UAS and SmallSat Weekly News

Contents

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US Navy selects L3Harris FVR-90 VTOL UAS second phase of UAS demonstration

December 4, 2020 News

The U.S. Navy has selected L3Harris Technologies to participate in phase two of a demonstration to identify and evaluate unmanned aerial systems capable of operating in austere deployed environments without additional support systems.

L3Harris was one of two teams selected by Naval Air Warfare Center Air Division AIRWorks, in collaboration with IMPAX, to participate in the three-week demonstration later this year in Yuma, Arizona.

The demonstration is part of a multi-phased selection process to evaluate state-of-the-art technologies, inform future acquisition strategies and satisfy merit-based competition requirements for potential Other Transaction awards for prototyping. Awarded OTs have the potential to become part of a future program of record estimated to be worth up to $1 billion.

L3Harris' FVR-90 uses patented Hybrid Quadrotor technology that allows it to take off in a confined area with a small crew and transition between horizontal and vertical flight quickly and accurately. The aircraft is different from existing 'runway independent' unmanned air systems, requiring no separate launcher or recovery device. It offers increased capability, portability, and smaller operational footprint for military and commercial applications.
https://uasweekly.com/2020/12/04/us-navy-selects-l3harris-fvr-90-vtol-uas-second-phase-of-uas-demonstration/?utm_source=rss&utm_medium=rss&utm_campaign=us-navy-selects-l3harris-fvr-90-vtol-uas-second-phase-of-uas-demonstration&utm_term=2020-12-04

Arecibo telescope collapse caught on video by a drone Josh Spires Dec. 4th 2020

In August, the telescope announced that it would be permanently closing due to excessive damage, including having a hole ripped through it. There was still hope that it could be repaired up until November when the first support wire broke, making it too unstable and dangerous for workers to begin repairs. The telescope was then monitored closely from the ground and the air.

Fast forward to December 3. The National Science Foundation (NSF), responsible for the telescope, released an update to the media, with the news no one wanted to hear. The

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telescope had collapsed. The drone footage starts at the 57-second mark. At first, all that appears to happen is a few bits of paint flaking off and a couple of strands of the wire snapping. The first wire gives way about a second later, ripping out some of the structure holding it in place. Less than a second later, the second breaks with just as much force.

The drone begins to pan to the center platform at this point when the third support wire breaks. The drone manages to pan quickly enough to capture the platform slowly making its way to the ground along with the wires from the rest of the support structures around the telescope. https://dronedj.com/2020/12/04/arecibo-telescope-collapse-caught-on-video-by-a-drone/#more-42894

FAA Releases Airworthiness Criteria for 3DRobotics and Flirtey Models Steve Rhode November 23, 2020 News

3DRobotics Government Services applied to the FAA on May 1, 2019, for a special class type certificate for the Model 3DR-GS H520-G UAS. It has a maximum gross takeoff weight of 5 pounds. It is approximately 20 inches in width, 18 inches in length, and 12 inches in height. It is battery powered using electric motors for vertical takeoff, landing, and forward flight. The UAS may be manually operated or may rely on high levels of automation. The UAS may include multiple UA operated by a single pilot, up to a ratio of 20 UA to 1 pilot.

3DR anticipates operators will use it for inspection or surveying of infrastructure. The proposed concept of operations identifies a maximum operating altitude of 400 feet above ground level, a maximum cruise speed of 33 38 mph, operations within visual line of sight of the pilot, operations at night and operations in sparsely populated areas. https://psflight.org/9398/faa-releases-airworthiness-criteria-for-3drobotics-and-flirtey-models/

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Using artificial intelligence to help drones find people lost in the woods Bob Yirka Tech Xplore NOVEMBER 27, 2020 REPORT

A trio of researchers at Johannes Kepler University has used artificial intelligence to improve thermal imaging camera searches of people lost in the woods. In their paper published in the journal *Nature Machine Intelligence*, David Schedl, Indrajit Kurmi and Oliver Bimber, describe

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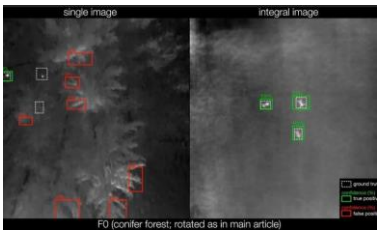
how they applied a deep learning network to the problem of people lost in the woods and how well it worked.



The solution the team used an AI application to process multiple images of a given area. The AI application they used allowed multiple thermal images taken from a helicopter (or drone) to create an image as if it were captured by a camera with a much larger lens. After processing, the images had a much higher depth of field—in them the tops of the trees appeared blurred while people on the ground became much more recognizable. To train the AI system, the researchers had to create their own database of images. They used drones to take pictures of volunteers on the ground in a wide variety of positions.

Testing of the system showed it to be approximately 87 to 95 percent accurate compared to just 25 percent for traditional thermal images. The researchers suggest their system is ready for use by search and rescue crews and could also be used by law enforcement, the military, or wildlife management teams. https://techxplore.com/news/2020-11-artificial-intelligence-drones-people-lost.html?utm_source=Airborne+International+Response+Team+%28AIRT%29+News+List&utm_campaign=8fc3c8d2a6-EMAIL_CAMPAIGN_2020_12_06_01_24&utm_medium=email&utm_term=0_2ecada6f57-8fc3c8d2a6-33089729

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DARPA's CODE autonomously flies General Atomics' Avenger UAV Garrett Reim 4 December 2020

A General Atomics Aeronautical Systems Avenger unmanned aerial vehicle was recently autonomously flown by an artificially intelligent software program developed by the US Defense Advanced Research Projects Agency.

DARPA's Collaborative Operations in Denied Environment (CODE) software program controlled maneuvering of the Avenger UAV for more than two hours without traditional pilot input, General Atomics said on 4 December.

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The experimental CODE program is designed to help the US military fly one or more UAVs without needing an always-connected communications link or dedicated pilot and sensor operator. In theory, autonomous flight would allow many more UAVs to be flown simultaneously and protect the aircrafts' incoming control signals from being jammed or spoofed.

The CODE program is also designed to allow UAVs to autonomously work in coordination with other UAVs, in part by relying on a mesh network – a communications system where signals are passed around using multiple nodes, not just broadcast from a single transmission point. With multiple UAVs in the sky sharing information, the network of aircraft becomes smarter, and blocking all broadcast points at once becomes harder for enemies.

DARPA envisions that a human supervisor, perhaps flying in a nearby fighter aircraft, would watch over the UAVs as they executed missions. That supervisor would approve flight movements and subsystem actions as recommended by the artificially intelligent software program.
https://www.flightglobal.com/military-uavs/darpas-code-autonomously-flies-general-atomics-avenger-uav/141467.article

Airbus Zephyr concludes successful new test flight campaign 3 DECEMBER 2020 In News

This year's campaign held during the first three weeks of November aimed to demonstrate operational flexibility and aircraft agility, particularly testing lower altitude flying and early stage transition to the stratosphere. It also allowed the validation of a new flight planning tool and the development of operational concepts through multiple, varied flights in short succession.

The campaign team used a Zephyr aircraft, fitted with new software control systems and flight test instruments, plus associated lighter test aircraft to conduct multiple successful test flights during November. The flights demonstrated take-off, climb, cruise, upgraded flight control and descent phases, followed by successful landings. The objectives of the test campaign were all achieved showcasing a more resilient and capable aircraft. https://www.aero-mag.com/airbus-zephyr-concludes-successful-new-test-flight-campaign/

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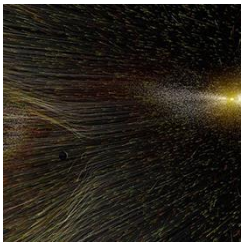
NASA to Launch Smallsat Missions Totaling $140M for Solar Probe Initiative

Brenda Marie Rivers December 4, 2020 News, Press Releases, Technology



NASA is slated to launch two small-satellite missions valued at $140 million combined as part of the agency's Heliophysics Solar Terrestrial Probes initiative in 2025.

The rideshare missions will launch along with NASA's Interstellar Mapping and Acceleration Probe and are meant to support research into the Earth's exosphere as well as propulsion technologies driven by solar radiation.

The first mission, known as Global Lyman-alpha Imagers of the Dynamic Exosphere (GLIDE), is valued at $75 million and will focus on tracking hydrogen-emitted ultraviolet light in the region between the Earth's atmosphere and outer space. Solar Cruiser, the second probe, is a technology demonstration worth $65 million aimed at evaluating the capacity of solar photons to support spacecraft built to forecast solar storms.

NASA also allocated funding for the Spectral Imaging of Heliospheric Lyman Alpha mission of opportunity which will involve mapping the sky to study the boundary between the heliosphere and heliopause. https://www.executivegov.com/2020/12/nasa-to-launch-smallsat-missions-totaling-140m-for-solar-probe-initiative/

AMA LAUNCHES NEW, FREE LAANC SOFTWARE December 7, 2020 Sally French The Drone Girl News

The Academy of Model Aeronautics (AMA) just launched a new, free LAANC software, making it easier for you to fly drones in FAA-controlled airspace (such as if you're flying drones in your backyard within the controlled-airspace radius of an airport).

LAANC, which is short for Low Altitude Authorization and Notification Capability, is a system that automates the application and approval process for airspace authorizations, so drone pilots can get near-instant approval to fly in airspace that they otherwise wouldn't be able to fly in. And the need for those near-instant approvals is growing. More than 320,000 LAANC authorizations have been granted since the automated approval program was launched in beta

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mode in 2017. What's more, more LAANC authorizations were granted in the first half of 2020, than in the first 21 months of LAANC's launch combined.

The free LAANC software is designed for recreational users — perhaps not surprising considering the AMA is an 84-year-old organization that supports hobby pilots, and more recently has grown to support drone hobbyists. The AMA has about 175,000 members spread throughout 2,400 clubs in the United States and Puerto Rico. http://www.thedronegirl.com/2020/12/07/ama-launches-new-free-laanc-software/

Uber May Bow Out Of Urban Mobility Russ Niles December 6, 2020

Uber is reportedly considering selling its urban mobility unit Elevate to raise cash. The company, known for its academically supported and deliberate approach to the point-to-point transportation model, has some more down-to-earth issues to deal with as the effects of the pandemic take huge chunks out of its bottom line. The company lost $3 billion in the second quarter of this year and is refocusing its efforts on making money. According to TransportUp, the reported frontrunner to take over Elevate is Joby Aviation, a lower key but well-financed California company that has worked with Uber in the past.

Neither company has commented on the potential deal. TransportUp says Joby's strength lies in the number of alliances it has formed with industry and its work on regulatory issues. Joby is developing a VTOL aircraft with six tilting electric rotors that convert it to a conventionally flying platform that will go 170 knots. Among its partners are Toyota, Intel and JetBlue. https://www.avweb.com/aviation-news/uber-may-bow-out-of-urban-mobility/?MailingID=512

Boeing Completes Autonomous Teaming Test Flights Kate O'Connor December 4, 2020

Boeing has successfully completed a series of test flights using five "high-performance surrogate jets" operating autonomously in a team. The flights, which took place over ten days, were designed to test Boeing's advanced autonomy technology including onboard command and control and data sharing capabilities. The 11-foot test aircraft reached speeds of 168 mph

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during testing.

“The tests demonstrated our success in applying artificial intelligence algorithms to ‘teach’ the aircraft’s brain to understand what is required of it,” said Emily Hughes, director of Boeing Phantom Works International.

Testing was conducted at the Queensland Flight Test Range in Cloncurry, Australia, as part of the company’s Advanced Queensland Autonomous Systems Platform Technology Project. Boeing worked with RFDesigns, Amber Technology Ltd., Premier Box, McDermott Aviation and Five Rings Aerospace on the project. https://www.avweb.com/recent-updates/unmanned-vehicles/boeing-completes-autonomous-teaming-test-flights/?MailingID=512

Army Seeks Info on JTAARS Supply Drone Concepts

Jane Edwards December 7, 2020 News, Technology

The U.S. Army has asked industry for information on supply drone concepts as part of the Joint Tactical Autonomous Aerial Resupply System program.

A notice published Thursday on the beta SAM website says the service is seeking a supply drone that could demonstrate operational capability at technology readiness level 6, could be ready for use by 2026 and could comply with regulations of the Federal Aviation Administration and the International Civil Aviation Organization.

The Army is interested in an unmanned aerial vehicle with automated functions such as launch, navigation, flight, cargo drop and landing. The UAV should transport payloads of up to 800 pounds, have cybersecurity capability and require minimal training, logistics and support requirements. The drone’s software and hardware should have a modular open systems architecture to incorporate various payloads, command-and-control systems, vehicle management platforms and mission planning software.

Interested stakeholders should submit a white paper and a PowerPoint presentation of no more than 20 slides by Feb. 12. https://blog.executivebiz.com/2020/12/army-seeks-info-on-jtaars-supply-drone-concepts/?utm_campaign=ExecutiveBiz%20Daily%20Headlines%2012.07.2020%20%28UMbmpk%29&utm_medium=email&utm_source=LIST%3A%20ExecutiveBiz%20Daily&_ke=eyJrbF9lbWFpbCI6ICJyb2JlcnQucmVhQGF4Y2VsLnVzIiwgImtsX2NvbXBhbnlfaWQiOiAiVEJLS3hQIn0%3D

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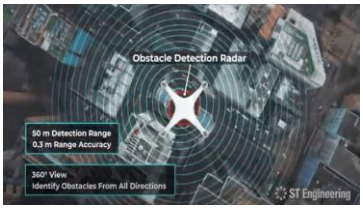
NASA Seeks Commercial Providers to Launch Cubesat for Planetary Research Demo Mission Brenda Marie Rivers December 7, 2020 News

NASA has released a sources sought notice calling on launch providers that can send a cube satellite to highly elliptical orbit as part of a demonstration mission on phenomena occurring in the Earth's outer radiation belt. NASA said in the SAM notice posted Friday that it is looking for commercial launch services to deliver the 6 Unit GTOSat spacecraft to HEO in line with the agency's orbital lifetime guidelines.

According to the document, GTOSat will operate as a sun-pointed cubesat and carry a Relativistic Electron Magnetic Spectrometer as well as a magnetometer to monitor the behavior of relativistic electrons in geostationary transfer orbit. It is meant to "naturally decay" in 25 years.

NASA expects spacecraft deliveries to begin in the first quarter of 2021 with rocket integration work scheduled for Aug. 1 of next year. Responses to the notice are due on Jan. 8, 2021.
https://blog.executivebiz.com/2020/12/nasa-seeks-commercial-providers-to-launch-cubesat-for-planetary-research-demo-mission/?utm_campaign=ExecutiveBiz%20Daily%20Headlines%2012.07.2020%20%28UMbmpk%29&utm_medium=email&utm_source=LIST%3A%20ExecutiveBiz%20Daily&_ke=eyJrbF9lbWFpbCI6ICJyb2JlcnQucmVhQGF4Y2VsLnVzIiwgImtsX2NvbXBhbnlfaWQiOiAiVEJLS3hQIn0%3D

Unleash the Potential of BVLOS Drone Operations with Obstacle Detection Radar December 7, 2020 Knowledge Base News



Beyond Visual Line of Sight operation is fast becoming a standard requirement in many industrial and mission-critical applications. With drone operations no longer limited by the range constraint within the remote pilot's line of sight, unlocking BVLOS operations in autonomous drones creates new use cases and performance benefits in various applications.

ST Engineering developed the Obstacle Detection Radar to overcome detection difficulties in collision avoidance systems, enabling drones to fly much further and safer BVLOS. While there are a few technologies available in the market, Radar technology to detect obstacles stands out compared to others such as LiDAR, ultrasonic and infrared because of its volumetric detection capability.

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The Radar simultaneously senses up to 20 obstacles in a 50-meter range with a 0.3-meter accuracy. Consuming only 1 W of power, it is packed in a compact 64 × 64 × 16 mm IP55 enclosure weighing a total of only 40 grams. It can also be scaled to provide a 360° view.
https://uasweekly.com/2020/12/07/unleash-the-potential-of-bvlos-drone-operations-with-obstacle-detection-radar/?utm_source=rss&utm_medium=rss&utm_campaign=unleash-the-potential-of-bvlos-drone-operations-with-obstacle-detection-radar&utm_term=2020-12-07

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These 3 companies will build prototypes for the Air Force's Skyborg drone Valerie Insinna

WASHINGTON — Boeing, General Atomics and Kratos will create prototypes for the Air Force's Skyborg program and have only five months to build the first test vehicles of the autonomous combat drone. The Air Force hopes to build a family of low-cost, attritable drones that can be reused but are cheap enough that losses in combat can be financially and operationally tolerated. The project is meant to produce a family of uncrewed aerial systems that can move into contested spaces and conduct aerial missions that might be too dangerous for human pilots.

The Air Force announced contract awards Dec. 7 for the three companies that will produce prototypes for the air vehicle and compete in a series of experiments hoping to win a production contract.

Three companies are under contract for two years: Boeing, $25.7 million; General Atomics Aeronautical Systems, $14.3 million, Kratos Unmanned Aerial Systems Inc., $37.8 million.

Military officials expect the first prototypes to be delivered no later than May 2021 for initial flight tests. The prototypes will then proceed into flight experiments beginning in July 2021 that will test each drones' ability to team with manned aircraft.
https://www.airforcetimes.com/air/2020/12/07/these-three-companies-will-build-prototypes-for-the-air-forces-skyborg-drone/

Russia is testing its own 'loyal wingman' drone for its Su-57 stealth fighter Alex Hollings Sandboxx News

According to reports released by Russia's state-owned media outlet RIA, Russia's S-70 Okhotnik (Hunter) uncrewed combat aerial vehicle recently completed its first "fighter-interceptor"

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exercise, in which the drone carried simulated air-to-air missiles while completing a series of test flights.

According to an unnamed source within the Russian military that was cited by RIA, these tests "will make it possible to assess the coupling of the drone's avionics with missile guidance systems and the lead Su-57 aircraft."

"From the strip of the military airfield of the Center for Combat Training and Combat Use of the Russian Aerospace Forces at the Ashuluk training ground, several flights of the Hunter were performed with functional simulators of guided air-to-air missiles. Such missiles in the combat version are designed to destroy other aircraft."

These remarks were published by the Russian government suggesting they are not only officially sanctioned, but likely, very intentionally worded.
https://www.businessinsider.com/russia-testing-loyal-wingman-drone-for-su57-stealth-fighter-2020-12

DroneSeed receives BVLOS approval for reforesting drone fleet Josh Spires Dec. 7th 2020

Reforestation company DroneSeed has been given FAA approval for its drone fleet to fly beyond visual line of sight (BVLOS) in California, Colorado, Montana, Nevada, Arizona, and New Mexico. The approval will mean the company can begin to reforest large areas after wildfires.

DroneSeed will now deploy its fleet of drones into badly burnt areas and other areas damaged by deforestation over larger distances than previously allowed.

Its fleet of drones plants seeds by dropping them onto the ground below using specialized capsules that ensure they penetrate the ground. The capsules contain six seeds, fertilizer, natural pest deterrents, and fibrous material.

DroneSeed advertises its drones to be six times faster than human-tree planters, with the ability to be in a planting area within 30 days after a fire. It also says its drones can cover up to 40 acres in a single day with up to a 57-pound payload, making it a much more efficient and cost-effective solution.

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DroneSeed bases its prices on the acres needed while skipping the expensive site setup costs of traditional seed dropping. The drones can also reach areas that are too dangerous for humans.
https://dronedj.com/2020/12/07/droneseed-receives-bvlos-approval-for-reforesting-drone-fleet/

This Skyguage drone is no ordinary quadcopter Scott Simmie Dec. 4th 2020

One of the interesting value propositions about the Skyguage is that it can inspect the thickness of walls and pipes. It does so with a special probe that is placed against the surface of the item.

That long probe on the front has swappable sensors, much like end effectors on robotic arms. Want to measure the thickness of a pipe? No worries. Need to check a weld? Can do. Lots of versatility here. You can change sensors for different jobs…Lots of options here…

But to *really* see the capabilities, you need to see this drone in action:
https://dronedj.com/2020/12/04/this-skyguage-drone-is-no-ordinary-quadcopter/

Autonomous Satellite-Launching UAV Unveiled 04 Dec 2020 Mike Ball

Aevum, Inc. has unveiled its new Ravn X Autonomous Launch Vehicle, which the company claims is the world's largest Unmanned Aircraft System by mass. It is designed to deliver satellites to space as fast as every 180 minutes. The system has been developed with the United States Space Force.

It is a global, autonomous, self-flying, self-managing, self-operating intelligent system of systems to deliver payloads from anywhere on Earth to any destination in low Earth orbit. The autonomous launch architecture optimizes every launch, taking into account variables including weather conditions, air traffic, orbital destination, payload weight, ground crew schedules, and other complex logistics processes to provide an end-to-end seamless service, autonomously.

The Ravn X Autonomous Launch Vehicle is powered by jet fuel and requires a one-mile runway and an 8,000 sf hangar for operation. The aircraft is 80 feet long with a 60 foot wingspan and has a gross takeoff weight of 55,000 lbs. After making its delivery to low Earth orbit, the UAV returns to Earth, autonomously lands on a runway and parks itself in the hangar. The vehicle is currently 70% reusable, with plans to extend this to 95%.

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https://www.unmannedsystemstechnology.com/2020/12/autonomous-satellite-launching-uav-unveiled/?utm_source=UST+eBrief&utm_campaign=92ab6e1507-eBrief_2020_8Dec&utm_medium=email&utm_term=0_6fc3c01e8d-92ab6e1507-119747501

DroneUp's Waiver for Flight Over People is a Major Step for Drone Delivery

Miriam McNabb December 07, 2020

Drone services company DroneUp has been approved for an industry-first FAA Waiver for flight over people and moving vehicles to support drone delivery of COVID-19 test kits anywhere in the U.S.

"DroneUp's waiver is the first to allow drone delivery operations over people anywhere in the United States without predefined operating areas, locations, or routes. The waiver is also a first to allow unrestricted delivery overflight of moving vehicles."

Brendan Stewart, DroneUp Training and Compliance Director, says the ground-breaking waiver required time, collaboration and a compelling application. "We came to the table with the safety and standardization infrastructure that you'd expect from a small airline… operating manuals, a safety management system, practical flight tests and proficiency checks, standardized operational risk management and flight reporting."

"Those components were hugely important to articulate why they should entrust DroneUp with a first-of-its-kind approval," Stewart says. "We also worked closely with Indemnis who provided the airframe parachute, the core mitigating technology to support our application." The waiver is a big deal for drone delivery. https://dronelife.com/2020/12/07/droneups-waiver-for-flight-over-people-is-a-major-step-for-drone-delivery/

World Economic Forum Predicts Open Skies for Drones Jason Reagan December 04, 2020

Global drone use continues to soar—according to the World Economic Forum —and the sky's the limit for future growth even as more drones are deployed to address COVID-related issues.

The WEF report— titled "Global Technology Governance Report 2021: Harnessing Fourth Industrial Revolution Technologies in a COVID-19 World"—notes that drone

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use for surveying has seen a 90 percent increase in use, while the construction industry recorded a 56 percent increase for remote job-site monitoring.

"Recently, COVID-19 and its accompanying need for physical distancing and remote work drove drone use to new levels," the report states. *"Other use cases such as medical supply delivery and stadium sanitization also saw growth as a result of the pandemic. It has only accelerated the growth of these uses, especially in delivery and facilities inspection, as agencies seek to reduce human interaction and enable remote work."*

The study also found increased drone use in facilities inspection, delivery videography and sports (such as drone racing). https://dronelife.com/2020/12/04/world-economic-forum-predicts-open-skies-for-drones/

Police Drones Are Starting to Think for Themselves Cade Metz Dec. 5, 2020

CHULA VISTA, Calif. — When the Chula Vista police receive a 911 call, they can dispatch a flying drone with the press of a button.

On a recent afternoon, from a launchpad on the roof of the Chula Vista Police Department, they sent a drone across the city to a crowded parking lot where a young man was asleep in the front seat of a stolen car with drug paraphernalia on his lap.

When the man left the car, carrying a gun and a bag of heroin, a nearby police car had trouble following as he sprinted across the street and ducked behind a wall. But as he threw the gun into a dumpster and hid the bag of heroin, the drone caught everything on camera. When he slipped through the back door of a strip mall, exited through the front door and ran down the sidewalk, it caught that, too. Watching the live video feed, an officer back at headquarters relayed the details to the police on the scene, who soon caught the man and took him into custody. Later, they retrieved the gun and the heroin. And after another press of the button, the drone returned, on its own, to the roof.

Each day, the Chula Vista police respond to as many as 15 emergency calls with a drone, launching more than 4,100 flights since the program began two years ago. Chula Vista, a Southern California city with a population of 270,000, is the first in the country to adopt such a program, called Drone as First Responder. https://www-nytimes-com.cdn.ampproject.org/c/s/www.nytimes.com/2020/12/05/technology/police-drones.amp.html

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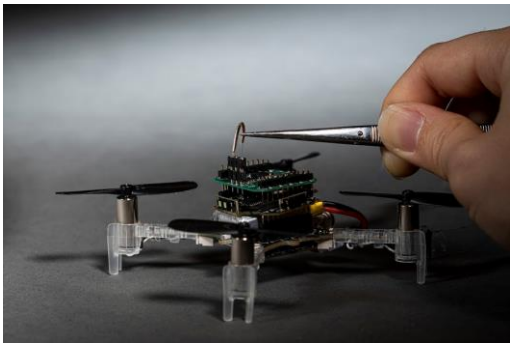
Smellicopter: Scientists Develop Tiny Drone that Uses Moth Antenna to Locate Smells Miriam McNabb December 08, 2020

Smellicopter is a tiny drone developed by scientists at the University of Washington, capable of detecting smells like gas leaks, explosives, or even the survivors of a natural disaster. This amazing, obstacle-avoiding UAV doesn't use a man-made sensor to smell: it uses a moth antenna to navigate towards an odor.

A research paper published in IOP Science describes Smellicopter as "A bio-hybrid odor-guided autonomous palm-sized air vehicle." The advantages to such a vehicle are clear: the tiny drone can travel in places that humans cannot or should not: the rubble of buildings after a natural disaster; zones where chemical leaks or spills may have occurred; or conflict zones that may contain chemical or explosive weapons.

The truly unique aspect of this amazing little drone is the use of a moth antenna: tiny, delicate, and amazingly sensitive.



"Nature really blows our human-made odor sensors out of the water," said lead author Melanie Anderson, a UW doctoral student in mechanical engineering. "By using an actual moth antenna with Smellicopter, we're able to get the best of both worlds: the sensitivity of a biological organism on a robotic platform where we can control its motion."
https://dronelife.com/2020/12/08/smellicopter-scientists-develop-tiny-drone-that-uses-moth-antenna-to-locate-smells-video/

UAVLAS Developed Universal Solution for Precision & Safe Landing for UAVs

December 9, 2020 News

UAVLAS has introduced a precision autonomous landing system for UAVs, a set of sensors and software that provides a direct connection between drone and landing site. As a result, the system ensures an accurate and safe landing even in the absence of or weak GPS signal, strong and gusty wind, landing on a charging station or mailbox

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and operations in dark or fog.

The precision landing system consists of a ground transmitter (landing platform), a lightweight onboard receiver on a drone and software enabling the system to operate with commonly known autopilots. The transmitter creates a virtual grid of positions above itself, and the receiver directed by the current grid square determines its position in relation to the landing platform. Such design and software solutions reduce the risk of damage to the UAV through the guarantee of precise landing. https://uasweekly.com/2020/12/09/uavlas-developed-universal-solution-for-precision-safe-landing-for-uavs/?utm_source=rss&utm_medium=rss&utm_campaign=uavlas-developed-universal-solution-for-precision-safe-landing-for-uavs&utm_term=2020-12-09

U.S. Army to improve VTOL drones during flight transition phase Josh Spires Dec. 9th 2020

Researchers with the U.S. Army Combat Capabilities Development Command center want to speed up VTOL drones when transitioning from vertical flight to horizontal flight. Most drones nowadays slowly transition between the two to prevent a stall from occurring and the drone from falling to the ground.

In collaboration with researchers at the Rensselaer Polytechnic Institute, the U.S. Army is creating a trajectory planner that will allow vertical take-off and landing drones to transition between vertical and horizontal flight in a much shorter time. The team of researchers has already created a bi-wing tail sitter-style drone for the Army's Common Research Configuration platform, which will allow it to test the drone before deciding on a final design.

Currently, VTOL drones, specifically tail sitters, follow a set of pre-determined actions very slowly to ensure the drone can transition safely and without any issues. The new planner being developed will allow the researchers to find the most efficient and safe way for the drone to transition between flight modes. https://dronedj.com/2020/12/09/u-s-army-to-improve-vtol-drones-during-flight-transition-phase/#more-43349

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Montana police use drones for investigating car crashes David MacQuarrie Dec. 9th 2020

Investigating a car accident on the highway is time-consuming and dangerous for police officers when it's done on foot with a measuring tape and a camera. With a drone, the time and danger almost disappear. And they may even save police officers' lives.

"I can go out by myself and process a quarter-mile scene in 30 minutes without interfering with the flow of traffic. And then take those photographs back to my office and finish processing the scene remotely," says Montana trooper Aaron Freivalds.

"Using physics, we can determine the speeds of these vehicles at impact, which is really important for when we're determining which vehicle's at fault or which vehicle may have been breaking a certain law," Hazelton told Yellowstone Public Radio .

"Rollover crashes can be very violent," Hazelton says. "People can be thrown 100 feet or more from a crash scene. At night, you could only search as well as your lighting." If someone is thrown from a vehicle at night, Montana officers use a thermal camera on a drone to locate the individual.

And money is saved as well. Hazelton says if an agency is required to purchase US-made drones, it might cost tens of thousands of dollars. Since his state doesn't have such a restriction, it was able to acquire DJI drones for just over $2,000. https://dronedj.com/2020/12/09/montana-police-use-drones-for-investigating-car-crashes/#more-43510

Amsterdam Drone Week: 'Drone sector keeps growing despite Covid' HEADLINE NEWS JOE PESKETT DECEMBER 9, 2020

Due to Covid-19, the third edition of Amsterdam Drone Week took place virtually this month.

In the meantime, the drone industry itself does not seem to be affected by the pandemic, given the enormous investments in the sector in the first six months of 2020.

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This quick growth means that legislation and regulations have difficulty keeping up. The call for cooperation between the business community, governments and knowledge institutes was therefore the most frequently heard during ADW Hybrid 2020.

"If the participants and the audience of more than 1,000 people from over 48 countries made one thing clear, it was the need for collaboration and the willingness to do so.

According to Adina Iona Valean, European Commissioner for Transport, around EUR760 million of investment in drone start-ups has been recorded in the first six months of 2020 alone, 20 times more than for the whole of 2016. "Drones appear to be more resilient to crises than commercial aviation", she said on Tuesday.

However, this disruptive growth also puts enormous pressure on the various Aviation Authorities around the globe. EASA (EU), FAA (USA) and CAAS (Singapore) all feel that pressure. Kevin Shum, Director General at CAAS said on Thursday: "We are moving too quick for regulators' comfort, and too slow for the industry."
https://www.commercialdroneprofessional.com/amsterdam-drone-week-drone-sector-keeps-growing-despite-covid/

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Drone Video Contest: Civil + Structural Engineer Media Launches Engineering Competition Jason Reagan December 09, 2020

Think your video soars above all the rest when it comes to engineering videos? Civil + Structural Engineer Media this week announced an open call for submissions to the 2021 Engineering Drone Video of the Year Competition through April 30, 2021.

Videos must be original, comprised of footage gathered with a drone and should feature an engineering or construction project. All submissions should be between 1-5 minutes in length. There is no fee to enter.

Three finalists will be selected by C+S readers between May 3 and May 21 via online voting. Finalists will be featured in *Civil+Structural Engineer Magazine*. Additional prizes for the winning video to be announced soon. Last year, the Alabama Department of Transportation UAS Team won the contest. https://dronelife.com/2020/12/09/civil-structural-engineer-media-launches-engineering-drone-video-contest/

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Volocopter To Launch eVTOL Taxi Services in Singapore Charles Alcock December 9, 2020

Volocopter is preparing to launch air taxi services with its Volocity eVTOL aircraft in Singapore by the end of 2023. The German company said it will work with the Economic Development Board of Singapore and the Civil Aviation Authority of Singapore.

Over the next three years, Volocopter will recruit a team of 50 pilots, engineers, operations specialists, and business managers. By 2026, it expects to have grown its team to 200 people and at that point will be operating a network of routes across the Southeast Asian city-state.

The first services in Singapore are expected to be sightseeing flights along the southern coast, giving views of the Marina Bay skyline. Further services might include cross-border flights into neighboring Malaysia.

Volocopter said it is not certain whether Singapore will be the first place in the world where it launches its air taxi services. It is certainly the first announced location, but the company continues to speak with other cities and is known to have focused cooperation efforts in Dubai, Paris, and London. https://www.ainonline.com/aviation-news/business-aviation/2020-12-09/volocopter-launch-evtol-taxi-services-singapore

Ground-breaking Ship to Shore Communication Technology on the Eastern Shore John Robinson, Chief Operating Officer

Wallops Island, VA – December 10, 2020: Sentinel Robotic Solutions recently demonstrated the ability to provide video, voice and data from a ship 90 Nautical Miles over the horizon, to a land-based Navy Operations Center at Wallops Island, Virginia. This demonstration has provided a more cost-effective and reliable means of getting secure information from ship to shore without using expensive satellite technology.

Advanced communication systems are starting to be widely used in highly-capable networks for the Department of Defense, First Responders and areas with limited radio connectivity. Supporting the Navy's Surface Combat Systems Center, Wallops Island, the SRS-led team held a full-scale demonstration of a Silvus-based mesh network with high fidelity voice, HD-video streaming and high bandwidth data transfer from land-based stations to over-the-horizon ship-based platforms at ranges of 90 Nautical Miles, via an airborne relay.

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The project not only proved the effectiveness of the technology but also serves to ignite innovation, economic growth and workforce development on the Eastern Shore. Teaming with Eastern Shore Community College, two students interned with SRS in support of the project.

Under Dr. Bowles' leadership, VISA is supporting a boom for the local Eastern Shore economy and the economy of the Commonwealth of Virginia. Peter Bale, CEO of SRS stated, "This is the start of a bright future for the implementation of communication and range instrumentation technologies on Wallops Island." 757-824-0600 / john.robinson@srsgrp.com

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U.S. Air Force Gives Lift to Flying Taxis Andy Pasztor and Andrew Tangel Dec. 10, 2020

Flying taxis, which one day may whisk passengers around town without pilots, are getting a boost from the U.S. military.

The Air Force has issued a first-of-its-kind safety endorsement of an electric-powered vehicle similar to a helicopter, opening the door to using such commercially developed equipment for military missions. This initial stamp of approval is meant to lay the groundwork for eventual civilian certification of the technology and even approval of autonomous flights crossing American cities, industry and military officials said. The current version does require a pilot.

For now, the impact of the Air Force's decision, expected to be announced as soon as Thursday, is limited. It means Joby Aviation, a Northern California startup, will become the first maker of novel vertical-takeoff-and-landing craft providing transportation for the U.S. armed services.

The Air Force will help accelerate safety analyses by conducting flight tests, pledging to pay for contracts seeking to verify vehicle reliability and generally vetting the capabilities of vehicles through direct and indirect funding of the company. https://www.wsj.com/articles/u-s-air-force-gives-lift-to-flying-taxis-11607596206

U.S. nears sale of four sophisticated drones to Morocco Mike Stone, Patricia Zengerle

WASHINGTON (Reuters) - The United States is negotiating the sale of at least four sophisticated large aerial drones to Morocco, according to three U.S. sources familiar with the negotiations, and is expected to discuss the deal with members of Congress in the coming days.

The sources did not indicate whether the deal, which has been in the works for several months, was related to the agreement brokered with U.S. help for Morocco to normalize relations with Israel.

While the State Department has authorized the sale of the unmanned aerial vehicles, it was not known if the U.S. officials have approved exporting the drones with weapons attached. The deal must be approved by members of Congress, who may receive notification as soon as Friday. Congress could block a final agreement but that was not expected.

The four MQ-9B SeaGuardian drones made by General Atomics have a range of 6,000 nautical miles and could survey huge swaths of sea and desert. https://www.reuters.com/article/usa-morocco-drones-exclusive-int/exclusive-us-nears-sale-of-four-sophisticated-drones-to-morocco-sources-idUSKBN28K2YV

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