



UAS and SmallSat Weekly News

Contents

- 2 Proposed Law Would Let Local Governments Legislate Drones**
- 2 Commercial drone services could generate billions of dollars by 2025**
- 3 Non-Military Drone Spending Will Hit \$11.8 Billion by 2026**
- 4 Facebook's Internet-delivering drone takes flight**
- 4 Police in Dubai have recruited a self-driving robo-car that can 'scan for undesirables'**
- 5 Navigating drone laws has become a growing and lucrative legal niche**
- 6 Drones are on the horizon, perhaps an answer to medical care amid disasters**
- 7 FAA Working On Drone Identification System**
- 7 The Tiny Satellites Ushering in the New Space Revolution**
- 8 Microdrones md4-1000 UAV Earns Compliance from Transport Canada**
- 8 DARPA Smart Quadcopters Navigate Without Human Pilots or GPS**
- 9 NOAA Teams with Drone Services Company for Wetland Restoration Work**
- 10 Bee brain formula for seeing colours more effectively could be used in drones, robots**
- 11 Aeromao Demos Long-Distance UAV Flight 18 Miles Away from Operator**
- 11 DRONES: Can I fly there? Now there's an app for that**
- 12 Verizon explains flying-cell-site drone-project**
- 13 'Swarm drones' could one day replace fireworks**
- 14 A drone to move shipping containers including homes**



UAS and SmallSat Weekly News

2July17

Proposed Law Would Let Local Governments Legislate Drones [Don Reisinger](#)

Jun 28, 2017

Congressman Jason Lewis (R-MN) recently introduced the Drone Innovation Act into Congress that would direct the U.S. Department of Transportation to work with state and local governments to regulate drones. According to Government Technology, which [spoke](#) with Lewis, the bill has bipartisan support and would give state and local governments the ability to decide for themselves regulations for drones flying 200 feet or under over their municipalities.

The Drone Innovation Act suggests local municipalities might prove most adept at determining what's right for their communities. And in an interview with Government Technology, Lewis said that the bill could also protect the privacy and property rights of people living in different municipalities.

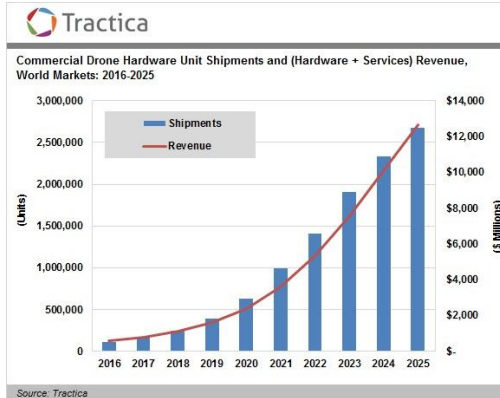
It's unknown at this point whether the bill will ultimately find its way to approval. However, Government Technology noted that the Federal Aviation Administration (FAA) has warned against municipalities governing drones, saying that it would create a "patchwork quilt" of regulations and ultimately create more trouble. <http://fortune.com/2017/06/28/local-government-drone-law/>

Report: Commercial drone services could generate billions of dollars by 2025 [CHELSEY BALLARTE](#) June 28, 2017

Commercial drones and their services are [expected to become a multibillion-dollar industry](#) in the next decade, according to a [new report from market intelligence firm Tractica](#). The report says that in 2017, drone revenue should amount to \$792 million — mostly from hardware sales. By 2025, Tractica predicts the market will rise to \$12.6 billion, **with two-thirds of the revenue coming from drone-based services rather than hardware**. "A number of major industries are seeing strong value propositions in utilizing drones for commercial use," says Tractica research analyst [Manoj Sahi](#). He named media, real estate and disaster relief as just a few of the industries that could use drone-enabled services. The report says that advances in technology, economies of scale, cloud-based applications and the drive to disrupt the market will contribute to commercial drone success in the coming years.



UAS and SmallSat Weekly News



<https://www.geekwire.com/2017/commercial-drone-services-2025/>

Non-Military Drone Spending Will Hit \$11.8 Billion by 2026



[Adam Rowe @AdamRRowe](#) June 28, 2017

Aviation experts say drone spending will soar higher than the drones themselves over the next decade, according to a recent study. 2017 drone spending will pass two and a half billion, but it's only growing from there, [VAO news reports](#):

“The Teal Group says around \$2.8 billion will be spent on non-military drones globally this year, growing to \$11.8 billion by 2026. The report says easing airspace regulations, major investment, and work by major technology companies means the civil drone market is ready ‘to take off.’ While many drones are used by hobbyists, commercial drones are the fastest growing part of this market.”

While there are potentially 40,000 licensed commercial drone pilots in the U.S., that number is likely to grow with the speed of a merely-days-long certification process. Drones can be used for everything from [keeping golf courses green](#) to [mapping buildings with X-ray-like vision](#) to [feeding sharks](#). As the industry's total worth grows into 11 digits over the next decade, it will cover a multitude of possibilities. <https://tech.co/non-military-drone-spending-will-hit-11-8-billion-2026-2017-06>



UAS and SmallSat Weekly News

Facebook's Internet-delivering drone takes flight

USA TODAY NETWORK **Garrett Mitchell, The Arizona Republic** Published 5:50 p.m. ET June 30, 2017
| Updated 5:50 p.m. ET June 30, 2017



PHOENIX — Facebook's solar-powered, Internet-providing drone successfully [completed its second test flight](#) over the Arizona desert last month.

The aircraft, called Aquila, aims to provide Internet access to remote corners of the world by transmitting a signal that can be received on the ground within a 60-mile radius. Aquila's second test flight occurred thousands of feet above Yuma in the early-morning hours of May 22 and lasted for one hour and 46 minutes, the company announced Thursday.

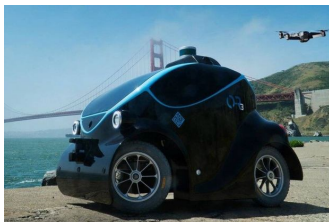
It is the latest endeavor by the massive social network to outfit the planet with access to the web. This week, Facebook announced it is connected to 2 billion Internet users, USA TODAY reported. It's now aiming to reach the two-thirds of the world's population that is not connected online.

The news comes a little over a year after Facebook's first Aquila test launch resulted in the aircraft becoming "substantially damaged" when an in-flight structural failure occurred during landing, the National Transportation Safety Board reported. <https://www.usatoday.com/story/tech/nation-now/2017/06/30/facebooks-internet-delivering-drone-takes-flight/444559001/>

Police in Dubai have recruited a self-driving robo-car that can 'scan for undesirables'

The O-R3 comes with a built-in drone to follow targets off-road

James.Vincent@jjvincent Jun 29, 2017



The O-R3, built by Singapore start-up OTSAW Digital.



UAS and SmallSat Weekly News

By the end of the year, Dubai's police force will have a new recruit patrolling the streets: a self-driving car that acts a mobile surveillance unit. The vehicle is about the size of a child's toy electric buggy, [reports Gulf News](#), and is equipped with 360-degree cameras that "scan for wanted criminals and undesirables" — presumably using facial recognition technology.

The bot is built by Singapore-based start-up [OTSAW Digital](#), and its proper name is the O-R3. OTSAW says Dubai will be the first city in the world to use the O-R3 for everyday patrols, noting that the robot isn't intended to replace human police officers, but to "fulfill low-level order enforcement tasks." As well as all-seeing cameras, the O-R3 can charge itself automatically, and comes **equipped with an onboard drone** to follow individuals to places where the bot can't drive.

In a press statement, the commander of the Dubai Police Force, Major General Abdullah Khalifa Al Marri, said: "We seek to augment operations with the help of technology such as robots. Essentially, we aim for streets to be safe and peaceful even without heavy police patrol." The bot will be deployed in tourist locations first. <https://www.theverge.com/2017/6/29/15893802/dubai-police-robot-drone-car>

Navigating drone laws has become a growing and lucrative legal niche

JUL 01, 2017 BY DARLENE RICKER



Shutterstock

Imagine a *Jetsons*-like world with drones buzzing above your building as they deliver packages, dry cleaning and even groceries to a rooftop concierge. Four years ago, CEO Jeff Bezos predicted that Amazon.com would be using drones for deliveries by 2019, and aviation lawyers saw what was on the horizon: a budding practice area in which the sky is literally the limit.

Although legal developments might delay Bezos' timeline, nothing has slowed the proliferation of drones in a wide range of commercial and personal uses. To hobbyists, a drone is a fancy toy. To Hollywood studios, it's a magical tool. To search and rescue crews, it's a lifesaving device. Regardless of the application, the central issue remains: How will the law be interpreted and applied in this uncharted territory?



UAS and SmallSat Weekly News

That question has catapulted the careers of a cadre of attorneys across the country. Given the ambiguities in the law, which had no warning of this technological development, the brave new world of drones has spawned a growing—and lucrative—legal niche. With little case law for guidance and a complex web of government regulations to wade through, “drone attorneys” have recently found themselves in high demand.

http://www.abajournal.com/magazine/article/drone_law_attorneys

3Jul17

Drones are on the horizon, perhaps an answer to medical care amid disasters



A prototype of a medical drone being developed in Mississippi. Michael Ollove July 1, 2017

In the aftermath of the twister, with winds up to 170 mph injuring 80 people, Italo Subbarao, an associate dean and disaster medicine specialist at the William Carey University College of Osteopathic Medicine in Hattiesburg, sent his students out to study how quickly emergency medical teams had responded to the disaster. The [tornado](#). In some cases, the students found, emergency medical responders had been slowed by debris and by fallen trees and power lines as they tried to reach the injured.

That research led Subbarao to wonder whether there was a way to deliver medical care before emergency responders could navigate the mayhem that comes with a natural or man-made disaster. His answer: a drone outfitted with audiovisual equipment and medical supplies.

Subbarao’s project, which he began the year after the Hattiesburg tornado, has now produced three prototypes and several demonstration flights. It appears to be the most advanced attempt to equip a drone with audiovisual equipment for doctors and survivors to interact in an emergency.

The doctor could give instructions on taking readings such as blood pressure, temperature, heart rate, or sugar or oxygen levels, using equipment dropped by the drone. And the doctor could talk a survivor through ways of giving aid, such as applying tourniquets, cleaning, clotting or bandaging wounds, and injecting medicines.

Smithson said the medical drones will not only save lives in the field but also help coordinate emergency medical care all over the state in a disaster, with doctors from far away able to make



UAS and SmallSat Weekly News

triage decisions and ensure that patients get taken to the most appropriate facility.

https://www.washingtonpost.com/national/health-science/drones-are-on-the-horizon-perhaps-an-answer-to-medical-care-amid-disasters/2017/06/30/f5b63cde-55f9-11e7-b38e-35fd8e0c288f_story.html

FAA Working On Drone Identification System

Rishabh Jain [International Business Times](#) July 2, 2017



The Federal Aviation Administration (FAA) is working on remote identification system for drones, which would ensure their safety. It held a meeting with stakeholders such as Amazon and Ford and the New York Police Department on June 21 and released a press statement later.

“The Aviation Rulemaking Committee considered issues such as existing regulations applicable to drone identification and tracking, air traffic management for drones, concerns and authorities of local law enforcement, and potential legal considerations. The group developed some preliminary questions and identification parameters, and reviewed a sample of existing identification technologies.” FAA stated in a [press release](#) on June 30.

Tying a drone to a pilot is difficult generally, since while the drone might be hundreds of feet up in the air, the pilot might be controlling it from anywhere.

Drone maker DJI might have the ideal solution. It has proposed an “electronic identification system” in which drones will actually transmit communication details such as location and registration number. The FAA committee is scheduled to meet on July 18 and is expected to make formal recommendations on Sept. 30. <https://www.yahoo.com/tech/faa-working-drone-identification-system-054710165.html>

The Tiny Satellites Ushering in the New Space Revolution

Ashlee Vance, Bloomberg Businessweek, June 29, 2017

Planet Labs and other companies are sending hundreds of low-cost satellites into orbit. We’re only beginning to understand how that will change life on Earth. [A comprehensive analysis of the](#)



UAS and SmallSat Weekly News

industry. **Required Reading:** <https://www.bloomberg.com/news/features/2017-06-29/the-tiny-satellites-ushering-in-the-new-space-revolution?stream=top-stories>

4July17

Microdrones md4-1000 UAV Earns Compliance from Transport Canada

29 Jun 2017



[Microdrones](#) has announced that the company's md4-1000 unmanned aerial vehicle (UAV) has been added to Transport Canada's (TC) exclusive list of Compliant Unmanned Air Systems. Only eight companies worldwide have earned this distinction.

Canada is recognized as having one of the safest, most successful civil aviation programs in the world, and that is largely due to the efforts of Transport Canada. TC works diligently with domestic and international partners to maintain their safety and security record. "Users who choose a compliant UAV, like the Microdrones md4-1000, will be able to apply for a Compliant Operator Certificate from Transport Canada that comes with important benefits," explained Jocelyne Bois, Microdrones Flight Operations Manager.

According to Transport Canada, operators deemed compliant may be granted greater geographic flexibility, like flying in restricted areas, closer to airports or cities, and beyond the visual line of sight. They may also benefit from extended validity, streamlined renewal, and priority processing of Special Flight Operations Certificates (SFOC).

<http://www.unmannedsystemstechnology.com/2017/06/microdrones-md4-1000-uav-earns-compliance-transport-canada/>

DARPA Smart Quadcopters Navigate Without Human Pilots or GPS 29 Jun 2017



[DARPA](#) has announced that Phase 1 of its Fast Lightweight Autonomy (FLA) program has concluded following a series of obstacle-course flight tests in central Florida. Over four days, three teams of



UAS and SmallSat Weekly News

DARPA-supported researchers tested their sensor-laden quadcopter unmanned aerial vehicles (UAVs) on increasingly difficult runs.

DARPA's FLA program is advancing technology to enable small unmanned quadcopters to fly autonomously through cluttered buildings and obstacle-strewn environments at fast speeds (up to 20 meters per second, or 45 mph) using onboard cameras and sensors as "eyes" and smart algorithms to self-navigate. Potential applications for the technology include safely and quickly scanning for threats inside a building before military teams enter, searching for a downed pilot in a heavily forested area or jungle in hostile territory where overhead imagery can't see through the tree canopy, or locating survivors following earthquakes or other disasters when entering a damaged structure could be unsafe.

"The goal of FLA is to develop advanced algorithms to allow unmanned air or ground vehicles to operate without the guidance of a human tele-operator, GPS, or any datalinks going to or coming from the vehicle," said JC Ledé, the DARPA FLA program manager.

<http://www.unmannedsystemstechnology.com/2017/06/darpa-smart-quadcopters-navigate-without-human-pilots-gps/>

5July17

NOAA Teams with Drone Services Company for Wetland Restoration Work

[Betsy Lillian](#) July 3, 2017



Ryka UAS, a drone services provider based out of Seattle, is [working on](#) a wetland restoration project in collaboration with the National Oceanic and Atmospheric Administration (NOAA).

In response to the 28 populations of salmon and steelhead listed as threatened or endangered due to habitat loss, Ryka UAS says it has been brought on to help evaluate the wetland restoration process through the use of drones and remote sensing. Other collaborators include the National Park Service (NPS) and Pacific Northwest National Laboratory. Ryka UAS says each group will play an important role in developing an effective restoration plan and executing it; for example, the NPS has given approval to fly drones within the Lewis and Clark National Park.



UAS and SmallSat Weekly News

By equipping drones with hyperspectral sensors, NOAA will be able to create catalogs of Pacific Northwest vegetation and invasive species that become harmful to wetland environments. This data will enable NOAA to analyze the status of the wetlands in an extremely detailed and comprehensive manner, as opposed to satellite and manned aircraft methods, says Ryka UAS. <https://unmanned-aerial.com/noaa-teams-drone-services-company-wetland-restoration-work>

Bee brain formula for seeing colours more effectively could be used in drones, robots By [David Sparkes](#)



Scientists investigating how bees see colours say the insect's highly efficient visual system could revolutionise the way robots and drones view the world. The way humans see colour is heavily affected by the changing light around them, such as during a sunset or in the middle of the night, but bees see the same colour regardless.

The Melbourne-based team has studied how bees solve this problem, by using three special eyes on top of their head, in addition to two main eyes at the front. "The three eyes point skyward, and they directly sample the colour of the light above us," Dr Adrian Dyer of RMIT University said.

"It means their brain knows what kind of lighting conditions they are in and then, when they are looking directly at a flower, they can say, 'Ah, it's a blue sky day, so the correct colour should appear like this, or if it's a cloudy day it should appear like something else.'"

The team discovered that the three eyes on top of the bee's head, called ocelli, contain two colour receptors that are perfectly tuned for sensing the colour of ambient light. The information from the ocelli is integrated with the colours seen by the two front eyes. <http://www.abc.net.au/news/2017-07-04/lessons-from-bee-colour-perception-pave-way-for-better-cameras/8674868>



UAS and SmallSat Weekly News

Aeromao Demos Long-Distance UAV Flight 18 Miles Away from Operator

[Betsy Lillian](#) July 3, 2017



Canadian unmanned aerial vehicle (UAV) company Aeromao Inc. recently demonstrated beyond visual line of sight (BVLOS) capabilities by flying an Aeromapper Talon to a target located 30 kilometers (approximately 18.6 miles) away from the operators.

The crew ventured 2,800 meters above sea level in the Andes Mountains of South America. The UAV, using a long-range communication system, cruised at an altitude of 250 meters above ground level and traveled over a body of water during half of the flight.

The company says the demonstration shows the potential for BVLOS drone operations for applications such as power line and pipeline monitoring, roadway surveys, surveillance and wildlife control, and long linear missions in general. Aeromao is planning further missions to demonstrate the capability of the UAV to fly 50 kilometers away from the operator. <https://unmanned-aerial.com/aeromao-demos-uav-flight-18-miles-away-operator>

6July17

DRONES: Can I fly there? Now there's an app for that 6th Jul 2017



THE Civil Aviation Safety Authority (CASA) has teamed up with specialist company, Drone Complier, to develop a smartphone, tablet and web-based app to help drone flyers fly safely and responsibly. The app, called 'Can I fly there?' will allow those flying drones for fun, or under the new sub-2kg commercial category to enter a location where they are proposing to fly.



UAS and SmallSat Weekly News

It will then flag nearby 'no-drone zones' such as airports, helicopter landing areas and other restricted areas. It will also flag 'no-drone zones' areas where emergency services such as firefighters are operating.

CASA's Group Manager, Aviation, Graeme Crawford, said that the app would also educate **Australia's** drone community on what rules to follow. <https://www.northernstar.com.au/news/drone-app-that-keeps-you-flying-legally/3197394/>

Verizon explains flying-cell-site drone-project

By [Luke Geiver](#) | July 05, 2017 | UAS Magazine



[During the flight exercise, American Aerospace utilized a chase-plane to follow the fixed-wing unmanned aircraft vehicle enabling it to fly beyond-visual-line-of-sight. PHOTO: VERIZON](#)

First responders, Verizon and American Aerospace Technologies Inc. have showcased a new strategy to utilize a drone to create a cell tower in the sky. In Cape May County, New Jersey, the entities worked to test the feasibility and operations using an AATI fixed-wing aircraft flying beyond-visual-line-of-sight while broadcasting a Verizon Airborne LTE signal.

UAS Magazine spoke with Verizon and AATI about the test flights and the potential outcomes.

Answers from:

Christopher Desmond, Principal Engineer, Verizon Network Operations

David Yoel, CEO, American Aerospace Technologies Inc.

To start, can you explain what the main takeaway was from the exercise in Cape May?

Christopher Desmond:

We proved in our first live emergency exercise with first responders that they were able to successfully connect to our "flying cell site" and use 4G LTE service to communicate back to their command centers. Rather than developing this technology in a behind-closed-doors / laboratory environment, we are developing this cutting-edge technology in a transparent



UAS and SmallSat Weekly News

fashion with the participation and feedback of first responders so it will be useful to them in an emergency situation.

David Yoel, American Aerospace:

Long endurance UAS can be used to deliver emergency communications services at long ranges in post-disaster, communications-denied environments. First responders tested these capabilities in the field in a disaster. Emergency wireless service in a communications denied environment and aerial survey are a big leap in support of public safety. We heard what first responders wanted, and we think we have delivered. <http://uasmagazine.com/articles/1718/verizon-explains-flying-cell-site-drone-project>

7July17

'Swarm drones' could one day replace fireworks

By Sally French, Marketwatch July 5, 2017

Companies like Intel Corp., Alphabet Inc.'s Project Wing, Qualcomm Inc. and Walt Disney Co. are working on technology to make it possible for dozens and even hundreds of drones to fly together, operated by a single person. The drone industry calls them "swarm drones," and you might have seen them operating in fireworks-style shows at Coachella or Walt Disney World, [where hundreds of Intel drones flew over the famous entertainment spot](#). They most famously performed behind Lady Gaga in the Super Bowl.

But those drones weren't actually performing behind Lady Gaga. The entire segment in which drones created shapes of the American flag and Pepsi logos [was actually prerecorded](#) and superimposed on television so the drones wouldn't have to do complex maneuvers over thousands of people in the stands and nearby.

The Federal Aviation Administration won't allow any aircraft to fly near stadiums during major sporting events for safety reasons, out of fear that two drones might accidentally collide and crash into a crowd. Swarm drones have flown over other non-sporting events, but only sort of. Disney flew drones over its Disney Springs shopping center, [though the drones never flew directly over people](#). http://nypost.com/2017/07/05/swarm-drones-could-one-day-replace-fireworks/?utm_campaign=partnerfeed&utm_medium=syndicated&utm_source=flipboard



UAS and SmallSat Weekly News

A drone to move shipping containers including homes

CHARLES BOMBARDIER Special to The Globe and Mail Aug. 28, 2016

The Modal is a logistics drone designed to move empty shipping containers by lifting them in the air and carrying them over short distances. It could be used to move containers in ports or position container homes on places that are hard for a truck to reach.



The Modal would have multiple propellers and a shape similar to a quadcopter or a hexacopter. A clamping system could be used to attach the vehicle to 20 or 40-foot long intermodal containers. A 2000-horsepower Pratt & Whitney [PW100TS](#) turboshaft engine would deliver power to the four propellers.

An intermodal container weights between 5,000 and 8,000 pounds depending on its size. The Modal would be able to use the ground effect to lift them up and transport them over distances of a few miles. The shape of the aircraft could be altered to optimize lift. Additional jet thrusters could be used to provide a boost to the aircraft. Lighter boxes made of composite could also be developed to reduce fuel consumption or increase the vehicle's autonomy.

<https://www.theglobeandmail.com/globe-drive/culture/technology/a-drone-to-move-shipping-containers-including-homes/article31551618/>