UAS and SmallSat Weekly News

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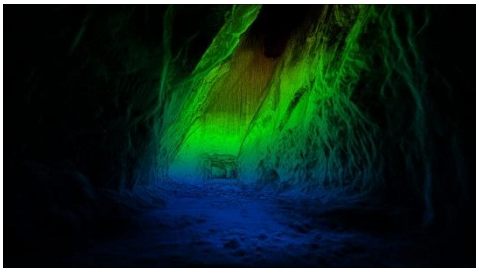
Deep below the surface: Ozzie startup uses drones to map mines and tunnels

November 7, 2018 Feilidh Dwyer

Emesant is an Australian startup founded by former Federal government workers who worked in robotics and autonomous systems. Their company specializes in software for the autonomous mapping of mines and tunnels.

Mining is a massive industry in Australia – adding 125 billion dollars of value to the country last year. Mining companies need accurate data on which areas are safe to drill, and Emesant can use a combination of drones, sensors and software to provide that information. The company has just secured $2.5 million in funding to continue developing their project which has already proved itself in extensive testing.

Emesant's system is called Hovermap. It gathers information through a device that is attached to the bottom of suitable industrial drones such as the Matrice 600. Alongside the normal video feed the drone captures through its camera, Emesant uses LIDAR (light detection and ranging), collision avoidance sensors and GPS (when available) to create digital maps of underground environments.



A rendering of the inside of a cave using their Hovermap software alongside LIDAR sensors

This technology provides a real advantage to surveyors or site inspectors, who sometimes have to put their bodies on the line to assess the progress of a tunnel being drilled or whether a particular zone will be too risky to proceed with digging.

To date, Emesant has tested Hovermap devices to a depth of 2000 feet below ground in Western Australia. The next challenge will be providing their product at a large-scale to mining companies, both in Australia and internationally. https://www.wetalkuav.com/below-ground-drones-map-mines-and-tunnels/?utm_source=WeTalkUAV&utm_campaign=e50a9cbc3f-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_1d410cb84d-e50a9cbc3f-83642867

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Drones for Good: The Organization Donating Drones to Public Safety Departments

Miriam McNabb November 08, 2018

Marc Langley is a man with a passion. Not just for his own company – he is CEO of national drone services provider Airborne Works – but for the non-profit he founded this year – the National Public Safety Drone Donation Program.

The organization's motto is "Eyes in the sky for every department in need" ™, and they mean it. From small towns to cities and counties, any public safety department who needs help getting a drone is welcome to apply.

NPS-DDP made their first donation this fall, to a small town on Cape Cod. A representative from Barnstable County, MA wrote a compelling request:

We are a coastal community on Cape Cod. We have a bay to our west and the Atlantic Ocean to our east. We get many distress calls for vessels or persons in these waters. However, due to the challenges of navigating the tides as well as the narrow channels, we exceed reasonable response times. Having a drone to quickly deploy and assess the situation would be invaluable to our department.

The department already had a Part 107 pilot on staff, but budgetary constraints meant that they simply could not purchase the appropriate aircraft. NPS-DDP responded that they would make a drone donation within weeks.

The organization's next donation – to a volunteer fire department in California – is in the works. Langley's team has found a donor to provide a drone: the team will deliver it and provide flight training early next month.

NPS-DDP is a project that's not only great for public services departments it's also great for our industry. Public safety may be most people's first introduction to drones. Allowing communities to see the benefits that drones will provide is probably the best way to protect innovation. https://dronelife.com/2018/11/08/drones-for-good-the-organization-donating-drones-to-public-safety-departments/

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Robird drone convinces bird flocks to move away from airports Patrick C. Miller November 07, 2018




Since mid-September, Aerium Analytics, Clear Flight Solutions and the U.S. Department of Agriculture have been working with the city of Grand Forks, North Dakota, to lower the number of bird strikes at the Grand Forks International Airport. Located adjacent to an airport surrounded by farms are 1,300 acres of wastewater treatment ponds that each year attract thousands of gulls, ducks and geese. Because the University of North Dakota conducts student flight training at the airport, it's one of the top 20 to 25 busiest in the U.S.

"Last year, we had USDA do a one-day assessment in the fall," said Melanie Parvey, Grand Forks water works director. "It was during migration and they documented 13,000 to 16,000 birds a night. When we stepped back and looked at it, we knew we had to do something because the majority of increases in strikes were happening at the airport with gulls and the larger birds."

Having so many aircraft in close proximity to so many birds normally results in dozens of bird strikes on aircraft annually. However, the Robird—a drone that looks and flies like a peregrine falcon—has dramatically reduced both the number of birds near the airport and number of bird strikes on manned aircraft. There were 34 bird strikes at the airport in 2016 and just 17 through mid-October this year. The number of birds in the area has dropped from around 5,000 in September to about 200 in late October. The birds believe they're seeing a peregrine falcon.
http://uasmagazine.com/articles/1946/robird-drone-convinces-bird-flocks-to-move-away-from-airports

Openreach turns to drone operations for fibre broadband connection in Scottish Highlands BUSINESS DRONES AT WORK HEADLINE NEWS TRAINING ALEX DOUGLAS NOVEMBER 8, 2018

The UAV was used to connect a remote home in the area with the network, providing it with a better quality of internet. The team had previously attempted to attach cables to fishing lines, golf balls and even hammers, but had been mostly unsuccessful.

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Chief engineer for Openreach in the North of Scotland, Kevin Drain, told the BBC: "Although Glenmazeran is only 20 miles from Inverness, the properties are very remote and scattered. We've had to contend with steep drops and banks as we buried cable along the single-track road."

He added: "But the biggest challenge was reaching one remote home, 400m away from the main route, where the fibre cable needed to span a 50m wide stretch of river. This is the first time we've used a drone to drop fibre into place here in Scotland and as a delivery method it's unbeatable."

Engineers at the firm had to complete a week's CAA training to become certified and are now one of only five teams across the UK approved to fly drones in this way.
http://www.commercialdroneprofessional.com/openreach-turns-to-drone-operations-for-fibre-broadband-connection-in-scottish-highlands/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-282388-Commercial+Drone+Professional+DNA+-+2018-11-10

PrecisionHawk buys Uplift Data Partners in fifth acquisition of the year BUSINESS FINANCIAL HEADLINE NEWS INTERNATIONAL TECHNOLOGY ALEX DOUGLAS NOVEMBER 6, 2018

Uplift focuses on delivering its services for construction, building information management and real-estate.

As part of the move, Uplift's cohort of commercially trained drone pilots will join PrecisionHawk's 15,000 strong network.

PrecisionHawk CEO, Michael Chasen, said, "By combining PrecisionHawk's leading-edge products and services with Uplift's industry experience and training standards, our customers will receive best-in-class aerial data and analytics for complex construction and facility inspection projects through a simple and easy-to-procure process."

This is the fifth acquisition for PrecisionHawk in 2018, following purchases earlier in the year which include Droners.io and Airvid. In September it purchased both HAZON and Inspectools which specialize in the delivery of inspection services and technology for the energy industry.
http://www.commercialdroneprofessional.com/breaking-news-precisionhawk-buys-uplift-data-partners-in-fifth-acquisition-of-the-year/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-282388-Commercial+Drone+Professional+DNA+-+2018-11-10

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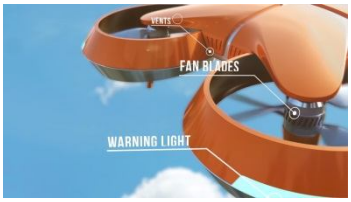
Transforming flying net drone could one day save you from a burning building November 11, 2018 Feilidh Dwyer

A group of Chinese students have designed a concept drone that transforms from a regular quadcopter into a flying safety net.

Appropriately named Net Guard, the drone would be capable of rapidly expanding from a single piece into four distinct flying corners with the net held taut in the middle.

Once the drone splits into four independent flying segments and carries the weight of a person, each rotor would have to spin at a different speed to compensate for the person's unevenly distributed weight.



Picture the scene: a high-rise building is on fire. The lower floors are completely ablaze and in desperation, a resident on one of the upper floor climbs onto the windowsill, peers down at the street below and prepares to jump. There are no firefighters nearby and the fire engines with ladders long enough to reach the upper floors are multiple blocks away. Before this person perishes in the inferno, a drone turns up beneath the window, allowing the person to step out and be gently lowered down to safety.

The concept has already earned the group $13,000 in prize money. Until they receive a significant financial boost, however, it will remain just a dream. Let's hope they are successful in pushing the project to the next stage. https://www.wetalkuav.com/net-guard-concept-drone/

China sticks AK-47s onto drones to challenge US dominance Latest News| Travel Advisory | Travel Alerts | Tips November 11, 2018

China has rolled out its huge stealth drones and smaller unmanned aircraft, which it says could be armed with AK-47s or any weapon your client wants, because the national country gets prepared to vie for a share of the US-dominated UAV market.

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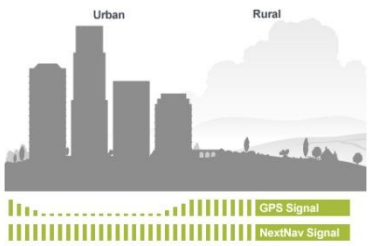
The drones were unveiled at the country's main aerospace industry exhibition held in the southern city of Zhuhai. Grabbing the visitors' attention was the brand new CH-7 or Caihong (Rainbow)-7 stealth combat drone. With a wingspan of 72 feet, it's bigger than modern attack jets and can travel at speeds of over almost 500 mph at altitudes as high as 46,000 ft.

The Chinese developers insist that Caihong-7 is founded on their own technologies and ideas, but experts pointed out that it has many similarities in its characteristics and appearance with the American X-47B drone.

The Chinese Ziyan company also makes smaller drones and says it's prepared to fulfill its foreign buyers' demands. *"Different weapons could be installed, as the customer wants,"* Wu Xiaozhen, Ziyan's overseas project director, said. Wu assured AFP of the *"great quality"* of its UAV, saying: *"We have been targeting Western markets, too. We don't fear competition from the Europeans and the Americans."* https://travelwirenews.com/china-sticks-ak-47s-onto-drones-to-challenge-us-dominance-1165215/

NASA to use NextNav's 3D geolocation services in urban drone program BUSINESS

FINANCIAL NEWS ALEX DOUGLAS NOVEMBER 9, 2018



The MBS system facilitates urban drone operations where satellite-based GPS signals may not be available.

Its system is used when knowing a drone's location horizontally and vertically is critical to ensure safe operations in urban air traffic corridors.

Evan Dill, of the Safety-Critical Avionics Systems Branch at NASA, said: "NextNav's MBS system provides us with new tools for the development of navigation systems in environments where GPS has traditionally been challenged." The FAA believes that by 2022 there will be over 700,000 drones delivering packages, monitoring traffic and aiding in search and rescue operations.

Ganesh Pattabiraman, co-founder and CEO of NextNav, said, "The MBS system is designed for secure, reliable and consistent 3D Geolocation capabilities which are important for autonomous systems such as drones. NASA's acquisition of the MBS system is a milestone for MBS technology and a great partnership with NASA to address the key challenges in urban drone navigation and make it possible to explore new opportunities in unmanned operations." http://www.commercialdroneprofessional.com/nasa-to-use-nextnavs-3d-geolocation-services-in-urban-drone-

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program/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-282340-Commercial+Drone+Professional+DNA+-+2018-11-09

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Rocket Lab Successfully Launches Its First Commercial Payload into Orbit *Andy Pasztor N*ov. 11, 2018

Startup is betting on rising world-wide demand to put inexpensive commercial and government satellites into space.

Rocket Lab, a U.S.-New Zealand startup that seeks to set the pace for frequent, inexpensive launches of small satellites, has successfully blasted its first commercial payload into space.

The company's Electron booster, featuring lightweight composite tanks and 3D-printed engines, lofted six satellites into orbit from a remote launch facility on the East Coast of New Zealand at around 4:50 p.m. local time on Sunday. The 56-foot tall booster carried with it the ambitions of a budding market segment that aims to drastically cut the cost of access to space.

The goal is to eventually reduce those costs to hundreds of thousands of dollars per customer for satellites weighing no more than hundreds of pounds. That compares with price tags of tens of millions of dollars—or historically $150 million and higher—for some satellites as large as a school bus and often weighing several tons each. Rocket Lab operates from its private New Zealand site and a second launch pad off the Virginia coast that the company recently signed up with state officials to use.

Founder and Chief Executive Peter Beck has said the company envisions ramping up launch rates to roughly one every week by early 2020. Its current prices to launch small satellites into relatively low orbits around the Earth are about $5 million, but the Electron is intended to boost multiple satellites nestled on top.

At the same time, swarms of small-satellite companies based in countries other than the U.S.—such as U.K., Luxembourg and the United Arab Emirates—are scrambling to parlay low-cost launchers into novel business plans. https://www.wsj.com/articles/rocket-lab-successfully-launches-its-first-commercial-payload-into-orbit-1541927391?tesla=y

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5 awesome drone stories you may not have heard of November 11, 2018 Feilidh Dwyer

Here are five cool drone clips that might not have crossed your radar:

1. Playing Air Tennis. The two drones play an impressive version of aerial pong using motion capture systems.

2. Spray Painting Walls. A typical scenario would involve having to hire a bunch of workers as well as fit scaffolding to the outside of the building. That's where an autonomous spray painting drone could come in handy.

3. Hoverboard Flies Around Stadium. Built by a Canadian start-up, in 2015, the first version of the Omni Hoverboard achieved a Guinness World Record of continuous manned flight for 275 meters and stayed flying for one and a half minutes.

4. Drone Surfing. The surfer in the video from 2016 is pulled along by a Freefly Alta 8.

5. An omnicopter that plays fetch. In just 20 milliseconds, the drone can calculate all possible trajectories of a thrown ball and decide which route is the most efficient to reach the ball and rapidly moves to the right spot to catch the ball.

If you know of any cool drone stories, let us know about it on our Facebook page and we'll give you a shout out! See the movies at: https://www.wetalkuav.com/5-cool-drones-you-may-not-have-heard-of/

New drone-jamming authority creates challenges for DHS SAM MINTZ 11/09/2018

With help from Stephanie Beasley and Brianna Gurciullo

The department is examining how and when to deploy possibly risky radio jamming tech in populated areas, among other top considerations. DHS officials said that blocking radio communications to errant drones in large cities, or even more rural areas where wireless device use is widespread, could cause major disruptions. Vetting those risks will require interagency discussions with the FAA and FCC.

A former FCC official said the challenges of using of radio jamming tech could grow if state and local authorities also were granted powers to interdict suspicious drones. The FAA bill did not grant counterdrone authorities to non-federal authorities, though airports had pushed to be included. https://www.politico.com/newsletters/morning-transportation/2018/11/09/new-drone-jamming-authority-creates-challenges-for-dhs-406320

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NASA urban air mobility studies point to $500 billion market but large regulatory hurdles November 8, 2018Philip Butterworth-Hayes Urban air mobility

NASA has unveiled the results of two high level studies – carried out by Crown Consulting Inc and Booz Allen Hamilton – looking into the future of urban air mobility (UAM) markets.

The *Booz Allen Hamilton* study focused on three potential UAM markets: airport shuttles, air taxis and air ambulances, using ten target urban areas to explore market size and barriers.

- Airport shuttle and air taxi markets are viable markets with a significant total available market value of $500 billion at the market entry price points in the best-case unconstrained scenario
- The air ambulance market served by eVTOLs is not a viable market due to technology constraints, but hybrid VTOL aircraft would make the market potentially viable.

The *Crown Consulting Inc* survey looked at the market for last-mile delivery, air metro and air taxi services.

"A path to a commercially viable market could exist for:

- Last-mile parcel delivery, projecting a potentially profitable market by 2030 – A significant ramp-up of UAS delivery in the years prior to profitability is likely
- Air metro could potentially be profitable by 2030, assuming that regulations are in place to accommodate this market. Piloted air metro services may be a stepping stone to large scale autonomous operations
- Although it's unlikely that there will be a widespread air taxi market in 2030 due to high investment costs, there may well be concentrated areas of high-net worth individuals and businesses served by air taxis

"There is an opportunity to coordinate planning for UAM research with the needs of industry. No single actor (public or private) has yet emerged as the industry convener for UAM, and there is no agreed-upon vision among market participants about each UAM use.

"Public acceptance of UAM is likely to be more complicated than asking popular opinion; local policy, interest groups and research (e.g., on noise) each play a major role."
https://www.unmannedairspace.info/urban-air-mobility/nasa-urban-air-mobility-studies-point-usd500-billion-market-large-regulatory-hurdles/

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EXCLUSIVE RESEARCH: £170m injected into drone industry this year as investors clamour for a piece of the market

BUSINESS FINANCIAL HEADLINE NEWS INTERNATIONAL INVESTMENT ALEX DOUGLAS NOVEMBER 11, 2018

The scale of funds injected into the industry demonstrates the growing appetite that private investors have for the drone sector and sets a benchmark that will likely be exceeded in 2019.

This high level of investment has prompted ***market research analysts to predict that the commercial drone industry will be worth around £1.5bn by 2022.*** This rise would be an increase of £410m in 2014, showing a CAGR of 16.9%. Here are *the* top ten investments in 2018.

PrecisionHawk £53m: The company, founded in 2010, raised £53m from a group of venture and strategic investors bringing total funding to more than £79m for the last eight years.

Airobots £23m: The Series D round of funding will scale operations in the United States and Australia.

DroneDeploy £19m: The funding round will bring the data platform to new industries and transform workflows on job sites.

Airspace Systems £14m: The investment will develop new technology aimed at protecting public venues from enemy drones.

Verity Studios £14m: The investment will expand its live events business in the US and expand into other commercial markets.

Matternet £12m: The firm specializes in on-demand unmanned aerial vehicle delivery operations in urban environments.

Sentera £10.8m: The company's sensors and AI technology help to detect nutrition, disease and plant status from corn and soybeans to vegetables, fruit and nuts.

Clobotics £8.5m: The two-year-old company, with headquarters in Shanghai and Bellevue, has raised a total of £16.3m over the past 24 months.

DroneBase £8m: This third round of investment helped support commercial missions for clients across real estate, insurance, telecommunications, construction, and media.

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Propeller Aero £7.4m: The cloud-based analytics company visualizes drone survey data in civil construction.

**Please note this list comprises investments that CDP has been made aware of in 2018. If you think we have overlooked any significant transactions please feel free to get in touch!* http://www.commercialdroneprofessional.com/exclusive-research-120m-injected-into-drone-industry-this-year-as-investors-clamour-for-a-piece-of-the-market/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-282559-Commercial+Drone+Professional+DNA+-+2018-11-12

Project Wing buys warehouse, starts drone delivery operation in Canberra

November 11, 2018 Philip Butterworth-Hayes UAS traffic management news, Urban air mobility

Project Wing, which is trialing drone deliveries of food and chemist supplies in Tuggeranong, Australia, has secured a warehouse in Mitchell, Canberra, as a full-time base for its drone delivery service. It will be "the first location of its kind with the world's most advanced drone delivery service". According to an October 2018 statement from the Australian Civil Aviation Safety Authority (https://www.casa.gov.au/aircraft/standard-page/trial-drone-delivery-systems):

"We have approved Unmanned Systems Australia to operate Wing drones in Bonython, a suburb in Canberra's south. Unmanned Systems Australia is a licensed and certified drone operator. They have been testing drone delivery with Wing in Australia over the past several years, refining their aircraft and systems. They have satisfied us that their operation meets an acceptable level of safety. As a result, we have permitted Unmanned Systems Australia to operate over Bonython and in closer proximity to a person, than our regulations would normally permit. The system is automated—however a licensed drone pilot is always at the helm. Wing works within our current guidelines for commercial drone operators flying over 2kg and these approvals are aligned with regulations and in accordance with similar instruments issued to other operators.

"Wing drones currently fly only during daylight hours. While an accident is unlikely to occur, pilots will know instantly if any of their drones operate outside of a standard mission. If this happens, the operator will decide if the safest course of action is to the land the aircraft, rather than continue the flight. In the unlikely event the drone encounters a problem, it is designed to automatically land very slowly. The aircraft are equipped with flashing strobe lights."

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According to the C*anberra Times*: plans for the permanent delivery service – which Wing is promoting as a world first – come after the ACT Assembly last week agreed to launch an inquiry into the Bonython trial, "which has been plagued by community angst over noise, privacy concerns and a perceived lack of government and regulatory oversight.
https://www.unmannedairspace.info/urban-air-mobility/project-wing-buys-warehouse-starts-drone-delivery-operation-canberra/

13Nov18

HERE COMES AUTONOMY November 12, 2018 Steve Rhode

In a few short years, drones have worked their way into a range of industries and applications, but *effective* adoption of the technology to support public safety is still at an early stage. Fire, police, specialized law enforcement, disaster assessment, and search-and-rescue groups have slowly begun to embrace unmanned aviation and use it to their advantage.

With access to sufficient wireless bandwidth, maps developed by swarms of unmanned aircraft flying low can be centralized and stitched together in near real time as the incident command staff watches. The aircraft in this scenario are less of an "aviation" asset, and more a part of the ground-based team.

Here at the Wake Forest Fire Department, we recently conducted **a UAS public safety class** that focused on this very subject. Experienced public safety pilots from various agencies learned how to integrate UAS into missions while making safe flight decisions at the same time. Understanding weather, airspace, and a host of hazards that are not always so obvious are not what computers are good at, at least not yet. A trained human pilot, on the other hand, is pretty good at keeping the big picture in perspective.

A defined incident command system that connects the UAS and the boots on the ground makes the drone a force multiplier, and the coming automation of UAS search-and-rescue flights should turn all-too-often frustrating efforts into successful rescue flights. Pilots will become automation specialists, more analogous to the incident commander than to any individual firefighter.

This is where drones are going, and you can see it as the systems are adapted to deliver food, medicine, blood, and law enforcement scene intelligence. Here in North Carolina, the Division of Aviation is neck-deep in research as part of its own FAA UAS Integration Pilot Program

project, which intends to use UAS to autonomously fly medical supplies to disaster areas and develop swarms of intercommunicating drones to rapidly cover an area to accomplish a specific mission.

Programming the software appropriately and selecting the best payload configurations to accomplish the mission at hand will, sooner or later, become the primary skills. Autonomous flight is approaching fast. https://www.aopa.org/news-and-media/all-news/2018/november/12/here-comes-autonomy?utm_source=drone&utm_medium=email&utm_campaign=181113drone

The Future of Flight: AI in the Cockpit Jason Bellini and Conall JonesNov. 12, 2018

AI-empowered systems may soon allow autonomous flying machines to reduce the number of pilots and soldiers working in high-risk environments. Could these flying robots also be firing weapons?

The U.S. military is investing billions of dollars each year in developing autonomous technologies that could enable planes, helicopters and drones to fly into some of the world's most dangerous places.

In this episode of Moving Upstream, we explore some proofs of concept already taking wing. The Wall Street Journal's Jason Bellini was the first journalist to ride in an autonomous helicopter and get an understanding of the potential, and the current limitations, of such flights.

Former Deputy Secretary of Defense Bob Work said the Pentagon is working on autonomous fighter jets that could substantially reduce costs and perform better in combat than human pilots.

But U.S. military officials are concerned, he said, about how adversarial countries like China and Russia might acquire and make use of autonomous planes and drones equipped with autonomous weapons. "In a democracy, we're going to set legal ethical and moral boundaries on AI that an authoritarian regime might not," Mr. Work said. https://www.wsj.com/articles/the-future-of-flight-ai-in-the-cockpit-1542018600

New Hydrogen Fuel Cell-Powered Multirotor Drone Unveiled 12 Nov 2018 Mike Rees

HES Energy Systems has announced the launch of HYCOPTER, an industrial-grade multi-rotor unmanned aerial vehicle designed for large-scale industrial maintenance inspections.

Addressing short flight durations is one of the final frontiers in drone technology. HES has a long-standing reputation for producing extremely light and compact fuel cell systems, which can be as much as 5 times lighter than lithium batteries. HES has been pushing the limits of its energy storage technology increasingly further, working from Singapore on various UAV programs and with leading aerospace institutions around the world.

HES is currently capable of over 700Wh/kg system-level specific energy and is working to push this limit even further thanks to a variety of novel technologies. HES has merged its core technologies with a specially adapted multi-rotor design so that flight durations can extend to 3.5 hours, instead of the typical 20-30 minutes when using lithium batteries.

The new hydrogen multi-rotor system will be able to keep precision cameras and other sensors in the air for much longer, opening up new commercial use cases while reducing operational costs for service providers. HYCOPTER was designed in Austin, Texas where a local production base is being set up. https://www.unmannedsystemstechnology.com/2018/11/hydrogen-fuel-cell-powered-multirotor-drone-features-three-hour-endurance/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=27ca54239a-eBrief_2018_Nov_13&utm_medium=email&utm_term=0_6fc3c01e8d-27ca54239a-119747501

NASA Incorporates 3D Geolocation Technology for Urban Drone Operations 09 Nov 2018 Mike Rees

NextNav, a provider of 3D geolocation services, has announced that its Metropolitan Beacon System (MBS) service has been accepted for use by the National Aeronautics and Space Administration. NASA will use the network as part of its CERTAIN (City Environment for Range Testing of Autonomous Integrated Navigation) facilities at NASA's Langley Research

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Center in Hampton, VA. CERTAIN supports, among other programs, Urban Air Mobility, an air transportation system with myriad applications from small package delivery drones to passenger-carrying air taxies.

The MBS system facilitates urban drone operations where satellite-based GPS signals may not be available, and the need to reliably know a drone's location horizontally and vertically is critical to ensure safe operations in urban air traffic corridors.

NextNav's wide-area terrestrial positioning network ensures accurate and secure location services, which is critical for unmanned aircraft navigation. In addition, MBS complements and integrates seamlessly with GPS and provides a level of geo-redundancy ensuring a safe and efficient system for future air transportation in cities and urban areas.
https://www.unmannedsystemstechnology.com/2018/11/nasa-incorporates-3d-geolocation-technology-for-urban-drone-operations/?utm_source=Unmanned+Systems+Technology+Newsletter&utm_campaign=27ca54239a-eBrief_2018_Nov_13&utm_medium=email&utm_term=0_6fc3c01e8d-27ca54239a-119747501

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Defense Department accepting proposals for rugged short-range recon drone *13 NOVEMBER, 2018 FLIGHTGLOBAL.COM GARRETT REIM LOS ANGELES*

The Department of Defense is accepting proposals for commercial drones to be used as the US Army's Short Range Reconnaissance (SSR) unmanned air vehicle. It is intended to be an inexpensive, rucksack portable, vertical take-off and landing small unmanned air vehicle that provides a platoon with quick intelligence, surveillance and reconnaissance information about enemy forces nearby.

The organization wants a vehicle that has a maximum volume of 576 cubic inches with total takeoff weight not exceeding 3 lb. The UAV should be able to be assembled and disassembled in less than 2min by a single person.

AeroVironment's small unmanned air vehicle, the Snipe

In the last several years, the US Army, Marine Corps and special operations forces have experimented with several small UAVs that can be carried in a soldier's backpack, including FLIR Systems' Black Hornet and AeroVironment's Snipe.

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It should have a camera to take pictures with a minimum of 16 megapixel resolution as well as the ability to record high definition full-motion video. It should enable situational awareness of people and vehicles at standoff ranges of 300 m and 200 m. DIU wants the UAV to have a 30min flight endurance, 1.62nm operational range, 8,000 ft. service ceiling and the ability to fly in 15 kt.SS winds or greater. The desired price point for the airframe is $2,000 and $2,000 for the optical sensor package. https://www.flightglobal.com/news/articles/defense-department-accepting-proposals-for-rugged-sh-453600/

Food delivery drones are annoying residents in Australia because…of course!

November 12, 2018 Feilidh Dwyer

The Australian Broadcasting Corporation reports that a trial of fast food deliveries had recently been launched in a suburb of Australia's capital by a company called Wing. Wing is an initiative from Alphabet X, Google's parent company. Anyone living within 6 miles (10 km) of a delivery base in Bonython, is now eligible to have certain types of fast food flown directly to their door.

The drones fly between the hours of 7 am and 4 pm but residents have complained that once they wake up, they cannot get back to sleep. 500 people have already signed a petition calling for the drones to be banned.

With giant companies like Amazon, Uber and Hello Fresh investing and working towards mainstreaming of food delivery drones almost seem like an inevitability. The noise problem will have to be dealt with to avoid a larger backlash from the public.

Not everyone's mad though. One resident interviewed by ABC, Jamie Hengst, said she regularly got food delivered by drones and loved it. "We can get food that we can't normally get in Tuggeranong delivered hot and fresh to us within 10 minutes, so honestly the little bit of noise you get for five minutes is totally worth it," she said.

Wing is currently working on making their drones quieter. The trial in the neighborhood of Bonython will run through February when it will move on to another Canberra suburb, Mitchell. Let's see how they like it. https://www.wetalkuav.com/food-delivery-drones-are-annoying-australians/?utm_source=WeTalkUAV&utm_campaign=5edaaff547-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_1d410cb84d-5edaaff547-83642867

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University To Provide Drone Disaster Response Services KATE O'CONNOR

The Lone Star Unmanned Aircraft Systems Center of Excellence and Innovation (LSUASC) at Texas A&M University-Corpus Christi announced that it has signed an agreement with Texas' Nueces County to provide drone support in the event of natural disasters. During disaster situations, LSUASC says its unmanned aircraft systems will be used for tasks such as assessing safe routes for first responders, along with gathering video data to evaluate damage to buildings and property.

"Whether it's another Hurricane Harvey or flooding because of rains in the watershed, with this agreement we will be able to help everyone get back on their feet and provide assistance when an emergency or disaster pops up," said LSUASC operations chief Tye Payne. "This is a really big win, not just for the county and TAMU-CC but for all the people who live here."

The agreement allows the county to call on LSUASC UAS teams once an emergency is declared. It is valid for one year and will be renewed annually for up to five years. The university, which is one of seven FAA-recognized UAS test sites in the United States, has been sending UAS teams to assist with emergency response since 2015. https://www.avweb.com/eletter/archives/101/4190-full.html?ET=avweb:e4190:2565185a:&st=email#231848

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OIG Audits FAA on Drone Waivers, Calls for Eight Actions Betsy Lillian November 14, 2018

In a newly released audit of the Federal Aviation Administration's (FAA) unmanned aircraft system (UAS) waiver process, the Office of the Inspector General (OIG) has found room for improvement, particularly regarding timeliness in approving waivers.

In a summary of its findings, the OIG says the FAA has "established processes for reviewing and granting waivers but has experienced difficulties obtaining sufficient information, managing the volume of requests and communicating with applicants, particularly in explaining reasons for denying requests."

"As a result, FAA's Flight Standards office has disapproved 73 percent of operational waiver requests (e.g., over people and beyond line of sight), and a significant backlog of waiver requests to operate in airspace with manned aircraft exists," the audit summary explains.

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"Although the agency has improved its guidance and processes, FAA may continue to experience difficulty with review timeliness and responsiveness, given the growing demand for UAS operations, which could increase the risk that operators may continue to bypass established processes and operate without agency approval," it says.

The OIG then delves into the FAA's "risk-based oversight system," which is still in its "early stages": "While FAA has developed guidance for planning annual inspections, few UAS operators have received inspections to verify their compliance with regulations and the terms of their waivers," the OIG says. "Moreover, the agency's ability to perform meaningful risk-based surveillance is hindered by limited access to detailed UAS operator, FAA inspection and risk data. As a result, FAA does not have assurance of operators' compliance with regulations, is not well-positioned to develop an oversight strategy, and is missing opportunities to gather information that will help shape rulemaking and policies."

The full OIG audit can be found here. https://unmanned-aerial.com/oig-audits-faa-on-drone-waivers-calls-for-eight-actions

New Virginia Small Business Offers Drone Agriculture Services Betsy Lillian November 12, 2018

A new Virginia business, Remote Agri Drone LLC, was recently selected as a recipient of a $10,000 Virginia Coalfield Economic Development Authority (VCEDA) seed capital matching grant.

Remote Agri Drone, based in Cedar Bluff in southwest Virginia, offers agricultural spraying services for controlling plant and brush vegetation, as well as services for plant fertilization and soil analysis. Other aerial photography, mapping, surveying and search-and-rescue services are also available.

"Remote Agri Drone's business model fit perfectly with VCEDA's emphasis on locating businesses in the emerging technology field in the coalfield region," says VCEDA's executive director and general counsel, Jonathan Belcher.

"The VCEDA seed capital matching grant will enable me to purchase another drone and camera bundle to enable us to expand our business further," says Don Nelson. https://unmanned-aerial.com/new-virginia-small-business-offers-drone-agriculture-services?utm_medium=email&utm_source=LNH+11-15-2018&utm_campaign=UAO+Latest+News+Headlines

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Drones help protected bird's nests relocate from power lines before they catch fire

November 15, 2018 Feilidh Dwyer

FirstEnergy has thousands of power lines throughout Pennsylvania. Ospreys, fish-loving hawks,

love to build their nests on top of power lines. This poses a risk to the birds, their eggs and the public power supply.

Problem is – a big pile of sticks piled directly on top of power lines can easily cause fires. This is a particularly big problem during the rainy season when the wet branches from the osprey nests conduct electricity more than they normally would and are an especially big fire risk.

In the first instances, some power companies have taken to building special platforms on top of the power lines so the birds have a safe spot to nest. Some birds take up the offer but others ignore the offer and still build their nests right next to the lines.

FirstEnergy has taken to sending their drones to fly patrols over the many powerlines around the state. From hundreds of feet in the air, the drone pilots can determine whether or not a nest is being used by an osprey. The operators keep the drones far from the nests to avoid disturbing the birds and potentially leading to a parent abandoning their nest.

In the instances where the nest does pose a risk to the public, the company cooperates with conservationists to remove the nest, incubate the eggs and relocate them to a safe location. According to Cleveland 19 News, the company has already saved 40 nests. Great stuff!

An aerial shot was taken from a FirstEnergy drone, leading to the nest's eventual relocation. https://www.wetalkuav.com/drones-help-protect-birds/

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The Art and Science of Modern Drone Design November 12, 2018 Juan Plaza

The people who were born in the era of the computer and don't know life without the Internet are playing with completely original concepts that may not have been influenced by formal training of that bygone era. Instead, they're often influenced and inspired by something like a fantastical video game, or by a technical innovation that has nothing to do with aviation.

One great example is of this innovation running wild is from Jonathan Hesselbarth, founder of Wingcopter, who is on a quest to conquer the difficult challenge of vertical to horizontal flight transition. His solution is so simple that it defies logic itself, but it works.

Jonathan's idea, called Wingcopter, like his company, was to divide the power plant into four rotors and to move them forward and aft of the wing to avoid prop wash during the transition. It's a simple solution but it works like a charm due to the fact that the wings never generate lift during the transition, except from air generated by movement, not the rotors.

Wingcopter in Vertical Flight Mode

Horizontal Mode

Another great example is Spencer Gore and his recently launched Flying Battery concept. Spencer and his team at Impossible Aerospace came up with the idea to stop fighting the weight/power ratio of commonly available UAVs and think out of the box. The result is an elegant and highly efficient drone capable of flying over two hours.

With the advent of new players and innovative ways to create and try revolutionary ideas, it was just a matter of time before a new industry would be created to serve this community.
https://www.expouav.com/news/latest/art-science-modern-drone-design/?utm_source=marketo&utm_medium=email&utm_campaign=newsletter&utm_content=newsletter&mkt_tok=eyJpIjoiTVRkaE16azVZak5oWWpsaSIsInQiOiIrQ1wvY1VCWTlBb2RNa1I4YUpHXC9kcEs2MW01ZGNUbllcL1FIOWUxUWdpZThKU1wvSnordEtHTUdvRTR3QUI4OTI4TEIwYTdZRnBWWHhGZkh5ZzZUWjViV3ZqbDRlbFc0RVk1RHRCVjBRcTU5XC8rSGtTdEFJVnhOZjZvQjFiNGhVMjBPIn0%3D

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