UAS and SmallSat Weekly News

Contents

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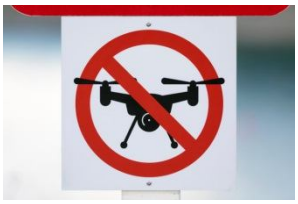
24Feb18

Vodafone Develops 4G IoT Technology for Tracking Rogue Drones Betsy Lillian

February 20, 2018



Vodafone has commenced trials of its 4G Internet of Things (IoT) drone tracking technology, designed to protect manned aircraft from drone collisions and prevent inadvertent or criminal drone incursions at sensitive locations, such as airports, prisons and hospitals.

The company says its radio positioning system (RPS) uses a 4G modem and SIM embedded within each drone to enable the following:

- Real-time tracking of each drone (with up to 50-meter accuracy) by drone operators and authorized bodies, such as air traffic control
- Over-the-horizon/beyond-line-of-sight control by the operator – reducing the risk of accidental incursions when operators lose sight of their drones
- Protective geofencing, with drones pre-programmed to land automatically or return to the operator when approaching predetermined exclusion zones (such as airports and prisons)
- Emergency remote control intervention to provide the authorities with the means of overriding a drone operator's control to alter the drone's flight path or force it to land
- SIM-based e-identification and owner registration.

According to Vodafone, 4G mobile networks operate with long-established and proven security systems, including strong end-to-end encryption over-the-air from SIM to base station. In addition, the company says RPS location data is significantly harder to hack or spoof than GPS location data, and the data connection used to control the drone offers the operator significant advantages over current drone radio control protocols, including over-the-horizon, real-time feedback.

The Vodafone RPS is combined with artificial intelligence algorithms to enable large numbers of drones to be tracked and controlled remotely. https://unmanned-aerial.com/vodafone-develops-4g-iot-technology-tracking-rogue-drones?utm_medium=email&utm_source=LNH+02-22-2018&utm_campaign=UAO+Latest+News+Headlines

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Kansas State Rolls out New UAS Training for First Responders

Betsy Lillian February 21, 2018

Kansas State University Polytechnic Campus is working with law enforcement partners to offer a training course specifically targeted at how first responders can use unmanned aircraft systems (UAS) in daily operations and safety procedures. The first course offering runs April 9-12 at the university's campus in Salina.

In the new course, pilots will receive hands-on flight training in areas such as flight maneuvers, crew resource management, accident scene reconstruction, search-and-rescue operations, and night operations. In addition to flight training, attendees will also learn best practices for drone operations, Federal Aviation Administration regulatory guidance for law enforcement agencies, and software tools for extracting actionable information.

"The search-and-rescue scenario will include training using full-motion video sensors and forward-looking infrared sensors," Carraway says. "It will introduce officers to techniques in using multiple aircraft and crews to execute a replace-on-station exercise to replace one already in the air collecting data but nearing battery depletion. https://unmanned-aerial.com/kansas-state-rolls-new-uas-training-first-responders?utm_medium=email&utm_source=LNH+02-22-2018&utm_campaign=UAO+Latest+News+Headlines

These Power Line-Stringing Drones Are Restoring Power in Puerto Rico

MARCO MARGARITOFF FEBRUARY 22, 2018

The mountainous area of Ponce, Puerto Rico, has posed quite the challenge for local officials attempting to restore power in the aftermath of Hurricane Maria. Cabling power lines through the thick woodlands is difficult for boots on the ground, but Duke Energy began approaching the challenge from an aerial perspective in January. The energy company is now using unmanned aerial vehicles to traverse the more than 1,000 feet gorges of Ponce, and string vital power lines across to return power back to the area.

Duke Energy simply rigs a drone with a lightweight nylon cord and a 3-D printed magnet. Once the UAV covers its assigned ground and is in position, it releases the cord, allowing workers on

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the ground to fasten a more durable cord in place. Finally, the conductor wire required to transmit electricity is pulled into position, and power can once again flow freely along its route.

When the company arrived in Puerto Rico last month, workers spent six days in Ponce, piloting power line-cabling drones all over the region. “We were doing upwards of 3-4 pulls in a day,” Velky said.

Before Duke Energy set up shop on the island in January, power in Ponce was restored for 68 percent of the local population. A mere month later that number is at 94 percent. http://www.thedrive.com/tech/18713/these-power-line-stringing-drones-are-restoring-power-in-puerto-rico

26Feb18

How Widespread Is The Problem Of ‘Peeping Tom’ Drones? February 25, 2018 Feilidh Dwyer

In 2017, the number of public complaints about drones to New Zealsnd’s Civil Aviation Authority (CAA) skyrocketed. Last year there were more than 300 public complaints to the CAA about drones.

Whether or not the drones that people complain about are actually spying is pretty difficult to determine. So while we can be sure that many of the flyovers of people’s properties are accidental or just thoughtless, the evidence we have so far would point to at least some of them being committed by deviants.

Some people have recently been prosecuted for using their drones to spy. Last year a Utah couple were arrested and charged with voyeurism for using a drone to film people in their bathrooms or bedrooms in the city of Orem.

To read the FAA regulations for the United States and avoid getting yourself in trouble read here and also here. https://www.wetalkuav.com/the-problem-of-peeping-tom-drones/2/

Talking Shooting Star Drones With Intel’s Natalie Cheung Nick Zazulia | February 23, 2018

You probably remember the Olympic rings hanging in the air during the opening ceremony, like a set of perfectly placed, everlasting fireworks. Or, if

you're one of the 112 million people who watched the Super Bowl in 2016, you likely recall the giant American flag in the air behind Lady Gaga during the halftime show, seemingly made of nothing but light.

Thanks to the fanfare they have gotten in the wake of those events, you may already know that those feats and others like them were possible thanks to the coordinated efforts of a fleet of Intel unmanned aircraft systems (UAS), dubbed Shooting Star drones. You may not know that those hordes — more than 1,200 machines in the case of the Olympics performance — are all operated by a single pilot; or that Intel has grand designs on possibly leveraging the technology it has developed for the Shooting Stars into commercial applications.

Avionics spoke with Natalie Cheung, the general manager of Intel's drone light shows, (who was in Pyeongchang, South Korea, overseeing her ever-growing armada) about the Shooting Stars, where they came from and where they might be going next. Read the interview at: http://www.aviationtoday.com/2018/02/23/intel-drones-placeholder/

On-Demand Helicopter Experience Feeds Into Airbus Air Taxi Design *Feb 23, 2018*

Tony Osborne and Graham Warwick | *Aviation Week & Space Technology*

Airbus is approaching urban air mobility from multiple directions, from gaining experience with on-demand helicopter service in gridlocked cities to designing vehicles optimized for the short-duration air taxi mission. Monthly growth of helicopter operations in Sao Paulo has exceeded 200% in number of trips and 220% in riders. The service now makes “several dozen trips a day” among eight heliports.

Customers must say how much luggage they plan to bring, as it can require a larger helicopter. Voom also is learning what routes customers want to travel. Airbus also is learning what passengers consider a fair price.

One key focus is on passenger comfort, particularly in the first seconds after takeoff as the CityAirbus transitions to forward flight. Airbus is working on maintaining level flight throughout the mission. Because the CityAirbus is designed to operate in sensitive urban areas, engineers are studying how to keep noise levels low.

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Once early testing is complete, the aircraft will be converted for manned flights. While initial commercial flights could be piloted, ultimately the CityAirbus would fly autonomously between preassigned stations.

Another lesson from Voom's first 10 months of operations in Sao Paulo? "Weather can be a real problem. In January, we had to cancel 21 trips in 1.5 hr." http://aviationweek.com/commercial-aviation/demand-helicopter-experience-feeds-airbus-air-taxi-design?NL=AW-05&Issue=AW-05_20180226_AW-05_537&sfvc4enews=42&cl=article_2&utm_rid=CPEN1000003332045&utm_campaign=13791&utm_medium=email&elq2=e6055a6946314aafb5377239b2bc796d

Dolce & Gabbana drones fly the catwalk at Milan Fashion Week *Trevor Mogg*

February 25, 2018

At Milan Fashion Week on Sunday, Dolce & Gabbana stunned the watching crowd with a memorable opener that replaced human fashion models with drones. That's right, folks, the Italian luxury brand fired up a bunch of quadcopters and sent them buzzing down the runway, showcasing its latest assortment of pricey offerings. They carried Dolce & Gabbana's latest range of quilted leather handbags as part of its fall and winter collection.

Seven of the copters hovered along the runway, each one with a handbag dangling beneath it. Named "Devotion" and featuring heart-shaped closures, the flying bags made quite an impression on the audience, which, incidentally, had had no idea this was coming. https://www.digitaltrends.com/news/dolce-and-gabbana-drone-fly-catwalk/

Agriculture Drone Market to touch US$1,932.6 Million by 2026 Fixed-Wing Drones to Remain Most In-demand Product Variety, Says TMR *February 26, 2018 07:19 ET* | Transparency Market Research

ALBANY, New York, Feb. 26, 2018 (GLOBE NEWSWIRE) -- According to the report, the global agricultural drone market will expand at an exponential 21.35 CAGR from 2018 to 2026, rising to a valuation of US$1,932.6 mn by 2026.

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The vendor landscape of the **global agriculture drone market** is expected to witness entrance of new players who are expected to bring advance technologies to the market, helping the market move ahead in the direction of maturity, observes Transparency Market Research in a recent report. Venture funding has already started picking pace in the field of agriculture technologies, and big investors are becoming more willing to invest in start-ups with new solutions for precision farming.

Companies are developing advanced product varieties such as quadcopter drones and collaborating with software providers and small vendors to bring easy-to-use drone packages. Some of the leading vendors in the market are Agribotix LLC, Delair Technologies Inc., Honeycomb Corporation, Precision Hawk, Drone AG, Ag Eagle Aerial Systems, Parrot SA, Aerovironment Inc., DJI Innovate, Yamaha Corporation, Sentera LLC., and Ideaforge India Private Ltd.

In 2016, a vast majority of the global revenue was held by the fixed-wing drone segment, followed by the multi-rotor drone variety. Deployment of hybrid drones is still limited to very large farms and is not expected to gain notable momentum in coming two to three years. This is largely owing to the fact that the overall agriculture drone market is still at nascent stage and farmers are still in the preliminary stages of receiving education about drone operations and their usability. Thus, unless farmers start completely acknowledging the vast capabilities and benefits of drones, hybrid drones are likely to find limited use in precision agriculture.
https://globenewswire.com/news-release/2018/02/26/1387206/0/en/Agriculture-Drone-Market-to-touch-US-1-932-6-Million-by-2026-Fixed-Wing-Drones-to-Remain-Most-In-demand-Product-Variety-Says-TMR.html

Industrial drones are the new 'sensor network' Michael Krigsman for Beyond IT Failure | February 26, 2018

Modern aerial drones are packed with sensors and based on platforms that use artificial intelligence and machine learning to analyze rich sets of data with sophisticated image processing.

Kespry CEO holding a drone during CXOTalk video filming.

The technology of industrial drones involves components such as ruggedized flight bodies, GPS, and LIDAR, in addition to cameras. So I could learn more, public relations ninja, Laura Hoang, introduced me to George Mathew, CEO of industrial drone supplier, Kespry. The

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company provides a complete enterprise platform for industrial drones that includes hardware, software, and data analytics.

Because drones are both cool and important, I invited George to take part in Episode 277 of the CXOTalk series of conversations with the world's top innovators.

During our talk, George explains drone tech and talks about topics like volumetric analysis in mining, LIDAR on drones, photogrammetry, and 3D orthomosaic image processing.

Watch the video embedded above and read the complete transcript. An edited transcript of key points raised in the discussion is at: http://www.zdnet.com/article/aerial-drone-tech-industrial-drones-are-the-new-sensor-network/

Italy's Skyrobotic cleared to fly drones above cities

February 22, 2018 Philip Butterworth-HayesUAS traffic management news

Skyrobotic, an Italeaf company that produces drones under 25 kilograms, has announced it has obtained permission from the Italian National Civil Aviation Authority (ENAC) for its SR-SF6c system to operate in urban scenarios with safety restrictions.

"This type of certification will allow the APRs (drones) Skyrobotic to fly over urban areas in VLOS (Visual line of sight) conditions," said Vice President Giancarlo Grasso. "This is the maximum safety recognition provided by national regulations for professional drones, which will allow operators who choose our systems to be able to fly over urban areas or congested areas in complete safety and in full compliance with industry regulations." http://www.unmannedairspace.info/uncategorized/italys-skyrobotic-cleared-fly-drones-cities/

27Feb18

With Complete Automation, Partners 'Fully Exploit' Value of Drone Inspections

Betsy Lillian February 26, 2018

Bihrle Applied Research and BNSF Railway have successfully demonstrated "truly automated" detection, classification and reporting of infrastructure conditions of railways by using unmanned aircraft systems (UAS) beyond the visual line of sight (BVLOS) of the operator.

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The partners used RailVision – a computer vision technology solution developed by Bihrle and BNSF in support of BNSF's drone research initiatives – to process tens of thousands of images at a time covering hundreds of miles of track.

RailVision enables BNSF to automatically process images collected by drones during supplemental railway inspection flights and generates actionable reports in a fraction of the time required by traditional methods, according to the partners.

"Bihrle's computer vision capabilities have been used in conjunction with our railway safety enhancement research and the FAA's Pathfinder Program," says Todd Graetz, director of technology services at BNSF. "The breadth of railway anomaly-detection capabilities provided by Bihrle allows us to further research into the use of long-range UAS." https://unmanned-aerial.com/complete-automation-partners-fully-exploit-value-drone-inspection?utm_medium=email&utm_source=LNH+02-27-2018&utm_campaign=UAO+Latest+News+Headlines

Virginia police department gets 3 more unmanned drones Associated Press February 26

PETERSBURG, Va. — One Virginia police department has added three more drones to its operations.

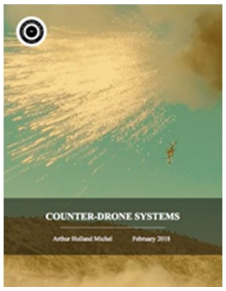
The Richmond Times-Dispatch reports the Petersburg Bureau of Police Chief Kenneth Miller said on Twitter that the department got three new drones "to tackle crime and keep the community safe." With a total of four drones, the department's stash of unmanned aircraft is four more than all other Richmond-area police departments.

There's no official count of Virginia law enforcement agencies with drones, but the Center for the Study of the Drone at Bard College said in a 2017 report that nine police, sheriff, fire and emergency agencies had used drones in Virginia between 2009 and 2017. https://www.washingtonpost.com/local/virginia-police-department-gets-3-more-unmanned-drones/2018/02/26/ecb10df0-1af0-11e8-98f5-ceecfa8741b6_story.html?utm_term=.5b7dd8b4c840

Report: Counter-Drone Systems February 20, 2018

Counter-drone technology, also known as counter-UAS, C-UAS, or counter-UAV technology, refers to systems that are used to detect and/or intercept unmanned aircraft. As concerns grow around the potential security threats drones may pose to both civilian and military entities, a new market for counter-drone technology is rapidly emerging. To date, we have found at least

235 counter-drone products either on the market or under active development. "Counter-Drone Systems," a new report published by the Center for the Study of the Drone, provides background on the growing demand for C-UAS technology, describes how the technology works, presents our database of known C-UAS systems from around the globe, and explains some of the challenges surrounding counter-drone technology use.



Key Takeaways:

- The C-UAS industry has grown exponentially in recent years. We have identified over 230 C-UAS products produced by 155 manufacturers in 33 countries
- The most popular drone detection techniques are radar, RF detection, EO, and IR. The most popular interdiction technique is jamming
- C-UAS technology poses a wide range of practical, legal, and policy challenges in all operating environments
- A lack of common standards in the C-UAS industry means that there is a wide variance in the effectiveness and reliability of systems

Read the full report here. http://dronecenter.bard.edu/counter-drone-systems/

CU Students Design Drone To Help Study Whales February 20, 2018 Karen Morfitt

BOULDER, Colo. – A team of 12 engineering students is collaborating with scientists from the Cetacean Echolocation Translation Initiative (CETI) to design and build a drone that will help locate and eventually track and crack the language of whales.

A senior aerospace engineering student, Polakiewicz is also the project manager for SHAMU- Search and Help Aquatic Mammals UAS student team.

"We're designing a drone that will be launched from a vessel that will fly for 100km endurance, around the ship, and it will scout for whales in the ocean," he said. Using electricity to run, their drone has a wingspan of 10 feet and weighs just under 20 pounds.

"Once the whale is located it will transmit the GPS location of the whale back to the research vessel," he said. A camera mounted to the aircraft will capture and send back photos – eventually the focus of the

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project will turn from locating to recording the sounds of those whales – giving researchers an opportunity to study and better understand their language.

The University has launched a fundraising page with the goal of raising $10,000, money that will be used on parts and getting team members like Grant Dunbar to launch day. If all goes as planned, the team will launch the drone by mid-summer. http://denver.cbslocal.com/2018/02/20/students-drone-whales/

Swiss Police Will Raise Eagles To Terminate Rogue Drones February 27, 2018 Feilidh Dwyer

Police in Geneva, Switzerland have joined a growing list of forces employing clever ways of dealing with drones behaving badly.

They have skipped using nets, guns or hackers. Rather – they have opted to train a pair of eagles all the way from hatchlings fresh from the eggs until they are fearsome, fully-grown masters of the skies.

To raise the eagles to operational readiness will take around a year. During this time a falconer will be regularly putting them through their paces and rewarding them with fresh meat every time they get it right.

The end result should be eagles that fly above unsuspecting drones, employ their sizable talons and yank said craft right out of the air.

The Swiss are just the latest of a growing list of European authorities using birds-of-prey to combat crime. The French air force has had a similar anti-terrorism program for the last few years. The Dutch too have tried the same strategy. Although it yielded some impressive results, they eventually decided to abandon the program as the birds were just too naughty.

We shall be watching the progress of these Swiss eagle drone killers with great interest.
https://www.wetalkuav.com/swiss-police-will-raise-eagles-to-terminate-rogue-drones/

UAVOS Unveils New Multi-Functional VTOL UAV 27 Feb 2018 | Caroline Rees

UAVOS has announced its new SURVEYOR-H Unmanned Aerial System, based around the company's UVH-290E vertical takeoff/landing (VTOL) drone platform. The new unmanned

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helicopter has a takeoff weight of 192 lbs (87 kg) and was designed with durability, extended operation life and serviceability as a priority.

The multi-purpose UVH-290E unmanned helicopter is the newest of UAVOS' gasoline rotary engine helicopters. In comparison with the previous version, the telemetry of the helicopter state parameters has been expanded, allowing for control of the basic parameters in flight, thereby contributing to the increased reliability and safety of the aircraft.

The flying range of the UAV is 249 miles (400 km) with a practical ceiling of 6800 ft (2100 m). The flight time of the helicopter is 5 hours with a payload of 11 lbs (5 kg). In addition, the efficiency of using the aircraft in difficult climate conditions – with a wide temperature range of 31F - 122F (-35C to + 50C) – has been increased.
http://www.unmannedsystemstechnology.com/2018/02/uavos-introduces-new-vtol-multifunctional-uav/

Police Drone Helps Save Man's Life From Hypothermia While Lying in Ditch

MARCO MARGARITOFF FEBRUARY 26, 2018

When someone went missing after a car crash in the dead of night on Sunday, no one could find him—except this drone, which saved the dying man's life.

A police drone fitted with an infrared camera helped locate an unconscious car-crash victim freezing to death in a six-feet deep ditch in Ludborough, Lincolnshire. According to *DroneDJ*, the unmanned aerial vehicle was deployed when the victim was spotted walking away from the scene of the accident on the A16 highway. After a few minutes of aerial surveying with the DJI Inspire drone in question, the man was found in the aforementioned ditch, unconscious and with hypothermia.

We've reported on the enormous benefits that search and rescue groups can garner from employing UAVs in their lifesaving efforts before such as when this elderly woman who went missing in the woods was found, or when firefighters utilized drones to ensure safety before entering hazardous areas. In this particular instance, the premise was fairly simple—it was pitch black at night, and a man disappeared near a crash-site. Thankfully, we live in an era now where the logical response to this scenario is to deploy a drone that can see things we can't. Minutes later, his life was saved. He was 500 feet away from the scene of the accident, which occurred

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around 2:00 a.m. on Sunday. http://www.thedrive.com/tech/18817/police-drone-helps-save-mans-life-from-hypothermia-while-lying-in-ditch

Drones emerge as new dimension in cyberwar Patrick Howell O'Neill FEB 5, 2018 | CYBERSCOOP

Military technology companies from around the world are rushing to design, build and sell drones that hack and track, while others want to own the business of hacking of the drones themselves. The burgeoning market is foreshadowing battles that could play out in the skies and, for some companies, bring significant profits.

It's an immature set of technologies — lots of marketing, precious few finished products — but there is a growing appetite for them.

"This market is about to blow up," said Francis Brown, a partner at the cybersecurity consultancy Bishop Fox. "Everybody's trying to grab market share. The next year or two is going to decide who will become Pepsi and Coke out of all these products."
https://www.cyberscoop.com/apolloshield-septier-drones-uav-cyberwar-hacking/

Oregon Earthworks Contractor Touts Benefits of Kespry Drone Adoption Betsy Lillian February 22, 2018

D&T Excavation, an Oregon-based earthworks company serving commercial, residential and government agencies, has selected the Kespry drone platform to safely perform comprehensive inventory management and worksite topographical analysis.

According to Kespry, D&T Excavation conducted a comprehensive survey of available industrial drone options and chose Kespry following a recommendation and demonstration from its strategic equipment partner, Papé Machinery, a member of the John Deere dealer network.

"We saw the benefit of being able to invite customers to look at specific jobs and their progress, as well as orthomosaic photographs from the cloud," continues Liechty. "From our research, we saw Kespry was the most complete, end-to-end solution. We think this is the future. Everyone's going to be using something like this."

With the Kespry platform's autonomous drone technology, operators select the survey area and set the flight parameters on an iPad application. Then, the autonomous Kespry Drone and

Kespry Cloud do the rest. https://unmanned-aerial.com/oregon-earthworks-contractor-touts-benefits-kespry-drone-adoption?utm_medium=email&utm_source=LNH+02-27-2018&utm_campaign=UAO+Latest+News+Headlines

28Feb18

After Mexico City Earthquake, Drones Help Make Sense of the Damage Feb 21

When a 7.1 magnitude earthquake hit central Mexico in the fall of 2017, much of Mexico City was left in chaos. To help the city move forward, emergency response teams, non-government organizations, construction companies, and urban planners needed a system that would allow them to respond quickly with the best information. But how do you conceptualize over five hundred square miles of urban landscape?

DroneSky, a drone mapping company based in Mexico City, saw an opportunity in the midst of the chaos. Using DroneDeploy's cloud-based drone mapping platform, they set out to develop a better way of collaborating after major disasters. The company mapped 98 acres in one of the hardest hit and most marginalized districts of the city, then teamed up with a group of architectural students to create a plan for a total regeneration of public space in the district. https://blog.dronedeploy.com/after-mexico-city-earthquake-drones-help-make-sense-of-the-damage-c056ce1d486c

Drone safety: EU aviation agency takes first steps toward regulation Malek Murison - February 28, 2018

The European Aviation Safety Agency (EASA) has released a formal opinion on how to keep drone flights in Europe safe and secure for all. The document is the first step toward continent-wide regulation by the European Commission (EC). EASA's proposals could be formally enshrined in European law before the end of the year.

Recreational pilots with drones weighing between 250 grams and 25 kilograms will have a maximum operating altitude for their machines of 394ft. In addition, they will be required to pass competency tests and register with their national aviation body. Commercial pilots, as is already the case in several EU countries, will need a licence to operate. EASA also seeks to

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ensure that drones weighing between 900 grams and four kilograms have some form of electronic identification.

The main challenge is accommodating beyond visual line of sight (BVLOS) operations.

Hobbyist pilots will be banned from losing sight of their drones. Commercial flyers will have to "declare" a BVLOS flight in advance to the appropriate regulator. Operators will have to "perform a risk assessment and to propose mitigation measures that the competent authority will analyse and approve through an authorisation", should the mission go outside of the organisation's pre-determined scenarios.

Once drone cargo flights begin internationally, military deployments increase, and – in the longer term – passenger drones become more commonplace, there will need to be international harmonisation of drone regulations – in line with the global environment for manned aircraft. https://internetofbusiness.com/eu-aviation-agency-drone-regulations/

1Mar18

Opinion: Industry Can Help Prevent Drone Disasters *Feb 27, 2018* David Silver | *Aviation Week & Space Technology*

Operation of unmanned aircraft systems (UAS) near an airport and at the altitudes demonstrated by the Las Vegas video are in clear violation of FAA regulations (see photo). Regulatory compliance, the threat of minor fines or the unlikely prospect of jail time for the violation may be outweighed by the potential for notoriety or internet fame, regardless of the serious risks involved.

While safe and responsible operations of UAS will always be the goal of most commercial operators and hobbyists, the potential for catastrophic damage from even the smallest drone requires that airports, key industrial and military sites and infrastructure assets have the means to protect themselves from threats of all kinds, whether intentional or negligent.

However, a key goal remains to develop an environment where drone technologies continue to evolve and thrive. Unmanned and remotely controlled aerial systems promise to open a wide range of innovative industries, services and jobs and to provide opportunities for a new generation of aviation pioneers, who will bring us everything from automated pizza delivery to

pilotless air taxis and cargo aircraft. The key is balance. We must move forward with these exciting technologies while we also develop the tools to ensure safety of both the public and our airspace. *David Silver is the vice president for civil aviation at the Aerospace Industries Association (AIA).* http://aviationweek.com/commercial-aviation/opinion-industry-can-help-prevent-drone-disasters?NL=AW-05&Issue=AW-05_20180301_AW-05_128&sfvc4enews=42&cl=article_2&utm_rid=CPEN1000003332045&utm_campaign=13864&utm_medium=email&elq2=23059356897548ec92a06f554f8ffccb

The WingtraOne PPK VTOL Drone Can Create Ultra-Precise Maps and 3-D Models MARCO MARGARITOFF FEBRUARY 27, 2018

Zurich-based drone manufacturer Wingtra is hoping to set a new standard for large-scale surveying and mapping needs. The company's new drone, the Wingtra PPK (post-processed kinematics) can construct orthomosaic maps and 3-D models with an accuracy of a fairly-negligible 0.4 inches.

"With the latest upgrade, our drone WIngtraOne PPK can offer broad coverage and high resolution at precise accuracy," said CTO of Wingtra, Armin Ambühl. It can cover an area equal to 240 football fields while software is simultaneously creating orthomosaic maps and constructing 3-D models. http://www.thedrive.com/aerial/18856/the-wingtraone-ppk-vtol-drone-can-create-ultra-precise-maps-and-3-d-models

World's biggest plane, Stratolaunch, marks another key milestone Edd Gent / Feb.28.2018

The 500,000-pound monster is designed to offer another way into space.

For the first time ever, the Stratolaunch aircraft moved out of the hangar to conduct aircraft fueling tests. This marks the completion of the initial aircraft construction phase and transition into the aircraft ground and flight testing phase.

"Stratolaunch" is a 500,000-pound

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beast with twin fuselages and a wingspan of 385 feet. Paul Allen's Seattle-based company is developing it as a platform for lifting rockets into the stratosphere before launching them into space. It's seen as a cheaper, more reliable route to low-Earth orbit (LEO).

The plane is still in development and has yet to fly, but last December it taxied out onto the runway at the Mojave Air & Space Port in Mojave, California. In another test last Sunday, it hit a new top taxi speed of 46 miles per hour. If all goes according to plan, the plane will take its first test flight next year. https://www.nbcnews.com/mach/science/world-s-biggest-plane-stratolaunch-marks-another-key-milestone-ncna851556?cid=par-aff-gray

Report: Counter-drone Solutions Experience "Stratospheric" Increase Jason Reagan: February 27, 2018

Bard College's Center for the Study of the Drone released a 23-page report on Feb 20 that breaks down available counter-drone products and identifies various ways each solution approaches drone mitigation.

"Following hundreds of reports of close encounters between drones and manned aircraft in the U.S. airspace system, the FAA launched a program to test C-UAS at a number of airports, where such incidents are both most common and most dangerous. After law enforcement groups raised the possibility that drones could be an effective weapon for terrorist attacks on large crowds, counter-drone systems began to appear around sporting and political events with increasing regularity."

The report notes that more than 230 counter-drone products produced by 155 manufacturers are now on the market (the report also provides a complete database). "The expansion of the sector in the roughly five years since counter-drone systems first appeared on the market has been stratospheric," Michel notes.

"In a market survey conducted in 2015, researchers at the Sandia National Laboratories identified just 10 dedicated counter-drone systems available for acquisition. Today, less than three years later, we have tallied over 200 systems on the market."
https://dronelife.com/2018/02/27/report-counter-drone-solutions-experience-stratospheric-increase/

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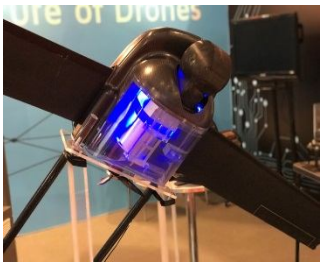
PrecisionHawk Became the U.S. Experts in BVLOS Flight. Now, They're Ready to Share their Research. Miriam McNabb: February 27, 2018

As a member of the FAA's Pathfinder Program, PrecisionHawk has been flying under a BVLOS waiver and gathering data to develop "operational and safety practices, as well as recommendations for technologies that enable drone flight beyond visual line of sight." The company will now offer consulting and training services for other commercial operators to fly BVLOS.

To date, PrecisionHawk has received both beyond visual line of sight and night operations waivers. Commercial applications like pipeline inspection, transportation infrastructure, and large scale agriculture rely on BVLOS flight, which has been legal in countries like France for several years. The FAA has indicated that it will prioritize BVLOS flight in forming U.S. drone regulation. PrecisionHawk's new program will officially launch in March: interested parties can contact PrecisionHawk at www.precisionhawk.com for more information on how to become involved with the program. https://dronelife.com/2018/02/27/precisionhawk-became-u-s-experts-bvlos-flight-now-theyre-ready-share-research/

HES Energy Systems Announces Smallest and Lightest Hydrogen Fuel Cell For Drone Applications Juan Plaza February 27, 2018



Currently, most electric multi-copters have an average TITA (time in the air) of 25 minutes, depending on the number of rotors. This has been the industry standard for years and the battery industry is in no hurry to improve the power/weight ratio of their lithium-ion technology.

However, the closer we get to a Part 107 expansion to include flights beyond visual line of sight (BVLOS), the more important TITA becomes. That means new developments and announcements from alternative sources of power, especially hydrogen fuel cells, are especially critical. The main benefit of these fuel cells is better defined as the ratio of the energy stored in the solution per unit of weight (Wh/kg). Compared to the commonly-used lithium battery, this Wh/kg ratio is 2 to 5 times higher, providing an electric load of 2 to 5 times more autonomy in the air.

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That's what makes the recent announcement from HES Energy Systems so notable and exciting. Based in Singapore, the company recently announced that they now manufacture the world's smallest and lightest hydrogen fuel cell for drones. https://www.expouav.com/news/latest/hes-energy-systems-hydrogen-fuel-drone-applications/?utm_source=informz&utm_medium=email&utm_campaign=newsletter&utm_content=newsletter

2Mar18

Boeing Is Getting Ready to Sell Flying Taxis Julie Johnsson and Alan Levin March 1, 2018

"I think it will happen faster than any of us understand," CEO Dennis Muilenburg said in an interview. "Real prototype vehicles are being built right now. So the technology is very doable." The new era of flying urban vehicles is close enough for the man overseeing jetliners and spacecraft to begin plotting what he calls the "rules of the road" for three-dimensional highways.

Autonomous air taxis and parcel-hauling drones have the potential to be the next disruption to sweep the aerospace industry, with Boeing and arch-rival Airbus SE among the manufacturers racing to stake a claim. Muilenburg sees it as a rare opening to shape a new transportation ecosystem. Fleets of self-piloted craft could be hovering above city streets and dodging skyscrapers within a decade, he said. Propelling these advances are a flood of investment, rapid gains in autonomy, and growing consumer frustration with bumper-to-bumper traffic.

Aurora Flight Sciences, which Boeing now owns, is working on a flying taxi project with Uber

Boeing bolstered its portfolio of unconventional pilotless aircraft last year by buying Aurora Flight Sciences, whose projects include a new flying taxi it is developing with Uber Technologies Inc. Other partners for Uber's futuristic Elevate service include Textron Inc.'s Bell Helicopter and Embraer SA, a Brazilian planemaker currently in tie-up talks with Boeing. https://www.bloomberg.com/news/articles/2018-03-01/boeing-is-getting-ready-to-sell-flying-taxis-within-a-decade

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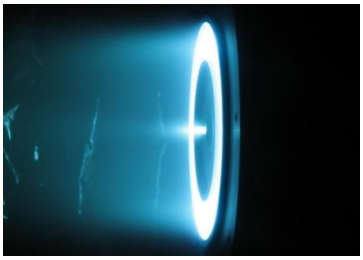
Startup Bringing Plasma Propulsion Technology To Smallsat Crowd *Mar 1, 2018*

Irene Klotz | *Aviation Week & Space Technology*

Last year, the Federal Communications Commission cleared OneWeb to operate the first of what may be a dozen or so constellations of small satellites for internet and other communications services in the U.S. OneWeb plans to launch the first 10 of its initial 720-satellite network this year. Applications are pending from other aspiring websat operators, including SpaceX, Boeing, ViaSat and O3b Networks.

Combined, the broadband constellations would include about 9,000 satellites. Those, plus hundreds of smaller cubesat networks operated by remote sensing, tracking and data analytics companies like Planet and Spire, spurred King's interest in developing a fuel-efficient, lightweight and low-cost Hall effect thruster for satellites in the 50-400-kg (110-880-lb.) range.



A 6-kW Hall thruster in operation at NASA's Jet Propulsion Laboratory

Based on work by physicist Edwin Hall in the 1880s, a Hall-effect thruster is a small engine that generates a magnetic field to accelerate a low-density plasma, producing thrust. The propellant is an inert gas, typically xenon. Aerojet manufactured the first Hall thruster for an operational satellite, the military's Advanced Extremely High-Frequency communications satellite, which launched in 2010.

"In the history of the space program, U.S. companies and government agencies together have only flown 16 Hall-effect plasma thrusters, and all of them were on military spacecraft," says King. "We see the opportunity here. There is the potential for hundreds of these, maybe thousands. There needs to be a new way to do this on a bigger scale and for lower cost."
http://aviationweek.com/connected-aerospace/startup-bringing-plasma-propulsion-technology-smallsat-crowd?NL=AW-05&Issue=AW-05_20180302_AW-05_488&sfvc4enews=42&cl=article_4&utm_rid=CPEN1000003332045&utm_campaign=13887&utm_medium=email&elq2=48f75cac6e224670946f32d119acbce5

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