UAS and SmallSat Weekly News

Contents

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

16Nov18

Aurora Flight Sciences schedules first flight for solar-powered endurance drone

INNOVATION NEWS RESEARCH TECHNOLOGY ALEX DOUGLAS NOVEMBER 15, 2018

Powered only by the sun, Odysseus is an ultra-long endurance, high-altitude platform built for persistence. The device utilizes advanced solar cells and is built with lightweight materials, technology the company claims could make Odysseus effectively fly for months on end.

The project was organized and led by Aurora president and CEO John Langford, alongside other MIT colleagues. Commenting on the news, Langford said: "Odysseus was an idea born out of Daedalus that is now a real solution to advancing the important research around climate change and other atmospheric chemistry problems. Odysseus offers persistence like no other solar aircraft of its kind, which is why it is such a capable and necessary platform for researchers. Odysseus will indeed change the world."

Aurora hopes the platform will be used to measure vegetation, ice coverage and flow rates, and even ground moisture and, in addition to climate and atmospheric research, it hopes the long-flight aspect of the device will enables users to complete a range of missions and operations across communication, connectivity, and intelligence.

http://www.commercialdroneprofessional.com/aurora-flight-sciences-schedules-first-flight-for-solar-powered-endurance-drone/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-283032-Commercial+Drone+Professional+DNA+-+2018-11-15

Flyability looks to future of indoor autonomous inspection after £8.5m round of fundraising

BUSINESS EUROPE FINANCIAL HEADLINE NEWS ALEX DOUGLAS NOVEMBER 13, 2018

This now brings the company's total amount of funding to £14.2m since its founding in 2014, investment which the company says will go to planning of indoor autonomous inspection.

Flyability's Series A investor ETF Partners co-led the round together with Swisscom Ventures which joined the round with a significant stake, along with historical investors GoBeyond and MKS.

Flyability says it wants to change how visual inspection is performed in the power generation, oil and gas, mining and chemical industries by preventing human exposure to hazardous environments and reducing downtime and inspection costs with its collision-tolerant drone, Elios.

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
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Remy de Tonnac, partner at ETF, said: "Flyability has delivered on its vision and has achieved remarkable growth since ETF Partners first invested in 2016. We are pleased to see the company reducing environmental risk across a number of industries, and we are delighted to support Flyability's next stage goal of delivering inspection on a click."

The company, based in Switzerland, has already demonstrated 3D mapping and localization capabilities indoors, where Flyability's unique collision tolerance technology gives access to complex environments with peace of mind.

Flyability is now taking on the DARPA SubT Challenge with a team of top researchers from around the world to push the limits of indoor autonomous flight.

http://www.commercialdroneprofessional.com/flyability-looks-to-future-of-indoor-autonomous-inspection-after-8-5m-round-of-fundraising/

Bell Flight wants to make an awesome tilt-rotor drone Logan Nye Oct. 03, 2018

The Bell V-247 Vigilant is to be an unmanned bird capable of operating at ranges of 1,300 nautical miles from its ship or base, carrying 2,000 pounds internally or a 9,000-pound sling load, or spending 12 hours time on station.

Bell says the aircraft will be capable of carrying a 600-pound payload 450 nautical miles for a mission with 8 hours time on station. It can also refuel in flight, further extending ranges and time on target.

And, with just two V-247s, a commander could establish 24-hour persistent reconnaissance of a target. That implies a much lower set of maintenance requirements than manned aircraft, since many require more hours of maintenance on the ground than they get in-flight hours.

Best of all, because the wings fold and it doesn't need space for a crew, the V-247 would fit in about the same amount of space on a ship as a UH-1Y, tight enough for it to land on Navy destroyers, whether to shuttle supplies or to refuel and re-arm for another mission.

For armament, Bell highlights its ability to fire air-to-surface missiles, helping Marines on the ground or potentially helping interdict fast boats during a swarm attack on the water.

https://www.wearethemighty.com/gear-tech/bell-helicopters-tilt-rotor-drone

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

In spite of dire warnings from scientists, UK military continues to work towards fully autonomous killer drones November 14, 2018 Feilidh Dwyer

The United Kingdom's Ministry of Defense (MoD) is actively funding development research into fully autonomous killer drones.

Future autonomous killer drones may have the ability to select, identify, and destroy targets (including people) with no human input. That information comes via Drone Wars UK, a small English non-profit and one of the many groups keeping the public informed and aware of the risks autonomous weapons may pose to us.

Every year the MoD spends around £80 million ($100 million USD) on research. Two of the major projects that have received significant portions of these funds are aircraft AI and a large research projects into drone swarm technology – which can be used to knock out military opponents' satellites, radars or other defenses.

The MoD has also invested into Taranis Drones (pictured below), which is capable of navigating to a runway, taking off, self-plotting a route to a mission area while "searching for targets." The only real thing the Taranis drone can't do (at least right now) is choosing to kill a target without human input. The current international rules of engagement forbid the drone to initiate the decision to kill without human involvement. There are all sorts of compelling reasons we don't want drones choosing who lives and dies.

A project involving significant UK MoD funding, the Taranis drone. Is this another step towards fully autonomous killer drones?
https://www.wetalkuav.com/uk-military-working-on-fully-autonomous-killer-drones/?utm_source=WeTalkUAV&utm_campaign=03c3212ff4-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_1d410cb84d-03c3212ff4-83642867

18Nov18

Missing hikers on Japan's Mt Fuji may soon be rescued by drone November 18, 2018 Feilidh Dwyer

Mount Fuji is one of the most recognizable tourist spots in all of Japan. Standing at 12,389 ft., it is a favorite attraction for visitors from around the world.

An average person can complete the return journey up and down the

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

mountain in five to seven hours. In 2017 alone, several thousand people were injured during their ascent.

Japanese cellphone provider KDDI Corp has signaled that from the beginning of 2019 they will begin to use drones to partake in search and rescue missions for hikers lost or injured on Mt Fuji.

The company had recently carried out a trial of the technology in a nearby prefecture. KDDI worked in conjunction with Yamap Inc. to locate people who carried GPS devices (which in the smartphone age, is basically everyone). The drones are also synced with weather software that allows them to fly the best route to the hikers. In the future, they plan to add microphones and cameras so the drones can fly to the stranded person and communicate with them.

The KDDI drones can fly up to 40mph and are able to operate in high winds. They are equipped with thermal imaging cameras which will help locate anyone missing on Mt Fuji at night or in low-cloud conditions.

We're looking forward to hearing how this program goes once it's fully operational next year!
https://www.wetalkuav.com/missing-hikers-in-japan-could-be-rescued-by-drone/

GAMA Promotes eVTOL Development MARY GRADY

The General Aviation Manufacturers Association will accelerate its efforts to work with European regulators to promote the development of electric VTOL aircraft, the association said this week. Thirty eVTOL experts from eight countries met with EASA, the European Commission and industry representatives over two days in Cologne and Brussels to discuss the future of the technology.

"I think there is tremendous potential for Europe and beyond," said Dorothee Bär, the German Federal State Minister for Digitisation. "Urban air mobility will become part of our daily life."

Discussions focused on the regulatory framework needed for safe and sustainable integration of eVTOLs into Europe's airspace, including topics such as certification, maintenance, operations, licensing and airspace management. "It's great that the industry is getting together proactively to liaise with EASA on common standards," Bär said. GAMA said it's focused on "prioritizing the safe introduction of these new systems and technologies whilst making flying more accessible to the general public." https://www.avweb.com/eletter/archives/101/4193-full.html?ET=avweb:e4193:2565185a:&st=email#231857

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

Aurora Introduces Solar-Powered Autonomous Aircraft KATE 'CONNOR

Boeing's Aurora Flight Sciences revealed a new solar-powered, autonomous high-altitude pseudo-satellite (HAPS) concept on Wednesday. The Odysseus is designed to be an ultra-long-endurance platform capable of performing research, communication, connectivity and intelligence missions. The company says the aircraft will have a payload capacity of 55 pounds and be capable of staying aloft "almost indefinitely." Its first flight is scheduled for next spring.

Some key features of Odysseus include the ability to persistently and autonomously remain on station, provide a greater year-round global operating zone than other vehicles in its class, and receive payload and hardware options and be quickly customized, re-tasked and relocated. According to Aurora, Odysseus was inspired by the Massachusetts Institute of Technology's Daedalus project, which was led by Langford and other founding members of Aurora. Daedalus set distance and endurance records for human-powered aircraft in 1988.
https://www.avweb.com/eletter/archives/101/4193-full.html?ET=avweb:e4193:2565185a:&st=email#231853

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CU Boulder's mini satellites set to launch Monday in California CHARLIE BRENNAN

Boulder Daily Camera November 18, 2018

The University of Colorado's Laboratory for Atmospheric and Space Physics is primed for Monday's scheduled launch of two of its miniature satellites on a mission to collect data on the physics of the sun and its impact on Earth. The two LASP missions are known as the Miniature X-ray Solar Spectrometer-2 (MinXSS-2) and the Compact Spectral Irradiance Monitor (CSIM).

Both are part of the payload for the Monday launch of Spaceflight's SSO-A SmallSat Express mission, onboard a SpaceX Falcon 9 rocket set to be launched at 11:30 a.m. MST from Vandenberg Air Force Base in California. Monday's mission launch highlights CU's growing prominence in deploying CubeSats for scientific research. Tom Woods, associate director of LASP, said that as opportunities increase to launch spacecraft from commercial missions like SSO-A, small satellites will become even more popular tools for scientists.

Read the full story on timescall.com. https://www.denverpost.com/2018/11/18/cu-boulder-mini-satellites-launch/

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

YOUR DRONE CAN GIVE COPS A SURPRISING AMOUNT OF YOUR DATA RIC NIILER

SCIENCE 11.16.18

BLOOMBERG

Drones are appealing to criminals in part because they seem fairly anonymous, flitting through the sky with an invisible digital tether to its owner. But anonymity is no longer a safe bet. In the hands of crime investigators, a drone can reveal a range of personal and financial information about its owner.

Most of these details are stored in memory chips inside the drone's circuit board. Or sometimes a law enforcement official gets hold of a drone's controller instead, which can open up access to its owners' setup account. The exposed data includes credit card numbers, which might be stored in an owner's account for after-market purchases, or GPS information about the drone's flights. It can even include an email or physical address.

With drones more regularly getting caught up in criminal activity, the National Institute of Standards and Technology has assembled an archive of digital readouts from 14 commercial drones, with the goal of helping law enforcement officials learn how to best extract this little-used trove of data. The NIST reference manual gives step-by-step instructions on how to physically remove the individual SD memory chips from each drone, and what to look for once an agent plugs the card into a computer.

https://www.wired.com/story/your-drone-can-give-cops-a-surprising-amount-of-your-data/?mbid=social_twitter&utm_brand=wired&utm_social-type=owned

Lifesaving Delivery Drones Second-Generation Zipline Aryn Baker

In 2016, Zipline made history by launching the first commercial drone delivery service in the East African nation of Rwanda, expediting the delivery of blood and vital medical supplies to some of the world's most remote communities.

This year, the California-based startup unveiled a new iteration of its fixed-wing craft that can carry up to 3.85 lb. at 80 m.p.h. for up to 100 miles per round-trip, making it the fastest—and most efficient—commercial delivery drone in the world. Zipline also streamlined its launch and recovery process, enabling the second-generation Zips to make 500 deliveries per day from their launching center, up from 50. And while Zipline will continue to serve rural communities in Africa, which now have even quicker, easier access to lifesaving supplies, the startup has other ambitions as well. Zipline recently started testing emergency medical-supply delivery in the U.S. and will start regular

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

service in North Carolina early next year. http://time.com/collection/best-inventions-2018/5455667/second-generation-zipline/

Dubai cops will soon be seen patrolling the streets on drone-like flying hoverbikes

Transport November 15, 2018 Sayan Chakravarty

The future is here! Dubai police force has started training its cops to fly and operate drone-like hoverbikes that can take to the skies to go after the bad guys. It was last year when the police department announced that they are testing a hoverbike concept built in the United States to patrol the streets of Dubai.

The Dubai Police have already started with the training program and hope to induct these ultra-cool machines into the force by 2020. The quad-rotored craft is the first production unit built by a Russian company named Hoversurf in Watsonville, California. "We are currently training and working with Dubai police to get their division up and running for 2020," Hoversurf said in a statement to USA TODAY.

The hoverbike weighs just 253 pounds and can hover at about 16 feet above the ground while flying at 60 miles per hour. It is powered by a lithium manganese nickel battery pack that gives it a flying time of 10 to 25 minutes with a pilot and about 40 minutes in drone mode with no driver. The first example was gifted to the Dubai Police for free for training and testing, while anyone can order one of these machines for $150,000. Hoversurf has also secured approval from the Federal Aviation Administration for the flying craft. The Dubai police department is already the coolest of its kind with a big fleet of some of the most exotic cars ever built. It also plans to add Robocop-style self-driving surveillance machines.
http://luxurylaunches.com/transport/dubai-cops-will-soon-be-seen-patrolling-the-streets-on-drone-like-flying-hoverbikes.php

We Asked 3 Industry Leaders for Their Assessment of the European Drone Market – Their Answers May Surprise You

Harry McNabb November 19, 2018

Flyability's Elios drone

DRONELIFE attended The Commercial UAV Show in London on November 14-15, 2018. We asked 3 industry leaders for their

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

perspective on the European market for drones – their answers may surprise you.

Patrick Thevoz, co-founder and CEO of Swiss-based Flyability, is running a truly global business. Their collision-tolerant Elios drone is used to access spaces that are generally considered inaccessible: from shipping containers in South America to industrial plants in Europe.

"We are leaders in the indoor inspection space in mining, oil and gas, power and water, public safety, and chemicals, and enterprise projects are beginning to scale."

Omid Maddah, Marketing and Communications Manager at manufacturer Yuneec, agrees that Europe is now ready to fully engage with the drone market. From their beginnings as a provider of recreational drones, Yuneec has expanded into the commercial market. In Europe, they have offices in the UK, France, Poland. "Europe is ready to adopt drone technologies in their ecosystems," says Maddah.

Christopher Thomson, Sales Manager at senseFly SA, a Parrot company, has a different take on the European drone market. The senseFly eBee has been an industry favorite for some time, providing a lightweight, safe endurance solution for agriculture and other markets. Parrot has now developed a full line of drone solutions including hardware and software. With drones at multiple sizes and price levels, Parrot Business Solutions is expanding into a wide variety of applications and verticals across the globe. https://dronelife.com/2018/11/19/we-asked-3-industry-leaders-for-their-assesment-of-the-european-drone-market-their-answers-may-surprise-you/

A STARTUP IS SETTING DRONES FREE BY TYING THEM TO THE GROUND JACK STEWARTJACK STEWART TRANSPORTATION 11.13.18

CyPhy's tethered drone once stayed in the air for two weeks—and only came down when the ground power went out.

THE WHOLE IDEA behind drones is that they fly free. CyPhy Works sees a different sort of liberty: freedom from short-lived batteries. "With the tether, we're able to fly continuous operations for two weeks at a time without coming down," says Laura Major, CTO of the Danvers, Massachusetts based startup.

That kind of flight time may not matter when hauling burritos, but it can make drones significantly more useful for the military and first responders likely to use drones as "instant

towers." They want aircraft that can hover over a given spot, providing them a birds-eye view or relaying radio and cell signals. The longer they can stay airborne, the better. And as a bonus, that tether can double as a transmission line, moving data from the sky to the ground without relying on a wireless signal.

CyPhy designed its drone for long-term flight, with motors and circuitry that don't burn out easily, and which are packaged to avoid overheating. A small battery on board can manage a safe landing if a sharp-billed goose slices the microfilament tether. It can also give the motors an extra boost of power if they need to resist a gust of wind. The drone, about four feet across with six spinning rotors, can fly at up to 400 feet. It can carry a camera that has a 30X optical zoom, good for vision for five to 10 miles, depending on conditions. Operators can swap that out for any payload up to six pounds, and the company has done tests of cell repeaters with Sprint.

One big potential application for persistent, tethered drone technology is getting communications up and running in areas hit by natural disasters like hurricanes.

The company is looking at scaling up—customers always want to fly heavier payloads for more powerful radios and camera, or environmental sensors. It's also looking at building a moving system, where the base station and spooler could be on the back of a vehicle, with the drone following behind on a leash. That should return some of the advantages of a traditional unhooked drone, but still allow all day data gathering for clients like insurance companies, without stops every 20 minutes for battery swaps. https://www.wired.com/story/startup-setting-drones-free-tying-them-to-the-ground/

20Nov18

FAA Processes More than 50,000 LAANC Drone Applications Mark Huber November 19, 2018

The FAA has processed more than 50,000 applications under the LAANC (low-altitude authorization and notification capability) from drone operators to fly in controlled airspace since November 2017—far exceeding the agency's expectations for program participation.

LAANC covers 300 ATC facilities serving 500 airports and it allows UAS operators with near-instant approval, a major flight-planning convenience.

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

The system uses airspace data from TFRs, Notams and UAS facility maps to show maximum allowable altitudes where the FAA authorizes operations under the Part 107 waiver rule for small UAS commercial and public operations.

To date, the FAA has approved 14 LAANC service providers, and UAS operators can also file for airspace authorizations using the FAA DroneZone, including areas not covered by LAANC or when the operator holds a Part 107 waiver.

The 14 authorized service providers are Aeronyde, Airbus, AirMap, AiRXOS, Altitude Angel, Convergence, DJI, Harris Corp., Kittyhawk, Project Wing, Skyward, Thales, UASidekick and Unifly. https://www.ainonline.com/aviation-news/general-aviation/2018-11-19/faa-processes-more-50000-laanc-drone-applications

Army Seeks Industry Feedback on Manned-Unmanned Aircraft Teaming Program

Darwin McDaniel November 20, 2018News, Technology

The U.S. Army has begun to solicit industry insights on a program that aims to develop and demonstrate teaming of manned and unmanned aerial platforms to carry out tactical operations with minimal human intervention.

A FedBizOpps notice posted Friday says Army Contracting Command expects to transition platforms at technology readiness level 4 to TRL 6 or 7 under the *Advanced Teaming Demonstration Program.*

The A-Team program aims to integrate software and other autonomous technologies into the service's future long range assault aircraft, future armed reconnaissance aircraft and advanced unmanned aircraft system.

The service intends to award cost-reimbursable contracts, cooperative agreements and other types of contract instruments starting May 2019 through August 2019 for the first two efforts of the program's technical approach. The technical approach includes mission systems development and integration; subsystems technology development and integration; and technology demonstrations.

The Army will host an industry day on Dec. 6 in Huntsville, Ala., to discuss the program's acquisition approach and technical requirements. https://blog.executivebiz.com/2018/11/army-seeks-industry-feedback-on-manned-unmanned-aircraft-teaming-program/

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

Drones, data and digital tools lauded as new ways to fight human rights abuses

Zoe Tabary Thursday, 15 November 2018

A pilot flies a Phantom drone at the 4th Intergalactic Meeting of Phantom's Pilots (MIPP) in an open secure area in the Bois de Boulogne, western Paris, March 16, 2014.

LONDON - From "citizen science" identifying slavery to drones mapping degraded land, technology and data can help create a "search bar for the planet" and detect and fight all manner of human rights abuses, experts told a conference on Thursday.

Geospatial data and satellite images give analysts and authorities news ways to tackle issues ranging from human trafficking to deforestation, said Andrew Zolli, head of social initiatives at Planet Labs, a U.S.-based space and AI company.

"Environmental stressors, conflict, food security ... we can see issues like deforestation happen in real time."

For example, organisations like the Red Cross Red Crescent Climate Centre are using weather predictions and historical data to trigger the release of funds or other assistance before a disaster like flooding strikes.

Technology can also prove a potent force to improve people's land rights, experts said, with apps and drones being used to map land and forests and establish property records. With 70 percent of the world unmapped, more than 5 billion people lack proof of ownership, according to the Lima-based Institute for Liberty and Democracy.

Crowdsourcing and "citizen science" can help people track slaves, said Kevin Bales, research director at the University of Nottingham's Rights Lab. Its "Slavery from Space" project, which relies on crowdsourcing, involves online volunteers who sift through satellite images to identify possible hives of slavery, which can also help to improve artificial intelligence.

Banks have a crucial role to play in training employees and using their data to uncover trafficking activity, said Erik Barnett, Europe head for financial crime threat mitigation at HSBC.

But technology and data are no silver bullet, panelists said, and require effective partnerships between governments, businesses and academics. http://www.thisisplace.org/i/?id=2778ebee-a8fb-4a66-ac42-7a52fbc9bca4&utm_source=Newsletter&utm_medium=Email&utm_campaign=Place

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

Russian signal jamming drones can block cellphones up to 60 miles away!

November 20, 2018 Feilidh Dwyer

In the past week, Russia's Ministry of Defense announced that they had greatly extended the range of their signal jamming drones.

Signal jamming drones are equipped with radio-electronic warfare systems and have been in use by Russia for around two years. Since first being released, their range has improved from around 20 miles up to 60 miles.

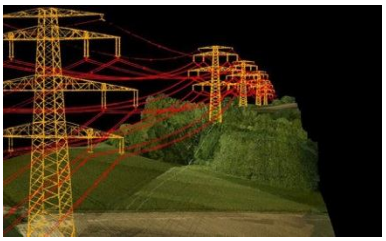
These systems are designed to provide protection and cover to groups of Russian troops from smart weapons such as homing missiles as they move through an area.

The Russian drones fly in groups of two or three along with a ground station. The first one acts as a signal-and-comms relay while another acts as a jammer. The drones disrupt the enemies ability to communicate with one another – which during warfare, may make the difference between life and death.

Til this point in time, the drones have been sighted in Ukraine. According to C4ISR.net, Russian troops reportedly work on adversary signal and cell comms suppression, identification and eventual destruction of the enemy force.

Due to their relatively low cost, compared to traditional fighting methods, wars with drones do not necessarily engender the kind of pushback that we often see when troops are sent into a country, such as during the 2003 invasion of Iraq. Drones make it much easier for countries to enter into long-term conflicts. https://www.wetalkuav.com/russian-signal-jamming-drones-can-block-cellphones-up-to-60-miles-away/

AI-Driven Overhead Line Inspection Uses CAMCOPTER UAV 18 Nov 2018Mike Rees



Siemens has announced that it has launched a new service approach for overhead line inspection called "SIEAERO", using artificial intelligence and a long-range unmanned aerial vehicle. The flights are performed with Schiebel Group's CAMCOPTER S-100, a long-range UAV for beyond visual line-of-sight operation with a high payload capacity.

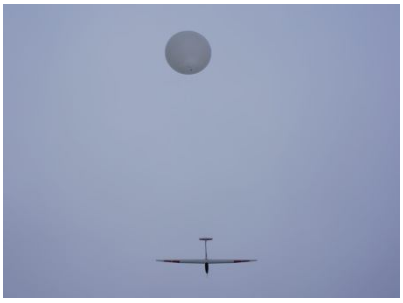
Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

SIEAERO uses AI and machine learning to store, manage and analyze all data in one integrated software system. To reduce the needed amount of flights and inspection efforts, SIEAERO is using a multi-sensor-system that can record all needed data in one go.

"SIEAERO is a gamechanger in overhead line inspection because we are using digitalization to bring services for our customers to the next level," says Mirko Düsel, CEO Transmission Solutions at Siemens' Energy Management Division. "Everything, from planning and performing inspection flights, managing and analyzing the gathered data to report generation and long-term data archiving, is more cost-efficient."

https://www.unmannedsystemstechnology.com/2018/11/ai-driven-overhead-line-inspection-uses-camcopter-uav/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=3cefdd34f3-eBrief_2018_Nov_20&utm_medium=email&utm_term=0_6fc3c01e8d-3cefdd34f3-119747501

Stratospheric Unmanned Glider Begins Flight Tests 18 Nov 2018 Mike Rees



UAVOS and Stratodynamics Aviation have announced that the two firms' joint project, a stratospheric balloon-launched unmanned aerial vehicle called HiDRON has entered the flight test program stage. It is designed to collect high-altitude atmospheric data.

The first flight lasted 1.5 hours and reached an altitude of 6000 m. Vertical speed averaged 2 m/s during the return flight, much slower than typical payload parachutes which often reach speeds of 4 m/s. The test program included: proving the stability of the primary radio link and the backup Iridium satellite system; stabilization and control of the aircraft after the balloon was released; testing the balloon release systems; and monitoring the influence of icing conditions on the UAV controls.

Aliaksei Stratsilatau, UAVOS lead developer, commented: "In general, the first test flight of the HiDRON was successful. All systems worked in a regular operation mode. The next flight will be at an altitude of 25-30km with integrated equipment for weather measurement: an ozonesonde with pressure, temperature and humidity sensors. The collected data will also be integrated with the autopilot sensors."

The development team designed two balloon release systems to ensure redundancy. The release system provides a controlled release from the balloon at the targeted altitude and can also be deployed to mitigate icing risk when passing through cloud layers at low altitudes.

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

The aircraft has a wing span of 3.4 m. The current maximum take-off weight is 4.5 kg with a payload of 1 kg. Further development plans include increasing the payload weight and target vertical speeds of 3-4 m/s on ascent and 3 m/s or lower on descent.

Gary Pundsack, CEO of Stratodynamics Aviation Inc., said: "The HiDRON is a unique balloon-launched unmanned glider for collecting in-situ high-altitude atmospheric data capable of autonomous and soaring flight modes. https://www.unmannedsystemstechnology.com/2018/11/balloon-launched-stratospheric-unmanned-glider-begins-flight-tests/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=3cefdd34f3-eBrief_2018_Nov_20&utm_medium=email&utm_term=0_6fc3c01e8d-3cefdd34f3-119747501

Europe's First Hydrogen Powered Drone Unveiled 14 Nov 2018 Mike Rees

SKYCORP has officially launched Europe's first hydrogen powered unmanned aerial vehicle at the Commercial UAV Show in London. It is a long-endurance quadcopter managed by an Artificial Intelligence operating system.

As a result of a SKYCORP partner company seeking to extend the flight-time of a small commercial drone by over three times that of traditional Lithium-ion Polymer batteries, hydrogen fuel cells were selected as an alternative power source. In addition to improved flight-time, the use of hydrogen fuel cells provides less downtime due to quick refueling and increased payload. The automated AI operating system is capable of running operations, and security is provided via NATO-validated level of encryption. Additional safety features include computer vision, assisted obstacle avoidance and various failure management features.
https://www.unmannedsystemstechnology.com/2018/11/europes-first-hydrogen-powered-drone-to-be-unveiled/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=3cefdd34f3-eBrief_2018_Nov_20&utm_medium=email&utm_term=0_6fc3c01e8d-3cefdd34f3-119747501

Bathymetric Scanning LiDAR Tested on DJI Matrice Drone 19 Nov 2018 Mike Rees

ASTRALiTe, Inc., a developer of LiDAR systems, announced that it has successfully demonstrated its 2-in-1 Topo-Bathy LiDAR on a DJI Matrice 600 Pro UAV during three separate missions over the course of a month.

"This is a significant achievement in miniaturization! The LiDAR runs on its own self-contained battery, saving the drone batteries and enabling more air time.

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

At a nearby reservoir in Colorado, ASTRALiTe integrated its LiDAR System onto the DJI Matrice 600 Pro. It was able to carry the 11 lb. payload while maintaining stability during two 15 minute flights.

A second demonstration was conducted at high elevation in conjunction with the US Geological Survey in Kremmling, CO. River transects were made to document volume flow of the two rivers including depth profiles, vegetation mapping, and underwater object detection.

A third set of demonstrations was conducted at the Applied Research Lab at the University of Hawaii's Institute of Marine Biology. Over three days the LiDAR collected near-shore bathymetry, dune, inlet and lagoon profiles and mapped underwater coral reef structures at centimeter-level resolution.. https://www.unmannedsystemstechnology.com/2018/11/bathymetric-scanning-lidar-system-demonstrated-on-dji-matrice-600-drone/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=3cefdd34f3-eBrief_2018_Nov_20&utm_medium=email&utm_term=0_6fc3c01e8d-3cefdd34f3-119747501

21Nov18

Tennessee County OK'd for sUAS Flights Over People Betsy Lillian November 19, 2018

The Federal Aviation Administration (FAA) has OK'd commercial drone operations over people for the government of Rutherford County, Tenn., through a Part 107 waiver.

Vantage Robotics says the county will deploy its Snap drone, a lightweight aircraft with shrouded rotors and the ability to absorb significant energy on impact, thanks to its frangible design.

Attorney James Mackler, whose law firm handled the application, says, "Rutherford County is now the first and only county government in the nation with a Part 107 waiver allowing these kinds of missions in both emergency and non-emergency situations."

"We have found in Rutherford County a need to be able to capture data and imagery of events, like a controversial rally and counter-protest in downtown Murfreesboro October of 2017," says Mike Curtis, GIS manager for Rutherford County's Office of Information Technology. "While we had some sUAS in the air, the restrictions of keeping the sUAS over structures limited our capability to monitor the event as it evolved. The ability to capture data and

imagery of these types of events will help us keep the public safer." https://unmanned-aerial.com/tennessee-county-okd-for-suas-flights-over-people?utm_medium=email&utm_source=LNH+11-21-2018&utm_campaign=UAO+Latest+News+Headlines

Boeing, SparkCognition Seek to Introduce AI-Based Drone Airspace Mgmt Software via Joint Venture Jane Edwardson November 21, 2018 News, Technology

Boeing and **SparkCognition** intend to form a new joint venture that will develop software platforms designed to integrate autonomous cargo vehicles and other unmanned aircraft systems into the global airspace.

Amir Husain, founder and CEO of SparkCognition, will serve as CEO of Austin, Texas-based **SkyGrid** that will help clients perform emergency response, industrial inspections and package delivery missions using drones, Boeing said Tuesday.

SkyGrid will use artificial intelligence-based dynamic traffic routing, cybersecurity, data analytics and blockchain technologies to develop software meant for airspace management. Husain said the joint venture will deliver technology platforms in support of the urban air mobility sector.

Boeing's venture arm **HorizonX** made an investment in SparkCognition in June 2017 to help develop new tech offerings based on AI and machine learning.
https://blog.executivebiz.com/2018/11/boeing-sparkcognition-seek-to-introduce-ai-based-drone-airspace-mgmt-software-via-joint-venture/

Deloitte Launches New Drone Advisory Offering Betsy Lillian November 20, 2018

Consulting and advisory firm Deloitte has launched a new drone-focused offering, Deloitte US Global Drone Solutions.

Deloitte says its approach is based on helping clients develop drone and counter-drone strategies, determine flight paths and data collection, ingest and process data, and integrate results into clients' business operations. Deloitte is also helping organizations understand the landscape and help provide standardization as the industry continues to evolve. The firm says its new offering is designed particularly for government, health care, energy and insurance clients.

"The application of drones is almost limitless across numerous industries," says Peter Liu, managing director of Deloitte Consulting LLP. "With so much potential, however, comes a lot of

risk, and we are not only helping clients figure out the best way to use drones but deploy them in a way that meets their business objective, adheres to government regulations, and gets them the data they need to make the right decisions." https://unmanned-aerial.com/deloitte-launches-new-drone-advisory-offering

Drones potential answer to Great Wall of China preservation worries HEADLINE NEWS INNOVATION INTERNATIONAL ALEX DOUGLAS NOVEMBER 21, 2018

The UAVs are able to assess places on the wall which were previously completely cut off. This means the people working on restoring the 13,000 mile fortification can gain a better understanding of the task before them.

A report carried out by BBC News shows how the drones are being used to evaluate building patterns and find out if there are any structural faults which need to be managed. Zhao Peng, a Great Wall architect, told the BBC: "Some sections of the wall are very dangerous, but using drones we can measure lengths and undulations."

The report goes on to describe how the drones can provide precise imagery which is helping preserve history in a way they could not have done before. The team working on the wall is hoping the new high-tech way to look after the wall will help preserve it for generations to come. https://www.commercialdroneprofessional.com/drones-potential-answer-to-great-wall-of-china-preservation-worries/

15 drone teams deployed after Camp Fire in Paradise, CA Haye Kesteloo Nov. 19th 2018

CNN reports the Camp Fire isn't even halfway done burning. Meanwhile, drone teams are already deployed after the fire in Paradise, CA, in what is called the largest UAV disaster response effort in the history of California. As we have seen with earlier wildfires, flooding, and hurricanes, drones can help to quickly map and visualize disaster-struck areas and provide assistance during the recovery.

At least 15 drone teams have been deployed in the area of Paradise, CA after the Camp Fire wiped out the town. Drones can be very helpful tools to quickly map and visualize disaster-struck areas. Especially after a wildfire that may have destroyed street signs and burnt-down

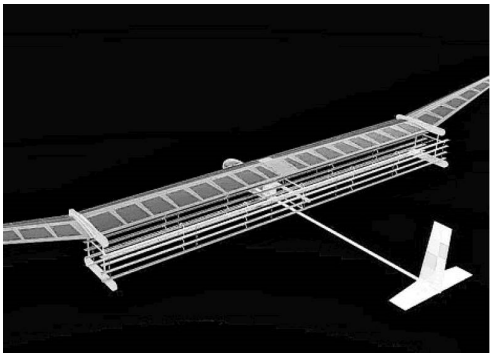
Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
robert.rea@axcel.us | 757-309-5869 | www.axcelinnovation.com

any recognizable features drone maps can be very useful. Highly accurate drone maps can be created quickly and overlayed with street names to aid during the recovery process.

Romeo Durscher, DJI's Director or Public safety Integration, reports on Twitter that 10,000 acres need to be mapped, and that covers only Paradise and Magalia. Now, as if mapping such a large area with 15 drone teams isn't complex enough, what do you think about the data processing of the thousands of photos that have been captured?
https://dronedj.com/2018/11/19/15-drone-teams-deployed-camp-fire-paradise/

22Nov18

Plane inspired by Star Trek has no moving propulsion parts Nov 22 2018 Joel Achenbach The Washington Post



Propelled by "ionic wind"

On Wednesday, Steven Barrett, an MIT professor of aerospace engineering, and his colleagues published in the journal Nature what might someday be viewed as a breakthrough paper in aeronautics. They have invented a solid-state airplane. It runs on electricity from batteries. It makes no noise. It generates no exhaust. Its propulsion system has no moving parts. It has no propellers, no turbines, not even a twisted rubber band. The researchers used batteries and an innovative power converter to create an electrical field along a fine wire.

As explained in a separate Nature commentary by Franck Plouraboué, a senior scientist in fluid mechanics at Toulouse University in France, the electric field agitates free electrons and makes them collide with air molecules and ionize them, which generates more electrons, leading to more collisions — a chain reaction with the net result of sending air molecules in an "ionic wind" streaming toward a structure called a collector.

All of this had been imagined half a century ago but was deemed impractical for creating an airplane. The generation of the ionic wind was simply too inefficient. But Barrett and his team have made a number of advances over the past decade. A major one was developing the power converter that lets them step up the voltage of the batteries to extremely high levels. "Many prototypes of that were fried," Barrett said. They also experimented with various plane designs before crafting one of optimal size, shape and weight.

It's too soon to say exactly how this could be applied. There was no one aboard the plane, no significant cargo, and it should be noted that all this happened indoors, with an initial thrust provided by bungee cords. It's not clear that this can be scaled up and employed for large aircraft, though Barrett is hopeful.
http://digital.olivesoftware.com/olive/ODN/virginianpilot/?olv-cache-ver=20181019025800

23Nov18

Drone Rules Likely Still Years Away, Dragging on Industry's Growth Andy Pasztor

Nov. 22, 2018 *Many agree drones need electronic license plates; few agree on how they should work*

Federal authorities and advocates of unmanned aircraft agree that reliable remote-tracking methods are essential for rapid industry growth, in areas ranging from package deliveries to expanded industrial uses and video applications. Such features, expected to be a combination of hardware and software, would allow law-enforcement and national security officials to identify suspect or potentially hostile unmanned aircraft.

But despite extensive company-government cooperation—spurred by White House pledges to fast-track decisions—trade-association leaders now see final FAA regulatory action stretching past the end of the decade. Some experts say 2022 is more likely.

The industry's frustration, expressed in recent interviews and formal recommendations by an FAA-chartered advisory group, partly stems from technical challenges. Delays also result from skepticism among some law-enforcement and national-security agencies about the safety or reliability of proposed airborne-identification systems. Commercial rivalries further impede consensus, extending the timeline.

The FAA was convinced it was on a good path in late 2017, with the goal of wrapping up the entire effort in a year or so. But in spring 2018, after senior Federal Bureau of Investigation officials balked at proposed safeguards and demanded tougher requirements to identify potential terrorists or hostile operators, FAA managers had to recast their proposal.

Consultant Jim Williams, the former head of the FAA's unmanned aerial systems office, compares identification standards to "an electronic license plate." But he said industry arguments continue to simmer over whether the best approach is to rely on sensors embedded in drones or to develop a hybrid, low-altitude traffic-control system that includes ground-based

elements. https://www.wsj.com/articles/drone-rules-likely-still-years-away-dragging-on-industrys-growth-1542888000?tesla=y

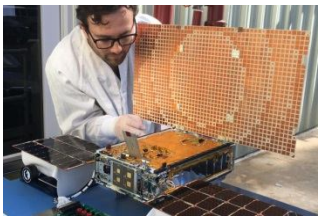
Headed to Mars: A Big Experiment in Tiny Satellites Robert Lee Hotz Nov. 22, 2018

Briefcase-sized CubeSats, commonly used in Earth's orbit, take an interplanetary journey.

This NASA illustration shows the twin MarCO spacecraft flying over Mars with Earth and the sun in the distance.

PASADENA, Calif.—Rapidly approaching Mars are the two smallest and cheapest spacecraft to ever cross between the planets, in the vanguard of what U.S. and European satellite designers hope one day will be swarms of tiny probes prowling the solar system.

The two 30-pound spacecraft are cruising alongside NASA's newest Mars lander—an $828 million robotic probe called InSight that NASA engineers hope to land safely on the Red Planet on Nov. 26. While InSight makes its fiery descent, the tiny twin craft will hang back in orbit to act as a communications relay.



An engineer uses sunlight to test the solar arrays on one of the MarCO CubeSats spacecraft

Hundreds of such tiny bargain-basement spacecraft, called CubeSats after their student-inspired standardized form, are transforming the business of space operations in Earth orbit. They image crops, beam internet service, gather weather data, track aircraft, monitor factories, and count the cars in shopping malls to gauge retail sales. Aerospace companies have filed plans to orbit thousands of these diminutive satellites in the coming decade.

NASA's two MarCO CubeSats, as the pair nearing Mars are called, are the first CubeSats to attempt an interplanetary journey. Launched this past May, each one is no bigger than a briefcase, is built from off-the-shelf commercial parts, and cost $18.2 million—a fraction of the price of the InSight craft they are escorting.

If successful, it could become a turning point in deep space engineering, researchers said. Such tiny probes can be developed not only more cheaply—a tenth of the cost of many traditional missions—but much more quickly, NASA engineers said. The more conventional InSight lander

took seven years to design, build and test. The two MarCO craft took just over a year.
https://www.wsj.com/articles/headed-to-mars-a-big-experiment-in-tiny-satellites-1542891601?tesla=y

Robert Rea | Axcel Innovation | Charlottesville and Portsmouth, VA
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