a very good impression of what Amazon described in their “airborne fulfillment center” patent. As the massive blimp flies over an urban area, a number of drones fly out of it to complete the last mile delivery. <https://dronedj.com/2019/04/02/drone-future-according-to-amazon/#more-15876>

FAA commercial drone registration figures show senseFly eBee as most popular fixed wing APPLICATION BUSINESS DRONES AT WORK HEADLINE NEWS MANUFACTURER TECHNOLOGY UNITED STATES ALEX DOUGLAS APRIL 3, 2019



The data is according to an official FAA Part 107 commercial drone registration data acquired by senseFly following an FOIA request.

It showed that senseFly small Unmanned Aerial Systems account for almost half of all new commercial fixed-wing drone registrations, at 45%.

The FAA’s figures, spanning the period January to September 2018, the latest data available, showed that last year’s registrations of the senseFly eBee are 29% ahead of the next fixed-wing provider on the list.

CEO of senseFly, Gilles Labossière, commented: “What we see is that industrial users are increasingly understanding the efficiency benefits a fixed-wing solution can bring over other sUAS platforms, such as quadcopters; primarily, that a fixed-wing drone’s greater endurance enables operators to complete medium- and larger-sized projects faster than a rotary drone. This helps to reduce in-field labor costs, and it enables operators to complete and bill more projects each week.” https://www.commercialdroneprofessional.com/faa-commercial-drone-registration-figures-show-sensefly-ebee-as-most-popular-fixed-wing/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-297485-Commercial+Drone+Professional+DNA+-+2019-04-03

Why drone races are hard to follow for spectators Haye Kesteloo Apr. 3rd 2019



An article in the WSJ today, explains why drone races are hard to follow for spectators. Many drone racing fans are left with questions such as: Where is the drone? Who’s winning? Even though the article doesn’t provide a solution to the challenge faced by spectators, it does do a



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really good job explaining why it is hard for many people to get excited about First-Person-View drone racing.

Mike Cherney writes for the WSJ: *...first-time drone-racing spectator Paula Cumner was impressed by the speed and maneuverability of the little machines. She also had no idea who won until an announcer proclaimed the victor.*

"At the moment, you go to a drone race, 95% of the people there are people racing, the other 5% are their girlfriends or friends," said Leonard Hall, lead engineer at Melbourne, Australia-based Freespace Drone Racing, which designed the bigger drones. "It's very hard to get spectators."

You can bring your own racing goggles and become part of the action. *Some die-hard fans, who are usually pilots themselves, bring their own video goggles to races, which allows them to tap into the pilots' video feeds to get a better view. There can be technical difficulties.*

Although one spectator who had done just that said: *The view was amazing. But he still couldn't tell which drone was winning.* You can read the entire article [here](#).

<https://dronedj.com/2019/04/03/drone-races-hard-to-follow/>

Illegally-flown drone hits NYPD officer on head during rabbi's funeral [Haye](#)

[Kesteloo](#) Apr. 2nd 2019



"There was a drone that came out of the sky and hit a police officer," NYPD police commissioner James P. O'Neill said, according to [NBC New York](#). "The drone apparently ran out of gas... and it landed on the officer's head."

According to the [Daily News](#), the drone pilot had told the police that he was trying to land the aircraft on a rooftop, but wasn't proficient at flying it. A police source said that the drone operator 'only had the drone for a week.' The NYPD took the drone pilot in custody, and he might be facing possible assault charges, according to police.

It is illegal to fly a drone in any of the five boroughs of New York City, although this is based on [a decades-old law](#) and many industry experts question if it would hold up in the court of law.

To **fly your drone legally** in New York City, there are [only five parks where this is allowed](#).

<https://dronedj.com/2019/04/02/nypd-officer-illegally-flown-drone/>



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4Apr19

INSECT-SIZE DRONES, COMING TO A SPY MISSION NEAR YOU EALVARO TAPIA

HIDALGO FOR OZY Tom Cassauwers THE DAILY DOSE APR 03 2019



[Unmanned drones have been around](#) for quite some time. For most of that time, they have looked and worked like traditional aircraft and helicopters, but that may be about to change. Animal Dynamics, a British startup spinoff from Oxford University, produces biologically inspired vehicles and drones — including the dragonfly-inspired “Skeeter,” a drone the size of a pen intended for military reconnaissance.

The company’s 44 employees, \$8 million in venture capital and contracts with the British Ministry of Defense signal the increasing attention on bio-inspired design. Skeeter is in its research and development phase, and early tests have begun. “Small drones often have problems maneuvering in heavy wind,” says Adrian Thomas, a 56-year-old Oxford professor. “Yet dragonflies don’t have this problem. So we used flapping wings to replicate this effect in



our Skeeter. It is designed for dragonfly-like maneuvering. Note how small it is here, next to a pen.

“The design is very challenging and subtle,” he says. “But we have cracked the issues with lift generation and gust tolerance, and Skeeter flies outside nicely. We are currently working to increase the flight time, and increase its robustness and operating lifetime.”

<https://www.ozy.com/rising-stars/insect-size-drones-coming-to-a-spy-mission-near-you/93079>

AeroVironment Awarded \$17.4 Million Puma AE UAS Contract For United States

Ally April 3, 2019 Military



[AeroVironment, Inc.](#), a global leader in unmanned aircraft systems for both defense and commercial applications, today announced it received a \$17,356,084 firm-fixed-price contract in March 2019 to provide [Puma™ AE II](#) small unmanned aircraft systems training and support to an allied nation. Delivery is anticipated by September 2019.



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“The combat-proven Puma AE delivers tactical Intelligence, Surveillance and Reconnaissance in a wide range of operating environments – over land and sea – providing the intelligence to help customers proceed with certainty,” said David Sharpin, vice president, sales and business development for AeroVironment.

AeroVironment’s family of small drones comprise the **majority of all unmanned aircraft in the U.S.** DoD inventory, and its rapidly growing international customer base numbers more than 45 allied governments. “This contract award is another indication of the unique capabilities and value international customers recognize in our small UAS solutions,” said Sharpin.

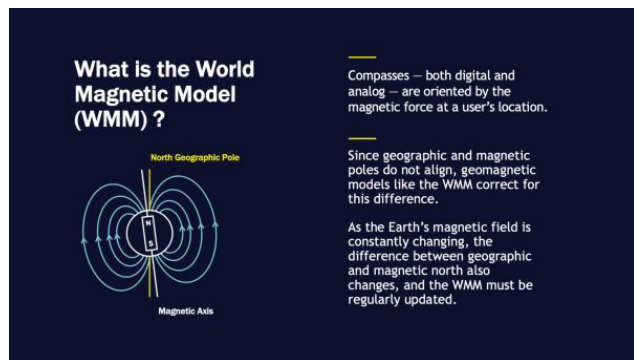
The Puma AE is a man-portable drone designed for land and maritime operations. The Puma, empowers the operator with extended flight time and a level of imaging capability never before available in the small UAS class. <https://uasweekly.com/2019/04/03/aerovironment-awarded-17-4-million-puma-ae-uas-contract-for-united-states-ally/>

MagQuest Seeks to Enable New Approaches to Geomagnetic Data Collection for the WMM

April 3, 2019 Juan Plaza

Earth is a giant magnet. Compasses — both digital and analog — are oriented by the magnetic force at a user’s location. Since geographic and magnetic poles do not align, geomagnetic models like the World Magnetic Model (WMM) correct for this difference.

The WMM is embedded in thousands of systems. More than a billion smartphone users depend on the WMM to point them in the right direction when they use mobile navigation apps.



Production of the WMM currently uses space-based magnetic field measurements that the European Space Agency (ESA) Swarm mission has provided since 2013. Swarm mission satellites contain several instruments

capable of producing a variety of measurements, including magnetic vector field measurements. To ensure sustainability of the WMM, the U.S. government is taking a proactive approach to identifying new methods of data collection independent of Swarm.

A New York-based company, [Luminary Labs](#), is the designer and producer of [MagQuest](#), a prize **competition** on behalf of the National Geospatial Intelligence Agency (NGA). The purpose of the competition is to identify **novel approaches to geomagnetic data collection** for the WMM.



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The competition is aimed at exploring how other methods, such as **drones**, might accomplish the same goal, drastically reducing costs and increasing efficiency.

https://www.expouav.com/news/latest/wm-world-magnetic-model-magquest/?mkt_tok=eyJpIjoiTW1Sa1pEWmINRE0zTXpSaylsluQioiJpWXdzOHFESklucFpicWhrSHBYdkdMMWgrdHVTVWtGdDOzMDdaSmcxU3Y3QXc3RkhBbzB4cFFJdkduK216ZkxvJlBT3VsTHQwZ05GXc9JaEtiaVhBZU5wT3h5TEZGc3k3bjA0eWR6S2M2OHEzdzJqcDk5YSs4OXprV0VkaG9rXC9Eln0%3D

UNL researchers getting ready to start drone tornado study Lincoln Journal Star Mar 29, 2019



A drone used by the Targeted Observation by Radars and UAS of Supercells team maneuvers toward a supercell thunderstorm during the 2018 storm season.

A long-awaited research project involving drone-based investigation of severe storms will launch this spring. Researchers from the University of Nebraska-

Lincoln and three other universities will start the Targeted Observation by Radars and UAS of Supercells project May 15.

The largest-ever study of its kind will involve more than **50 scientists and students**, who will use four unmanned aerial vehicles, a manned aircraft, eight trucks equipped with meteorological instruments, several mobile radar systems and sophisticated weather balloons to collect data on supercell thunderstorms, which are thunderstorms with deep rotating updrafts that are the most likely to spawn a tornado.

The project, which was announced last fall and will encompass the 2019 and 2020 severe storm seasons, will cover the Great Plains from North Dakota to Texas, and Iowa to Wyoming and Colorado.

The goal of the project, which is funded by a three-year, \$2.4 million grant from the National Science Foundation, as well as additional funding from the National Oceanic and Atmospheric Administration, is to better study the hidden composition of severe storms. The hope is that the data gathered will improve the detection of tornadoes and reduce the number of false-alarm warnings that are issued.

“Every place in the United States is vulnerable to supercell thunderstorms,” Houston said.

“What we learn in this laboratory called the central Plains is applicable everywhere. Tornadoes



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are geographically agnostic." AccuWeather is predicting 1,075 tornadoes in 2019, which is 9 percent more than the 987 tornadoes in 2018.

The other two schools participating in the project are Texas Tech University and the University of Oklahoma. https://journalstar.com/news/local/unl-researchers-getting-ready-to-start-drone-tornado-study/article_3132bbb9-1535-529f-9df4-9562cb9ef2a9.html#1

Drone era arrives for local governments sooner than most By Jacob Demmitt

jacob.demmitt@roanoke.com 381-8621 Apr 1, 2019



Roanoke County firefighters Jacob Dodson (left) and Christopher Lacy fly a DJI Phantom drone at the Masons Cove fire and rescue station. The county has seven certified drone pilots and three drones spread around the county for quick deployment.

A drone was used for the **first** FAA-approved medical supply drone delivery in Wise County in 2015, an effort that included the Mid-Atlantic Aviation Partnership at Virginia Tech. As drone use has increased since, local governments are now considering what they have to do to utilize the technology in beneficial ways.

Roanoke County has a team of seven certified pilots and three drones standing by for everything from tracking brush fires to capturing aerial photography for county brochures. Franklin County's GIS department has a drone to track progress at major construction projects and photograph tourism events. Roanoke City has purchased a drone for its fire department, though it's still working out the program details before it sees much use. Pulaski County has used drones to map vehicle wreck scenes, among other jobs.

Radford Sheriff Mark Armentrout earned his drone pilot certification so he can fly search and rescue missions over the New River or take aerial photographs of property for sale.

In Christiansburg, IT Director Adam Carpenetti bought a drone several years ago when he got tired of troubleshooting issues with the town's antennas mounted on cell towers. The job would often be as simple as checking to see if a power indicator light was blinking. But it would take thousands of dollars and up to a week to hire a tower climber. So Carpenetti got a drone with a camera and started handling the job himself.

When a Giles County hiker got lost in 2017, rescue teams found themselves searching four miles of dense forest on the side of a mountain. Celanese, a local company that has a drone for



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security monitoring, volunteered to help out. The company's drone had a thermal camera and spotted the hiker within 30 minutes. It then hovered overhead with strobe lights flashing in order to guide search crews in the hiker's direction.

https://www.roanoke.com/news/local/christiansburg/drone-era-arrives-for-local-governments-sooner-than-most/article_b00e076e-1522-5679-9941-8125c532c0d6.html

Using Drones to Improve Flood Forecasts COASTAL FLOODING FLOOD APR 1, 2019



[NOAA] As the Yalobusha River rose around Greenwood, Mississippi, during a major rainstorm in late February, scientists from the [Northern Gulf Institute](#) at Mississippi State University deployed a small unmanned plane that took high-resolution images of rising waters and beamed them back in **real time** to NOAA weather forecasters.

Scientists piloted the 8.5-foot long by 14-foot wide Griffon Outlaw G2E unmanned plane from MSU's Raspet Flight Research Center in Starkville, Mississippi to take, process and transmit images with 6-inch resolution when flying 4,500 feet above the ground.

The images were transmitted to the High Performance Computing Collaboratory at MSU, and could be immediately downloaded by NOAA's NWS Lower Mississippi River Forecast Center. NOAA forecasters used the information to refine forecasts that are **vital** to local emergency managers, the public and the area's farmers.

Once the plane landed, scientists retrieved higher resolution images stored onboard that can now be used to improve flood prediction models. <http://www.weathernationtv.com/news/using-drones-to-improve-flood-forecasts/>

CMU team develops a robot and drone system for mine rescues Brian

Heater@bheater / 5 days ago



On our final day in Pittsburgh, we find ourselves in a decommissioned coal mine. Just northeast of the city proper, Tour-Ed's owners run field trips and tours during the warmer months, despite the fact that the mine's innards run a constant 50 degrees or so, year round.



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With snow still melted just beyond the entrance, a team of students from Carnegie Mellon and Oregon State University are getting a pair of robots ready for an upcoming competition. The small team is one of a dozen or so currently competing in [DARPA's Subterranean Challenge](#).

The goal of the **\$2 million** challenge is to design a system capable of navigating complex underground terrains, in case of cave-ins or other disasters. The robots are created to go where human rescuers can't — or, at very least, shouldn't.



The CMU team's solution features multiple robots, with a four-wheeled rover and a small, hobbyist-style **drone** taking center stage. "Our system consists of ground robots that will be able to track and follow the terrain," says CMU's Steve Willits, who serves as an adviser on the project. "We also have an unmanned aerial vehicle

consisting of a **hexacopter**. It's equipped with all of the instrumentation that it will need to explore various area of the mine."

The rover uses a combination of 3D cameras and lidar to navigate and map the environment, while looking for humans amid the rubble. Should it find itself unable to move, due to debris, small passage ways or a man-made obstacle like stairs, the drone is designed to **lift off** from the rear and continue the search. <https://techcrunch.com/2019/03/30/cmu-team-develops-a-robot-and-drone-system-for-mine-rescues/>

Drone Delivery Canada Says Commercialization Underway Betsy Lillian April 3, 2019



Drone Delivery Canada (DDC) says it is moving toward commercial operations and revenue generation in 2019 in remote Canada and rural Canadian communities.

In addition, DDC will be pursuing eight business sectors where it sees growth opportunities: health care, pharmaceuticals, oil and gas, mining, agriculture, forestry, construction and courier.

"The opportunities are not only with the many Canadian First Nations and Inuit remote communities, but also with a broad range of government, commercial and industrial applications globally," comments Michael Zahra, vice president of operations and strategy. "We are also seeing an increase in traction with our international customers globally as our drone delivery system continues to be validated globally. Our proven system is seen as a commercially



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viable delivery infrastructure solution to companies looking to reduce costs and dramatically improve logistics.”

In March 2018, DDC [completed](#) a series of test flights at Griffiss International Airport in Rome, N.Y., representing **the first for the company in the U.S.** https://unmanned-aerial.com/drone-delivery-canada-says-commercialization-underway?utm_medium=email&utm_source=LNH+04-05-2019&utm_campaign=UAO+Latest+News+Headlines

DPR Construction Adopts SkyCatch Drone Data Solution Betsy Lillian April 3, 2019

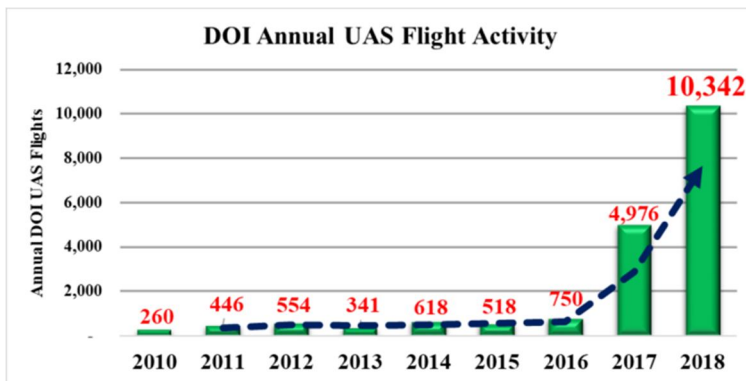


DPR Construction has signed an enterprise-wide agreement with Skycatch that will create a new model of unmanned aerial vehicle standardization and productivity for all of DPR’s project sites in the U.S.

Hannu Lindberg, a construction industry veteran and leader of DPR’s virtual design and construction team, says “We’ve seen Skycatch deliver results in a variety of applications and settings. We believe it offers the best opportunity for us to deliver our projects more efficiently.”

The ability to share drone data with a range of users – from the design team to the subcontractor – allows DPR to enhance communication and efficiency. DPR also cites improvements in logistics planning, BIM coordination, quality control, as-built verification and billing verifications. https://unmanned-aerial.com/dpr-construction-adopts-skycatch-drone-data-solution?utm_medium=email&utm_source=LNH+04-05-2019&utm_campaign=UAO+Latest+News+Headlines

The Interior Department’s Drone Program Keeps Growing Betsy Lillian April 4, 2019



In fiscal year 2018, the U.S. Department of the Interior increased its unmanned aircraft systems usage by **108% year-over-year.**

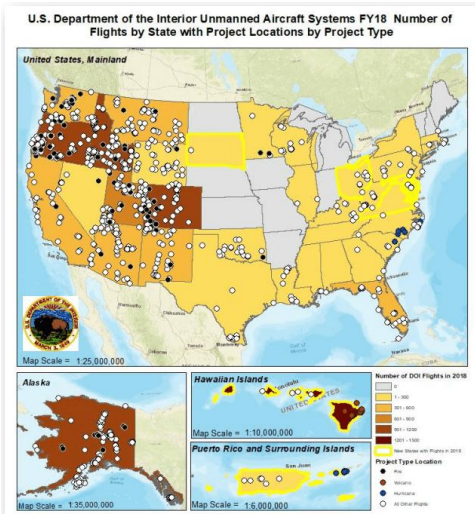
In total, the federal agency conducted 10,342 UAS flights across more than 25 types of missions in 42 states and U.S.



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territories during the year. This is up from 4,976 flights in 2017, which saw a big jump from 750 in 2016.

The DOI is responsible for managing a total of 500 million acres of land and 1.7 billion acres on the Outer Continental Shelf. It also expanded its UAS operations to eight new states and territories in 2018: Delaware, Hawaii, Maryland, Ohio, Puerto Rico, South Dakota, the U.S. Virgin Islands and Virginia.



Number of DOI flights in fiscal year 2018 by state

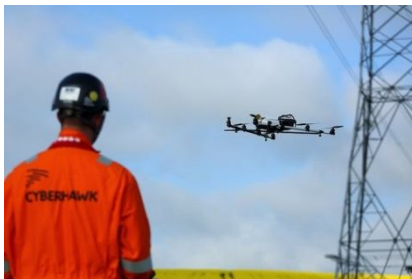
The agency categorizes its UAS missions as project flights (planned or one-off missions) or incident support (unforeseen missions). During the year, 72% of the missions were project flights, while the rest were for fires (14%), volcanoes (14%) and hurricanes (1%).

Further, the DOI had 531 drones and 359 active pilots during the year. With a total acquisition cost of \$1.9 million, the DOI's fleet of drones cost less than several of the agency's manned aircraft: e.g., the \$2 million AS530 helicopter, the \$3 million King Air airplane or the \$6.3

million Bell 412 helicopter. https://unmanned-aerial.com/the-interior-departments-drone-program-keeps-growing?utm_medium=email&utm_source=LNH+04-05-2019&utm_campaign=UAO+Latest+News+Headlines

Newly Acquired by Magnesium Capital, Cyberhawk Plans U.S. Expansion

Betsy Lillian April 1, 2019



Cyberhawk Innovations Ltd., a provider of drone inspections and asset visualization software for energy infrastructure, has been acquired by funds advised by London-based Magnesium Capital LLP.

To date, Cyberhawk has flown more than 30,000 commercial missions in more than 30 countries. Recently, the company developed cloud-based, AI-enabled visual asset management software known as iHawk, which uses high-resolution imagery to digitize industrial infrastructure assets. iHawk is [already supporting](#) multiple energy multinationals.



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The new transaction facilitates a **full exit** for the company's existing institutional investors, Scottish Equity Partners and Scottish Investment Bank, as well as provides additional growth capital to fund further stages of software development and a **U.S. expansion**. Headquartered near Edinburgh, Scotland, Cyberhawk also has locations in Houston; Abu Dhabi, the United Arab Emirates; and Kuala Lumpur, Malaysia.

"Over the last 10 years, with the support of Scottish Equity Partners and the Scottish Investment Bank, our team has not only built a thriving, profitable business but has played a critical role in the creation and digitization of the entire unmanned aerial vehicle inspection industry," comments Chris Fleming, CEO of Cyberhawk.

"This next phase of growth is a very exciting time for the business," he continues. "We see a huge opportunity in the U.S. market, a region in which we are already using our credentials and mature, trusted UAV data-capture solutions as a springboard for growth. https://unmanned-aerial.com/newly-acquired-by-magnesium-capital-cyberhawk-plans-u-s-expansion?utm_medium=email&utm_source=LNH+04-05-2019&utm_campaign=UAO+Latest+News+Headlines

5Apr19

Lebanon receives 6 Scan Eagle drone systems from US FERGUS KELLY APRIL 4, 2019



Lebanon received six Boeing Insitu Scan Eagle unmanned aerial systems from the United States on Wednesday, April 3, the Lebanese Armed Forces and the U.S. Embassy in Beirut said. The [#LebaneseArmy](#) Air Force received a batch of 6 drones through Rafic Hariri International Airport, as part of the United States Aid program dedicated to the [#LAF](#)

The Boeing Insitu ScanEagle drone is a small, portable low-altitude long-endurance unmanned aerial vehicle with a flight endurance of over **20 hours** used for battlefield intelligence, reconnaissance and surveillance.

A single ScanEagle system [comprises](#) four air vehicles, a ground control station, a remote video terminal and the launch and recovery systems. The drone carries a stabilized electro-optical and infrared camera on a lightweight inertial stabilized turret system. It can also carry a miniature synthetic aperture radar. The Scan Eagle systems, valued at more than \$11 million, are part of a [\\$120 million package of U.S. military aid for Lebanon](#) announced in December 2017.



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"This advanced equipment will help the Army build on its capability to conduct border security and counterterrorism operations and importantly to defend the country and the people of Lebanon," Ambassador Elizabeth Richard said at the time.

<https://thedefensepost.com/2019/04/04/lebanon-scan-eagle-drone-us/>

Amazon plans to launch over 3,000 satellites to offer broadband internet

TECHNOLOGY NEWS APRIL 4, 2019



(Reuters) - Amazon.com Inc on Thursday confirmed its plan to build a network of over 3,000 satellites through "Project Kuiper" to provide high speed internet.

The project will launch a constellation of low-Earth orbit satellites that will provide low-latency, high-speed broadband connectivity to people globally who lack basic access to broadband internet, the company said. Details of the project were filed with the United Nation's International Telecommunication Union last month.

Amazon's satellite project faces stiff **competition** from similar ventures from billionaire entrepreneur Elon Musk's rocket company SpaceX and Airbus-backed OneWeb among others. In February, OneWeb launched its first six satellites.

Companies such as SpaceX, LeoSat Enterprises and Canada's Telesat are working to enable data networks with hundreds or even thousands of **tiny satellites** that orbit closer to Earth than traditional communications satellites, a radical shift made possible by leaps in laser technology and computer chips. <https://www.reuters.com/article/us-amazon-com-broadband/amazon-plans-to-launch-satellites-to-offer-broadband-internet-idUSKCN1RG1YW>