axcel

UAS and SmallSat Weekly News

Contents

24Sep17

DJI Proposes Systems For Managing And Monitoring Drone Traffic

DJI, a leader in civilian drones and aerial imaging technology, believes existing technology and local communication protocols can provide a robust system for managing and monitoring drone traffic, without requiring new equipment or a massive new database of all drone flights. DJI outlined its regulatory approach to ensuring the safe growth of drone traffic in two white papers delivered Saturday at the International Civil Aviation Organization (ICAO) Drone Enable conference in Montreal.

"The rapid adoption of drones for business, academic, government and nonprofit uses has generated enormous benefits for society, but it has also raised concerns about how authorities can identify drones and ensure they operate safely in complex airspace," said Walter Stockwell, DJI Director of Technical Standards. "Rather than develop complicated new systems using untested technology, DJI believes industry and government can address these challenges with equipment available today, and without requiring every drone flight to be permanently recorded in a government database."

In one white paper available here, DJI proposes that unmanned traffic management (UTM) systems do not require a centralized control center to establish flight paths and help drones avoid traditional aircraft, fixed obstacles and each other. Instead, drones can directly coordinate their flight paths and avoid obstacles by using **On-board Anti-collision Technologies (OATs) already found on many civil drones**, such as obstacle sensing systems and radio transmitters and receivers communicating with other drones.

"We envision a future in which drones will be smart enough to navigate safely through the airspace, avoiding obstacles, each other, and manned traffic, all on their own, in most locations," the white paper states. "Because OATs are less complex than an end-to-end automated traffic management system, because they present fewer points of failure, and because they can be deployed with no required investment in ground-based infrastructure, we expect these technologies will receive regulatory approval well before a networked UTM system will."
http://uasweekly.com/2017/09/23/dji-proposes-systems-managing-monitoring-drone-traffic/?utm_medium=push_notification&utm_source=rss&utm_campaign=rss_pushcrew

Drones are more helpful than ever in hurricane-ravaged Texas and Florida Thom Patterson @CNNTech September 24, 2017

Unmanned aircraft — small and large — swooped in during the aftermath of Hurricanes Irma and Harvey to get a glimpse of the devastation. That's why insurance companies have been using drone technology more than ever before to quickly -- and safely -- assess damage from the storm.

"I think we can say there's **an unprecedented number of insurance companies** using an unprecedented number of drones to service more and more policyholders," said Tom Karol, general counsel for the National Association of Mutual Insurance Companies.

Most of the drones in the sky are light-weight, quad-copter drones outfitted with cameras that can send images back to insurance professionals -- some in real time. For major U.S. insurers, the technology is a game-changer. Allstate said it launched permanent drone damage inspection programs last spring in four states: Texas, Oklahoma, New Mexico and Colorado.

Drone's aren't just for insurers, either. Communications companies like Verizon and power companies like Florida Light and Power have used drones to inspect equipment. It's a sign pointing to America's exploding drone industry, powered by skyrocketing numbers of commercial drone pilots.

More than **59,000 of the US certificates** that are required to pilot drones commercially have been granted since the government started issuing them last year, according to the Federal Aviation Administration. http://money.cnn.com/2017/09/23/technology/hurricanes-drones/index.html

25Sep17

Drone testing park or more broadband? Hampton Roads group endorses both for funding By Kimberly Pierceall The Virginian-Pilot Sep 22, 2017

One proposal for GO Virginia grant funding suggests building a testing site for unmanned vehicles on land in York County. On Thursday, the Hampton Roads Planning District Commission board gave unanimous approval to two proposals, one to build a drone testing zone including a 25-acre recreational park in York County and the second to link the broadband fiber-optic networks of Hampton Roads cities.

York County Economic Development Director James Noel Jr. said the idea for a drone park "bubbled up with the industry" that was having trouble finding places within FAA limits to test and fly

unmanned vehicles. The proposal is looking for $2.5 million to buy 65 acres for the first phase, including developing runways and a road to a nearby creek for unmanned boat testing.

HRPDC executive director Bob Crum said **the endorsements Thursday don't preclude other groups with proposals to seek a vote to recommend**. Timing could be a problem though. The Commission next meets Oct. 19. Applications are due to the GO Virginia regional board by Oct. 31. https://pilotonline.com/business/consumer/drone-testing-park-or-more-broadband-hampton-roads-group-endorses/article_51643250-5f31-5792-9d26-a90e6ed138c1.html

Smallsat companies band together in new spectrum-advocacy organization Caleb Henry — September 22, 2017

LONDON — Eleven small satellite companies are **establishing a trade association** to address spectrum policies and regulations specific to the no-longer-tiny smallsat industry.

The group, called the Commercial Smallsat Spectrum Management Association, or CSSMA, will **focus on issues unique to smallsats** not addressed by the Satellite Industry Association, whose membership largely consists of established geostationary satellite operators, launch providers, and network operators.

Founding members of the CSSMA are satellite operators Astro Digital, HawkEye 360, Kepler Communications, Planet and Spire; ground station operators KSAT and RBC Signals; manufacturer Blue Canyon Technologies; law firm Hogan Lovells; NanoRacks and the nonprofit research organization Aerospace Corporation.

Four CSSMA members — Planet, Spire, Aerospace Corp. and HawkEye 360 — are also part of Washington-based SIA. http://spacenews.com/smallsat-companies-band-together-in-new-spectrum-advocacy-organization/

Arkansas police department gets new drones to fight crime *The Associated Press*
SEPTEMBER 22, 2017 NORTH LITTLE ROCK, ARK.

KTHV-TV reports that North Little Rock police officers gathered in an area park Thursday to test out the department's **three new drones**. Lt. Patrick Thessing says tax payers aren't paying for the new equipment because the department used funds from drug seizures to purchase the drones.

Thessing says the drones won't be used for general surveillance and that they won't fly into residents' backyards without a reason. He says the drones will be used for specific missions, such as

tracking down a suspect on the run or getting more information on a hostage situation.
http://www.miamiherald.com/news/politics-government/national-politics/article174898126.html

After Harvey, the Red Cross tries to speed up relief with drones Travis Bubenik
September 22, 2017

A tethered drone hovers over a pasture near Hankamer, Texas, looking for damage from Harvey.

When hurricanes and tropical storms like Irma and Harvey hit, it can take a while to figure out how bad the damage is. In Texas, the Red Cross has been experimenting with a way to **speed up the process**, and the recovery, using drones.

Fred Miclon is a volunteer with the Red Cross. He's been using the drone to help people as they return to their neighborhoods now that floodwaters have receded. "We were able to really assess damage quickly, and actually had a team that afternoon going down with food, water and supplies in order to help the families that were there," he said.

Still, there are some basic challenges: dealing with drone regulations and getting permission to fly. There are privacy concerns to consider, and when roads are flooded after a storm, it's sometimes hard to get close enough to an affected area to launch the drone.
https://www.marketplace.org/2017/09/22/life/after-harvey-red-cross-tries-speed-relief-drones

26Sep17

AUVSI Novus Unmanned to Bring Together Startups, Investors

The Association for Unmanned Vehicle Systems International (AUVSI) has announced plans for Novus Unmanned, a conference that will **bring together innovators and investors** from the world of autonomous and unmanned technology and systems for funding opportunities, mentorship and a chance to make powerful and lasting connections. The Venture Acceleration Program of Investorfest is partnering with AUVSI to host the event, which will be held at the Hyatt Regency San Francisco Airport on Nov. 1.

AUVSI has issued a call for emerging companies in the unmanned systems industry who are seeking investment to participate in Novus Unmanned, which was formerly known as AUVSI's Startup Connection. AUVSI will review submissions through a three-stage selection process. The selected finalists will undergo an acceleration program, which includes coaching in areas such as presentation pitching and business and marketing planning. More than a dozen finalists will give

presentations before a panel of investors for a chance to receive funding and prizes. http://uasweekly.com/2017/09/25/auvsi-novus-unmanned-bring-together-startups-investors/

Dubai starts tests in bid to become first city with flying taxis Noah Browning

DUBAI (Reuters) - Dubai staged a test flight on Monday for what it said would soon be the world's **first drone taxi service** under an ambitious plan by the United Arab Emirates city to lead the Arab world in innovation.

The flying taxi developed by German drone firm Volocopter resembles a small, two-seater helicopter cabin topped by a wide hoop studded with 18 propellers. Meant to fly without remote control guidance and with a maximum flight duration of 30 minutes, it comes with plenty of fail-safes in case of trouble: back-up batteries, rotors and, for a worst case scenario, a couple of parachutes.

Volocopter is in **a race with more than a dozen well-funded European and U.S. firms**, each with its own science fiction-inspired vision for creating a new form of urban transport that is a cross between a driverless electric car and a short-haul, vertical takeoff-and-landing aircraft. These include aerospace giant Airbus, which aims to put a self-piloting taxi in the air by 2020; Kitty Hawk, a company backed by Google co-founder Larry Page; and Uber, which is working with partners on its own flying taxi strategy. https://www.reuters.com/article/us-emirates-dubai-drones/dubai-starts-tests-in-bid-to-become-first-city-with-flying-taxis-idUSKCN1C0232

Inspector General: NASA Should Improve UAS Asset Management Ramona Adams September 25, 2017

NASA's office of inspector general has called on the agency to improve the implementation of policy on unmanned aircraft systems acquisition and management.

The OIG said in a report published Monday that NASA centers inadequately implemented agency policy on UAS procurement and inventory tracking, which has resulted in **unauthorized drone purchases** and inefficient inventory control.

Auditors found that 231 of NASA's 410 UAS acquisitions since 2009 were bought without necessary approvals. NASA's property system contains incomplete and inaccurate information on UAS, rendering certain systems invisible to other potential users and hampering the capacity to share UAS between centers, the report stated. http://www.executivegov.com/2017/09/inspector-general-nasa-should-improve-uas-asset-management/

DARPA Seeks Info on Sensing, Neutralization Tech Platforms Against Small Drones Jane Edwardson: September 26, 2017

The Defense Advanced Research Projects Agency has asked industry to provide information on novel technology platforms designed to counter small unmanned aerial systems.

A request for information posted Wednesday on FedBizOpps says DARPA is interested in modular and scalable platforms that work to identify and target small drones and could complement systems that are still in the development phase under the agency's *Mobile Force Protection* program.

DARPA said Friday the MFP program seeks novel tech platforms in the areas of sensing and neutralization that work to detect and destroy small UAS at a distance of at least 1 kilometer and can be integrated with tactical ground vehicles. http://blog.executivebiz.com/2017/09/darpa-seeks-info-on-sensing-neutralization-tech-platforms-against-small-drones/

Long-Endurance Portable UAV Introduced for Commercial Applications 26 Sep 2017 | Author: Caroline Rees

Skyeton has announced the introduction of its new ACS series of unmanned aerial vehicles (UAVs). The ACS is a modular fixed-wing aircraft with the **ability to operate autonomously** once in flight. Man-portable and packed into a single box, the ACS can be assembled and launched from a catapult in 15 minutes. The system can deploy either a parachute or airbag to aid recovery.

The ACS UAV can carry a payload of up to 7 kg, making it a versatile platform that can fly a wide variety of missions. It is capable of **flight times exceeding 15 hours** and has an operation ceiling of 3000m. The four-stroke gasoline engine provides 3.5 hp and a maximum speed of 160 km/h.

The ACS series UAS is suitable for a wide range of commercial applications, including precision agriculture, aerial photography, mapping and surveying, and search and rescue. http://www.unmannedsystemstechnology.com/2017/09/skyeton-introduces-new-long-endurance-portable-uav-commercial-applications/

PrecisionHawk Developing Survey-Grade Drone LiDAR 26 Sep 2017 | Author: Caroline Rees

PrecisionHawk has announced that it is preparing to provide its customers with a drone LiDAR solution that matches or exceeds standard manned aircraft data outputs.

The company's first move was to hire LiDAR expert Jamie Young as Director of LiDAR Services. Young has over 20 years of experience with leading geospatial firms and has worked across all aspects of LiDAR including sensor development, applications development, data acquisition and data processing.

PrecisionHawk also integrated and added the mini-vux LiDAR system by Riegl to its service offering. The LiDAR device has a positional system that increases the efficiency, by collecting data at a higher altitude, and improves data accuracy, allowing PrecisionHawk to increase its capabilities to deliver **survey-grade data** to its engineering clients.

http://www.unmannedsystemstechnology.com/2017/09/precisionhawk-create-new-drone-lidar-solution/

Drone With Event Camera Takes First Autonomous Flight Evan Ackerman 25 Sep 2017

Photo: University of ZurichInspired by insect eyes, an event-based camera tracks changes rather than recording images to help drones move fast and reliably.

A few years ago, Davide Scaramuzza's lab at the University of Zurich introduced us to the usefulness of a kind of dynamic vision sensor called an event camera. Event cameras are almost entirely unlike a normal sort of camera, but they're ideal for small and fast moving robots when you care more about not running into things than you do about knowing exactly what those things are.

In a paper submitted to *Robotics and Automation Letters*, Antoni Rosinol Vidal, Henri Rebecq, Timo Horstschaefer, and Professor Scaramuzzapresent the very first time an event camera has been used to autonomously pilot a drone, and it promises to enable things that drones have never been able to do before. Instead of recording what a scene looks like, as a conventional camera would, **event cameras instead record how a scene changes**. Point an event camera at a scene that isn't moving and it won't show you anything at all. But as soon as the camera detects motion (pixel-level light changes, to be specific), it'll show you just that motion on a per-pixel basis and at a very high (millisecond) refresh rate. If all you care about is avoiding things while moving, an event camera is

perfect for you, and because they just look for pixel changes, they're sensitive to very low light and don't get blinded by bright light either. https://spectrum.ieee.org/automaton/robotics/drones/drone-with-event-camera-takes-first-autonomous-flight

27Sep17

Raytheon Coyote UAVs help NOAA track, model Hurricane Maria Sept. 27, 2017

The National Oceanic and Atmospheric Administration used six Raytheon Company Coyote® unmanned aerial vehicles to track and model Hurricane Maria. Launched from a NOAA WP-3D Orion hurricane hunter aircraft, the Coyotes flew directly into the storm, giving researchers an unprecedented view of Maria from a safe distance.

Developed for the military, Coyote is a small, expendable UAV that's air- or ground-launched into environments too dangerous for manned aircraft. The system can fly for more than an hour and up to 50 miles from its host aircraft.

 Navigating Maria's winds of greater than 100 miles per hour, the Coyotes gathered and transmitted storm information directly to the National Hurricane Center. NOAA scientists are evaluating the data to better understand Hurricane Maria and other storms like it.

"NOAA is investing in these unmanned aircraft and other technologies to increase weather observations designed to improve the accuracy of our hurricane forecasts," said Dr. Joe Cione, NOAA hurricane researcher and chief scientist for the Coyote program. "The Coyotes collected critical, continuous observations in the lower part of the hurricane, **an area impossible to reach with manned aircraft."**

Researchers can also fly Coyotes throughout the storms, revisiting key locations inside hurricanes to obtain the most robust data possible. http://uasweekly.com/2017/09/27/raytheon-coyote-uavs-help-noaa-track-model-hurricane-maria/

North Carolina DOT schedules drone workshop for Wilmington *The Associated Press*
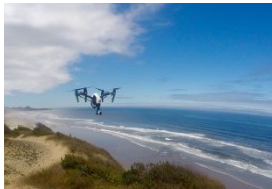SEPTEMBER 26, 2017

CASTLE HAYNE, N.C. The Division of Aviation in the N.C. Department of Transportation has scheduled a Wilmington-area workshop for commercial and government drone and unmanned aerial systems operators. NCDOT said in a news release that the agency and its partners are aiming to educate local agencies and businesses about potential practical applications.

The workshop will focus on how drones can be used for **emergency management**. Other topics include flight operations, drone safety and data management, as well as the use of drones in blasting operations and newsgathering. http://www.miamiherald.com/news/politics-government/national-politics/article175386051.html

Drones Seek Out Lost Shipwrecks Below Lake Huron

Maritime archaeologists use drone maps to survey shallow-water shipwrecks in marine sanctuary.

Lake Huron's Thunder Bay is known as shipwreck alley for a reason. Nearly two hundred ships met their end here, and at least half were never found.

It's difficult, and in some cases impossible, to use traditional underwater survey tools in much of the bay's shallow, rocky shoreline. Researchers are now turning to drones and mapping software to **locate wrecks in the shallow waters of inaccessible coastlines**. Drone-focused nonprofit Oceans Unmanned recently set out to help marine archaeologists leverage drone data to find the lost shipwrecks of Thunder Bay. https://blog.dronedeploy.com/drones-seek-out-lost-shipwrecks-below-lake-huron-1420f8b407b4

Drones help with hurricane recovery efforts Kelly McSweeney for Robotics | September 26, 2017

Unmanned aerial vehicles are heading to damaged areas **in unprecedented numbers**.

This year's extraordinary hurricane season marks a milestone for drones, as unmanned aircraft are becoming critical tools for rescue teams. After so much talk about how drones could *potentially* change ecommerce, infrastructure management, and search & rescue, now we're actually seeing drones in action. Fleets of drones headed to Texas, Florida, Mexico, and Puerto Rico to help with recovery efforts.

FAA Administrator Michael Huerta said in a speech to the InterDrone conference on Sept. 6: "I don't think it's an exaggeration to say that the hurricane response will be looked back upon as a landmark in the evolution of drone usage in this country." Unlike previous hurricane seasons, there is now a large community of licensed drone pilots ready to help.

Drone expert Brett Velicovich tells ZDNet, "this could be the largest humanitarian drone response in US history." In early September, he headed to Texas with what he describes as "**an Army of drone volunteers** ready and willing to support search and rescue efforts and plug into other Harvey

response teams already on the ground." Then his team moved into Irma right before the storm hit so they could be there to offer immediate help. For example, the Air National Guard used drones that are normally used for combat operations to fly above disaster zones and decide which areas needed the most urgent assistance. http://www.zdnet.com/article/drones-help-with-hurricane-recovery-efforts/

Workhorse Group's Horsefly Drones Expected to Assist in Last-Mile Deliveries by Christmas MARCO MARGARITOFF SEPTEMBER 26, 2017

Workhorse joins companies like Amazon and UPS in focusing on 'last mile' drone delivery with their newly-unveiled Horsefly drone.

The company demonstrated its Horsefly drone on Monday, and hopes to have them **in the field by Christmas**. We recently reported on companies like UPSand Amazon band-aiding that last local stretch of delivery efficiency with their train-mounted or delivery truck-mounted drone hubs.

It just makes sense to let your drones be transported by other vehicles, before zipping off to handle that last-mile drop off and then returning to base. UPS seems to be on the same page.

According to *Trucks.Com*, Burns says "[We've] done a test with UPS, we're working with the [Federal Aviation Administration], we've been modifying our operational software and now we are ready." http://www.thedrive.com/aerial/14645/workhorse-groups-horsefly-drones-expected-to-assist-in-last-mile-deliveries-by-christmas

28Sep17

DroneMapper Releases RAPID A Free Photogrammetric Imagery Processing Application September 28, 2017

DroneMapper's RAPID is a free Windows 10 (64-bit) based photogrammetric imagery processing and GIS application. It is limited to a maximum input of 150 images. RAPID will produce scaled Digital Elevation Models and Orthomosaic maps in GeoTIFF format, WGS84 Lat/Lon projection. For small area of interest collections RAPID provides near real time feedback at the site on a laptop computer using the preview orthomosaic function. In a matter of minutes the operator can confirm successful aerial collection, pack up equipment and have high confidence in DEM and orthomosaic generation either at the site or back in the office. For topographical, elevation contour and volumetric estimate operations for small areas that also

require immediate insight – RAPID provides the solution.
https://dronemapper.com/software_downloads/ http://uasweekly.com/2017/09/28/dronemapper-releases-rapid-free-photogrammetric-imagery-processing-application/?utm_medium=push_notification&utm_source=rss&utm_campaign=rss_pushcrew

Hydrogen Fuel Cells for Drones from Intelligent Energy Frank Schrothon: September 20, 2017

The Roswell Test Flight Crew met with several companies while attending Interdrone in Las Vegas last week. In this episode, Patrick Sherman of the Roswell Flight Test Crew hears from Julian Hughes, the senior vice president for Intelligent Energy. He describes how the company has developed a small, lightweight hydrogen fuel cell that can be mounted in place of a conventional lithium-polymer battery on board a drone to radically extend its flight time. Fuel cells are three times more energy-dense than a conventional drone battery. In the example of a DJI Matrice 100, on display at the Intelligent Energy booth at InterDrone, **flight time increases from 20 minutes to 90 minutes**. Also, time to re-charge is also dramatically reduced. Once the hydrogen gas on board the drone is exhausted, the pressure cylinder can be re-filled in as little as two minutes, or replaced with another, full cylinder. Hydrogen gas is widely available from industrial gas suppliers.
https://dronelife.com/2017/09/20/hydrogen-fuel-cells-drones-intelligent-energy/

"And for our next trick . . " DJI Proposal for Managing Drone Traffic Frank Schrothon: September 24, 2017

DJI disclosed it has **developed a working system** that detects the radio signals transmitted by DJI drones and displays them on a screen where authorities can view their registration numbers and monitor their activity. That system can be easily adapted to use similar wireless transmission protocols on drones from other manufacturers as well as hobbyists and inventors. DJI has deployed the system for testing and evaluation at two international airports since April 2017.
https://dronelife.com/2017/09/24/and-for-our-next-trick-dji-proposal-for-managing-drone-traffic53507/

Rutgers professor creates drone capable of both flight and aquatics 09/27/17 Dan Israel

 Rutgers Professor Francisco Javier Diez is soaring to new heights after the launch of his latest project — the Naviator submersible drone.

The Naviator is **the first unmanned aerial-underwater vehicle** of its kind and can transition from water to air seamlessly.

Diez, a renowned professor in the Department of Mechanical and Aerospace Engineering, has been crafting this invention for nearly five years. Research is currently being funded by the Office of Naval Research.

Diez said there are many vehicles that fly and others that swim — but now, it is possible to both fly and swim with a single drone. In recent years, there have been many attempts to make such a drone across the globe by groups other than the team at Rutgers. Those researchers may have made some progress, but Diez believes the Naviator is the first of its kind. http://www.dailytargum.com/article/2017/09/rutgers-professor-creates-drone-capable-of-both-flying-and-swimming

Wingtra partners with Florida-based Lengemann Corporation to offer next generation-drone **Press** 27 September 2017

The WingtraOne takes off and lands vertically like a multirotor, but flies like a fixed-wing airplane in air. It has a flight time of up to **55 minutes** on a single battery, covering anywhere between 690 and 980 acres at 1.2in/px GSD depending on the specific sensor. The WingtraOne offers a variety of sensors to generate high-resolution imagery for orthophotos, 3D reconstructions, cloud points and NDVI maps. Thanks to the vertical landing, the cameras are well-protected and are never at risk of being damaged by belly landings.

The process of planning a survey takes roughly 5 minutes and is as simple as indicating the area that a user wants to map. Then, with the press of a button, the WingtraOne takes off, collects aerial imagery, and lands — **all fully autonomously**. The user, thus, does not have to worry about needing any pilot training. https://www.suasnews.com/2017/09/wingtra-partners-florida-based-lengemann-corporation-offer-next-generation-drone/

Rocketmine Drones Are Changing the Mining Industry Game

Drones are helping the mining industry increase efficiency, cut costs, and keep people safe while collecting sophisticated blast data for businesses. BY MARCO MARGARITOFF SEPTEMBER 27, 2017

Rocketmine Africa Sales Executive Eric Delabrousse puts it simply to *Drone Life*, saying, "Drones are **a game changer for the mining industry.**

It goes as follows: First, there's a pre-blast inspection, where drones guarantee that no one is within the one-kilometer safety area before an explosion occurs. Next, UAVs record live video of the blast, which is useful data as it can be analyzed and viewed countless times at various speeds and from various angles. After that, drones make sure that there are no undetonated charges lying around once the planned blast has concluded. Lastly, Rocketmine's fragmentation analysis allows engineers to gain a clearer understanding of what exactly occurred during the blast, and how to improve upon this in the future. http://www.thedrive.com/aerial/14683/rocketmine-drones-are-changing-the-mining-industry-game

How drones will change the world in the next 5 years BI Intelligence Sep. 25, 2017

This is a preview of a research report from BI Intelligence, Business Insider's premium research service. To learn more about BI Intelligence, click here.

This report provides **forecasts for the business opportunity** in commercial drone technology, looks at advances and persistent barriers, highlights the top business-to-business markets in terms of applications and end users, and provides a list of notable companies already active in the space. Finally, it digs into the current state of US regulation of commercial drones, recently upended by the issuing of the Federal Aviation Administration's draft rules for commercial drone flights.

Here are some of the key takeaways from the report:

- We project revenues form drones sales to top $12 billion in 2021, up from just over $8 billion last year.

- Shipments of consumer drones will more than quadruple over the next five years, fueled by increasing price competition and new technologies that make flying drones easier for beginners.

- Growth in the enterprise sector will outpace the consumer sector in both shipments and revenues as regulations open up new use cases in the US and EU, the two biggest potential markets for enterprise drones.

- Technologies like geo-fencing and collision avoidance will make flying drones safer and make regulators feel more comfortable with larger numbers of drones taking to the skies.

- Right now FAA regulations have limited commercial drones to a select few industries and applications like aerial surveying in the agriculture, mining, and oil and gas sectors.

- The military sector will continue to lead all other sectors in drone spending during our forecast period thanks to the high cost of military drones and the growing number of countries seeking to acquire them.

http://www.businessinsider.com/the-drones-report-research-use-cases-regulations-and-problems-2017-9

29Sep17

Closed wing tiltrotor aircraft downsized for the UAV market Rich Haridy August 30th, 2017

  This Converticopter is designed to tap into the growing unmanned aerial vehicle (UAV) market, with the product initially aimed at government or commercial organizations involved in activities such as search and rescue, border patrol or oil and gas inspections.

With a closed, or box, wing design and two tiltrotors, the Converticopter has a wingspan of around 8 ft (2.4 m), which is larger than most commercially available quadcopter UAVs, such as the DJI Inspire 2. The craft's larger size and 20-Ah battery allows loiter flights of up to 1.5 hours, which can be extended to more than five hours with an electric hybrid power plant.

The initial model, the CVC 96, can carry a payload of up to 5 lb (2.2 kg), but the company suggests the design can be easily scaled up depending on the needs of the buyer. These customizable models could theoretically scale up to a wingspan of 40 ft (12.1 m) and, with a larger power source, offer even longer flight times and increased payload sizes.
http://newatlas.com/converticopter-uav-vtol-aerospace/51128/

FBI expects terrorists will use weaponized drones to target US 'imminently'

Commercial drones are increasingly used to drop bombs and conduct surveillance. *Jason Murdock September 28, 2017*

 Members of the US-backed Syrian Democratic Forces (SDF), made up of an alliance of Arab and Kurdish fighters, inspect on March 29, 2017 ***a downed***

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

Page 15

drone, reportedly belonging to the Islamic State DELIL SOULEIMAN/AFP/Getty Images

The use of drones by terrorist groups has become a "real problem" and they will "imminently" be deployed to target American civilians, law enforcement chiefs warned this week.

"It is a topic that we've been discussing a lot lately," FBI director Christopher Wray revealed Wednesday during a Senate Homeland Security and Government Affairs committee hearing. "I think we do know that terrorist organizations have an interest in using drones. We have seen that overseas already with some growing frequency. And I think the expectation is **it's coming here imminently**. They are relatively easy to acquire, relatively easy to operate, and quite difficult to disrupt and to monitor. So, it's something that I would welcome working with the Congress as well as with the other agencies to try to figure out a solution." http://www.ibtimes.co.uk/fbi-expects-terrorists-will-use-weaponised-drones-target-us-imminently-1641209

FAA bans drone flights near major US landmarks Associated Press September 28

NEW YORK — The Federal Aviation Administration is banning drone flights within 400 feet (122 meters) of several national landmarks, including the Statue of Liberty and Mount Rushmore. The FAA announced the no-fly drone zones at 10 Department of the Interior sites on Thursday. They take effect Oct. 5.

The restricted sites also include Boston National Historical Park, Philadelphia's Independence National Historical Park and Jefferson National Expansion Memorial in St. Louise, Missouri. Five dams also are on the list: Nevada's Hoover Dam, Shasta and Folsom Dams in California, Arizona's Glen Canyon Dam and Washington's Grand Coulee Dam. Drone violators may face civil penalties and criminal charges.

The FAA says the new restrictions came **at the request of U.S. national security and law enforcement agencies.** https://www.washingtonpost.com/lifestyle/travel/faa-bans-drone-flights-near-major-us-landmarks/2017/09/28/da2898ba-a4b7-11e7-b573-8ec86cdfe1ed_story.html

Civilian oversight group tells L.A. Sheriff's Department to ground its drone

The Sheriff Civilian Oversight Commission called on the Los Angeles County Sheriff's Department to permanently ground its drone. Maya Lau Contact Reporter

A sheriff's official holds the department's unmanned aircraft during an earlier commission meeting. (Al Seib / Los Angeles Times)

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

In its first nine months, the $10,000 device has hovered over hard-to-reach spots in Los Angeles County, searching for gunmen and missing people.

Los Angeles County Sheriff's Department officials say the 20-inch-long unmanned aircraft system, equipped with a camera, has been deployed only five times out of the 1,000 events this year that could have used the special set of eyes.

But after months of public debate over possible surveillance and weaponization, the Sheriff Civilian Oversight Commission voted Thursday to call on the department to permanently ground its drone.

"The community has told us they're already feeling over-policed and over-surveilled," said Commissioner Priscilla Ocen, a Loyola Law School professor who's been the most vocal opponent of the drone on the panel. She said the department's search-and-rescue operation has done "an amazing job" for years, but can continue that work without the drone.

The decision — **supported by five members and opposed by four** — is not binding on the department, which can continue to fly the aircraft. The oversight group can issue formal advice to the department and the Los Angeles County Board of Supervisors but cannot subpoena documents or force the sheriff to act. http://www.latimes.com/local/lanow/la-me-sheriff-drone-20170928-story.html