11July17

Firsthand Look at Intrepid's Drone Exhibit: A Thoughtful Display of 'Tomorrow's Aviation' Betsy Lillian July 10, 2017

Shedding light on the enormous potential of civilian unmanned aircraft systems (UAS), the Intrepid Sea, Air & Space Museum in New York City is offering a temporary exhibit chock-full of drones of all shapes and sizes – and certainly of all applications.

The exhibit, which opened in May and will run until Dec. 3, is sponsored by DJI, the American Institute of Aeronautics and Astronautics, IEEE Foundation, and the New York State Council on the Arts (supported by New York Gov. Andrew M. Cuomo and the New York State Legislature).

When you first walk in, you're greeted with quirky, brightly colored walls with moving screens and a brief outline of the evolution of drones – from "remote-controlled planes used for target practice" to "versatile and highly specialized aircraft." Past the entrance is a 1945 quotation from U.S. Air Force General Hap Arnold saying, in part, "Take everything you've learned about aviation in war, throw it out the window, and let's go to work on tomorrow's aviation. It will be different from anything the world has ever seen."

Indeed, "tomorrow's aviation" is thoughtfully weaved into the exhibit, which features loaned drones on display; photos and video of drone work conducted around the world; a look into first-person-view drone racing goggles; a "drone arts theater" presented by AirVuz; interactive polls, such as "Will Drones Improve Our Lives?"; a flying cage; and more. https://unmanned-aerial.com/firsthand-look-intrepids-drone-exhibit-thoughtful-display-tomorrows-aviation

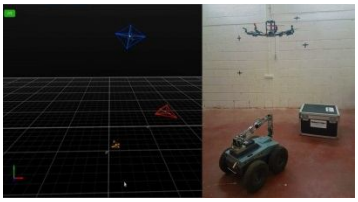
Micro Systems Develops New Drone Swarming Technology 11 Jul 2017

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

Micro Systems, a subsidiary of Kratos Defense and Security Solutions, has announced that it has developed a swarming technology called WOLF-PAK, which utilizes the collective behavior of multiple autonomous vehicles independently following the same leader vehicle. Each vehicle in the swarm can recognize and locate each other vehicle to offer a true swarming configuration. All vehicles stay within a pre-defined distance of each other as the swarm constantly adjusts and reconfigures itself without relying on a centralized control system. This capability is a platform enabler for distributed airborne tactics that can be adapted to a variety of different aerial platforms and mission objectives. http://www.unmannedsystemstechnology.com/2017/07/micro-systems-develops-new-drone-swarming-technology/

Unmanned Ground Vehicle Platform Integrates with Quadcopter Drone

11 Jul 2017

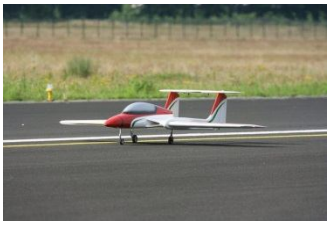


RoboTiCan, a manufacturer and developer of autonomous robotic platforms, has announced full-scale deployment of unmanned ground vehicle (UGV) robot integration with quadcopter technology using the company's Komodo mobile robotic platform. The project is the brainchild of Dr. Noa Agmon and Prof. Gal Kaminka from the Department of Computer Science at Bar-Ilan University, who developed the quadcopter integration process with Komondo as a key component.

The Komodo was integrated with an aerial robot in a specific environment for two purposes: to provide the ground robot and its operator with a bird's-eye view behind the horizon of the robot's sensors; and for the drone to provide the Komodo with an "anchor point" to improve its position and orientation. By harnessing this technology, one aerial drone can support numerous ground robots by providing feedback on their relative position and helping control the ground robots' formation while in motion. http://www.unmannedsystemstechnology.com/2017/07/unmanned-ground-vehicle-platform-integrates-quadcopter-drone/

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

Netherlands Aerospace Centre Tests Jet-Powered Drone 09 Jul 2017



The Netherlands Aerospace Centre (NLR) has announced that it will be testing the XCalibur+ Jet Trainer drone at Twente Airport. NLR is using the XCalibur+ Jet Trainer – a large drone approved for professional use in accordance with the Assessment Specifications for Remotely Piloted Aircraft Systems, Class 1 (AS-RPAS1) – to gain experience in operating drones powered by jet engines.

The XCalibur+ Jet Trainer PH-1 is based on a model aircraft which has been subjected to a number of modifications to ensure compliance with the AS-RPAS1 requirements. The Jet Trainer can fly at various speeds and is radio-controlled. This is the first series of test flights performed by NLR using this drone model. Four NLR employees have completed a special training course in Germany that qualifies them to operate jet-propelled fixed-wing drones. The tests will also be supervised by a pilot with expertise in flying real jet aircraft and drone jets. The drone will reach a maximum altitude of 1500 feet, will remain within the operator's visibility range, and will not fly over residential or nature areas. http://www.unmannedsystemstechnology.com/2017/07/netherlands-aerospace-centre-tests-jet-powered-drone/

Sentient ViDAR Demonstrated to European Maritime Surveillance Agencies

04 Jul 2017

Sentient has announced that it has demonstrated its ViDAR airborne optical radar system to European maritime surveillance agencies, with a ViDAR-equipped Insitu ScanEagle RPAS (Remotely Piloted Aircraft System) detecting and tracking small boats and people in the water on a trial at Huelva, Spain.

Representatives of the European Maritime Safety Agency (EMSA), European Border and Coast Guard Agency (Frontex) and European Fisheries Control Agency (EFCA) saw the ViDAR equipped ScanEagle detect and cue a range of representative targets over a broad search area, on missions

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

representative of border control, anti-drug trafficking, illegal fishing detection and search and rescue operations.

During the evaluation, ViDAR successfully autonomously detected all targets, including fast RIBs, fishing vessels, rubber rafts and people in the water. Using ViDAR, the ScanEagle detected fishing vessels out beyond 14 nautical miles and a life raft in 35 knot winds with 6 feet swells in a very short time period. http://www.unmannedsystemstechnology.com/2017/07/sentient-vidar-demonstrated-european-maritime-surveillance-agencies/

AI, AI, AI, drones are using sight to fly!

TRISTAN GREENE ARTIFICIAL INTELLIGENCE

Scientists in Zurich are removing the blinders and letting drones figure things out for themselves. Using "vision algorithms" a group of researchers were able to teach inexpensive off-the-shelf drones to fly autonomously and map surrounding areas.

The algorithms used are a "dense surface reconstruction" data-set designed to teach drones to understand their environment. Using a single camera and an inertial sensor the drones are able to take off, navigate, and create accurate 3D images.

This technology allows drones to operate without people, the ability to build 3D maps in realtime will aid navigation and allow the robot to plot courses through cities, forests, and even over water. It's almost certain that the future of search and rescue involves autonomous drones. https://thenextweb.com/artificial-intelligence/2017/07/10/drones-gain-sight-in-latest-sign-the-robots-are-taking-over/

12July17

US Air Force Requesting Use Of Anti-UAV Equipment.

Defense Daily (7/11) reports that the US Air Force is seeking the authority to employ "anti-drone equipment" to defend against small UAVs that may fly over a homeland base, according to Gen. James Holmes, head of US Air Force's Air Combat Command.

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

Small satellites driving space industry growth: report Irene Klotz

CAPE CANAVERAL, Fla. (Reuters) - Small satellites used for observing conditions on the earth are the fastest growing segment of the $260.5 billion global satellite industry, the Satellite Industries Association said in an annual report released on Tuesday.

Small satellites, some no bigger than a shoe box, generated an 11 percent jump in annual revenue for Earth imagery in 2016 and a growing share of the 1,459 operating spacecraft that circled the planet at the end of the year, the report said.

The orbital fleet includes 499 satellites that weigh up to 1,323 pounds (600 kg), many of them used for Earth observation and remote sensing, said Carissa Christensen, chief executive of Bryce Technology and Space, which wrote the report for the trade association. Satellites used for earth imagery accounted for just $2 billion of the total industry but accounted for 11 percent of the sector's growth, according to the report.

The report found at least 33 dedicated small satellite launchers in development worldwide, including privately owned Rocket Lab, which debuted its Electron booster in May, and Richard Branson's Virgin Orbit, which is expected to fly its LauncherOne rocket this year.

In all, 126 satellites were launched last year, including 55 shoe-box-sized spacecraft known as CubeSats. About twice as many CubeSats were launched in 2015, the report said.

In February, a single Indian Polar Satellite Launch Vehicle rocket put 103 small satellites into orbit, along with a larger Earth-imaging spacecraft called Cartosat. https://www.reuters.com/article/us-space-satellites-idUSKBN19W2LR

Making an insurance claim? Expect to see a drone By **Barbara Marquand** July 12, 2017

Faster estimates, and safer for adjusters


Getty Images

A typical roof inspection using a ladder takes about an hour. Inspections of multiple-story or steep roofs take even longer, and they often require specialists and extra equipment, says Patrick Gee, senior vice president of claims at Travelers. A drone captures the necessary images in 10 to 20 minutes. Allstate used drones for spring storm damage claims this year. It took as few as 4½ days

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

from when a customer reported damage for the company to issue a repair estimate. Typically that process would take 11 days, says Glenn Shapiro, Allstate's executive vice president of claims.

Speed is important because roofing contractors are booked quickly after a big storm hits. "We like the idea of getting our customers to the front of the line," Shapiro says.

Using drones is also safer for insurance company employees. "Giving our adjusters a drone that keeps them on the ground may be more expensive than giving them a ladder, but even one adjuster falling off a roof is one too many," says Gary Sullivan, vice president of property and subrogation claims for Erie Insurance. http://www.marketwatch.com/story/making-an-insurance-claim-expect-to-see-a-drone-2017-07-12

13July17

USAF Wants Authority To Down Drones After F-22 Near Miss

Jul 12, 2017 **Lara Seligman** | ***Aerospace Daily & Defense Report***


F-22: USAF

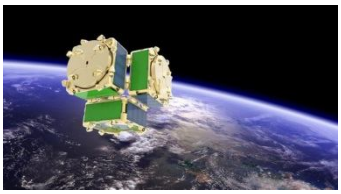
In early July, an F-22 Raptor pilot coming in for a landing just barely avoided colliding with a small, commercial unmanned aerial system (UAS). That same week, a base security guard watched another tiny drone fly onto the complex and over the flight line before heading back out. In neither case did the airman have the legal authority to shoot down or otherwise disable the drone.

As drone technology becomes cheaper and more commercially available, the U.S. Air Force is increasingly worried about the threats posed by small UAS such as quadcopters. But while the service is developing the tools to defend against these systems—from jamming their electronics to shooting them down—it lacks the legal authority to use them, says Gen. James Holmes, commander of Air Combat Command. http://aviationweek.com/defense/usaf-wants-authority-down-drones-after-f-22-near-miss?NL=AW-05&Issue=AW-05_20170713_AW-05_306&sfvc4enews=42&cl=article_1&utm_rid=CPEN1000003332045&utm_campaign=10891&utm_medium=email&elq2=7eed4669b4b64235bbe84f8159f1a894

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

DARPA Trying to Launch Smallsat Experiment on an Indian Rocket

By Caleb Henry, Space News | July 12, 2017


Credit: NovaWurks

WASHINGTON — Citing delays with its original launch on a SpaceX Falcon 9 rocket, the U.S. Defense Advanced Research Projects Agency is trying to launch an experimental small satellite mission on a Polar Satellite Launch Vehicle from India.

DARPA had originally planned to launch a mission called EXCITE, or eXperiment for Cellular Integration Technologies, on a secondary payload adapter called Sherpa that Seattle-based Spaceflight expected to launch on a Falcon 9 in 2015. But the continued delay of that mission forced Spaceflight this March to seek out alternatives for Sherpa customers.

Speaking at the Milsatcom USA conference here June 29, Jeremy Palmer, program manager for DARPA's Tactical Technology Office, said the agency is now pursuing a launch opportunity with the Indian Space Research Organisation (ISRO). "We have 14 of these satlets aggregated together in a 155-kilogram secondary payload satellite intended for low-Earth orbit at an inclination of 98 degrees with an elliptical orbit of 450-kilometer perigee," he said. "We hope to launch EXCITE aboard an Indian PSLV rocket in the early half of FY18." https://www.space.com/37435-darpa-smallsat-experiment-indian-rocket.html

14July17

NASA Hybrid-Electric UAS Technology Goes Commercial

*Jul 13, 2017***Graham Warwick | *Aviation Daily***


Greased Lightning: NASA

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

NASA's Greased Lightning concept for a hybrid-electric, distributed-propulsion vertical-takeoff-and-landing (VTOL) unmanned aircraft system (UAS) has been licensed to a Virginia-based startup, Advanced Aircraft Co. (AAC). The concept is for a "distributed-propulsion vertical-takeoff-and-landing (VTOL) unmanned aircraft system (UAS). Congratulations to the inventor – Bill Fredericks!
http://aviationweek.com/awincommercial/nasa-hybrid-electric-uas-technology-goes-commercial

Soyuz rocket lifts off with 73 satellites

July 14, 2017 Stephen Clark

A Russian Soyuz booster lifted off Friday from Kazakhstan on a complex mission to deploy 73 satellites into three different orbits, including a Russian spacecraft to locate forest fires, 48 CubeSats for Planet's global Earth observation fleet, and eight nanosatellites for Spire Global's commercial weather network.

The Soyuz-2.1a rocket fired into space at 0636:49 GMT (2:36:49 a.m. EDT; 12:36:49 p.m. Kazakh time) from Launch Pad No. 31 at the Baikonur Cosmodome in Kazakhstan.

Friday's launch deployed modified CubeSats from five California-based companies, two student-built German satellites, two Norwegian maritime tracking and communications satellites, a commercial Japanese microsatellite to map Arctic sea ice, two Earth-imaging CubeSats for Roscosmos, and three nanosatellites developed by Russian students.
https://spaceflightnow.com/2017/07/14/soyuz-rideshare-launch/

Professional Photographers of America Adds 'Certified Drone Photographer' Designation **Betsy Lillian** July 13, 2017

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

Professional Photographers of America (PPA), a nonprofit photography association touting 30,000 members in more than 50 countries, has made a "certified drone photographer" designation available for members. Calling the certification a "declaration of professional competence and ability," PPA says it also gives photographers an edge in advertising their services, as well as justifies the price of their services.

According to PPA, to be eligible for the program, photographers must have a PPA membership, a Federal Aviation Administration Section 333 exemption or Part 107 remote pilot certificate, proof of general liability insurance, an unmanned aircraft systems registration number, and a logbook summarizing 30 hours of flight time. https://unmanned-aerial.com/professional-photographers-america-adds-certified-drone-photographer-designation

Risks, Opportunities Seen In Smallsat Market

*Jul 13, 2017***Jen DiMascio** | ***Aerospace Daily & Defense Report***


XSS-11 small satellite: Lockheed Martin

The fortunes that could be made from small satellites—with large fleets of LEO communications satellites and big-data analysis culled from remote sensing constellations—remain highly uncertain, satellite industry analysts caution. Along with those developments is a flurry of investments in small launch vehicles that is equally precarious.

The business of satellites remains dominated by markets built around using them rather than building them. In all, satellite revenues generated $260.5 billion in 2016, the U.S.-based Satellite Industry Association (SIA) reports. By comparison, a scant $13.9 billion is generated by actually making the satellites; the launch industry brought in just $5.5 billion.

But small satellites—those under 600 kg (1,300 lb.)—"continue to be on the radar for disrupting the satellite manufacturing business," says Charity Weeden, senior director of policy at SIA. "There are cubesats being launched by the dozens. There are also trends to customize small satellites" that are expected to continue into 2017. http://aviationweek.com/space/risks-opportunities-seen-smallsat-market?NL=AW-05&Issue=AW-05_20170714_AW-05_561&sfvc4enews=42&cl=article_1&utm_rid=CPEN1000003332045&utm_campaign=10915&utm_medium=email&elq2=a98ba553380f49fa82fb1faee8cb05ec

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