



## UAS and SmallSat Weekly News

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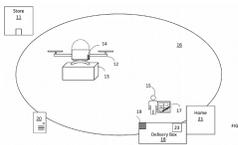
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### Walmart's drone delivery plan includes blockchain tech

*Walmart's patent application reveals plans for a drone delivery service that uses blockchain technology to ensure that packages are dropped off in secure locations.*

Kelly McSweeney for Robotics | May 30, 2017



(Image: US Patent & Trade Office)

Walmart has submitted a patent application for a drone delivery system that focuses on how packages will be received. Instead of just delivering goods to your doorstep, drones would **drop packages into secure boxes (lockers) that communicate with the drone**. The application describes a smorgasbord of technology that could be used to ensure secure drop-off, including geofencing and a blockchain for package tracking and identification. <http://www.zdnet.com/article/walmarts-drone-delivery-plan-includes-blockchain-tech/>

**Drones Are About to Revolutionize Our World. This Bill Will Let America Lead the Drone Economy.** [Jason Snead](#) / [@jasonwsnead](#) / [John-Michael Seibler](#) / [@JSeibler](#) / June 02, 2017 /



The Drone Federalism Act proposes to chart a new course, one that **guarantees the safety of the national airspace system without compromising the traditional right of states and localities to police the conduct that takes place within their own communities**. States will be free to compete with one another to create inviting conditions that attract drone businesses, much as states do today when they offer competitive tax rates and regulatory environments meant to lure job-creating industries.



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But the Drone Federalism Act will not throw open the doors to the Wild West. This process will be guided by the FAA, which will provide big-picture guidance and retain firm control of the navigable airspace. <http://dailysignal.com/2017/06/02/drones-revolutionize-world-bill-will-let-america-lead-drone-economy/>

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### UK Drone Collision Tests Draw Criticism *Aug 8, 2017* [Tony Osborne](#) | *Aviation Daily*



*Lockheed Martin*

LONDON—Organizations representing manufacturers of small unmanned air vehicles and those operating them have criticized a UK government report into the risks associated with collisions between the systems and manned aircraft. The [July report](#)—commissioned by the UK Department for Transport, Military Aviation Authority and British Airline Pilots Association—said that consumer drones could cause more damage to aircraft structures than a bird of similar mass, because of the use of metallic components in the air systems.

However, the Drone Manufacturers Alliance Europe (DMAE) “strongly believes drone regulations should be based on scientific studies that quantify risk in order to minimize it. Unfortunately, these tests were conducted in secrecy, and the organizations involved have not published their results in detail or submitted them for peer review,” said Daniel Brinkwerth of DMAE. “This summary does not provide an adequate basis for designing safer drones or protecting the public.”

Brinkwerth urged the Department for Transport to release more detailed information and questioned why **the study did not pose questions about the likelihood of such an incident.** [http://aviationweek.com/commercial-aviation/uk-drone-collision-tests-draw-criticism?NL=AW-05&Issue=AW-05\\_20170814\\_AW-05\\_200&sfvc4enews=42&cl=article\\_5\\_4&utm\\_rid=CPEN1000003332045&utm\\_campaign=11277&utm\\_medium=email&elq2=1647bc64e4544a8d9cdbbaed33e30d1f](http://aviationweek.com/commercial-aviation/uk-drone-collision-tests-draw-criticism?NL=AW-05&Issue=AW-05_20170814_AW-05_200&sfvc4enews=42&cl=article_5_4&utm_rid=CPEN1000003332045&utm_campaign=11277&utm_medium=email&elq2=1647bc64e4544a8d9cdbbaed33e30d1f)



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### Cubesats Are Making Inroads Into NASA Science Missions

*After investing millions in smallsat technologies, NASA looks at cubesats to fulfill science goals Aug 11, 2017* [Irene Klotz](#) | *Aviation Week & Space Technology*

For 30 years, intrepid groups of engineers, entrepreneurs, students and space enthusiasts have been trekking to Logan, Utah, for an annual gathering to discuss emerging technologies, opportunities and challenges in the small satellite industry. Lately, scientists have joined their ranks, bolstered by government solicitations and contracts that focus on specific requirements for data instead of spacecraft architectures. <http://aviationweek.com/aviation-week-space-technology/cubesats-are-making-inroads-nasa-science-missions>

**US firm reveals gun-toting drone that can fire in mid-air** Mary-Ann Russon  
Technology Reporter, BBC News 11 August 2017

A US technology firm has developed a drone that is able to aim and fire at enemies while flying in mid-air. The Tikad drone, developed by Duke Robotics, is **armed with a machine-gun and a grenade launcher**. The gun can be fired only by remote control, and is designed to reduce military casualties by cutting the number of ground troops required.



*Image DUKE ROBOTICS The weapon can be fired only remotely by human control.*

Robotics expert Professor Noel Sharkey expressed concern that gun-toting drones could make it easier to kill innocent people. "Big military drones traditionally have to fly thousands of feet overhead to get to targets, but these smaller drones could easily fly down the street to apply violent force," he told the BBC. "This is my biggest worry since there have been many legal cases of human-rights violations using the large fixed-wing drones, and these could potentially result in many more." <http://www.bbc.com/news/technology-40901393>



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### Northrop Grumman expanding at Grand Forks tech park

[April Baumgarten](#) Aug 11, 2017



Northrop Grumman will break ground on a 35,000-square-foot hangar this summer at the Grand Sky tech park, spokeswoman Faith Jennings told the Herald. The project is Phase 2 of the company's plans to build at [the park designed for tenants in the unmanned aircraft system industry](#).

"The additional space will be for an aircraft hangar with associated support spaces," Jennings said in an email. "This will enable us to begin working on aircraft modifications and repairs, and to conduct flight test and demonstration activities as we move into the future."

The first tenant to break ground at Grand Sky, Northrop Grumman opened its 36,000-square-foot facility in April. The facility's initial cost was slated at \$10 million. The company said it expected to staff the building with [100 employees](#), adding that number likely will grow as it expands.

<http://www.grandforksherald.com/news/business/4311053-northrop-grumman-expanding-grand-forks-tech-park>

### Daytona Beach Police Launching UAS Program With Help from Embry-Riddle [Betsy Lillian](#) August 11, 2017



The Daytona Beach, Fla., Police Department and Embry-Riddle Aeronautical University (ERAU) have announced a new aviation program made up of [five officers and two unmanned aircraft systems](#).

"Anything we can get to protect our citizens and our visitors, to keep them safe, we're going to do," said Daytona Beach Police Chief Craig Capri during a news conference on Thursday. "I'm very excited about this new technology, and it's going to save lives." <https://unmanned-aerial.com/daytona-beach-police-launching-uas-program-help-embry-riddle>



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August 15, 2017

### DJI Develops Option For Pilots To Fly Without Internet Data Transfer

DJI, the world's leader in civilian drones and aerial imaging technology, is developing a new local data mode that stops internet traffic to and from its flight control apps, in order to provide **enhanced data privacy assurances for sensitive government and enterprise customers.**

DJI's flight control apps routinely communicate over the internet to ensure a drone has the most relevant local maps and geofencing data, latest app versions, correct radio frequency and power requirements, and other information that enhances flight safety and functionality. When a pilot enables local data mode, DJI apps will stop sending or receiving any data over the internet, giving customers enhanced assurances about the privacy of data generated during their flights.

[http://uasweekly.com/2017/08/15/dji-develops-option-pilots-fly-without-internet-data-transfer/?utm\\_medium=push\\_notification&utm\\_source=rss&utm\\_campaign=rss\\_pushcrew](http://uasweekly.com/2017/08/15/dji-develops-option-pilots-fly-without-internet-data-transfer/?utm_medium=push_notification&utm_source=rss&utm_campaign=rss_pushcrew)

**And here is the rest of the story...**

### China Drone Maker Steps Up Security After U.S. Army Ban By REUTERS AUG. 14, 2017

(Reuters) - Chinese drone maker SZ DJI Technology Co Ltd is tightening data security on its drones **after the U.S. Army ordered its members to stop using DJI drones** because of "cyber vulnerabilities," a company official told Reuters on Monday.

The privately held Shenzhen-based company is speeding deployment of a system that allows users to disconnect from the internet during flights, making it impossible for flight logs, photos or videos to reach DJI's computer servers, Brendan Schulman, vice president of policy and legal affairs at DJI, said in an interview. The security measure had been in the works for several months, but DJI said it is bringing it out sooner than planned because of an Army memo earlier this month that barred service members from using DJI drones.

<https://www.nytimes.com/reuters/2017/08/14/technology/14reuters-usa-drones-dji.html>



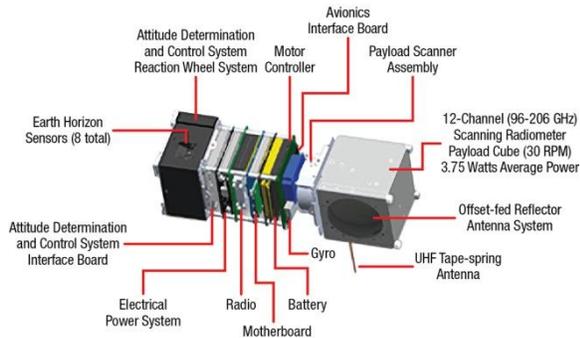
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### Cubesats Are Making Inroads Into NASA Science Missions

After investing millions in smallsat technologies, NASA looks at cubesats to fulfill science goals  
Aug 11, 2017 Irene Klotz | Aviation Week & Space Technology

Goddard will be testing a 6U satellite called Dellingr (a name derived from the god of the dawn in Norse mythology) that is slated to launch on Aug. 14 aboard a SpaceX Dragon cargo ship to the International Space Station (ISS) and then be deployed from the station's NanoRacks cubesat Deployer in November.

#### The MicroMAS-2 CubeSat



Source: MIT Lincoln Laboratory

Dillingr will be put to work for science, **measuring abundances of oxygen, nitrous oxide and other gases in Earth's upper atmosphere** with a novel miniaturized ion/mass spectrometer.

[http://aviationweek.com/space/cubesats-are-making-inroads-nasa-science-missions?NL=AW-05&Issue=AW-05\\_20170815\\_AW-05\\_55&sfvc4enews=42&cl=article\\_4&utm\\_rid=CPEN1000003332045&utm\\_campaign=11295&utm\\_medium=email&elq2=91c5592397d34b51886a6089d79495ac](http://aviationweek.com/space/cubesats-are-making-inroads-nasa-science-missions?NL=AW-05&Issue=AW-05_20170815_AW-05_55&sfvc4enews=42&cl=article_4&utm_rid=CPEN1000003332045&utm_campaign=11295&utm_medium=email&elq2=91c5592397d34b51886a6089d79495ac)

### Drone Aerial Reconnaissance Used to Fight Wildfires 10 Aug 2017





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Currently, fire incident commanders must work with fire line information that often is 12-to-24 hours old — while a fire continues to burn. Now, Insitu's ScanEagle UAS can “fly the gaps” — **both day and night** — using its military-grade electro-optical (EO) cameras during daylight, and infrared (IR) cameras for nighttime imaging. Flying at these times will provide previously unavailable data collection, analysis, and delivery of decision-making information to manned firefighting fleets operating in difficult terrain, smoke, or temperature inversion situations.

<http://www.unmannedsystemstechnology.com/2017/08/drone-aerial-reconnaissance-used-fight-wildfires/>

## New Drone-Based Mapping Program Designed for Public Safety Applications

14 Aug 2017



CompassDrone, a developer of unmanned aerial solutions for data collection, has announced a new drone-based mapping program designed for Public Safety applications. The Complete Incident Response Recovery Unmanned Aerial System (CIRRUAS) program is designed primarily for Accident Reconstruction and Crime Scene Mapping, but is also applicable to Search & Rescue and Reconnaissance missions. The CIRRUAS package contains everything needed for public safety personnel to quickly and accurately **map an accident or crime scene for 3D reconstruction or evidence preservation** purposes. Different CIRRUAS packages are offered, but each contains multiple DJI drones, software, and Part 107 commercial flight training.

<http://www.unmannedsystemstechnology.com/2017/08/new-drone-based-mapping-program-designed-public-safety-applications/>



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### FLIGHTWAVE AEROSPACE SYSTEMS INTRODUCES FLIGHTWAVE EDGE UAS

AUVSI NEWS AUG 15, 2017



California-based startup FlightWave Aerospace Systems, Inc. has introduced the FlightWave Edge UAS, which is a “long-range, high-endurance, vertical take-off aircraft.”

Designed and manufactured in the United States, the UAS offers a variety of features including its ability to perform in various weather conditions and wind up to 40 knots; in just seconds, the UAS can automatically transform from a tri-copter to forward flight; and it can fly for more than **two hours** at a time in cruise and up to 100 km range per charge. <http://www.auvsi.org/industry-news/flightwave-aerospace-systems-introduces-flightwave-edge-uas>

### Researchers collect more precise weather, climate data with help from unmanned aerial system August 14, 2017



*Sandia National Laboratories unmanned aerial system expert Dave Novick examines an octocopter prior to the first joint balloon-UAS test in May. Credit: Randy Montoya*

Last week, researchers at Sandia National Laboratories flew a tethered balloon and an unmanned aerial system, colloquially known as a drone, together for the first time to get Arctic atmospheric temperatures with better location control than ever before. In addition to providing more precise data for weather and climate models, being able to **effectively operate UASs in the Arctic** is important for national security.

"Operating UASs in the remote, harsh environments of the Arctic will provide opportunities to harden the technologies in ways that are directly transferable to the needs of national security in terms of robustness and reliability," said Jon Salton, a Sandia robotics manager. "Ultimately, integrating the specialized operational and sensing needs required for Arctic research will transfer



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to a variety of national security needs." Read more at: <https://phys.org/news/2017-08-precise-weather-climate-unmanned-aerial.html#jCp>

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### U.S. Air Force Plans 'ThunderDrone' Technology Demonstration

Bill Carey August 15, 2017

The U.S. Air Force is planning a "ThunderDrone" technology demonstration this fall to **study small drones and swarming applications**. The exercise will culminate with a "prototype rodeo" in November and could lead to further development. "Basically it's to investigate swarms and platforms and effects and data science for small unmanned aerial vehicles," Air Force Secretary Heather Wilson said August 9 during an event at Holloman Air Force Base in New Mexico. Participants are invited to "bring your stuff; we'll see who the last drone standing is," she added.

Sofwerx, of Tampa, Florida, a partnership of the non-profit Doolittle Institute and the U.S. Special Operations Command (USSOCOM), is conducting the demonstration, which exemplifies a new approach to evaluating and acquiring technologies, Wilson said. ThunderDrone will be held in a 7,000-sq-ft indoor test range designed for drone experimentation, prototyping and testing, according to Sofwerx. <https://www.ainonline.com/aviation-news/defense/2017-08-15/us-air-force-plans-thunderdrone-technology-demonstration>

### LEAVE THE DRONES TO TESLA TROY TURNER 08/16/2017



Did you know that Nikola Tesla patented a drone before there were drones? In this concept, called Aurora, Tesla's electric motor technology is applied to a tricopter design to facilitate long-range, extended-time camera capability.



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Operating either autonomously or controlled manually, it's ideal for reconnaissance, checking on out-of-reach machinery, routine structure inspections, or simply for capturing vivid photography and video for fun. The three rotor design allows for larger propellers. This results in less required rotations and less energy to fly, making it more efficient with up to **35% more battery life**. Because of the size of the propellers, it also has greater acceleration and better maneuverability. As far as looks go, it's carefully considered and beautifully executed sculpting that's probably the e-drone concept most closely in line with the Tesla aesthetic.

<http://www.yankodesign.com/2017/08/16/leave-the-drones-to-tesla/>

### **Knowledge Base Presented By Airware “The Eight Stages of Drone Technology-Driven Transformation”**

The commercial drone technology ecosystem has come a long way in the last half-decade. There have been at least **eight distinct levels of evolution** within commercial drone technology, beginning with simply getting drones into the air reliably, and culminating with complete industry and application-specific solutions that enable organization-wide benefit. The early stages of this continuum were achieved years ago. The advanced stages are on the cutting edge, and are in the process of being developed and tested today.



Stage One: Affordable and Reliable Flight Control Systems. The first inflection point that signaled the start of the commercial drone era was the debut of drones that had extremely stable and reliable flight controls, while still being affordable enough to deploy en masse. Stage Two: Autonomy. Stage Three: Reliable Data Collection. Stage Four: Data Collection at Scale. Stage Five: Data Management. Stage Six: Machine Learning. Stage Seven: Industry- & Application-Specific Analytics. Stage Eight: Systems Integration. [http://uasweekly.com/2017/08/16/knowledge-base-presented-airware-eight-stages-drone-technology-driven-transformation/?utm\\_medium=push\\_notification&utm\\_source=rss&utm\\_campaign=rss\\_pushcrew](http://uasweekly.com/2017/08/16/knowledge-base-presented-airware-eight-stages-drone-technology-driven-transformation/?utm_medium=push_notification&utm_source=rss&utm_campaign=rss_pushcrew)



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### Mobile Skylight UTM System Developed to Provide Drone Security

BY [STAN GOFF](#)



Unmanned aerial systems (UASs) and their uses have exploded in recent years, and first responders are just one example of many groups impacted by using drones for a variety of critical applications.

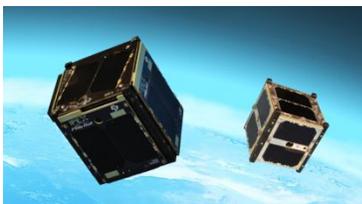
With this jump in UAVs comes the increased need for safety measures and Unmanned Traffic Management (UTM) systems. Gryphon Sensors, which has worked with NASA on UTM developments for a few years, has developed a Mobile Skylight system designed to deliver **drone security and UAS traffic management**.

Featuring an array of self-contained multispectral sensors, the Mobile Skylight system provides accurate three-dimensional detection of low-flying, small UAS at out to 10 kilometers.

<http://insideunmannedsystems.com/mobile-skylight-utm-system-developed-provide-drone-security/>

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### Smallsat developers propose self-regulation to address orbital debris concerns [Jeff Foust](#) — August 15, 2017



*Industry self-regulation to avoid smallsat collisions could keep governments from step in and imposing more restrictive rules. Credit: NASA/JPL-Caltech*

LOGAN, Utah — During a panel session at the 31st Annual Conference on Small Satellites here Aug. 6, representatives from across the smallsat community said that **while the odds of a collision involving a smallsat remained low, such an event could trigger an overreaction of government regulations** if the community isn't prepared.



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"The worst-case scenario would be to have this kind of thing happen and they're scrambling to figure out what to do about it, and they just do something that's not informed," said Brian Weeden, director of program planning at the Secure World Foundation, referring to a reaction by U.S. government agencies to a collision involving a smallsat. A better outcome, he said, would be if smallsat operators prepared for such an event by developing their own recommendations for policies ahead of time. <http://spacenews.com/smallsat-developers-propose-self-regulation-to-address-orbital-debris-concerns/>

### **Drone comes dangerously close to state police helicopter** Associated Press August 16

FRAMINGHAM, Mass. — Authorities say a drone came within about 100 feet (30 meters) of a state police helicopter in Massachusetts. A state police spokesman says the helicopter was passing over Lawrence Municipal Airport at approximately 600 feet (183 meters) late Wednesday morning when the crew spotted the drone approach from the side.

The drone flew in front of the helicopter before suddenly dropping to the ground. Police say if the drone had struck the plane's windshield, it could have entered the flight cabin. The helicopter as well as cruisers on the ground unsuccessfully searched for the person flying the drone.

[https://www.washingtonpost.com/national/drone-comes-dangerously-close-to-state-police-helicopter/2017/08/16/b1594b9e-82a9-11e7-9e7a-20fa8d7a0db6\\_story.html](https://www.washingtonpost.com/national/drone-comes-dangerously-close-to-state-police-helicopter/2017/08/16/b1594b9e-82a9-11e7-9e7a-20fa8d7a0db6_story.html)

### **How the US, France, Germany, Brazil, and New Zealand Are Saving Lives With Drones** Miriam McNabbon: August 16, 2017



*The US, France, Germany, Brazil and New Zealand are among the countries adopting a life-saving application for drones this year – as lifeguards at some of the world's busiest beaches.*

In [December of 2015](#), firefighters in Rio de Janeiro, responsible for protecting the world-famous Copacabana beach during the southern hemisphere's summer season, announced that they would deploy lifeguarding drones to augment patrols by boat and life raft. Since then, German drone



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manufacturer microdrones successfully [demonstrated](#) their lifeguarding drone, equipped with a compact life-saving device, to Germany's lifeguarding association. The US, France, and New Zealand have also announced that they have implemented drones to help lifeguards patrol dangerous waters.



HELPER drone

French authorities announced that the use of French-manufactured [HELPER drones](#) on France's Atlantic beaches would be increased after a successful launch this season, one that resulted in the drones being used to help more than 50 swimmers. (A significant boost, perhaps, to drone giant DJI's [running tally](#) of lives saved by drone.) <http://dronelife.com/2017/08/16/us-france-brazil-new-zealand-saving-lives-drones/>

## Microsoft tests self-flying gliders in rural Nevada



*A Microsoft researcher launches a glider equipped with artificial intelligence Thursday, Aug. 10, 2017, in the Hawthorne Advanced Drone Multiplex Test Range. (Mark Barker/NIAS). Nicole Raz Las Vegas Review-Journal August 16, 2017*

Forget self-driving cars, Microsoft is already thinking about **self-flying airplanes**. The tech giant tested such technology in Hawthorne, 130 miles south of Reno, last week with the help of the Governor's Office of Economic Development and the Nevada Institute for Autonomous Systems.

Two gliders, one with a 16-foot wingspan and another with about a 6-foot wingspan, used artificial intelligence to find and "catch rides" on rising hot air, "like how wild birds stay aloft," as Kapoor described in the statement. Gliders, equipped with sensors built inside the aircraft, used computer algorithms to predict air patterns and to plan a route to seek out columns of rising hot air or thermals. The technology that Microsoft developed can be installed to "all different types" of



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unmanned systems, be it ground, marine or aerial. <https://www.reviewjournal.com/local/local-nevada/microsoft-tests-self-flying-gliders-in-rural-nevada/>

### **Minneapolis to launch drones to survey sewer problems** [Eric Roper](#) Star Tribune AUGUST 16, 2017



*A sanitary exhaust vent atop a flat-roofed building, pictured during smoke testing, which can't be spotted easily from the ground.*

Drones will take to the skies in some Minneapolis neighborhoods this fall to hunt for problems hidden in the city's sewers.

The city is experimenting with the technology as part of its annual smoke testing of the sewers, which helps crews spot trouble spots underground. It will be a first for the city's public works department, though [engineers across the country](#) are discovering public uses for drones — including inspecting bridges and ditches in Minnesota. <http://www.startribune.com/minneapolis-to-launch-drones-to-survey-sewer-problems/440814513/>

**18Aug17**

### **Spacewalking Cosmonauts Initiate 3D-Printed Small Sat Test**

Aug 17, 2017 [Mark Carreau](#) | *Aerospace Daily & Defense Report*



*Tomsk TPU-120: TPU*

HOUSTON—Russia staked claim to the first Earth-orbiting 3D-printed small satellite Aug. 17 following deployment of the Tomsk TPU-120 by cosmonaut Fyodor Yurchikhin outside the International Space Station. The 11-lb. satellite is expected to orbit for about six months. The



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spacecraft developed by students at the Tomsk Polytechnic University broadcasts in 10 languages, including English, Chinese, French, German and Russian to help monitor its performance.

[http://aviationweek.com/space/spacewalking-cosmonauts-initiate-3d-printed-small-sat-test?NL=AW-05&Issue=AW-05\\_20170818\\_AW-05\\_447&sfvc4enews=42&cl=article\\_4&utm\\_rid=CPEN1000003332045&utm\\_campaign=11351&utm\\_medium=email&elq2=d9ec8a1e94ed4320a203ebd07456ebbe](http://aviationweek.com/space/spacewalking-cosmonauts-initiate-3d-printed-small-sat-test?NL=AW-05&Issue=AW-05_20170818_AW-05_447&sfvc4enews=42&cl=article_4&utm_rid=CPEN1000003332045&utm_campaign=11351&utm_medium=email&elq2=d9ec8a1e94ed4320a203ebd07456ebbe)