UAS and SmallSat Weekly News

Contents

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

12Apr19

SpaceX launches mega rocket, lands all 3 boosters MARCIA DUNN April 11, 2019

A SpaceX Falcon Heavy rocket carrying a communication satellite lifts off from pad 39A at the Kennedy Space Center in Cape Canaveral, Fla., Thursday, April 11, 2019.

CAPE CANAVERAL, Fla. (AP) — SpaceX launched its second supersized rocket and for the first time landed all three boosters Thursday, a year after sending up a sports car on the initial test flight.

The new and improved Falcon Heavy thundered into the early evening sky with a communication satellite called Arabsat, the rocket's first paying customer. The Falcon Heavy is the most powerful rocket in use today, with 27 engines firing at liftoff — nine per booster.

Eight minutes after liftoff, SpaceX landed two of the first-stage boosters back at Cape Canaveral, side by side, just like it did for the rocket's debut last year. The core booster landed two minutes later on an ocean platform hundreds of miles offshore. "What an amazing day," a SpaceX flight commentator exclaimed. "Three for three boosters today on Falcon Heavy, what an amazing accomplishment." It's not UAS or SmallSats, but a noteworthy achievement.
https://apnews.com/ed0364d2539d4ce29fbef75b1ddeff70

Virgin Orbit satellite-launching plane to take off from Guam April 11, 2019

HONOLULU (AP) — A company owned by British billionaire Richard Branson is picking Guam as a site for its airplane-launched satellite service. Virgin Orbit plans to launch small satellites from a rocket released by a customized Boeing 747. It has another site in California.

The company said Thursday the U.S. Air Force will allow it to take off from the U.S. territory's Anderson Air Force Base. Guam's international airport is seeking a Federal Aviation Administration license to host launches.

Payloads will weigh up to 1,000 pounds and orbit the equator at an altitude of about 310 miles. The satellites will be for communications, research and other uses. The U.S. military is expected to be a customer. https://www.chron.com/business/technology/article/Virgin-Orbit-satellite-launching-plane-to-take-13760737.php

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

Autonomous Vehicles and Drones May Help Address Rural Healthcare Disparities 04/11/2019 by Will Maddox

Autonomous vehicles, drones, and tele-enabled ambulance services are being considered to address rural health disparities by a partnership between Blue Cross and Blue Shield of Texas and Texas A&M Health Science Center. The joint project will research innovative care delivery strategies and other rural health issues.

BCBS of Texas is contributing $10 million to the Health Science Center as a part of the Affordability Cures program to reduce healthcare costs, address health disparities and improve social determinants of health. Projects will look at engaging vulnerabilities and improving access to healthcare, which will include the use of autonomous vehicles, drones, and tele-enabled ambulances as a way to provide better access to rural areas. Research will also analyze the impact of hospital closure on common conditions, study a network that fits the size of community it serves, and evaluate how communities are able to deal with chronic conditions such as diabetes. https://healthcare.dmagazine.com/2019/04/11/autonomous-vehicles-and-drones-may-help-address-rural-healthcare-disparities/

A Drone Airline? Who Will Get the First Approval for Large Scale Drone Delivery in the U.S.? Miriam McNabb April 12, 2019

This week, Google spin off Project Wing featured in two big pieces of news in the drone industry. First came the news that the company had won the approval of the Australian aviation authorities for their drone delivery program. Next was the widespread speculation that Wing would be the first company to get approval from the FAA as a "drone airline" – a move that would pave the way for commercial drone delivery.

FAA Office of Unmanned Aircraft System Integration Executive Director Jay Merkle said that the office would announce the first "air carrier certificate for a drone airline." *"Operations enabled by this exemption will be the first of their kind – a convergence of prior experience the FAA has with both small UAS operations and air carrier operations," the FAA said, in reference to unmanned aircraft systems.*

By requiring drone companies to meet the same standards as those that manned aircraft carriers must meet, the FAA may feel that fewer conflicts between manned and unmanned aircraft will arise – at least until a robust framework of unmanned traffic management is

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

implemented across the country. https://dronelife.com/2019/04/12/a-drone-airline-who-will-get-the-first-approval-for-large-scale-drone-delivery-in-the-u-s/

Without drones, planting a billion trees would take a long time Haye Kesteloo Apr. 12th 2019

Last September in a remote field south of Yangon, Myanmar trees were planted with the help of drones. The unmanned aircraft are made by Biocarbon Engineering, and they shoot biodegradable pods—filled with a germinated seed and nutrients—into the ground. The mangrove saplings that were planted last year are now about 20 inches tall.

"Within three states, roughly 350,000 hectares of coastal forest needs to be restored—an area nearly as large as Rhode Island. With about 5,000 trees able to grow in a hectare, that works out to more than a billion trees. Two operators working with 10 drones can theoretically plant 400,000 trees in a day."

"The drones first fly over an area to map it, collecting data about the topography and soil condition that can be combined with satellite data and analyzed to determine the best locations to plant each seed. Then the drone fires biodegradable pods—filled with a germinated seed and nutrients—into the ground."

"Ultimately, drones could help support much more massive tree planting, which would have a significant impact on climate change: researchers recently calculated that there is enough room to plant another 1.2 trillion trees, which could suck up more carbon each year than humans emit." You can read the entire article here. https://dronedj.com/2019/04/12/without-drones-planting-billion-trees/

Terra Drone acquires stake in aerospace solutions provider BUSINESS EUROPE NEWS ALEX DOUGLAS APRIL 12, 2019

Terra Drone has acquired a stake in Slovenia-based C-Astral Aerospace, a company which specializes in the manufacturing and services of fixed-wing UAS.

The firm's specific focus is on high-productivity and high-endurance surveying, security, and remote sensing.

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

Explaining the reason behind the investment, Toru Tokushige, CEO of Terra Drone, said: “I am sure C-Astral’s UAS will be coveted by various markets all over the world, and Terra Drone’s global network will help them rapidly increase their sales volume.”

Nejc Trost, co-founder of C-Astral Aerospace said “Over the past 11 years, C-Astral has successfully focused on the technological development of advanced long-endurance electric small unmanned aerial systems. Now, we are looking forward to collaborating within the Terra Group to strengthen our global sales and support network.
https://www.commercialdroneprofessional.com/terra-drone-acquires-stake-in-aerospace-solutions-provider/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-298431-Commercial+Drone+Professional+DNA+-+2019-04-12.

15Apr19

U.S. FAA Probes Drone Sighting Over Baseball Game at Boston's Fenway Park

April 12, 2019 DAVID SHEPARDSON

WASHINGTON (Reuters) - The Boston Red Sox said on Friday that a drone flew over the playing field during the late innings of Thursday's evening game against the Toronto Blue Jays. FAA regulations prohibit flying drones around stadiums during major sporting events. "We are trying to learn more about what happened, and stand ready to work with Boston Police and other security agencies to investigate this incident," the U.S. unit of Shenzhen, China-based SZ DJI Technology Co Ltd said in a statement Friday.

"Whoever flew this drone over the stadium apparently overrode our geofencing system and deliberately violated the FAA temporary flight restriction in place over the game." The company added the "incident shows why the federal government must mandate a remote identification system for airborne drones as soon as possible." https://www.usnews.com/news/us/articles/2019-04-12/faa-investigating-drone-sighting-over-baseball-game-at-bostons-fenway-park

Wallops set for Wednesday launch of rocket loaded with experiments from Virginia PAMELA A. D’ANGELO FOR THE FREE LANCE-STAR

Student experiment leaders (from left) Kim Wright of Old Dominion, Erin Puckette of the University of Virginia and Madison Broadnax of Virginia Tech pose with their teams’ satellites.

NASA Wallops Flight Facility and Virginia’s Mid-Atlantic Regional Spaceport is set to launch an Antares rocket carrying a Cygnus cargo

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

spacecraft to the International Space Station Wednesday.

The mission is the inaugural launch of the Virginia Space ThinSat Program, a partnership of Virginia Space Grant Consortium and Twiggs Space Lab. The program allows participating students to design, build and launch a small satellite within about one year.

The Virginia Space Grant Consortium has four of member universities: Old Dominion, Virginia Tech, University of Virginia and Hampton. Three student teams designed and developed small satellites, each about 4 inches cubed and weighing 3 pounds.

Students from ODU, Tech and U.Va. developed their satellite to measure their interaction with the atmosphere that causes a gradual decrease in the satellite's distance from Earth, called orbital decay. The students' satellites will be deployed from the ISS in early July simultaneously so they can orbit together and function as a constellation.

The student project is part of NASA's CubeSat Launch Initiative, which provides opportunities for small satellite payloads built by universities, high schools and nonprofit organizations to fly on upcoming launches. https://www.fredericksburg.com/news/state_region/wallops-set-for-wednesday-launch-of-rocket-loaded-with-experiments/article_d1653bd5-b5c6-50b7-93b3-2d47a9e64ac4.html

South Korea goes 5G – are telecom companies now poised to take over the UTM market? April 15, 2019 Philip Butterworth-Hayes UAS traffic management news

On April 5 Korea became the first country in the world to roll-out a 5G mobile telephone network. Earlier this year KT (formerly known as Korea Telecom) awarded Ericsson a 5G commercial contract to enable the nationwide launch of commercial 5G services in the country.

The two companies are targeting drone management services as an early market opportunity for this new technology. 5G will massively extend the amount of data which can be communicated along with the range and robustness of the communications link.

The advent of 5G will, believe many UTM experts, transform the drone management and flight control markets. Mobile devices travelling at up to 500 kilometers per hour can potentially stay connected on a 5G network, and up to one million devices can be supported by 5G in a square kilometre; 5G network equipment and devices will consume only 10% of the energy consumed by 4G network equipment and devices, and specialized services that will operate on the 5G

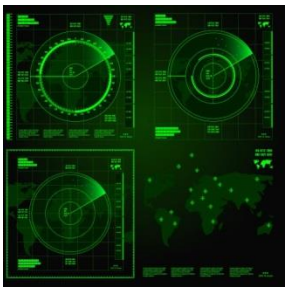
network will take much less time to implement; five millisecond end-to-end travel time of data from the mobile device to the edge of the 5G network – "faster than the blink of an eye, and 5G will be more than 99.999% reliable." Mariah Scott, CEO of Skyward, Verizon's UTM company, said Verizon would be the first company to connect 1 million drones to the 5G network. https://www.unmannedairspace.info/uncategorized/south-korea-goes-5g-are-telecom-companies-now-poised-to-take-over-the-utm-market/

FAA "expects to license commercial drone operator in May" April 12, 2019 Philip Butterworth-Hayes UAS traffic management news

The Federal Aviation Administration is expected to award its first license to operate a drone airline in May, according to the US *National Law Review.* "Last year, the FAA determined that large-scale commercial package delivery drone operations would require certain safety and economic certification standards like other licensed U.S. airlines. The FAA has not yet announced which company will receive that certificate, but to date, the only air carrier certificate application for a drone carrier listed on the applicant website has come from Wing Aviation LLC, which is a subsidiary of Google's parent, Alphabet, Inc," said the review.

"In the next month we expect to announce we will have our first … air carrier certificate for operating a drone airline," said FAA Office of Unmanned Aircraft System Integration Executive Director Jay Merkle at a conference in Singapore in April. https://www.unmannedairspace.info/latest-news-and-information/faa-expects-to-license-commercial-drone-operator-in-may/

UK defence ministry launches UKP2 million counter UAS competition April 10, 2019 Philip Butterworth-Hayes Counter UAS systems tenders



The UK's Ministry of Defence has launched a UKP 2 million competition for proposals to tackle the future threats of Unmanned Aerial Systems. The competition, run by the Defence and Security Accelerator, will seek robust and cost-effective next-generation solutions to the risks posed by hostile UAS.

"The MOD is looking to develop new defensive capabilities which draw upon autonomous decision-making mechanisms and networked sensing systems capable of detecting, tracking, identifying and defeating hostile UAS over complex and varied environments.

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

The competition is the latest stage in Defence Science and Technology Lab's ongoing research program into Countering UAS which has been running for ten years. This program has included the extensive research, testing and evaluation of the counter-UAS technology currently employed by the MOD, including the landmark series of 'Bristow' trials with industry in 2013, 2015 and 2018. https://www.unmannedairspace.info/counter-uas-systems-tenders/uk-defence-ministry-launches-ukp2-million-counter-uas-competition/

Healthdrone medical supply program underway in Denmark April 15, 2019 Philip Butterworth-Hayes Urban air mobility

The HealthDrone program is testing drones to transport patient samples, medicine and medical equipment between hospital units, medical practices and home-visiting nurses. In the long term, drones will also transport persons, such as highly specialized doctors, who may be acutely lacking in an operating room.

Partners include Autonomous Mobility A/S, Falck A/S, Unifly, Scandinavian Avionics A/S, Odense University Hospital (OUH), and University of Southern Denmark (SDU).

"The initial tests of the health drones will be carried out in the UAS Test Center in HCA Airport by Odense. The researchers expect the health drones to fly the route between Svendborg hospital and Odense University hospital in less than an hour. Today the transport time of patient samples is an average of 12 hours….When ready, the health drones will improve the logistics in the healthcare sector and assure faster and better treatment for the patients. The drones will enable more examinations to be conducted at medical practices or at home, instead of at the hospitals. The use of health drones is expected to save the Danish hospital sector 200 million DKK per year.

The project is supported by Innovation Fund Denmark with a grant of 14 mio. DKK and a total budget of more than 30 mio. DKK and runs from January 2019 – January 2022 https://www.unmannedairspace.info/latest-news-and-information/healthdrone-medical-supply-programme-underway-in-denmark/

Gatwick could have been an 'inside job', suggests police APPLICATION COUNTER-DRONE CRIME DRONES AT WORK HEADLINE NEWS ALEX DOUGLAS APRIL 15, 2019

Gatwick's chief operating officer, told BBC Panorama that the operator of the reported drone "seemed to be able to see what

was happening on the runway". The BBC report outlined how Sussex Police had also said that the possibility an "insider" was involved was a "credible line" of inquiry.

Chris Woodroofe, COO at Gatwick, also said the way in which he and his team handled the incident would be no different if the same happened again. He also went on to dismiss the suggestions that the number of sightings had been exaggerated as well as dismissing the theory that there had been no drone at all.

However, despite nearly four months passing since the incident, the reported drone sightings are yet to be confirmed or verified. https://www.commercialdroneprofessional.com/gatwick-could-have-been-an-inside-job-suggests-police/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-298641-Commercial+Drone+Professional+DNA+-+2019-04-15

New report predicts global drone defense spending to exceed $10bn APPLICATION

COUNTER-DRONE INTERNATIONAL NEWS ALEX DOUGLAS APRIL 15, 2019

A report from Verdnatix has suggested that corporations and civil government agencies will be forced to spend $10.8bn on drone defense by 2039 if regulations do not become strict.

The independent research and consulting firm carried out the analysis based on the threat that UAVs could pose to 42,600 airports, data centers, industrial facilities, ports, power plants and prisons located in the US, Canada and the European Union.

David Metcalfe, Verdantix CEO, commented: "Every month hundreds of vulnerable civil government, industrial and commercial sites are targeted by illegal UAV flights or simply by drone enthusiasts who don't know the rules. Examples range from smuggling at ports, to delivering contraband to prison inmates, to snooping on commercial meetings."

The report describes how spending on drone defense solutions will grow from $80m in 2019 to $10.8bn in 2039, a 28% CAGR. By 2039, prisons will spend $876m, airports$1.5bn and industrial facilities $6.5bn. The analysis is based on the threat that UAVs could pose to 42,600 airports, data centers, industrial facilities, ports, power plants and prisons located in the US, Canada and the European Union. https://www.commercialdroneprofessional.com/new-report-predicts-global-drone-defence-spending-to-exceed-8bn/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-298641-Commercial+Drone+Professional+DNA+-+2019-04-15

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

Sulfur-Sniffing Drone to Patrol Danish Waters MAREX 2019-04-13

In the coming months, a large drone will check emissions from ships in Danish waters to make sure they comply with sulfur emissions limits.

The drone is being provided by the European Maritime Safety Agency and is fitted with a so-called "sniffer" capable of measuring sulfur emissions. Entering the ship's exhaust gas plume, the drone can register the amount of sulfur in the fuel. The data are immediately available to Danish authorities who can follow up if a ship does not comply with the requirements.

The project will contribute to a more efficient enforcement of the sulfur rules, thereby ensuring fair competition for shipping companies and less pollution from ships, says the Danish Maritime Authority. The drone will operate in an area north of The Great Belt where many large tankers sail to and from the Baltic Sea. https://www.maritime-executive.com/article/sulfur-sniffing-drone-to-patrol-danish-waters

RESEARCHERS SPOT FEVERISH CATTLE FROM ABOVE April 15, 2019 Zach Ryall

A DJI Matrice drone equipped with a thermal imaging camera is prepped for takeoff at a research feedlot in Texas.

Texas A&M researchers hope to develop test methods to identify feverish animals before they show symptoms of illness or infect other animals. More precise targeting of antibiotics would reduce overuse of drugs.

Brent Auvermann heads the AgriLife center in Amarillo and is one of seven FAA-certificated remote pilots at the facility. Auvermann and his staff were trained two years ago, and recently renewed their certifications. He recently completed additional training to prepare for applying to the FAA for a daylight operations waiver. Thermal imaging can be more complicated during the day when a black, brown, or pale cow might reflect different amounts of heat. Nighttime becomes more of an equalizer.

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

"It's one thing to have a horse isolated on the ground under control, perhaps even sedated in a large animal veterinary clinic and do some very close-up thermography," Auvermann said. "It's another thing entirely to try to do it from the air, from a mobile platform on mobile animals, without them knowing it's going on."

Drones are used at other locations, and dozens of certificated pilots are on staff. In Corpus Christi, crops including cotton and sorghum are monitored by drones for signs of stress, including disease. The imaging from drones can help measure the size of the bolls on cotton, and through multi-angle imaging, the number of berries on a sorghum head. Drones already have a proven track record in guiding irrigation and fertilizing in addition to monitoring yield and stress.

Prior to enlisting drones for animal study, Auvermann said wheat breeding has been the primary focus of the unmanned aeronautical efforts in Amarillo, capturing images to monitor how different varieties of wheat react to stress. https://www.aopa.org/news-and-media/all-news/2019/april/15/drone-drone-on-the-range

SkySkopes and Robot Aviation Fly BVLOS in Norway

Through a partnership that spans across the Atlantic Ocean, two UAS companies executed Beyond Visual Line of Sight commercial operations in Norway and look to bring them to the United States. SkySkopes, the North Dakota-based drone service provider, was drawn to the FX20 manufactured by Robot Aviation for its long endurance capabilities.

"SkySkopes has flown BVLOS in numerous countries, including the United States. Flying BVLOS in Norway with Robot Aviation was everything we would expect from a world-class operator," said Matt Dunlevy, President and CEO of SkySkopes. "We enjoy bringing their cutting-edge air frames to Minot, North Dakota." SkySkopes' pilots stand ready to take advantage of BVLOS when permitted.

"With the FX20, our electric long-endurance aircraft, equipped with detect and avoid technology for quiet and safe operations, Robot Aviation supports SkySkopes in the growing energy sector. Our cooperation with SkySkopes will shortly result in activities for our small-tactical FX10 system, and we hope that the day when our 20 hour endurance FX450 flying in North Dakota is not far away, says Børre Larsen CEO of Robot Aviation.''
https://dronescrunch.com/skyskopes-and-robot-aviation-fly-bvlos-in-norway/

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

16Apr19

Delta Wants to Use Drones on the Airfield for MRO Michael Bruno Apr 12, 2019

ATLANTA--Delta Air Lines through its Delta TechOps is working on being able to use unmanned aerial vehicles on the airfield--outside of a hangar--to conduct inspection work on its air transport aircraft at Hartsfield-Jackson Atlanta International Airport and others.

Regulators are most concerned with flyaway risk with drones; the fear that the UAVs get loose and interfere with airport operations or worse, run into a flight. One obvious near-term solution may be tethering the UAVs. Donecle started testing and showing regulators 2-3 years ago, including at least one yearlong experiment.

Another idea could include having a deployable field unit that can go to an airfield where aircraft are parked for inspection after experiencing hail or lighting strikes. The airline is talking with regulators over how to go about getting approval, including possibly a blanket waiver of some kind.

"At Delta we absolutely want to fly outside," Piotrowski said. Delta aircraft experience 1,800-2,000 lighting strike events each year, spurring inspections including at airfields without adequate hangar space. https://www.mro-network.com/maintenance-repair-overhaul/delta-wants-use-drones-airfield-mro

Drone tech helping conservationists keep an eye on endangered orangutans

APPLICATION INTERNATIONAL NEWS ALEX DOUGLAS APRIL 16, 2019

Located in Borneo, the team is using imaging to track the orangutan population. Drones can cover large areas more quickly, and the thermal cameras help detect hard-to-spot animals.

Professor Serge Wich from Liverpool John Moores University

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

commented: “When we started this, I was skeptical whether this would work. The tropics are a very humid area, it’s very hot. We weren’t sure if the heat signal of an orangutan in a nest would be visible on the drone images, but fortunately they are.”

As part of the project, researchers were able to conduct 28 flights from two sites over the course of six days and successfully spotted 41 orangutans from the air. Watch the footage here: https://www.commercialdroneprofessional.com/watch-drone-tech-helping-conservationists-keep-an-eye-on-endangered-orangutans/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-298808-Commercial+Drone+Professional+DNA+-+2019-04-16

Drone footage used to show damage done by Notre Dame fire APPLICATION

EMERGENCY SERVICES EUROPE NEWS ALEX DOUGLAS APRIL 16, 2019

Fire officials have been able to use drones to assess the fire while it was still burning to learn how best to tackle the blaze.

Media organizations around the world have used footage obtained by drones to show viewers the extent of the damage.

The French interior ministry also tweeted a video highlighting the work done by emergency services at the scene which showed drone footage and some of the emergency service personnel using drone technology to help in their work.

After a rough translation, the tweet read: “Establish a perimeter of safety, evacuate the residents, fight relentlessly the flames… The forces of help and security are mobilized for more than 3h and use all the means at their disposal to fight the fire. See the video here: https://www.commercialdroneprofessional.com/drone-footage-used-to-show-damage-done-by-notre-dame-fire/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-298808-Commercial+Drone+Professional+DNA+-+2019-04-16

Fuel Cell Module Powers Record-Breaking UAV 16 Apr 2019 Mike Rees

Intelligent Energy has announced that its fuel cell technology has been used by South Korean liquid hydrogen specialist MetaVista to successfully break the Guinness World Record for longest flight time of a multirotor UAV. A flight time of 12 hours, 7 minutes and 22 seconds was officially recorded. The MetaVista team used a 6-litre liquid hydrogen cylinder and Intelligent Energy’s 800W Fuel Cell Power Module to power the UAV.

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

The previous record held stood at 2 hours, 6 minutes and 7 seconds. The substantial difference in flight time achieved demonstrates the impact fuel cells could have on the commercial UAV industry, breaking through the limited flight time constraints of traditional batteries.
https://www.unmannedsystemstechnology.com/2019/04/intelligent-energy-fuel-cell-module-powers-record-breaking-uav/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=b84f37e993-eBrief_2019_Apr_16&utm_medium=email&utm_term=0_6fc3c01e8d-b84f37e993-111778317

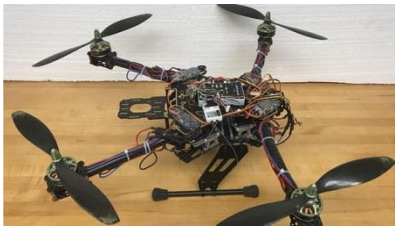
Multi-User BVLOS UAS Network Completes Initial Field Testing 16 Apr 2019 Mike Rees

The University of North Dakota has announced, along with research partners from Harris Corporation and the Northern Plains Unmanned Aircraft Systems Test Site, it has successfully completed initial field testing for a first-of-its kind command and control ground radio network to support beyond visual line of sight drone flights.

The North Dakota Network is a 55-mile system of communications and surveillance infrastructure between Grand Forks and Fargo that enables drones to fly farther and safer in national airspace. The field tests confirmed the network's ability to provide reliable data communications between remote pilots and unmanned aircraft over long distances.

Currently, UAS operations are limited to short distances, largely because reliable long-distance communications have not been available. The Network allows pilots to send commands to unmanned aircraft for take-off, maneuvering, landing and maintaining control at all times. The aircraft use the same link to report information back to the pilots, such as aircraft location, battery life and images collected. This C2 service is aligned with radio standards that are being developed for integrating drones into the national airspace.
https://www.unmannedsystemstechnology.com/2019/04/multi-user-bvlos-uas-network-completes-initial-field-testing/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=b84f37e993-eBrief_2019_Apr_16&utm_medium=email&utm_term=0_6fc3c01e8d-b84f37e993-119747501

Insect-inspired drone folds its arms for improved flight Ben Coxworth 16 April 2019



Whereas quadcopter drones have four rigid propeller-bearing arms, flying insects are able to adjust the angle of their wings according to the situation. Inspired by that fact, scientists have created a drone that can fold its arms while in flight, allowing for better performance.

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

The prototype copter was developed by a team at Indiana's Purdue University, led by Asst. Prof. Xiumin Diao. It's better than a regular drone at flying in windy conditions. It can automatically move its arms to maintain its center of gravity as the wind threatens to knock it askew by hitting it from one side. It can lift heavier asymmetrically-shaped payloads. It is more energy-efficient than others, in that they can be angled to take full advantage of the available thrust. It can squeeze through narrow gaps (as might be encountered in search and rescue operations) by folding its arms to the front and back, making itself skinnier.

Purdue's Office of Technology Commercialization has patented the technology, and is now working with Diao to find industry partners who might be interested in licensing it.
https://newatlas.com/quadcopter-folding-arms/59330/

17Apr19

U.S. Coast Guard Employs UAS To Inspect New ATON Structures April 16, 2019 News

U.S. Coast Guard Civil Engineering Unit Providence, Rhode Island, piloted a short range Unmanned Aerial System to inspect the construction of new Aids to Navigation structures. In a first, Lt. Kieron D. McCarthy conducted the inspections by piloting the UAS from a small boat assigned to the New Haven, Connecticut-based U.S. Coast Guard Cutter Bollard.

Hand launching the drone from the 16-foot boat, the CEU inspected and approved the steel tower structures that serve as fixed channel markers at Housatonic River, Black Rock, and Duck Island. McCarthy said using the UAS saved the CEU more than 30 hours of work and reduced the risk of having to climb the structures.

"It has proved to be exceptionally helpful with CEU's mission. Largely for elevated assets or assets over water such as roofs, siding, towers, piers and wave breaks," said McCarthy. It is also an effective tool for post hurricane damage assessments. "We can use it to quickly map and photograph an area immediately after a storm goes through," said McCarthy.
https://uasweekly.com/2019/04/16/u-s-coast-guard-employs-uas-to-inspect-new-aton-structures/?utm_source=newsletter&utm_medium=email&utm_campaign=uasweekly_daily_newsletter_04_16_2019&utm_term=2019-04-16

DRONERESPONDERS to Unite First Response and Emergency Management Organizations April 16, 2019 News

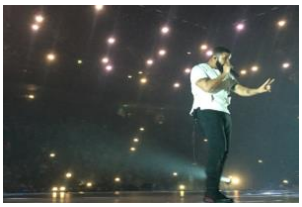
Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

To expedite adoption and use of UAS by first responders, the non-profit DRONERESPONDERS Public Safety Alliance was unveiled on April 12 at the UAS DRONES Disaster Conference in Miami to assist law enforcement, fire rescue, search teams, emergency management and other stakeholders with implementing UAS technology. The Alliance will forge partnerships with other organizations across government, industry and academia to continue the adoption and evolution of UAS. It will focus on three missions:

1. PREPAREDNESS: Providing shared education and training capabilities for the development, implementation, management and flight operations of public safety drone programs to help first responders standardize UAS as a tool for everyday missions.
2. RESPONSE: Developing and maintaining a global directory of UAS teams, remote pilots, assets and capabilities that can be deployed when emergencies and disasters strike.
3. RESILENCE: Deciphering and standardizing concepts, regulations and procedures across like-minded organizations around the globe to develop consistent protocols for public safety and emergency management operations.

"Public safety agencies around the globe are yearning for additional knowledge about how they can use drones for life-safety emergency missions," says Werner. "DRONERESPONDERS will help first responders navigate the complex unmanned aviation landscape."
https://uasweekly.com/2019/04/16/droneresponders-public-safety-alliance-to-unite-first-response-and-emergency-management-organizations/?utm_source=newsletter&utm_medium=email&utm_campaign=uasweekly_daily_newsletter_04_16_2019&utm_term=2019-04-16

Verity Studios Has Performed Thousands of Flights Over People Safely. Now You Can Use Their Code. Miriam McNabb April 17, 2019



Verity Studios AG, is a pioneer in autonomous drones – and in flight over people. It is the team behind spectacular drone shows at concerts, festivals and events like Cirque du Soleil, Drake's most recent tour, and Metallica concerts. They have over 7,000 flights over people under their belts, and Verity thinks they've cracked the code – pun intended – to making those flights failsafe.

"While many technological innovations have been developed to improve the aircrafts' operational safety, such as "return to home" features and automatic obstacle avoidance, the

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

majority of technical failures today are caused by a failure in the propulsion system," says Verity. "This is a technological challenge that even the largest companies in the drone industry have not solved. Against conventional engineering analysis, the team at Verity has now proven the ability to safely control and land a quadrotor after a loss of one, or even two, of its propulsion systems with an algorithm-only solution. When a Failsafe-enabled drone has a propulsion system failure, instead of spinning out of control and crashing to the ground, the drone stays in the air, stabilizing itself using sophisticated algorithms. It can then be safely navigated to an appropriate landing location." https://dronelife.com/2019/04/17/verity-studios-has-performed-thousands-of-flights-over-people-safely-now-you-can-use-their-code/

True Terrain Following Available For Professional Drone Surveys and Inspections

April 16, 2019 Mapping and SurveyingNews

A new solution for UAS allows for accurate terrain following without the need to rely on map data.

With the help of a proprietary data logger and a laser altimeter, SPH Engineering has solved a problem that has been troubling the drone industry for quite some time: how to follow terrain without compromising effectiveness and precision.

The new solution is especially significant for inspections, mining, engineering, agriculture and environmental industries where ground penetrating radars or analyzers are used or where being able to fly over objects at a particular height is crucially important for other reasons. As this usually requires flying them above the ground at a very precise height, rough estimates are not good enough.

SPH Engineering gathers and uses terrain data on the go. The laser altimeter gathers an uninterrupted data flow by measuring the flight time of a short flash of infrared laser light as it bounces back off the surface of the terrain, while the data logger adjusts the drone flight height accordingly. As it uses actual and not pre-existing data, the mode is called True Terrain

All of this, together with the software, allows for hassle-free drone mission planning with uncompromised flight height precision. The operator just needs to set the desired flight height and speed, and activate the True Terrain Following mode. More details are available at industrial.ugcs.com/ttf. https://uasweekly.com/2019/04/16/true-terrain-following-available-for-professional-drone-surveys-and-

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

inspections/?utm_source=newsletter&utm_medium=email&utm_campaign=uasweekly_daily_newsletter_04_17_2019&utm_term=2019-04-17

18Apr19

Jet-Powered Flying Taxi Startup Seeks Safety Approval Christopher Jasper April 17, 2019

German drone startup Lilium is seeking regulatory approval for the world's first all-electric vertical takeoff and landing passenger jet.

Lilium has begun the process of securing certification for the planned five-seat air taxi from the European Aviation Safety Agency and will also commence an application with the U.S. Federal Aviation Administration, Christopher Delbrueck, the company's incoming chief financial officer, said in an interview.

The company aims to have a fleet of craft operating in cities across the globe by 2025, providing a pay-per-ride service that will be emission-free, five times faster than a car and produce less noise than a motorbike. The model, which achieved a first for a jet in 2017 when a prototype successfully transitioned between hover mode and horizontal flight, will have a 186-mile range, allowing it to travel between New York and Boston in just an hour.

Lilium has raised $100 million to fund development work, including $90 million secured in 2017, though further financing will be required to go to full-scale production. Gaining regulatory and public acceptance in the U.S. is seen as a key step, especially in light of the number of existing helipads and airfields that could host its craft and pare spending on infrastructure. Initial applications will assume a pilot is on board, though the model will be fully autonomous.

There are more than 100 electric-aircraft programs in development worldwide.
https://www.bloomberg.com/news/articles/2019-04-17/jet-powered-flying-taxi-startup-lilium-seeks-safety-approval

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

UAS Industry Responds to Proposed FAA Rules Betsy Lillian April 17, 2019

The notice of proposed rulemaking for night/over-people flights would "allow operations of small unmanned aircraft over people in certain conditions and operations of small UAS at night without obtaining a waiver." The FAA also sought input on "stand-off distances, additional operating and performance restrictions, the use of UAS Traffic Management, and additional payload restrictions," as well as on "design requirements" and "critical safety systems" for UAS.

AUVSI argues that the proposed rules for flying over people are "too restrictive and [do] not consider the safety or societal benefits of the technology." The agency should follow a two-step approach: first, through a "revised framework that provides certainty for operators, such as safety compliance based on standards and aircraft reliability, and permits operations over moving vehicles," and second, through "new, performance-based regulations that account for the low risks posed by UAS operations, backed by available data."

DJI says it is opposed to the proposal to prohibit flights over moving vehicles, which, for example, could pose "unjustified restrictions on the use of drones by public safety organizations." DJI believes the 0.55 lb. weight limit for flying over people is too low and should be doubled, at least.

Commercial Drone Alliance says the proposed rules for flying over people are "far too restrictive and impose undue costs without any corresponding demonstrable safety or security benefit." It takes issues with "the prohibition on flights over moving vehicles, the singular focus on kinetic energy impact standards, the failure to recognize sophisticated operators for more expanded operations, and the narrow definition of 'direct participant.'"

Small UAV Coalition says rules to enable expanded commercial operations, including the operations-over-people proposal, will not move forward until remote identification standards are in place.

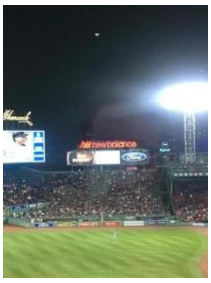
AMA The Academy of Model Aeronautics underscores the need for the FAA to "account for the differences" between model aircraft and drones when it comes to rulemaking. "The FAA cannot and should not take a one-size-fits-all approach to regulations." https://unmanned-aerial.com/uas-industry-responds-to-proposed-faa-rules?utm_medium=email&utm_source=LNH+04-18-2019&utm_campaign=UAO+Latest+News+Headlines

19Apr19

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

At Fenway, a prank and a warning HIAWATHA BRAY TECH LAB GLOBE STAFF APRIL 18, 2019

It came, it hovered, it left. The remote-controlled aerial drone that soared over Fenway Park during last Thursday's Red Sox game was probably just a bored teenager's idea of a prank. If so, the fans had nothing to fear.



But it could have been much worse. Suppose there had been a bomb on board, or maybe a package of some toxic powder? The drone that buzzed Fenway during the late innings of the game against the Blue Jays was illegal, on multiple levels. Drones aren't allowed over crowds of people, over sports arenas during a game or within the restricted airspace of major airports, which rules out most of downtown Boston and adjacent neighborhoods.

Authorities eventually found and confiscated the drone and interviewed the pilot, whom Boston police would only describe as "a juvenile." No charges have been filed yet, but since no harm was done, the perpetrator will likely get off with a stern warning from the Federal Aviation Administration, which enforces regulations of drones.

In 2017, a disgruntled drone pilot dropped leaflets into San Francisco's Levi Stadium during a 49ers game. Also that year, a drone crashed into the stands at Petco Park during a San Diego Padres baseball game. And the FAA is hearing from about 100 pilots each month, complaining that they can see drones operating near their flight paths.

The terrorist group ISIS routinely used explosive drones in Syria and Iraq. In January, Houthi rebels in Yemen used an explosive drone to kill six loyalist troops during a parade. And in August, opponents of Venezuelan strongman Nicolas Maduro went after him with two camera drones stuffed with plastic explosives while he was giving a speech during a military parade in Caracas. Maduro was not harmed, but seven soldiers were injured, and the explosions triggered panic among the spectators.

Even an unarmed drone can cause havoc in the wrong place. Last December, the UK's second-largest airport, Gatwick, was shut for hours and more than 140,000 Christmas travelers were stranded when a drone hovered along the runways. The perpetrators have never been caught.
https://www.bostonglobe.com/business/2019/04/18/fenway-prank-and-warning/EP5WApSuHbBxe3zqikbGuK/story.html

The 2019 AUSVI Trade Show Len Calderone for RoboticsTomorrow 04/18/19

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

The Association for Unmanned Vehicle Systems International show will be held at the McCormick Place in Chicago with exhibits running from April 30, 2019 to May 2 and educational programs running from April 29 to May 2.

8,500 technologists, regulators and users from commercial to defense sectors will be attending. AUSVI XPONENTIAL brings together the entire unmanned systems community to share ideas and learn about the emerging trends of unmanned technology.

One of the features of the show is the AUVSI Startup Showdown, which is a competition for disruptive companies, who are developing or improving unmanned systems technologies and applications. These are up-and-coming, investment-worthy startups. AUSVI gives them a platform to share their innovations with investors and corporations, looking to form profitable connections with the next generation of innovators.

At this time, five finalists will have ten minutes each to present their business to the panel and then will have a five-minute question and answer session with the judges. All XPONENTIAL 2019 attendees and exhibitors are invited to attend. https://www.roboticstomorrow.com/article/2019/04/the-2019-ausvi-trade-show/13442/

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com