UAS and SmallSat Weekly News

Contents

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

19May18

The ROI of Commercial Drones

Read on to get a first-hand look at the results DroneDeploy customers across industries such as agriculture, construction, and surveying report from using drones.

ReconnTech recently used drones to map underground utility locations across more than 400 sites in California. Without drones, a technician typically completed between five and seven sites per day. Drone mapping allowed a single tech to complete at least ten, and sometimes up to twenty, sites in a single day. ***Read the case study***

Nelson Aggregates replaced ground-based survey teams with aerial surveys completed by a single operator, resulting in a 95% reduction in staff hours—a total of 228 hours each year—and saved $28,500 across six quarry sites. Read the case study.

One industry seeing a big payoff from drone data is Agriculture. By identifying pests, disease, and fertilizer issues, growers can stomp out problems before they get out of hand. Learn how catching an aphid infestation before it spread helped one farmer prevent nearly $60,000 in lost revenue. Read the case study.

Construction companies see results by generating drone imagery to assist project management, planning, and design. By having an in-house drone program, Choate Construction saved $1,100 per month managing a project with UAVs, or $7,700 over the entire project. Read the case study.

Drones minimize the time spent inspecting dangerous areas such as roofs or construction sites, eliminating the need to put people at risk.

In a recent survey, 55% of DroneDeploy customers reported increased safety as a result of drone usage. Learn how drones improve on-site safety here. https://blog.dronedeploy.com/the-roi-of-commercial-drones-82d2c14dd17?elqTrackId=1a6b3a7aa82a4e878ac660e6c8532a10&elq=7d846438851243b9ae0ab5c57351993c&elqaid=385&elqat=1&elqCampaignId=271

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

Sierra Nevada Corporation Selected to Participate in DARPA Gremlins Program Phase III Sarah Whittaker May 18, 2018

The Defense Advanced Research Projects Agency has formed a team with the mission to create a device that has the capacity to recover drones in flight. This will be the third phase of the Gremlin program, which is running on a budget of $38.6m for a period of 21 months. The entire Gremlins program is slated to last for 43 months and is valued at $64m.

The program seeks to create low-cost, expendable, limited lifetime systems that can be used about 20 times. With reduced payloads, maintenance and airframe costs, the U.S. military also wish to be able to retrieve the UAS' at a much lower cost than today's long-life unmanned aircraft.

Sierra Nevada Corporation has been selected by DARPA for the final phase of the program, which will send drone swarms from US military aircraft out of reach of enemy air defense. The company will provide the drones with an autonomous docking system, which will allow C-130 military transport aircraft to seize drones in flight at the end of their mission and be prepared for a new flight within 24 hours. https://dronebelow.com/2018/05/18/sierra-nevada-corp-selected-darpa-gremlins-phase-iii/

20May18

AACUS Makes First Operational Cargo Delivery to US Marines May 17, 2018

Military | News

Aurora's Autonomous Aerial Cargo Utility System (AACUS) achieved a major milestone last week when it successfully delivered cargo to US Marines in the Integrated Training Exercise at the Marine Corps Air Ground Combat Center Twentynine Palms in California.

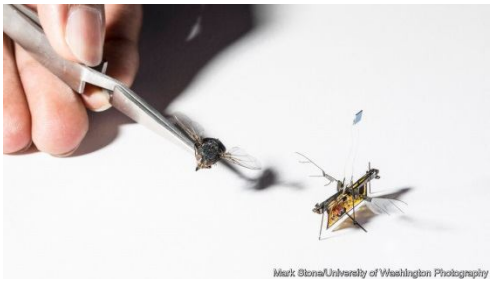
The AACUS enabled UH-1H helicopter successfully completed an autonomous cargo sustainment flight delivering 520 pounds of water, gasoline, MREs, and replacement communications gear including a packed cooler to represent urgently required

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

cargo such as blood. This was the first ever autonomous point-to-point cargo resupply mission providing critical logistics support to Marines in need.

Developed under Office of Naval Research's Innovative Naval Prototype program, the AACUS enabled UH-1 helicopter is capable of flying completely autonomously, using only its onboard sensors, advanced computers and intelligent algorithms to plan its trajectory and to select its own landing sites in unmapped and hazardous environments. "The AACUS program exceeded all of our expectations," said Dennis Baker, AACUS PM.
http://uasweekly.com/2018/05/17/aacus-makes-first-operational-cargo-delivery-to-us-marines/?utm_source=newsletter&utm_medium=email&utm_campaign=uasweekly_newsletter_2018_05_18&utm_term=2018-05-18

The world's lightest wireless flying machine lifts off May 17th 2018



DRONES are getting ever smaller. The latest is the first insect-sized robot to take to the air without a tether delivering its power.

To get their device aloft, Sawyer Fuller of the University of Washington, in Seattle, and his colleagues had to overcome three obstacles. One is that the propellers and rotors used to lift conventional aircraft are not effective at small scales where the viscosity of air is a problem. A second is that making circuitry and motors light enough for a robot to get airborne is hard. The third is that even the best existing batteries are too heavy to power such devices. Nature's portable power supply, fat, packs some 20 times more energy per gram than a battery can.

In 2013, Dr Fuller was part of a team which overcame the first of these hurdles, making a robotic insect that weighed just 80mg. The team copied nature by equipping their device with a pair of wings which flapped 120 times a second (close to the frequency of a fly's wing beat). They partly overcame the second hurdle by doing away with conventional motors and driving the wings using a piezoelectric ceramic that flexes in response to electrical currents. The third, however, stumped them. Their drone was powered by means of a thin cable—and this cable also served to send control signals from equipment too heavy to be installed on the drone.

Dr Fuller and his new colleagues have now—almost—cracked the remaining problems. They have made the electronics which flap the wings lighter, by cutting the circuitry from copper foil using a laser, rather than printing the pattern onto a base. They have also added an 8mg solar

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

cell to their device. Focusing a laser on this cell lets them power the robot without wires. They have dubbed their gizmo “RoboFly”.

The caveat is that, because they have not yet developed a way to make the power laser track the drone, as soon as it flies out of the beam it drops unceremoniously to the bench top. Solving this should not, however, be too hard—and once it is done they hope RoboFly will be flapping happily around their laboratory. https://www.economist.com/science-and-technology/2018/05/17/the-worlds-lightest-wireless-flying-machine-lifts-off

21May18

International CubeSat and Mission Contest Friday, May 18 - Thursday, August 30

The theme of the International CubeSat and Mission Contest is “CubeSat, the innovative space platform”. Any individuals or groups interested in CubeSats and Astronautics can participate in this contest.

The contest includes the following topics:
1.Innovative platforms and subsystems of CubeSats
2.Innovative payload and application of CubeSats
3.CubeSat deep space exploration mission
4.Other new concepts and ideas about CubeSats

The contest will set prizes including the first prize, the second prize, and the third prize. There will be a free launch opportunity of 3U CubSat or 1U payload capacity for the first prize. The award ceremony will be held at the China microsatellite Symposium on November 20th, 2018. The participants can sign up and submit the works through the contest website: www.cubesatcontest.org. The deadline for submission (in English) is August 31, 2018. For more details about topics, submission, and the contest, please visit our website www.cubesatcontest.org. If you have any questions, please let us know service@cubesatcontest.com http://spacenews.com/event/international-cubesat-and-mission-contest/

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

T-Mobile outlines 600 MHz, 700 MHz and 5G drone ambitions Mike Dano | May 18, 2018 12:10pm

Advances in technology could allow pilots to remotely fly drones beyond their line of sight. (DJI)

T-Mobile confirmed that its LTE network is also powering a number of major drone tests around the country - efforts the company said are part of its work to ensure its network will connect future drone-based businesses.

"T-Mobile is working with the North Carolina Department of Transportation, the Kansas Department of Transportation and the City of Reno to test and explore capabilities of our LTE network to enable advanced drone operations."

AT&T **previously confirmed** that it is working with both the city of San Diego and the commonwealth of Virginia on their drone tests in the program.

"T-Mobile's LTE network will be used to test and support cellular drone command and control, beyond visual line of site flying, remote ID and tracking, UAS traffic management (UTM), delivery solutions and more," T-Mobile said in its statement, adding that the current tests make use of its LTE network but that it will "work towards expanding drone operations and use cases with 5G." https://www.fiercewireless.com/iot/t-mobile-outlines-600-mhz-700-mhz-and-5g-drone-ambitions

Insitu and University of Alaska Fairbanks to Partner in UAS Integration Pilot Program 17 May 2018 | Mike Rees

Insitu has announced that it is partnering with the University of Alaska Fairbanks (UAF) in the recently announced Federal Aviation Administration Unmanned Aircraft Systems (UAS) Integration Pilot Program (IPP).

The U.S. Department of Transportation has selected UAF as one of 10 participants in the IPP to work with state, local and tribal governments, UAS operators and manufacturers to accelerate the safe integration of unmanned vehicles into the nation's airspace.

Insitu will work with UAF in demonstrating operations over urban settings, night operations and beyond visual line of sight (BVLOS) flights. Insitu's experience includes 1 million operational

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

flight hours, flying BVLOS missions day and night in Australia and operating the first FAA-sanctioned UAS BVLOS flights in the National Airspace Systemm.
http://www.unmannedsystemstechnology.com/2018/05/insitu-and-university-of-alaska-fairbanks-to-partner-in-uas-integration-pilot-program/

Croatian Civil Aviation Agency "liberalises drone laws" May 21, 2018 Philip Butterworth-Hayes UAS traffic management news

According to the *Dubrovnik Times* (http://www.thedubrovniktimes.com/news/croatia/item/4504-relaxation-of-laws-of-flying-drones-in-croatia) the Croatian Civil Aviation Agency (CCAA) has announced a series of rule changes to its drone operating laws (http://www.ccaa.hr/english/general_372/) which will ease restrictions on UAS operations in the country.

At the recent Osijek Drone Expo CCAA announced: "We liberalised the technical requirements for unmanned aircraft systems to fly legally, we allowed night-time flying – which had not been legal until now – and we reduced the minimum safety distance from people or buildings required to fly."

The newspaper said there are around 900 companies registered in Croatia for unmanned aerial vehicles, "however the actual number of drones in the country is unknown due to the fact theses operators aren't obliged to report how many drones they actually own."
https://www.unmannedairspace.info/uncategorized/croatian-civil-aviation-agency-liberalises-drone-laws/

"AUDS counter-UAS system now mobile" – UK Ministry of Defence May 21, 2018 Philip Butterworth-Hayes Counter-UAS systems and policies

The UK's Ministry of Defence (https://www.contracts.mod.uk/do-uk-and-international-news/auds-counter-drone-system-enhanced/) reports that the AUDS counter UAS system – developed in 2015 by a consortium of UK defence companies has been enhanced for deployment on military and commercial security and surveillance vehicles to more effectively defeat swarm attacks by malicious unmanned aircraft systems (UAS), including long range winged drones.

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

According to the ministry: "With an intuitive interface, the system can be operated by a single user and can detect, track, identify and defeat a drone in approximately 15 seconds at a range of up to 10km or six miles. The system has been optimised and further ruggedised for deployment on either military trucks or commercial surveillance vehicles, as well as on semi-portable containers.

"AUDS is available in three standard configurations – a portable platform for rooftop installation, a field-mast system for forward operating bases or temporary camps, and a fixed system for borders and critical infrastructure sites. The AUDS system has shown its effectiveness against swarm attacks – successfully defeating approaching 2,000 drone sorties. It has also been tested against more than 60 types of drone including fixed wing and quadcopters." https://www.unmannedairspace.info/counter-uas-systems-and-policies/auds-counter-uas-system-now-mobile-uk-ministry-defence/

Swedish researchers investigate complex urban UTM concepts May 21, 2018 Philip Butterworth-Hayes UAS traffic management news

UTM operators, safety assessors and service providers working together on the interactive simulation using a scenario with 76 drones over Norrköping City

Linköping University (https://liu.se/en) , Sweden's air navigation service provider LFV (http://www.lfv.se/en/start) and 3D drone mapping services company Spotscale (http://spotscale.com/) are working on a project to visualize and study future traffic management concepts, services, and regulation for drone traffic in cities. UTM 50 is being funded by Trafikverket (www.trafikverket.se) and LFV and will be completed by November 2018.

The goals of Project UTM 50 are to:

- Visualize future air traffic (and key constraints)
- Simulate future air traffic (to visualize)
- Implement routing and detect-and-avoid algorithms (for the traffic simulation)
- Study: human-machine interaction concepts, to manage unmanned traffic, within regulatory limits, optimization algorithms for real-time adjustment of traffic, identify the need to adjust current regulation (e.g. regarding traffic near airports, over built-up areas), identify potential future services /usage areas for unmanned traffic, evaluate the relevance of the NASA and U-SPACE four-step approaches to UTM implementation with

a focus on the last steps, cities (in Sweden); and identify key challenges for future research and development.

The purpose of UTM is to manage unmanned traffic safely and efficiently beyond line of sight. Current plans (U-Space in Europe, UTM in the US) prescribe a step-wise implementation from countryside to cities. This project looks ahead toward the final step, cities, identifying potential challenges and solutions.

For more information please contact:

- Project lead Linköping University, Dr Jonas Lundberg (jonas.lundberg@liu.se)
- Project Lead LFV, Billy Josefsson (billy.jesefsson@lfv.se)

https://www.unmannedairspace.info/uncategorized/swedish-researchers-investigate-complex-urban-utm-concepts/

NATS launches drone training centre, invests in space-based ADS-B May 21, 2018

Philip Butterworth-Hayes UAS traffic management news

NATS (formerly National Air Traffic Services), the UK's air navigation service provider, and Sky-Futures, a provider of commercial drone-based inspection services and training, have developed a combined training course for commercial pilots.

The combined Remotely Piloted Aircraft Systems course syllabus can be adapted to meet the individual needs of trainees working in specific areas such as construction, offshore oil and gas, or the emergency services for example, and encompasses in-depth theoretical instruction in airspace and safety as well as real-life scenario-based training. It is designed to ensure organisations can secure the Civil Aviation Authority permissions required

for drone pilots to operate commercially, whilst providing expert guidance on using drones safely in professional or commercial environments.

- On 16 May 2018 NATS announced it was investing USD69 million, worth around 10% equity, in space-based ADS-B service provider Aireon. Through a network of 66 low Earth orbiting Iridium® NEXT satellites, AireonSM will monitor the location of Automatic Dependent Surveillance-Broadcast (ADS-B) equipped aircraft flying anywhere in the world. https://www.unmannedairspace.info/uncategorized/nats-launches-drone-training-centre-invests-space-based-ads-b/

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

Boeing, Airbus to contribute to Integrated Pilot Program May 21, 2018 Philip

Butterworth-Hayes UAS traffic management news

Insitu, a wholly-owned subsidiary of The Boeing Company, has announced that it is partnering with the University Of Alaska Fairbanks (UAF) in the recently announced Federal Aviation Administration Unmanned Aircraft Systems UAS Integration Pilot Program.

Insitu will work with UAF in safely demonstrating capabilities such as operations over urban settings, night operations and beyond visual line of sight (BVLOS) flights. Insitu's experience in this area includes achieving more than 1 million operational flight hours, flying ongoing BVLOS missions day and night in Australia and operating the first FAA-sanctioned UAS BVLOS flights in the National Airspace System.

Meanwhile Airbus Aerial has also been selected to provide its domain expertise in unmanned aircraft systems as part of a team of private-sector firms supporting the Integration Pilot Program (IPP) initiative. Airbus Aerial is a member of the applicant teams for Virginia and for North Dakota, both of which have been selected for one of the ten IPP awards.

Launched just over a year ago, Airbus Aerial provides customized data and analysis of aerial imagery collected from drones, satellites, high-altitude aircraft and other sources. Its customers represent a range of markets, including insurance, public utilities and infrastructure. In Virginia, the IPP team is led by the Commonwealth of Virginia through the state's Innovation and Entrepreneurship Investment Authority and the Center for Innovative Technology. The North Dakota IPP team is led by the North Dakota Department of Transportation.
https://www.unmannedairspace.info/uncategorized/boeing-airbus-contribute-integrated-pilot-program/

22May18

Intel awards student $75,000 for window-washing drone! May 21, 2018 Thomas Luna

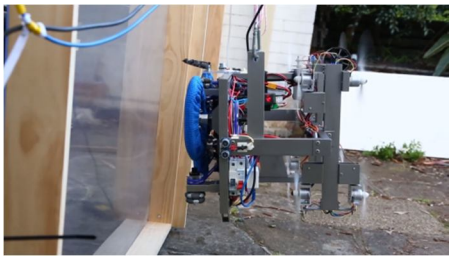
Oliver Nicholls, a 19-year-old Australian high school student, won the Gordon E. Moore Award at the 2018 International Science and Engineering Fair (ISEF) with his window-washing drone, according to a press release by Intel. Nicholls designed and built a $2,300 drone that autonomously washes commercial buildings with a spray nozzle and rotating microfiber scrubbers while being tethered to a roof. Out of about 1,800 participants, Nicholls' project was selected to be the best in its category and in the whole fair, which also meant he won the $75,000 grand prize that came with it.

The Sydney native was chosen for his innovative research and his drone's potential impact on the field. Nicholls' window-washing drone was made to possibly replace traditional commercial

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

cleaning methods and reduce costs that normally go as high as $11,000 per job. More importantly, the tethered drone can reduce injury-related risks associated with cleaning skyscrapers.

According to Science News for Students, the 26 to 33-pound drone is designed with a computer that controls up-and-down movements with the help of ropes and cables. The propellers are used to push the device away from a building, and they also help move the drone to a different section of windows. After water is sprayed from the drone, microfiber scrubbers clean the windows, while an attached squeegee is used to remove excess water.



The window-cleaning drone is tethered to a roof while its body lies parallel against a building. Nicholls' project was tested in a backyard with a leaf blower to withstand wind speeds up to 28 mph. The window-washing drone goes section by section to clean dirt off windows. https://www.wetalkuav.com/intel-awards-student-75000-for-window-washing-drone/

The Pentagon's Controversial Drone AI-Imaging Project Extends Beyond Google

Kate Conger

Google has pressed forward with its effort to provide artificial intelligence solutions to the Department of Defense, despite an internal employee petition against the company's involvement in a pilot program that analyzes drone footage using AI and the resignations of around a dozen employees who objected to the program.

But Google isn't the only company partnering with the Department of Defense on Project Maven—the artificial intelligence pilot program at the heart of the controversy—and the Pentagon has explored the possibility of working with other major tech firms on Project Maven.

DigitalGlobe, a Colorado-based firm that specializes in geospatial imagery, reportedly provides images and algorithms to Project Maven. IBM has been approached about participating in the project by using artificial intelligence to analyze streaming video. Nvidia has also indicated interest in the project, but it's not clear whether either company has an official contract to work on Maven—IBM says it does not, while Nvidia declined to comment. https://gizmodo.com/the-pentagons-controversial-drone-ai-imaging-project-ex-1826046321

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

Unmanned aerial vehicles hold the potential to shape the future of the UK's construction market BUSINESSHEADLINE NEWSTECHNOLOGY BY EMMA CALDER ON MAY 22, 2018

A new report into the future of the construction industry has pointed toward some big changes ahead.

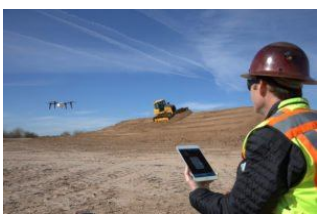
The report, written by futurologist Dr. Ian Pearson, suggests that drones, 3D printed walls and biometric roofs made from recycled plastic taken from the ocean could change the face of the industry over the next few years.

By 2025 we will already see huge changes in the construction industry thanks to technology with drones, artificial intelligence (AI) and 3D printing all becoming commonplace," commented Dr Pearson. "By 2050, we could see floating buildings or apartments that could save the housing crisis using carbon foam that's lighter than air – the possibilities for this really are endless."

Looking even further ahead, Dr Pearson proposed that by 2075 AI could be responsible for a wave of kinetic architecture, resulting in self-assembling buildings that will allow new structures to be formed from existing materials.

ConstrucTech is an open innovation programme that supports start-ups to prepare for the trial and adoption of their product or service by one of the UK's fastest-growing contractors, Colmore Tang. http://www.commercialdroneprofessional.com/virgin-gazes-ahead-predict-drones-will-shape-future-construction-market/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-261731-Commercial+Drone+Professional+DNA+-+2018-05-22

Are State Lawmakers Changing Their Minds? The Case for Drones Miriam McNabbon: May 22, 2018



Not so long ago, many of the news stories about state drone regulations were bad news for the drone industry. Despite efforts from the FAA to establish preemption over the airspace and from drone operators to demonstrate safety and responsibility, local laws proliferated. The result was 28 new pieces of legislation in 2017 alone, most of them restricting drones in some way, according to the National Council of State

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

Legislators. The U.S. regulatory landscape has rapidly begun to resemble what former FAA Administrator Michael Huerta once called a "patchwork quilt of regulations" across the country.

The tide may now be changing, however. The state and local response to the Department of Transportation's UAS Integration Pilot Program, designed to give states more influence in federal drone regulation, has been enthusiastic. Perhaps more tellingly, the economic benefit of the drone industry has begun to make itself felt – and that may be leading states to think differently about drones. https://dronelife.com/2018/05/22/are-state-lawmakers-changing-their-minds-the-case-for-drones/

World's first autonomous drone-in-a-box system deployed at power plant

Innovation News Technology by Emma Calder on May 22, 2018

The world's first autonomous drone-in-a-box system has taken off to carry out round-the-clock operations at a power plant facility.

Enel, an Italian multinational manufacturer and distributor of electricity and gas, has completed deployment of Percepto's Sparrow drone system for use at its Torrevaldaliga Nord power plant in Italy. The multipurpose drone platform will support operation and maintenance activities at the site.

The Sparrow will fly in automated mode under the supervision of an operator who can take control of the device at any moment as Italy's regulatory framework does not currently allow fully-autonomous drone flight.

The drone carries a permanent dual payload of day and night-vision cameras, enabling around-the-clock operations, including the collection of aerial video, snapshots and data that can be transmitted to Enel personnel in real-time.

"While drones are touted as the technology of the future, the ability to act autonomously unlocks their true potential, enabling them to act as a responsible, independent and smart 'team member' that provides not only a bird's-eye view of facilities, but real, actionable insights," said Dor Abuhasira, CEO of Percepto.

Sparrow is stationed on-site at Enel's Torrevaldaliga Nord power plant and is housed in a self-contained base unit from where it launches and lands autonomously.

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

http://www.commercialdroneprofessional.com/worlds-first-autonomous-drone-box-system-deployed-power-plant/?utm_source=Email+Campaign&utm_medium=email&utm_campaign=45819-261731-Commercial+Drone+Professional+DNA+-+2018-05-22

23May18

Pipeline leaks test drone developers James Osborne May 22, 2018

Huge quantities of natural gas leak out of pipelines and drilling sites each year. Identifying and fixing those leaks could mean big profits, but so far it has proven immensely difficult.

Right now twelve drone and other technology developers are competing in a contest to see who can build the most effective device to find methane leaks, **in a contest staged by the Stanford University Natural Gas Initiative and Environmental Defense Fund.**

Leak surveys are traditionally carried out by vehicle or by foot, which can be inefficient and dangerous to utility workers. But getting developers interested in gas leaks isn't necessarily that easy.

"Natural gas prices are at record lows reducing the economic incentive to employ expensive leak solutions. Therefore, we need mobile, low-cost, and preferably fast solutions to finding gas leaks," the contest website reads. https://www.chron.com/business/energy/article/Pipeline-leaks-test-drone-developers-12932125.php

Marine Corps orders Switchblade drones from AeroVironment 22 MAY, 2018

FLIGHTGLOBAL.COM GARRETT REIM LOS ANGELES

Use of AeroVironment's explosive-tipped drone, the Switchblade, is growing as the US Marine Corps ordered its first of the missile-like weapon in April 2018. The USMC order was part of a larger follow-on contract with the US Army which brings the total value of Switchblade awards to $111 million since August 2017.

The awards for hardware and contractor logistics support were approved through Urgent Need Statements, said AeroVironment. The contract includes Switchblade systems, operator training, support and logistics.

The Switchblade drone first deployed with the US military more than five years ago. The drone has a range of up to 6.2 miles, carries a grenade-sized

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

munition and is designed to be flown into enemy personnel via remote control. Orbital ATK provides warheads for the Switchblade.

AeroVironment advertises the unmanned aerial vehicle as a camera-equipped, missile-like weapon that can be waved off and sent into a loitering flight path if civilians or friendly forces are spotted in its intended strike area. https://www.flightglobal.com/news/articles/marine-corps-orders-switchblade-drones-from-aeroviro-448797/?unique_ID=636626196538631350

Elevation – a documentary examining the many profound ways drones are changing our world May 23, 2018 Feilidh Dwyer

Drones may potentially be as disruptive to society as the advent of the internet.

That's one of the claims made in a new short documentary about drones called *Elevation*.The film is produced by Dezeen, a popular design and architecture website and magazine. Coming in at just under 18 minutes, the doco interviews futurists, architects and other experts about positive and negative implications that UAVs are having on society today.

The Parrot AR: one of the early consumer drones which kicked UAVs firmly into public consciouness.

One major question the film's producers investigate is how drones will change how we relate to others and space.. Drones make it easier for us to get to places that were previously extremely difficult to access such as looking at the inside of active volcano craters or inside the cavernous tops of underground caves.

Travel Drone taxis could change the way we travel. It will take extensive planning and regulation to start making flying taxis a reality but if it comes to pass, cities need not be designed around roads.

Architecture Architects are beginning to put more emphasis on how buildings and cities are constructed with an upward view in mind.

Construction The film shows drones carrying construction bricks and painting the side of a building. A UAV equipped with a spray can is easily able to print an intricate design on the side of a massive building.

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

The dark side of drones

Elevation touches on some of the negative implications of drones, imaginging a future where people could easily be constantly monitored by groups of drones equipped with facial recognition software. It seems almost certain that eventually one will crash into a passenger plane, resulting in deaths. Similiarly, terrorists could easily use drones to carry out an attack on the public. The film can be seen at: https://www.wetalkuav.com/new-documentary-how-drones-are-changing-our-world/

MIT Engineers Build Albatross-Like Autonomous Glider May 23, 2018 AZoRobotics

In regions where there is high wind, the robot is engineered to remain aloft, a lot like its avian counterpart. However, in regions where there are calmer winds, the robot can dip a keel into the water to ride like an extremely efficient sailboat.

The robotic system, which takes ideas from both biological and nautical designs, can cover a particular distance using one-third as much wind as an albatross and travels 10 times faster than a regular sailboat.

The physics of albatross flight is quite similar to that of sailboat travel. Both the albatross and the sailboat transfer momentum so as to keep moving. The albatross wings offer natural lift, though it flies between air layers with a comparatively small difference in wind speeds. On the other hand, the sailboat is better at the latter, traveling between two mediums of extremely different speeds—air versus water—though its hull produces a lot of friction and prevents it from gaining much speed. What if a vehicle could be built to perform well in both metrics, combining the high-speed potentials of the albatross and the sailboat?

"Imagine you could fly like an albatross when it's really windy, and then when there's not enough wind, the keel allows you to sail like a sailboat," Bousquet says. "*This dramatically expands the kinds of regions where you can go."*
https://www.azorobotics.com/News.aspx?newsID=9893

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

QuestUAV Surveys The Port Of Sunderland Via Datahawk PPK Fixed Wing Drone

QuestUAV Ltd was commissioned to undertake an orthographic survey for the Port of Sunderland in the UK. The 150-hectare survey used one of QuestUAV's Datahawk PPK fixed-wing drones, equipped with a Sony RX100 RGB camera capable of a 3cm resolution at 400ft. The survey took one day to complete, including travel induction, risk assessment, and setup of Trimble base station. https://youtu.be/MbUDMG3c9ro

The team of two CAA qualified pilots chose two different sites for launch and landing to keep the drone visible always. When airborne, one pilot acts as remote drone controller and one acts as the commander with laptop and telemetry communications, at all times the drone is kept in visual sight by at least one member of the team.

One geolocated high-resolution image is taken automatically every 2 seconds by the drone. The total flight time was 1hour and fifteen minutes in which total of one thousand eight hundred images were taken of which one thousand four hundred were used for the survey. The final processed results were given to the client three days after the completion of the flights. The resulting survey accuracy was within 5cm absolute accuracy, based on 12 checkpoints from around the survey area.

QuestUAV has a professional survey service that has operated for ten years. The company also manufactures fixed-wing drones for commercial survey use around the world.
http://uasweekly.com/2018/05/22/questuav-surveys-the-port-of-sunderland-via-datahawk-ppk-fixed-wing-drone/?utm_source=newsletter&utm_medium=email&utm_campaign=uasweekly_newsletter_2018_05_22&utm_term=2018-05-23

Drones set to conquer UK's energy market as 'landmark' project takes off

ApplicationBusinessHeadline NewsInnovationNewsTechnology by Emma Calder on May 23, 2018

Drones are poised to reinvent the manner in which members of the energy sector conduct inspections as a new UAV scheme takes to the skies.

The large-scale project, Pathfinder, is working across electricity and gas networks and is coordinated by international innovation scout, the Energy Innovation Centre (EIC).

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

The three-year programme is being led by Wales & West Utilities in collaboration with Cadent, National Grid Gas Transmission, Northern Gas Networks, Northern Powergrid, Scottish & Southern Electricity Networks and UK Power Networks.

The designated government Pathfinder project, which is the first-of-its-kind in the UK, will work with the CAA to explore how the application of drone technology could transform the way the industry carries out essential maintenance tasks.

To fully realise the benefits that drones can bring to routine network tasks such as pipeline or overhead line inspections, there is a requirement to fly BVLoS. Getting the endorsement of the CAA to use drones for routine and non-routine inspections will be a key step in making BVLOS flight 'business as usual' and will underline the innovative approach the utilities industry is taking to meet the challenges of today and tomorrow."
http://www.commercialdroneprofessional.com/category/suppliers/

24May18

UK military looking at smallsats to increase space resilience Tereza Pultarova — May 23, 2018

U.K. Air Chief Marshal Sir Stephen Hillier

LONDON – The U.K.'s Royal Air Force is exploring the possibility of using constellations of cubesats and other mini-satellites to increase the military's space capabilities and improve resilience, according Air Chief Marshall Sir Stephen Hillier.

Speaking at the Air Power Association's Defence Space 2018 conference here May 21, Hillier said the cost-effective technology with its short development cycles would enable the military to always take advantage of the latest technological developments, unlike the traditional slow-paced military satellite projects.

"Resilience, efficiency and rapid capability development and deployment of new space capabilities are at heart of our thinking," he said. "The prospect of cost-effective constellations of small satellites being built, launched and replaced quickly is hugely exciting, providing us with the resilience that we seek." He added the Royal Air Force even envisions a large constellation of 1-kilogram cubesats.

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

In January, the Royal Air Force launched its Earth-observation mini-satellite Carbonite-2. The 100-kilogram low-Earth orbit spacecraft, which provides high-definition imagery and video from space, took only eight months from concept to launch, according to Hillier, and cost 4.5 million pounds ($6.3 million).

He added that the fast deployment and low cost would provide the resilience the military seeks at the time of increased threats, including possible adversary attacks. A lost satellite could be easily replaced without straining the military budget. http://spacenews.com/uk-military-looking-at-smallsats-to-increase-space-resilience/

Former FAA Chief Counsel: Integration Pilot Program Strengthens U.S. Leadership In Drones Reggie Govan May 22, 2018

The Trump administration is to be commended for the recent announcement of 10 state, local and tribal governments, who, together with their private industry partners, will participate in the Federal Aviation Administration's new Unmanned Aircraft Systems Integration Pilot Program.

There are four big challenges to solve in order to responsibly accelerate the evolution of the drone economy:

First, the FAA's development of the drone regulatory framework has not kept pace with the speed of the potential commercialization of innovative drone technology. Nevertheless, the IPP dramatically expands the FAA's reliance on the private sector to develop technological solutions to important regulatory obstacles and hurdles.

Second, the safe integration of drone operations into national airspace requires continuing research and development of a sophisticated technology infrastructure that includes streamlined and automated systems for drone registration, flight authorization, and dynamic routing of drones. Only technology can ensure a drone conducting a package delivery operation can safely navigate the entirety of its route or allow beyond visual line of sight flights by providing routing services, radar integration and alerts about manned aircraft.

Third, the federal government has exclusive regulatory oversight for large aircraft to traverse into the upper atmosphere. That model no longer works when the task is to integrate drone operations into low-altitude airspace above every local community and neighborhood in

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

America. To do so requires close collaboration between the FAA and state, local and tribal governments that have the authority to adjudicate private property, privacy and land-use concerns in local communities and neighborhoods.

To fully realize the enormous economic promise of the drone industry, the private industry has to come to the table understanding that giving the FAA sole responsibility to craft uniform rules of national applicability is too simplistic a response to the many divergent interests of local communities across America. The IPP truly is the private sector's first public opportunity to work collaboratively to develop the "new federalism" in which state, local and tribal governments play an important role.

Reggie Govan is the former chief counsel of the FAA under the Obama administration, during which he played key roles in establishing the regulatory framework for the commercial operation of drones and performance-based rulemaking. https://unmanned-aerial.com/former-faa-chief-counsel-integration-pilot-program-strengthens-u-s-leadership-in-drones?utm_medium=email&utm_source=LNH+05-24-2018&utm_campaign=UAO+Latest+News+Headlines

Alberta drone test could show faster, cheaper way to replant forests GORDON KENT May 23, 2018

Drone pilot Jeremie Leonard from BioCarbon Engineering will be helping the Canadian Forest Service for the first Canadian trial of using drones to plant tree seeds. The drone will be used in northern Alberta to plant.

The massive task of restoring land denuded by fires, drought or human activity might eventually be helped by swarms of drones that can plant almost 400,000 tree seeds a day.

"What we could do is make tree planters right now 150 times more effective.

The device his team showed off flies about three metres above the ground. It uses pressurized air to fire capsules loaded with seeds and nutrients into the soil twice a second. The goal is to have one team operate a swarm of 10 drones at a location. "If you got to 300 teams, that would get you to 10 billion trees a year, and that's what we have to be thinking about if we're talking about restoring global ecosystems."

Drones track each seed's exact location, allowing a later trip to put out a small dose of herbicide around survivors so they can fend off weed competition.

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

BioCarbon staff will be at a five-hectare clear-cut site 40 km south of Slave Lake this week doing what Price thinks is the first drone seeding in Canada, and possibly North America. They'll drop 2,500 pods per hectare, each containing two white spruce and one jack pine seed in hopes something will sprout.

It will take a few years to assess the results, but if the process works well, it could provide new options for forestry companies and government. http://edmontonjournal.com/business/local-business/alberta-drone-test-could-show-faster-cheaper-way-to-replant-forests

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