

# APSCC Monthly e-Newsletter

## SEPTEMBER 2017

The **Asia-Pacific Satellite Communications Council (APSCC) e-Newsletter** is produced on a monthly basis as part of APSCC's information services for members and professionals in the satellite industry. Subscribe to the APSCC monthly newsletter and be updated with the latest satellite industry news as well as APSCC activities! To renew your subscription, please visit [www.apsc.or.kr/sub4\\_5.asp](http://www.apsc.or.kr/sub4_5.asp). To unsubscribe, send an email to [info@apsc.or.kr](mailto:info@apsc.or.kr) with a title "Unsubscribe."

*News in this issue has been collected from August 1 to August 31.*

### INSIDE APSCC

#### **APSCC 2017 Satellite Conference & Exhibition, 10-12 October, Tokyo, Japan** **EARLY BIRD REGISTRATION Ends on September 8!**

The APSCC Satellite Conference and Exhibition is Asia's must-attend executive conference for the satellite and space industry, where business leaders come together to gain market insight, strike partnerships and conclude major deals. Celebrating its 20th annual event APSCC 2017 #SATECHexplorer will incorporate industry veterans and new players through the 3-day of in-depth conference program to reach out to a broader audience. [Join APSCC 2017](#) and expand your business network while hearing from a broad range of thought-provoking panels and speakers representing visionary ideas and years of business experience in the industry. For more information, please visit [www.apsc2017.com](http://www.apsc2017.com)

### NEW MEMBER

#### **Singapore Space and Technology Association (SSTA) Joins APSCC as an Affiliate Member**

Singapore Space and Technology Association (SSTA) is Singapore's trade association focused on developing Singapore's space technology industry. SSTA acts as a neutral platform to facilitate information and communication for government, industry and academia. SSTA spearheads major trade and business-focused initiatives with the aim of advancing Singapore's space ecosystem, thus catalysing Singapore's drive as a regional space hub. On the domestic front, SSTA drives educational and outreach programmes to encourage STEM careers in the expanding space and related technology industries.

### SATELLITE BUSINESS

#### **SES Government Solutions Lands Additional MEO Beam Task Order with U.S. Department of Defense**

August 1, 2017 - SES Government Solutions (SES GS), a wholly owned subsidiary of SES, signed a five-year task order with the U.S. Department of Defense (DoD). Under the agreement, an additional satellite beam will enable access to real-time information for better-informed, life-saving decisions in the field for key U.S. Government end-users. The additional connectivity will be provided via SES's Medium Earth Orbit (MEO) O3b fleet as part of a high throughput, low latency satellite communications solution SES GS is providing to the U.S. DoD. Operational benefits of the solution include the capability to transfer large files from remote locations in just minutes instead of hours. Cloud-based applications and information can be used anywhere in the service area. End-users will be able to view simultaneous High Definition videos providing situational awareness to commanders.

#### **Inmarsat Demonstrates Seamless Global Xpress Connectivity in VIP Aircraft Worldwide Test Flight**

August 2, 2017 - Inmarsat announced the successful completion of its Global Xpress 'Around the World' test flight. The exercise, conducted on a Gulfstream IV aircraft between June 5 and June 11, 2017, covered more than 25,000 miles and demonstrated Global Xpress' ability to deliver seamless, worldwide coverage across multiple spot beams and satellites. While government and business users have historically had to manipulate flight plans to avoid gaps in coverage and performance, the test flight enjoyed complete flexibility in route selection. The flight route spanned the Northern and Southern Hemispheres, beginning in the United States with stops in the United Kingdom, the United Arab Emirates, Thailand, Australia and Fiji.

### **Comtech Xicom Awarded \$7.5 Million Order for SSPAs for In-Flight Connectivity Application**

August 2, 2017 - Comtech Xicom Technology, Inc., which is part of Comtech's Commercial Solutions segment, received an order for \$7.5 million for Solid-State Power Amplifiers (SSPAs) to be used in an airborne, In-Flight Connectivity application. This order will be shipped in fiscal 2018. These Gallium Nitride (GaN) SSPAs will enable high-speed satellite connectivity for both airlines and travelers around the world.

### **EM Solutions Cobra Satellite Terminals Providing Assured Communications for Australian Navy**

August 7, 2017 - Less than 6 months after the first proto-type terminal underwent initial sea trials, EM Solutions has delivered and installed its Cobra X/Ka tri-band Maritime Terminals on two recently launched Australian Navy Cape Class Vessels that are now in service. The Cobra tri-band terminal supports four connected modems, enables simultaneous communication at X and Ka Bands, provides services on both military and commercial Ka Band satellites and is in the final stages of certification for the WGS and Inmarsat GX networks. This flexibility in service provision and the unique monopulse tracking technology used by EM Solutions, which maximizes the ability of the terminal to maintain satellite lock under the most extreme conditions, is a significant step forward in meeting customer expectations of assured broadband communications at sea.

### **Comtech's Pakistan Partner, Supernet Achieved 11bits/Hz for MNO's 2G Backhaul Traffic**

August 7, 2017 - Comtech EF Data Corp., in conjunction with its' Pakistan partner, Supernet Limited, have migrated a Mobile Network Operator (MNO) customer to new High Throughput Satellite (HTS) capacity over VSAT while leveraging existing infrastructure equipment. Challenged by low Average Revenue Per User (ARPU), MNOs struggle to drive down costs while delivering effective services over VSAT. By teaming with satellite service providers and system integrators, Comtech is able to deliver solutions to address this challenge. Earlier this year, Supernet Limited and its MNO client, upon executing the migration plan, realized a marked decrease in backhaul expenses. This significantly improved the MNO's competitive position and the profitability of service delivery over satellite. These savings were made possible through a combination of migrating its services to HTS spot beam capacity, updating Comtech EF Data CDM-625 satellite modems via FAST code to enable higher order modcods and throughput, and through Supernet's exceptional customer support efforts. In the process, the MNO client realized the remarkable equivalent of 11 bits/Hz in their use of satellite capacity which translated into the OPEX savings on backhaul expenses and added room for 3G services.

### **Cobham SATCOM's EXPLORER Terminals Delivered for Land Rover Tour of Peru**

August 7, 2017 - Cobham SATCOM's sponsorship of the Land Rover Experience Tour 2017 kicked-off in July with delivery and testing of the cutting-edge EXPLORER terminals that will keep participants safe and connected during the grueling expedition, which takes place in Peru from 14th October to 9th November this year. Cobham SATCOM is a long-time supporter of Land Rover's semi-regular trek to some of the world's most remote locations. This year's tour features 16 new model Land Rover Discovery SUVs and 3 new model Range Rover Sports with a team of staff and experts from Land Rover Experience Germany and support from the global Experience Network. The team is accompanied by 42 international participants, all of whom won their places on the tour by entering a series of national competitions open to the public earlier this year.

### **Investor Group to Acquire Globecomm Systems Inc.**

August 9, 2017 - Globecomm Systems Inc, a leading service provider in designing, integrating, and operating complex communication solutions differentiated by capabilities in satellite and wireless, announced that an investor group led by HPS Investment Partners, LLC (HPS) and funds managed by Tennenbaum Capital Partners, LLC (TCP), have entered into a definitive agreement to acquire Globecomm from a New York-based private equity firm. Terms of the transaction were not disclosed. With nearly 400 employees and 200 engineers spanning 17 offices and 10 countries, Globecomm leverages unique innovations, world-class engineering, and global network connectivity to link anyone to anything, wherever in the world their customers' needs dictate, no matter how remote, hazardous or challenging. Globecomm is dedicated to improving communications and leverages its world class, global teleport and fiber network and data centers to offer end-to-end, managed service communication solutions worldwide, all supported by a 24/7 Network Operations Center. The transaction is expected to be completed in the third calendar quarter of 2017, and is subject to customary regulatory approvals.

### **Inmarsat and Addvalue Sign Agreement to Launch Inter-satellite Data Relay Service**

August 10, 2017 - Singapore's Main Board listed company, Addvalue Technologies Ltd and its subsidiaries (Addvalue), have formalized a worldwide agreement with Inmarsat plc to jointly offer the world's first commercial on-demand communications service specifically designed to address certain elements of the rapidly expanding Low Earth Orbit (LEO) satellite market. The service, termed Inter-Satellite Data Relay Service (IDRS), will

enhance and improve the operational efficiency of LEO satellite operations globally. As an example, this service could be of particular interest to operators of scientific, weather forecasting, earth observation and imaging missions. The Inmarsat and Addvalue IDRS service agreement is a follow-through of the signed Memorandum of Understanding announced by Addvalue on 2 February 2017.

### **ND SATCOM Successfully Tests Interoperability of SKYWAN 5G with LTE Systems**

August 11, 2017 - ND SATCOM announces full interoperability with General Dynamics Mission Systems Fortress<sup>®</sup> LTE solutions. Validation testing confirmed excellent interoperability between the Fortress decentralized network architecture for autonomous LTE deployable and SKYWAN satellite mesh capabilities for a resilient and bandwidth efficient distributed network of sites with full end-to-end network communications and mobility. The combined platform provides an ideal suite for transportable and fixed LTE networks that are increasingly becoming a technology of choice for military, tactical, public safety and private mobile users. The Fortress LTE solution offers autonomous, decentralized LTE sites providing temporary or permanent coverage. ND SATCOM's satellite mesh network solution with SKYWAN 5G supplements the solution, enabling direct, single-hop communication between sites. Fortress cellular LTE network products use IP as convergence layer.

### **Thuraya Poised for Government Collaborations, Post KSA Roadshows**

August 13, 2017 - Thuraya Telecommunications Company recently held meetings with senior-level officials and government system integrators in the Kingdom of Saudi Arabia (KSA) to present its latest product portfolio and explore possibilities for collaborative ventures. The roadshow that took place in July and included visits to Jeddah, Riyadh and Damam, was exclusively developed in line with increasing KSA's public sector interests. Thuraya's national service partner, Farhan Commercial Company played a pivotal role in enabling meetings with the country's commanding officers and decision makers. From formal introductions with new potential partners to sit-downs with long term clients, each meeting maintained a live demo component: Thuraya's suite of land voice and data products was on display and customers were allowed to conduct testing on the equipment of their interest. Many meetings were held with specialized solution integrators who work with the government to deliver customized applications for military and government vehicles. Thuraya also held discussions to determine the scope for developing specific M2M solutions such as seismic sensors for the KSA market.

### **SpeedCast International Ltd Awarded VSAT License in Iraq**

August 14, 2017 - Speedcast International Limited has been awarded a VSAT (Very Small Aperture Terminal) license to operate in Iraq through its locally-licensed entity, prompting the completion of a new systems integration project providing managed network services for an international oilfield services group in the country. The VSAT license is a strict new requirement as of January 2017 for service providers operating in Iraq, which was previously covered under the yearly telecommunications license required to operate communications networks in-country. Speedcast's local entity has renewed its general telecommunications license in addition to being awarded the VSAT-specific license, allowing the company to continue to support customers in the region for satellite connectivity as well as other telecommunications and technology services.

### **Intelsat Provides Satellite Services to Brazil's Mareste for Smaller Maritime Vessels in South America**

August 15, 2017 - Intelsat S.A. announced that Brazil's Mareste Equipamentos e Serviços de Telecomunicação Ltda. will use Intelsat satellite services to deliver communications solutions for maritime customers. Under a new, multi-year agreement, Mareste, a privately held company based in Rio de Janeiro, will offer Ku-band communications services delivered by the Galaxy 28 satellite for the leisure, fishing and coastal sectors in Brazil, Peru, Argentina, Chile and Uruguay. Mareste will package the satellite services with its Ello product, which includes antennas and hardware, to provide a cost-effective satellite communication system designed to serve smaller coastal and regional vessels, where physical space for onboard equipment and budgets can be scarce or limited.

### **DigitalGlobe Announces Four-Year Direct Access Contract with the Australian Department of Defence**

August 15, 2017 - DigitalGlobe, Inc. announced that it signed a Direct Access Program (DAP) contract with the Australian Department of Defence. This multi-year agreement will allow the Australian government to access DigitalGlobe's industry-leading commercial satellite imaging constellation to support defense and intelligence missions. The contract is expected to deliver \$83.0 million USD in incremental revenue to DigitalGlobe over four years, beginning in January 2018. As a DAP partner, the Australian Department of Defence will be able to directly task and download imagery in real-time to its ground station from all five DigitalGlobe satellites. The addition of Australia – a key ally of the U.S. and member of the Five Eyes intelligence alliance - expands the global footprint

of DigitalGlobe's DAP program and reflects the Australian government's commitment to increase the use of commercial satellite imagery for its critical national defense and intelligence missions.

#### **ETL Systems Supplies Equipment for New SES Gateways**

August 15, 2017 - ETL Systems, a global designer and manufacturer of RF distribution equipment for satellite communications, has provided essential equipment for ground stations and gateways to support three new SES satellites. ETL Systems supplied a large amount of the RF hardware required for the six Ka-band and nine Ku-band gateways and ground stations, which are located around the world. These include four ground stations in Australia, seven in the USA and two in Brazil. Within the fully tailored kits ETL provided to SES were custom designed switches and 10MHz splitters, specially designed to meet SES's exact requirements. The ground stations also feature ETL's L-band and SHF switches, distribution switches and Enigma switch matrix router systems. Enigma offers complete resilience with single points of failure from hot-swap single input and output cards, dual redundant hot-swap power supplies and CPU modules.

#### **BS Broadcast Establishes Business in Middle East to Cater to Region's Market for Used Broadcast and Satellite Equipment**

August 15, 2017 - Backed by Broadcast Systems Arabia, one of the region's leading broadcast system integration companies, BS Broadcast has established itself as the first company in the Middle East to deal in the buying and selling of quality-tested used broadcast and satellite equipment. Strategically based in the UAE, to facilitate easy shipment across the globe, the company is keen to engage with TV and radio stations, earth stations, satellite uplink providers, OB/SNG service providers, production houses, media training centers, government and educational institutions that lack the budgets to buy expensive cutting-edge solutions but still require reliable high-grade production, broadcast and satellite equipment. The company has worked to establish an inventory of over 650 products from 69 market leading manufacturers including Advent, Comtech Xicom Technology, Communication & Power Industries (CPI), Ericsson, Harmonic Inc, Norsat and many more. This stock includes an extensive range of HD/SD equipment such as video converters and servers, satellite antennas and terminals, modulators, frequency converters, multiplexers, HPA, SPG, waveform monitors, upconverters, routers and switchers.

#### **Speedcast Awarded Fully-Managed Communications Contract for Fred. Olsen Cruise Lines**

August 16, 2017 - Speedcast International Limited has been selected by UK-based Fred. Olsen Cruise Lines to provide end-to-end communication services for voice and data on board its fleet of four cruise ships. Speedcast will leverage satellite Very Small Aperture Terminals (VSAT) and land-based 4G/LTE connectivity to deliver communications for Fred. Olsen guests and crew on board its fleet of four cruise ships Balmoral, Braemar, Boudicca and Black Watch - wherever they are in the world. The integration of both satellite and land-based infrastructure allows Fred. Olsen to optimize the use of its ships' networks. The Speedcast multi-band managed communications platform will be installed on each of Fred. Olsen's ships, monitoring for and adopting the 'best fit' satellite, wireless or terrestrial network. Speedcast's Intelligent Communications Director technology will provide seamless, automatic switching between the different networks and technologies to ensure robust connectivity at all times. Utilizing Speedcast's global satellite capacity infrastructure, the network will also provide reliable connectivity between Fred. Olsen's offices and its fleet, sailing all over the globe.

#### **Kratos' satID<sup>®</sup> Offers Industry's Only TDMA Network Geolocation Capability to Combat VSAT Interference**

August 23, 2017 - Kratos Defense & Security Solutions, Inc., a leading National Security Solutions provider, announced that its market leading satID<sup>®</sup> satellite interference geolocation product offers the industry's only TDMA network geolocation capability to combat VSAT interference. The satID<sup>®</sup> product is recognized as the industry's most accurate geolocation product, routinely locating satellite interference well within 5 km of the source. The TDMA geolocation module enables satID to classify the signals from a TDMA network and provide geolocation results per terminal using advanced classification, filtering and processing. The TDMA option takes advantage of award-winning SatGuard technology that identifies VSAT terminals by their ID to generate significantly more geolocation results.

#### **SKY Perfect JSAT Selects Kratos for Expanded Geolocation System**

August 24, 2017 - Kratos Defense & Security Solutions, Inc. announced that SKY Perfect JSAT (SJC) selected its satellite interference geolocation solution. SJC becomes the first satellite operator to take advantage of satID's most recent TDMA network geolocation capability to combat VSAT interference and assure the highest quality of service for customers. SJC, Asia's largest satellite operator, purchased satID in part because of its highly scalable

architecture and powerful interference mitigation capabilities. The system enables the cost-effective expansion of SJC's geolocation capability to multiple sites using the existing operational antennas at C and Ku band.

### **SpeedCast Provides High Capacity and Distribution Services to Iquitos**

August 24, 2017 - Speedcast International Limited will be providing 500 Mbps of connectivity via satellite into Iquitos, Peru. This multi-year, multi-million dollar project has significant additional bandwidth growth potential given the demands in the region. Speedcast will deliver network services to cellular operators and enterprise customers in areas of Peru where high performance internet is badly needed, enabling a host of latency-sensitive and bandwidth-hungry applications, as well as opening the door to new economic development. Speedcast will provide fiber-like connectivity and a high customer experience which will be supported by Speedcast's 24x7x365 global customer service centers, and local field engineering resources in the region to provide fast, reliable support at all times. The Iquitos project is significant as it brings connectivity to the region while protecting the environment and natural resources. Other communication technologies, such as fiber, would have been more expensive to implement, taken more time and would have had a negative impact on the local rainforest.

### **Globecomm Communications and Media Systems Go Live onboard Global Seatrade Newbuild MV Baltic**

August 24, 2017 - Globecomm, one of the leading providers of maritime connectivity services, has installed a complete communications solution on MV Baltic, the latest newbuild to join the Global Seatrade fleet. To meet demanding connectivity needs, Globecomm delivered its global Ku-band VSAT solution with VoIP services, an Iridium Pilot L-Band system and KNS S8 to enable flat fee internet access and live TV services onboard the new heavy cargo roll-on/roll-off vessel ship. Globecomm VSAT is a state-of-the-art global network based on the iDirect Evolution IP-based platform technology. Providing a broad range of narrowband and high-throughput applications over a robust and scalable network, it supports automatic beam switching, as well as access to new HTS services, providing Ku, Ka, and C-Band services on a single platform.

### **ViaSat Successfully Live Streamed Solar Data for NASA during the August 21 Solar Eclipse**

August 24, 2017 - Building on its relationship with NASA, ViaSat Inc. announced it supplied NASA and its partners, with high-quality airborne satellite broadband communications (satcom) for research purposes during the August 21 Great American solar eclipse. Using its satellite broadband network coupled with its airborne satcom terminals mounted onto two of NASA's WB-57 high altitude research aircraft, ViaSat enabled a successful HD video live stream of unique high-resolution images of the Sun's corona, its outer atmosphere, during totality of Monday's total solar eclipse, and provided two-way communication between the planes and controllers on the ground. This link was critical in helping the team complete this historic mission, and the live stream was included in NASA's nationwide broadcast of the total eclipse. The ViaSat data link was also instrumental in acquiring rare infrared observations of Mercury that will be used to attempt the first-ever "thermal images" of its night-side surface, which was visible to these high altitude aircraft during the eclipse window.

### **Speedcast and Danaos Partner to Accelerate Digitalization of Maritime Industry**

August 28, 2017 - Speedcast International Limited and Danaos Peripherals announced a strategic alliance agreement under which the two companies will combine maritime communications with advanced application management developed by Danaos. Within 2017 the two companies will jointly release a remote and autonomous IT system on board a vessel, leveraging key technologies such as Big Data analytics, (IoT) Internet of Things, and cyber security. The system will enable the remote deployment of 3rd party services and applications, allowing for the swift and simple implementation of new capabilities to a ship. Danaos Peripherals is the leading software provider to the commercial maritime industry offering the most complete system to the shipping community currently supporting more than 6000 vessels and 500 shipping companies worldwide.

### **EM Solutions to Supply Cobra Terminals for New Australian Navy Program**

August 28, 2017 - EM Solutions has recently been contracted by Raytheon Australia to supply its Cobra X/Ka triband Maritime Terminals and associated network infrastructure to the Royal Australian Navy as part of the SEA1654 program that will deliver two new supply vessels. This order follows the successful deployment of the same Cobra platform on both Navy and Border Force Cape Class Vessels, and further enhances EM Solutions as an Australian SME delivering leading edge capability to the Australian Defence Force. The project is being fulfilled from EM Solutions facility in Brisbane.

### **ViaSat Ramps up Melbourne Base to Support Next-Generation Asia-Pac Satellite**

August 28, 2017 - US satellite company ViaSat is ready to ramp up its resources in Melbourne to cater for recent Australian growth as well as to support the future launch of its ViaSat-3 constellation in Asia Pacific. Its new Asia

Pacific headquarters was officially opened by Victorian minister for small business, innovation and trade Philip Dalidakis at an event with existing ViaSat customers NBN and Qantas. ViaSat-3 is a constellation of three satellites, with each expected to have a capacity of 1 terabit per second. The satellites will be launched from 2019, with one satellite expected to provide coverage over Asia Pacific and Australia. Australia is already ViaSat's largest market in Asia Pacific. It continues to work with NBN following its contract to build the ground infrastructure for the Sky Muster satellite service, while it is currently providing satellite services and equipment to Qantas for its soon-to-launch inflight internet service. And more recently it has won a major contract with the Department of Defence for a ground station at Kapooka, NSW in conjunction with Northrop Grumman.

#### **DigitalGlobe Delivers WorldView-4 High-Resolution Satellite Imagery to PSMA Australia**

August 29, 2017 - DigitalGlobe, Inc. has delivered high-accuracy, high-resolution imagery from its WorldView-4 satellite to PSMA Australia to further build out Geoscape<sup>®</sup>, a digital representation of the Australian continent's built environment. PSMA Australia offers national geospatial datasets derived from authoritative sources to support a range of public and private business solutions and is among the first commercial customers to leverage WorldView-4 imagery. PSMA Australia is using DigitalGlobe's unrivaled satellite imagery to create valuable location and built environment information for an estimated 20 million buildings across Australia, including features such as building footprints and heights, rooftop materials, solar panels, and swimming pools.

#### **Inmarsat and USAID Partner for Legal, Traceable and Sustainable Fishing**

August 29, 2017 - The United States Agency for International Development's Oceans and Fisheries Partnership (USAID Oceans) and Inmarsat Global Limited (Inmarsat) have announced a new partnership to help commercial fishing crews promote sustainable fishing in Southeast Asia. By making use of enhanced communication technology, the partnership will advance catch documentation and traceability (CDT) to promote legal, reported and regulated fishing. USAID Regional Development Mission for Asia's Regional Environment Office Director, Angela Hogg, and Chief Sales Officer for Inmarsat Maritime, Gerbrand Schalkwijk attended a signing ceremony for the partnership. Through this partnership, USAID Oceans will leverage Inmarsat's expertise to improve communications for fishing vessels in the region. Crew members on medium and large vessels will integrate existing monitoring systems and CDT data with Inmarsat's Fleet One and IsatData Pro technology, a global two-way messaging service for tracking and monitoring ports and vessels. USAID Oceans will pilot this technology in Bitung, Indonesia, and Songkhla, Thailand, where the project has undertaken CDT system development and testing. Successful pilot tests demonstrating effective communications between vessels and ports will enable further CDT system development in the region.

#### **Comtech Awarded \$8.6 Million Contract Modification from U.S. Army**

August 29, 2017 - Comtech Telecommunications Corp. announced that during its fourth quarter of fiscal 2017, its Maryland-based Command & Control Technologies group, which is part of Comtech's Government Solutions segment, has received a contract modification valued at \$8.6 million from the U.S. Army Program Executive Office (PEO) Command, Control, Communications-Tactical (C3T). The modification increases the total amount funded on this delivery order from \$82.1 million to \$90.7 million and extends the period of performance through July 2018. The funding will provide enhanced communications infrastructure for U.S. forces in the Central Command (CENTCOM) Area of Responsibility (AOR).

#### **Optus Satellite Extends Contract with Seven Network**

August 30, 2017 - Optus Satellite has extended its services contract with Seven Network (Operations) Limited for transponder capacity on the Optus D1 satellite. The financial terms of the contract re-sign are confidential, however the term will extend to 2021 and capacity requirements expanded from 18MHz to 27MHz. Optus Satellite has provided satellite broadcast support to Seven Network since 1986. Optus supports Seven with the ability to flexibly move television content between sites, deliver outside broadcast services and network resilience and continuity in the event of a terrestrial failure.

#### **KT SAT Enters Japanese Maritime VSAT Market - Signed Partnership Agreement with Hun's Corporation**

August 30, 2017 - KT SAT announced that it has signed a partnership agreement with Hun's Corporation, a Japanese ship network supplier, for distribution of MVSAT (Maritime VSAT, unlimited maritime satellite Internet with high speed) in Japanese market. KT SAT now enters Japanese maritime VSAT market and provides MVSAT, which enables seamless global communication for vessels owned by Japanese shipping companies, starting in September. Hun's Corporation is specialized in supply and maintenance of ship network, and Hun's provides its service to more than 900 vessels from 53 companies in Japan. Through this agreement, Hun's will be the official sales agent of KT SAT in Japan and will be in charge of MVSAT service distribution. KT SAT provides MVSAT

service and technical support to Hun's contract customers. KT SAT plans to successfully penetrate Japanese market with more reasonable service rates and superior quality control compared to other companies. KT sat aims to earn USD 27 million with 300 vessels on MVSAT service in the Japanese market until 2021.

### **Taking the Tour de Timor to the World via Kacific's Satellite Connections**

August 31, 2017 - Mountain bike enthusiasts around the globe will be able to follow every stage of Asia's most famous mountain bike race, the 2017 Tour de Timor. This is the result of a broadband services agreement signed between Tour organizers, Noble Timor, and Kacific Broadband Satellites Group (Kacific), the exclusive internet partner of the Tour de Timor and sponsor of a team in the 2017 event. Using its interim satellite service, Kacific will provide terminals and internet connectivity to the organizers and participants in the Tour de Timor for the duration of the event. These will be used extensively in the race camps of Aileu and Maliana to support race management, website updates and communications, and uploads by media organizations that follow the Tour. In addition, a mobile unit will provide internet coverage along the daily stages allowing enhanced communications for medical support and media coverage in some of the most remote areas of Timor-Leste.

## **BROADCASTING**

### **Gilat Propels the Russian DTH Market into Broadband Services**

August 2, 2017 - Gilat Satellite Networks Ltd. announces that NTV-Plus has selected the broadband service developed by Eutelsat Networks and powered by Gilat's high-performance VSATs to offer high-speed Internet to DTH subscribers across the European part of the Russian Federation. Gilat's satellite solution provides affordable high-quality broadband, leveraging multi-beam high throughput capacity on the Express AMU1/EUTELSAT 36C satellite, whose wide-beam capacity is already used by NTV-Plus for TV broadcasting. The service is based on Gilat's leading broadband VSATs, Gemini (for enterprise) and the innovative Scorpio (for consumers), VSAT-in-a-Box outdoor terminal, both supporting self-install and automatic service activation. DTH providers in Russia, looking to bring internet service to their subscribers, are embracing the fast growing broadband over satellite market. NTV-Plus has joined this flourishing market, offering Gilat's high-performance VSATs for internet service to their installed base. The Service is intended for both private consumers and corporate customers in unserved and underserved locations.

### **MX1 to Distribute Bavarian Local TV in HD on Astra**

August 4, 2017 - MX1, the technical services subsidiary of Astra satellite operator SES, will distribute all 16 Bavarian local TV channels in HD quality on Astra (19.2° East) from October 1, 2017. The company will provide the capacity on two Astra transponders and also handle signal contribution and uplink of the HD signals. MX1 has won the commission in a tender by Bayerische Medien Technik GmbH. In parallel to the HD transmission, the channels will continue to be offered in SD resolution on Astra until the end of March 2018. Media Broadcast Satellite is handling the distribution.

### **DVB Steering Board Approves New Subtitling Specification**

August 14, 2017 - At the most recent meeting of the DVB Steering Board, the new specification for DVB TTML subtitling systems was approved. The specification enables the delivery of next generation subtitles in transport streams for broadcast television services, based on W3C Timed Text Markup Language (TTML). The new specification complements the bitmap based subtitle solutions, which have been in use for over 20 years. TTML subtitles are increasingly being adopted, including by standards bodies ARIB, ATSC, EBU, SMPTE, ISO/MPEG in the Common Media Application Format specification and many others including platform specifications such as HbbTV. TTML subtitles were initially chosen by DVB for internet delivery of services using the DVB profile of MPEG DASH (TS103 285). TTML subtitles provide a data rate efficient solution for SD, HD and even UHD resolutions. This new TTML delivery specification will allow service providers to transition over time to a common TTML subtitle format for both broadcast and internet delivered services.

### **AsiaSat and Eurovision Media Services to Deliver Taipei 2017 Universiade on AsiaSat 5**

August 15, 2017 - Eurovision Media Services, in collaboration with its long-term satellite partner, Asia Satellite Telecommunications Company Limited (AsiaSat), will use AsiaSat 5 to deliver the Taipei 2017 Universiade across the Asia Pacific. The 29th Summer Universiade is an international sporting and cultural event staged biennially, with Taipei as this year's host city from 19th to 30th of August. The Universiade will include 21 competitive sports as well as one demonstration sport throughout 12 days of competitions, attended by talented youth athletes from

around the world. Since 1999 Eurovision Media Services and AsiaSat have enjoyed a successful partnership that delivers top quality sports content to broadcasters and TV networks in 4K and HD. This new delivery on AsiaSat 5, Asia's most popular OU service platform, sees the strong relationship continuing into the future with other major events to come. AsiaSat 5 currently provides access to more than 800 million households via terrestrial networks and pay TV platforms in the Asia Pacific.

#### **AsiaSat and Encompass Partner to Deliver 29th SEA Games via AsiaSat 5**

August 18, 2017 - Asia Satellite Telecommunications Company Limited (AsiaSat) and Encompass Digital Media (Asia) Pte. Ltd. (Encompass) have partnered to provide Telekom Malaysia Berhad (TM) with C-band capacity on the AsiaSat 5 satellite to deliver live coverage of the 29th Southeast Asian (SEA) Games to viewers across Asia-Pacific. The biennial sporting event invites teams from 11 nations in Southeast Asia to compete in multi-sport games, held in Kuala Lumpur, Malaysia, from 19th to 30th August. AsiaSat 5 will be an integral part of the satellite and fiber networks for the delivery of the event. The events and games will be transmitted from all venues to the International Broadcasting Centre (IBC). From there, the feeds will be delivered to broadcasters across the satellite's extensive footprint, spanning from Russia to New Zealand and from Japan to the Middle East and parts of Africa. Encompass will support TM with the satellite capacity and distribution, enabling the largest number of viewers across the Asia-Pacific to enjoy coverage of the opening ceremony, 405 events and 38 games until the closing on 30th August.

#### **TV Clube Moves High Definition Channel to Intelsat's New Latin America HD Video Neighborhood**

August 22, 2017 - Intelsat S.A. announced Brazilian regional television broadcaster TV Clube as the latest television programmer to move their high definition (HD) channel distribution to Intelsat 14, a new HD video neighborhood expanding Intelsat's leading distribution presence in the region. Under a new, multi-year agreement, TV Clube, a Rede Record TV affiliate, will use services on Intelsat 14 to expand its high definition presence in the region, including distribution to its UHF retransmission sites. Located at 315° East, Intelsat 14 is the newest HD cable distribution neighborhood delivering premier, pan-regional programming in Latin America. Intelsat 14 expands Intelsat's media distribution leadership in the region, joining Intelsat 11, Intelsat 21 and Intelsat 34 – content owners' top picks for distributing top tier sports, entertainment, news and education programming for more than 93 million viewers. Intelsat currently delivers 77 of the 100 most watched channels in the region, with nearly 150 channels distributed in HD.

#### **Harmonic Powers New Broadcast Center for SKY Brasil**

August 23, 2017 - Harmonic announced that DTH satellite operator SKY Brasil has deployed a Harmonic software-based video processing solution to deliver linear HD and SD channels in its new broadcast center. Through world-class video encoding technology, Harmonic's Electra™ X2 solution delivers crystal-clear video quality to SKY Brasil subscribers at the lowest possible bitrates. Digital TV Research predicts that satellite TV revenues in Latin America will continue to grow in the coming years. Harmonic's solution enables SKY Brasil to be a major stakeholder in the market and capitalize on revenue opportunities by differentiating itself through better video quality. Harmonic's scalable headend solution supports encoding in SD and HD formats and MPEG-2, MPEG-4 AVC and HEVC video codecs as well as statistical multiplexing for the ultimate flexibility, operational efficiency and pristine video delivery over satellite networks. Built with rock-solid reliability in mind, Harmonic's solution ensures that system downtime is not an issue for SKY Brasil.

#### **Intelsat and Dejero Partner on a New Solution to Deliver Reliable Video Transmissions Solution**

August 23, 2017 - Dejero, an innovator in cloud-managed solutions that provide IP video transport and Internet connectivity while mobile or in remote locations, has announced a partnership with Intelsat. The collaboration provides broadcasters with a new blended cellular and Ku-band IP solution for live television coverage from remote locations. Dejero CellSat leverages Dejero's patented network blending technology to combine cellular connectivity from multiple mobile network carriers with Ku-band IP connectivity provided by Intelsat. This gives CellSat users the required bandwidth and greater confidence to go live from virtually anywhere. If the bandwidth available from cellular connections dips due to network congestion or other factors, CellSat automatically blends in Ku-band IP satellite connectivity to boost bandwidth to the requested level for the live shot.

#### **MEDIA BROADCAST Chooses Nevion for Major German TV Distribution Network Refresh**

August 23, 2017 - Nevion, award-winning provider of virtualized media production solutions, has provided a range of its products to MEDIA BROADCAST, Germany's largest service provider for the broadcast and media industry, for its new broadcast distribution network, ARD-Disnet. This is designed to handle DVB-T, DVB-T2 HD, FM, DAB+ as well as generic data transport. MEDIA BROADCAST was commissioned by German public

broadcasters Hessischer Rundfunk (hr), Mitteldeutscher Rundfunk (mdr), Norddeutscher Rundfunk (NDR), Radio Bremen (rb), Südwestrundfunk (SWR) and Westdeutscher Rundfunk (WDR) to build and run this new distribution network. One of the major drivers for this new network was the need to handle the increased bandwidth and availability requirements that resulted from the conversion of signals to DVB-T2 HD.

#### **Globecast Provides 4K Feeds for the 29th Summer Universiade Taipei 2017 via AsiaSat 5**

August 25, 2017 - Globecast has been chosen to broadcast the Opening and Closing ceremonies of the 29th Summer Universiade Taipei 2017, being held in Taipei, Taiwan. The signals, being broadcast in 4K UHD HEVC format, are available in Asia via AsiaSat 5, Europe via Eutelsat, and North & South America via Intelsat 34. With this transmission, Globecast's expertise in UHD transmission has been extended to the Asia region with new UHD-capable SNG, a UHD-trained crew and UHDready MCR at Singapore. The 29th Summer Universiade, running from the 19th to 30th of August, is an international sporting and cultural event staged biennially. The Universiade includes 21 competitive sports as well as one demonstration sport throughout 12 days of competition, attended by talented youth athletes from around the world.

## LAUNCH / SPACE

#### **Lockheed Martin Invests \$350 Million in State-of-the-Art Satellite Production Facility**

August 2, 2017 - Preliminary construction is underway on a new, \$350 million Lockheed Martin facility that will produce next-generation satellites. The new facility, located on the company's Waterton Canyon campus near Denver, is the latest step in an ongoing transformation, infused with innovation to provide future missions at reduced cost and cycle time. Lockheed Martin's new satellite integration facility will make its Waterton Canyon campus one of the largest space technology centers in the country, with 3.5 million square feet of research, engineering, test and office space. The new Gateway Center, slated for completion in 2020, includes a state-of-the-art high bay clean room capable of simultaneously building a spectrum of satellites from micro to macro. The facility's paperless, digitally-enabled production environment incorporates rapidly-reconfigurable production lines and advanced test capability. It includes an expansive thermal vacuum chamber to simulate the harsh environment of space, an anechoic chamber for highly perceptive testing of sensors and communications systems, and an advanced test operations and analysis center. The Gateway Center will be certified to security standards required to support vital national security missions.

#### **Vega Orbits Two Earth Observation Satellites – OPTSAT-3000 and Venüs for Italy, Israel and France**

August 2, 2017 - Arianespace has successfully launched two Earth observation satellites for civil and military applications: OPTSAT-3000 for the Italian Ministry of Defence; and Venüs, a mission of the Israel Space Agency (ISA) – a government body sponsored by the country's Ministry of Science & Technology – and the French CNES space agency (Centre National d'Etudes Spatiales). The launch took place on Tuesday, August 1, 2017 at 10:58:33 pm (local time in Kourou) from the Guiana Space Center (CSG), Europe's Spaceport in French Guiana. This was Arianespace's eighth mission of the year and the second using Vega in 2017. It marked the 10th successful Vega launch in a row since this light-lift vehicle started its career at the Guiana Space Center in 2012.

#### **JAXA Clear-Air Turbulence Detection System to be on Boeing ecoDemonstrator 2018**

August 2, 2017 - Japan Aerospace Exploration Agency (JAXA) is to work with the Boeing Company to flight test its onboard clear-air turbulence detection system with ecoDemonstrator program 2018. The system to be flight tested on ecoDemonstrator 2018 is originally developed through JAXA SafeAvio project\* that aimed at establishing safety avionics technology to halve aircraft accidents caused by clear-air turbulence. JAXA had successfully developed the onboard system that weights only 83.7 kilogram, which is equivalent to one passenger with one baggage, but boosts the world's longest range of 17.5 kilometer in detecting clear-air turbulence ahead of the aircraft. A 17.5 kilometer means roughly 70 seconds for cruising aircraft, during which pilots can turn on the seatbelt sign to make advanced warning for passengers and crews to prepare for hazardous shaking. By enabling the detection of clear-air turbulence during flight, JAXA's onboard clear-air turbulence detection system could reduce by 60 percent of injuries and damages caused by turbulence. This innovative solution is highly regarded and selected as one of technologies to be tested on the ecoDemonstrator program 2018.

#### **CGWIC Signs Launch Services Contract to Launch Cubesat**

August 4, 2017 - China Great Wall Industry Corporation (CGWIC) signed a launch services contract to launch a CubeSat to its orbit. According to the contract, the CubeSat will be launched as a piggyback payload by the Long March 11 launch vehicle from Jiuquan Satellite Launch Center by the end of 2017. CGWIC is a wholly-owned

subsidiary of China Aerospace Science & Technology Corporation (CASC) and the sole commercial agency authorized by the Chinese government to operate commercial launches, provide satellites in-orbit delivery services and develop international space cooperation as well as technology cooperation. As of today, CGWIC has conducted 56 commercial launches, including 13 piggyback launches for more than 20 countries and regions.

### **SSL and NASA Complete PDR for Trailblazing Restore-L On-orbit Robotic Servicing Spacecraft**

August 8, 2017 - Space Systems Loral (SSL) announced that it successfully completed the Preliminary Design Review (PDR) for NASA's Restore-L mission to provide satellite servicing in Low Earth Orbit (LEO). With the completion of the PDR, Restore-L is proceeding on schedule to the next phase of development and its launch in 2020. SSL is working with NASA Goddard Space Flight Center's Satellite Servicing Projects Division (SSPD), to build a spacecraft that will change the nature of how infrastructure in space is managed by, for the first time in history, refueling a satellite in orbit that was not designed for servicing. Restore-L will use robotics and an advanced suite of technologies to grasp and refuel an existing U.S. government satellite already in LEO with the goal of extending the operational lifetime of space assets, as well as to demonstrate the tools, technologies, and techniques that will help enable future space exploration missions and a new U.S. satellite servicing industry. The design review took place over a three-day period at SSL's facilities and demonstrated that the Restore-L design meets system requirements. Due to the success of the PDR, Restore-L will now proceed to the detailed design phase. The SSL-built spacecraft will provide the structural support, propulsion, attitude control, data and communications interface, and power to support the Restore-L robotic payload for the trailblazing on-orbit demonstration.

### **SSTL and In-Space Announce 'Faraday,' an Ultra-Low Cost Ride to Low Earth Orbit Opportunity**

August 8, 2017 - Surrey Satellite Technology Ltd (SSTL) and In-Space Missions Limited (In-Space) have today revealed an opportunity for an ultra-low cost ride to Low Earth Orbit (LEO). The in-orbit demonstration Faraday missions, named in honour of Michael Faraday, one of Britain's greatest experimentalists and scientific communicators, will offer ultra-low cost prices for a ride to LEO starting at \$12,000. The Faraday satellite platforms will be designed and manufactured by SSTL making use of their world leading robust space design approach, with In-Space managing the payload interface and providing customers with expert support for design, test and service exploitation. Sized from 12U to 150kg, the Faraday missions have been designed to support a range of payload interfaces, including a simple USB interface, offering customers a streamlined test and integration campaign. The inaugural mission will provide a six to twelve month qualification and demonstration phase for on-board payloads, followed by a 5 year early service exploitation phase for at least one payload.

### **Orbital ATK Updates Progress on NASA's Landsat 9 Satellite**

August 8, 2017 - Orbital ATK is making excellent progress on the NASA/U.S. Geological Survey Landsat 9 spacecraft less than a year after winning the contract award in October 2016. Landsat 9, an advanced land surface mapping satellite, will collect space-based images and data that serve as valuable resources for researchers in areas that include agriculture, land use mapping, emergency response and disaster relief. Orbital ATK is designing and manufacturing the satellite, integrating two government-furnished instruments, and supporting launch, early orbit operations and on-orbit check-out of the observatory. Representatives from NASA and Orbital ATK recently completed a successful Preliminary Design Review which demonstrated that the spacecraft meets all system and schedule requirements. The Landsat 9 spacecraft will be manufactured and tested at the company's Gilbert, Arizona, facility and is currently planned for launch in late 2020. The spacecraft will be operated by the U.S. Geological Survey once in orbit. Landsat 9 will extend the length of the overall Landsat program to half a century, providing the longest continuous record of the Earth's surface as seen from space. Orbital ATK has built three other Landsat satellites, including Landsat 8, which was launched in 2013, and is providing high quality images in quantities that surpass mission requirements. The company was also responsible for the successful Landsat 4 and Landsat 5 satellites launched in 1982 and 1984.

### **Harris Corporation Delivers Navigation Payload for Third Lockheed Martin GPS III Satellite**

August 9, 2017 - Harris Corporation has delivered the third of 10 advanced navigation payloads to Lockheed Martin which will increase accuracy, signal power and jamming resistance for U.S. Air Force GPS III satellites. The advanced navigation payloads feature a Mission Data Unit (MDU) with a unique 70-percent digital design that links atomic clocks, radiation-hardened computers and powerful transmitters – enabling signals three times more accurate than those on current GPS satellites. The new payloads also boost satellite signal power, increase jamming resistance by eight times and help extend the satellite's lifespan. The payload is expected to be integrated into GPS III Space Vehicle 3 (GPS III SV03) this summer. In May, Harris' second GPS III navigation

payload was integrated into GPS III SV02. The first navigation payload is integrated aboard GPS III SV01, which has now completed rigorous testing and is in storage awaiting its expected 2018 launch.

### **Astro Aerospace Completes Preliminary Design Review for Inmarsat 6's L-band Reflectors**

August 9, 2017 - Astro Aerospace, a Northrop Grumman Corporation business, completed a successful Preliminary Design Review (PDR) of the nine meter L-band reflectors for two Airbus Inmarsat-6 series satellites. The success of the PDR is a significant milestone for the Inmarsat-6 program. With the preliminary design of the L-band reflectors now set, Astro Aerospace will continue maturing the design in preparation for the Critical Design Review (CDR) later this year.

### **GOS Launches First LEO Communication CubeSat in the End of 2017**

August 9, 2017 - Berlin-based German Orbital Systems GmbH (GOS) works on the development of small satellites' constellation for the D-Star communication on LEO orbit, the constellation will consist of 3U CubeSats. This project is implemented in partnership with iSky Technology s.r.o. (Prague, Czech Republic). The first satellite called «D-Star One» is designed for technology demonstration with two D-Star communication modules onboard. These modules will be fully dedicated to the amateur radio community. Subsequent satellites will have enhanced capabilities and address larger potential customer groups. D-Star One will become the first private German satellite, i.e. designed and built on own company funds. German Orbital Systems is developing the satellite's concept, its subsystems, and software. iSky is carrying out mission analysis, environmental analysis and planning a launch program with the launch providers. The result of this long-term evolutionary design approach will be the most capable communication CubeSats ever built.

### **SSL to Provide Transformational Ultra High Density Satellite for Hughes Network Systems**

August 10, 2017 - MacDonald, Dettwiler and Associates Ltd. (MDA), a global communications and information company, today announced that its subsidiary, Space Systems Loral (SSL) has signed a contract to provide JUPITER™ 3 a transformational Ultra High Density Satellite (UHDS) to Hughes Network Systems, LLC (HUGHES) to be designated EchoStar XXIV. The technologies included in this satellite will provide more concentrated capacity over high-use areas than any other satellite and will power future generations of Hughes consumer, enterprise and aeronautical services across the Americas.

### **Lockheed Martin Successfully Integrates First Modernized A2100 Satellite**

August 10, 2017 - A team of engineers and technicians at Lockheed Martin has completed the integration of the company's first modernized A2100 satellite. The spacecraft, known as Hellas-Sat-4/SaudiGeoSat-1, now moves into final assembly and testing, on track for launch in the second quarter of 2018. In a clean room near Denver, Lockheed Martin's first modernized A2100 satellite has undergone the important integration process of three major subsystems. Built for Arabsat and King Abdulaziz City for Science and Technology, Saudi Arabia, the satellite will provide advanced telecommunications capabilities, including television, internet, telephone and secure mode communications, to customers in the Middle East, Africa and Europe. This milestone on a modernized A2100 satellite sees the hybrid propulsion integrated with the payload module and transponder panels. Using a combination of electrical Hall current thrusters and liquid apogee engine, the propulsion subsystem serves as the structural backbone of the satellite and is essential for maneuvering it into its final orbit as well as keeping it on station throughout its mission. The modernized A2100 builds on a flight-proven bus that is the foundation for more than 40 satellites in orbit today. Through an internally-funded, multi-year modernization effort, Lockheed Martin has enhanced the spacecraft's power, propulsion and electronics, while also adopting the latest advanced engineering and manufacturing techniques to decrease production costs and timelines. There are five modernized A2100 satellites currently under contract to Lockheed Martin.

### **Airbus Completes MetOp-C Platform/Payload Coupling**

August 10, 2017 - The payload module of MetOp-C, developed and built by Airbus in Germany, was delivered to Toulouse after it completed a series of tests at ESTEC, the technical centre of the European Space Agency (ESA) in Noordwijk, the Netherlands. The satellite, weighing in at four tonnes, is now almost complete after successful coupling of its payload and service module. In preparation for the launch scheduled for October 2018 from Kourou, French Guiana, MetOp-C will undergo a further series of radio-electric tests in the coming weeks. The solar panel, which is the last outstanding major component, will be integrated in November 2017 just before vibration testing. The MetOp satellites have been developed by Airbus for ESA and EUMETSAT, the European Organisation for the Exploitation of Meteorological Satellites, and are part of a joint European-US cooperation.

### **ISS-Reshetnev to Build Three Gonets-M Satellites**

August 10, 2017 - Information Satellite Systems - Reshetnev Company has kicked off production of three Gonets-M satellites under a new contract. Small personal communications satellites Gonets-M 33, 34, 35 will be built for the ROSCOSMOS State Corporation. The new satellites are intended to augment the orbital constellation of the multifunctional personal satellite communications system Gonets-D1M. Gonets-M satellites are launched in batches of three into the low Earth orbit some 1500 kilometers above the surface. The projected active lifespan of this type of satellites is 5 years. Gonets-M satellites collect messages, register them in the onboard memory, store and then forward to the addressee. Satellites are also capable of providing telephony and fax communications in case the sender and the addressee are both within the same satellite's footprint. The orbital constellation of the multifunctional personal satellite communications system Gonets-D1M embodies 12 Gonets-M satellites and it was fully completed in the beginning of 2015. With a view of prompt replenishment if needed, ISS-Reshetnev Company has already built three Gonets-M satellites which are now stored at the company's facilities. Six more Gonets-M satellites are currently in production.

### **China's Satellite Sends Unbreakable Cipher from Space**

August 10, 2017 - Chinese scientists have realized quantum key distribution from a satellite to the ground, laying the foundation for building a hack-proof global quantum communication network. The achievement based on experiments conducted with the world's first quantum satellite, Quantum Experiments at Space Scale (QUESS), was published in the authoritative academic journal Nature on Thursday. The Nature reviewers commented that the experiment was an impressive achievement, and constituted a milestone in the field. Pan Jianwei, lead scientist of QUESS and an academician of the Chinese Academy of Sciences (CAS), said the satellite sent quantum keys to ground stations in Xinglong, in north China's Hebei Province, and Nanshan near Urumqi, capital of northwest China's Xinjiang Uygur Autonomous Region. Communication distance between the satellite and the ground stations varied from 645 km to 1,200 km, and the quantum key transmission rate from satellite to ground is up to 20 orders of magnitude more efficient than that expected using an optical fiber of the same length, said Pan. When the satellite flies over China, it provides an experiment window of about 10 minutes. During that time, 300 kbit secure keys can be generated and sent by the satellite, according to Pan.

### **DLR Orders Nanosat Platform from GomSpace**

August 10, 2017 - GomSpace ApS (GomSpace), a subsidiary of GomSpace Group AB, has closed an order for delivery of a nano-satellite platform for the German Aerospace Center's ("DLR") demonstration of the OSIRIS optical demonstration payload. In the framework of the OSIRIS program, DLR develops highly compact optical communication payloads for small LEO spacecrafts together with their cooperation partner Tesat-Spacecom GmbH & Co KG. The total order value amounts to approximately 500,000 EUR. Delivery will take place in 2018.

### **Virgin Orbit to Launch SITAEL Satellite in ESA-ASI Program**

August 11, 2017 - Virgin Orbit was selected to launch a SITAEL satellite developed in collaboration with the European Space Agency (ESA) and the Italian Space Agency (ASI). With Virgin Orbit's LauncherOne, SITAEL will launch its  $\mu$ HETSat, a technical demonstration of a new electric propulsion system for ESA and ASI. Established in 1994 and headquartered in Mola di Bari, Italy, SITAEL is the largest privately-owned space company in Italy and provides Small Satellites based turn-key solutions, from mission concept to satellite in-Orbit commissioning. Virgin Orbit's LauncherOne is a simple, expendable, launch vehicle designed to place small satellites of up to 500 kg / 1100 lbm into a wide range of Low Earth Orbits (LEO) at an affordable price. Rather than launching from ground level, LauncherOne is carried to an altitude of approximately 35,000 feet by the 747-400 carrier aircraft Cosmic Girl.

### **GLAVKOSMOS Continues to Develop the Russia-China Space Cooperation**

August 11, 2017 - On August 8-10, 2017, Glavkosmos team took part in the meeting of the Russia-China Working Group for Space Cooperation. It was the second meeting held within this year. The topics discussed were related to the interaction between Russia and China under the bilateral cooperation. Special attention was given to the elaboration of the new Russia-China Program for 2018-2022 under which Glavkosmos acts as a coordinator of activities and an executor of some projects. Glavkosmos will be more intensively involved in the projects provided for in the new Program. The Program is expected to be signed by the parties in the autumn of 2017. In addition to that, Glavkosmos met with their commercial partners from China and discussed the progress of the ongoing contracts' performance, as well as promising areas of cooperation.

### **Russia's S7 Group Plans to Resume Zenit Rocket Launches from Sea Launch**

August 14, 2017 - Russia's S7 Space Transportation Systems plans to start launching Zenit-3SL carrier rockets from the Sea Launch floating platform and continue until 2023. Sea Launch was formed in 1995 as a consortium of four companies from Norway, Russia, Ukraine and the United States, and was managed by Boeing. The project aimed to use a floating launch site to place rockets on the equator, which is the best possible location for launch giving the rocket additional speed on lift-off thanks to centripetal force caused by Earth's rotation. The company was purchased by Russia's S7 Group in September 2016. The only carrier rocket that could be launched from the pad is Zenit-3SL, manufactured by the Ukrainian Yuzhmash construction bureau and using Russian RD-171 engines produced by the NPO Energomash manufacturer. The last Zenit launch from the Sea Launch was carried out in 2014. In April, Yuzhmash and S7 Sea Launch Limited signed a deal on supply of 12 Zenit-3 SL carrier rockets.

### **NASA Cargo Launches to Space Station aboard SpaceX Resupply Mission**

August 15, 2017 - SpaceX launched its 12th resupply mission to the International Space Station from NASA's Kennedy Space Center in Florida on August 14. Carrying more than 6,400 pounds of research equipment, cargo and supplies, the spacecraft will arrive at the space station Wednesday, Aug. 16, at which time astronauts Jack Fischer of NASA and Paolo Nespoli of ESA (European Space Agency) will use the space station's robotic arm to capture it.

### **New Zealand Mulls Managing Space Rocket Launches**

August 16 - The New Zealand government is seeking public feedback on how to best manage space rocket activity and its environmental impacts, Environment Minister Nick Smith said. These latest proposals are about further assisting this technologically advanced industry to grow while ensuring New Zealand maintains high environmental standards, Smith said. The environmental issue from space vehicle launches is that before it reaches orbit, some material is jettisoned and falls back to earth, and this material may burn up in the atmosphere but some may land in the waters of New Zealand's Exclusive Economic Zone (EEZ) and the Extended Continental Shelf (ECS), sink and deposit on the seabed, he said. The impacts of this have been assessed as small, and the proposal is that this be a permitted activity for all ocean area to the north, east and south of New Zealand, subject to a standard set of conditions, which limit the number of launches to 100, require a 14-day public notification of the launch and flight path, and post-launch reports on the activity, said the minister.

### **The 100th Launch of the Proton M Successfully Completed**

August 17, 2017 - On August 17, 2017 at 01:07 Moscow time from the Baikonur Cosmodrome, the Proton Breeze M launch vehicle successfully launched a spacecraft into the orbit in the interests of the Ministry of Defense of the Russian Federation. The launch was the 100th heavy lift Proton M, which has been in use since 2001, and the 414th launch in the Proton rocket since its maiden flight in 1965. The Proton M launch vehicle and the Breeze M upper stage are designed and produced at Khrunichev Space Center of Moscow, one of the core industry enterprises under the State Corporation "ROSCOSMOS". Proton M is a heavy lift launch vehicle used for both Russian Federal programs and international commercial projects, under the auspices of International Launch Services (ILS). Today, the Proton M rocket with the Breeze M booster launches payloads of more than 6 Metric Tons to geostationary orbit and 3.3 Metric Tons directly to geostationary orbit. Proton M is the development of the original carrier rocket "Proton-K" and over time has improved its energy-mass, operational and environmental characteristics. The first launch of the Proton Breeze M complex took place on April 7, 2001. At present, the Proton M rocket with the Breeze M upper stage is the main heavy lift rocket launcher in operation. The Proton launch vehicle is the primary means of launching the orbital modules for the ISS Russian Segment. In early 2002, the first launch of the Proton launch vehicle with the Breeze M upper stage with a commercial payload (the Nimiq 2 satellite) took place. Since 1995, Proton has launched 94 missions for commercial customers worldwide with ILS.

### **Blagovest Telecommunications Satellite, Designed and Built by ISS-Reshetnev Company, Launched**

August 17, 2018 - The Blagovest №11 took off at 01:07 Moscow time from the Baikonur cosmodrome atop a Proton-M launcher. Nine minutes into the flight the fairing enclosing the Breeze-M upper stage and the Blagovest satellite successfully separated from the launch vehicle. Now the satellite with the help of the upper stage is continuing its journey to the intended orbit. The Blagovest №11 will orbit the Earth on the geostationary orbit 36 000 kilometers above the equator. The satellite was built by ISS-Reshetnev Company to provide high-speed internet access, data communications, telephony and videoconferencing services.

### **NASA Successfully Launches Latest Communications Satellite**

August 19, 2017 - NASA's Tracking and Data Relay Satellite-M (TDRS-M), which is the third and final in a series of next generation communications satellites, has successfully been placed into orbit following separation from an United Launch Alliance (ULA) Atlas V rocket. TDRS-M launched Friday at 8:29 a.m. EDT from the Cape Canaveral Air Force Station in Florida. Ground controllers report the satellite is in good health at the start of a four-month checkout in space by its manufacturer, Boeing. NASA will conduct additional tests before putting TDRS-M into service early next year. When ready, TDRS-M will become part of NASA's Space Network providing navigation and high-data-rate communications to the International Space Station, NASA's Hubble Space Telescope, rockets and a host of other spacecraft.

### **H-IIA Successfully Launches MICHIBIKI No. 3**

August 19, 2017 - Mitsubishi Heavy Industries, Ltd. and JAXA successfully launched H-IIA Launch Vehicle No. 35 (H-IIA F35) which encapsulates MICHIBIKI No. 3, (Quasi-Zenith Satellite System; geostationary orbit) at 2:29:00 p.m. on August 19, 2017 (JST) from JAXA's Tanegashima Space Center. The launch and flight of H-IIA Launch Vehicle No. 35 proceeded as planned and the separation of the satellite was confirmed at approximately 28 minutes and 37 seconds after liftoff.

### **Lockheed Martin Powers-up Next Orion Spacecraft for First Time**

August 22, 2017 - Engineers at Lockheed Martin and NASA breathed life into the next Orion crew module when they powered up the spacecraft for the first time at the Kennedy Space Center, Florida. Designed for human spaceflight, this Orion will be the first to fly more than 40,000 miles beyond the Moon during its nearly three-week Exploration Mission-1 (EM-1), a feat that hasn't been possible before. The initial power-on event was the first time the vehicle management computers and the power and data units were installed on the crew module, loaded with flight software and tested. Evaluating these core systems, thought of as the "brain and heart" of the Orion capsule, is the first step in testing all of the crew module subsystems.

### **Two Korean Satellites to Fly on Soyuz 2.1a**

August 22, 2017 - GLAVKOSMOS and GK Launch Services announced the signing of contracts with Korea Aerospace Research Institute (KARI) for the launch of CAS500-1 and Korea Aerospace Industries Ltd (KAI) for the launch of CAS500-2 satellites. GLAVKOSMOS and its daughter company GK Launch Services, a provider of launch services for satellites with the use of Soyuz-2 family launch vehicles, signed a contract with KARI for the launch of CAS500-1 satellite in Daejeon, Republic of Korea, on August 17, 2017 and a contract with KAI for the launch of CAS500-2 satellite in Sacheon, Republic of Korea on August 18, 2017. Soyuz 2.1a launcher with Fregat upper stage will be used as a launch vehicle for both missions. Along with CAS500-1 and CAS500-2, other payloads are planned to be delivered into orbit during these two launches. The tender bid for the provision of launch services for the two Korean spacecraft was prepared in February 2017 by joint efforts of GLAVKOSMOS and GK Launch Services. The primary mission of the CAS500-1 and -2 satellites is to provide panchromatic and multi-spectral image data with the Advanced Earth Imaging Sensor System-Compact (AEISS-C) payload. GK Launch Services has been established by the decision of Roscosmos for commercialization of launch services, and is a launch services provider authorized to conclude commercial contracts for spacecraft launches from the Russian launch sites with the use of Soyuz-2 family launch vehicles.

### **SpaceX's Falcon 9 Launches Taiwanese Earth Observation Satellite**

August 24, 2017 - SpaceX's Falcon 9 rocket successfully delivered FORMOSAT-5, an Earth observation satellite for Taiwan's National Space Organization (NSPO), to a low-Earth orbit (LEO). FORMOSAT-5 will operate in a sun synchronous orbit at an altitude of 720-km with a 98.28 degree inclination angle. As with the FORMOSAT-2 satellite, the primary payload on FORMOSAT-5 is an optical Remote Sensing Instrument (RSI), which provides 2-meter resolution panchromatic (black & white) and 4-meter resolution multi-spectral (color) images. FORMOSAT-5 also hosts a secondary scientific payload, an Advanced Ionospheric Probe (AIP), developed by Taiwan's National Central University. FORMOSAT-5 is the first space program that Taiwan's National Space Organization (NSPO) has taken full responsibility for the design, development and system integration of. The program's mission is to promote space science experiments and research, to enhance Taiwan's self-reliant space technology capabilities, and to continue to serve the users of FORMOSAT-2's global imagery services. NSPO developed the key components of the remote sensing instrument and spacecraft bus through the integration of resources from domestic partners.

### **Orbital ATK Successfully Launches Minotaur IV Rocket Carrying ORS-5 Satellite for the US Air Force**

August 26, 2017 - Orbital ATK, a global leader in aerospace and defense technologies, announced its Minotaur IV space launch vehicle successfully launched and placed into orbit the U.S. Air Force's Operationally Responsive Space-5 (ORS-5) spacecraft on August 26, 2017. The Minotaur IV launched from Cape Canaveral Air Force Station's Space Launch Complex 46 (SLC-46), which is operated under license by Space Florida. This mission marks the 26th consecutive successful launch for the company's Minotaur product line. The rocket's first stage ignited at 2:04 a.m. (EDT). Approximately 28 minutes later, the Minotaur IV deployed the ORS-5 satellite into its targeted low inclination orbit 372 miles (599 kilometers) above the earth. From this orbit, ORS-5 will deliver timely, reliable and accurate space situational awareness information to the United States Strategic Command through the Joint Space Operations Center.

### **APSTAR-6C Completed Mating of Communication Module with Platform**

August 28, 2017 - The AIT (Assembly, Integration and Test) of the APSTAR-6C satellite has made significant progress since the System CDR (Critical Design Review) was conducted in October 2016. The testing result showed the performance of the satellite is in line with specifications. On 7 August, 2017, the mating of SM (service module), PM (propulsion module) and CM (communication module) has been successfully completed. This milestone also marks the commencement of the system level testing. Launch service progressed as scheduled, launcher structure, main engines and electrical system are under construction normally, the AIT is expected in October 2017. The project schedule shows that APSTAR-6C will be ready for shipment in first quarter of 2018, would fly on board a LM-3BE and replace APSTAR-6 satellite.

### **SES Swaps SES-12 and SES-14 Launches**

August 28, 2017 - SES announced a change of launch vehicles and launch slots for its SES-12 and SES-14 satellites. Under the new agreements, SES-12 will be launched on a Falcon 9 vehicle from SpaceX in Q1 2018 while SES-14 will be launched on an Ariane 5 rocket early in Q1 2018. The swap of launches will enable SES to improve service quality and continuity for its customers. Both SES-12 and SES-14 are using electric propulsion for orbit-raising and will enter into service some four to six months after launch. SES-14, manufactured by Airbus Defense and Space, will be positioned at the 47.5 degrees West orbital slot. The C-band payload of SES-14 will replace NSS-806 and will support SES's cable neighborhood in Latin America. The Ku-band payload augments the Ku-band capacity on NSS-806 with wide beams and high throughput spot beams covering the Americas and the North Atlantic Region. SES-12, a very large satellite also manufactured by Airbus Defense and Space, will be positioned at 95 degrees East. The satellite will expand SES's capabilities to provide direct-to-home (DTH) broadcasting, VSAT, Mobility and HTS data connectivity services in the Middle East and the Asia-Pacific region, including rapidly growing markets such as India and Indonesia. The satellite will replace NSS-6 at this location and will be co-located with SES-8. As the largest satellite ever built for SES, SES-12 is capable of supporting requirements in multiple verticals from Cyprus in the West to Japan in the East, and from Russia in the North to Australia in the South.

### **In-orbit Testing of the EchoStar XXI Satellite Successfully Completed**

August 29, 2017 - EchoStar Corporation announced the successful completion of in-orbit testing and handover of the EchoStar XXI satellite from manufacturer Space Systems Loral (SSL) to EchoStar's satellite operations team who manages flight operations via EchoStar XXI's primary satellite earth station located in Griesheim, Germany and a secondary station in Rambouillet, France. Located at the geosynchronous orbital location of 10.25° East longitude, EchoStar XXI carries a state-of-the-art S-band Mobile Satellite Service (MSS) payload that will enable EchoStar subsidiary EchoStar Mobile Limited, with commercial operations headquartered in Milton Keynes, United Kingdom, to provide mobile connectivity for small and medium-sized enterprises, large corporations and government agencies throughout Europe.

### **PSLV-C39 Flight Carrying IRNSS-1H Navigation Satellite Unsuccessful**

August 31, 2017 - The forty first flight of India's Polar Satellite Launch Vehicle (PSLV-C39), conducted on August 31, 2017 from Satish Dhawan Space Centre SHAR, Sriharikota, was unsuccessful. PSLV-C39 had a normal lift-off at 1900 hrs IST (7:00 pm) and all the flight events took place exactly as planned, except heat shield separation. This resulted in satellite separation occurring within the heat shield. The satellite is inside the heat shield resulting in the unsuccessful mission. Detailed analysis is under progress to identify the cause of the anomaly in the heat shield separation event.

## EXECUTIVE MOVES

### **Rajant Appoints Michael J Van Rassen as Executive Vice President of Business Development**

August 8, 2017 - To meet its strategic growth objectives and global expansion goals, Rajant, the pioneer of innovative mobile mesh technology for private wireless networks, announced the hiring of Michael J. Van Rassen as Executive Vice President of Business Development, and Ed Preston as Program Manager. Rajant makes mobile, scalable and highly reliable kinetic wireless mesh network technology, which provides a make-before-break, always-connected communications network, so mission-critical applications are always available. Its wireless mesh technology delivers intelligent path selection to ensure the best conditions for V2V (vehicle to vehicle) and V2X (vehicle to everything) communications, and maximizes industrial IoT (Internet of Things) initiatives around Unmanned Ground Vehicles (UGV) and Unmanned Aerial Vehicles (UAV). Van Rassen will cover military and commercial markets for Rajant domestically and internationally, bringing to the company more than 20 years of acquisition experience, both in uniform and as an Army Civilian.

### **Avanti Replaces CEO**

August 16, 2017 - Avanti Communications Group plc announces that CEO, David Williams, is stepping down from the board and leaving the Company. His immediate replacement will be Alan Harper, currently a board non-executive director who joined in March 2017, who will assume the role of interim CEO. Alan is a highly respected telecoms veteran from the telecoms industry with relevant experience in European and African markets. He has worked at Vodafone as Group Strategy Director and more recently founded and ran Eaton Towers, which served most of the major telcos that are a key part of the strategy for expansion at Avanti. Alan is also chairman of Azuri Technologies and of Gigabit as well as a non-executive director of MTN.

### **Don Brown Joins Telesat to Lead Government Business Growth in the U.S. and Overseas**

August 17, 2017 - Telesat announced that Don Brown, a satellite industry expert with a 20+ year record of innovation in the use of commercial satellites by major government customers around the world, has joined Telesat as General Manager, Government Services. He will be based in the company's Washington, DC office. Brown will focus on creating and executing Telesat's business strategy in global government markets for Telesat's geostationary fleet, specifically the company's high throughput satellite (HTS) Telstar VANTAGE series. He will do the same for Telesat's low earth orbit (LEO) satellite constellation, now in development. As previously announced, Telesat has obtained priority ITU rights on a global basis to LEO Ka-band spectrum and has developed an innovative (patent pending) constellation design and system architecture. Telesat's LEO constellation is being optimized to offer superior performance for government communications by combining low latency with gigabits of speed and terabits of total capacity. It will also provide industry leading security and resiliency, plus the ability to seamlessly integrate with existing networks – both satellite and terrestrial.

### **Mediacorp Appoints Tham Loke Kheng as CEO**

August 18, 2017 - Singapore media company Mediacorp has announced the appointment of Tham Loke Kheng as its CEO and Board Director, effective 1 September 2017. Ms Tham will succeed Shaun Seow, who will remain as Executive Director, Mediacorp till 30 September 2017 before joining Temasek. Tham is an industry veteran with extensive media experience, especially in content and marketing. She has held senior management and leadership roles in terrestrial free-to-air TV, Pay TV and broadband services in leading Asian operators in Singapore, Taiwan and most recently, Hong Kong. Tham started work in 1988 at Singapore Broadcasting Corporation, an antecedent of Mediacorp, where she spent eight years. Since then, she has built a successful career at leading Asian media companies, serving as President of Taiwan Broadband Communications and as Head of NOW TV, the largest Pay TV operator in Hong Kong at different times. In 2015, she was named Content Asia's Asia Media Woman of the Year, in recognition of her contribution to the development of the Pay TV industry in Asia over the years.

### **Panasonic Avionics Appoints David Bartlett as CTO and Chief Information Security Officer**

August 23, 2017 - Panasonic Avionics announced the appointment of David Bartlett as its new Chief Technology Officer (CTO) and Chief Information Security Officer (CISO). Bartlett will be responsible for the continued development of Panasonic Avionics' technology roadmap, harnessing his extensive experience in software and the Internet of Things. He previously served as CTO of GE Aviation and was most recently the CTO of Current by GE. GE Aviation is a leading provider of jet and turboprop engines, components and integrated systems. Current, powered by GE, blends LED lighting and solar solutions with networked sensors and software to make cities and buildings energy efficient and smart.

### **Stephen Spengler Appointed a Commissioner of the UN Broadband Commission for Sustainable Development**

August 24, 2017 - Intelsat S.A. announced that the company's Chief Executive Officer, Stephen Spengler, has been named a Commissioner of the United Nations Broadband Commission for Sustainable Development. The Broadband Commission, jointly managed by the International Telecommunications Union (ITU) and UNESCO (United Nations Educational, Scientific and Cultural Organization) engages in high-level advocacy to promote broadband in developing countries and underserved communities. One of the central roles of the Commission is to advocate for the development of broadband infrastructure and services, as a means to ensure that the benefits of connectivity technologies are realized in all countries. The Commission promotes collaboration between governments and industry to devise strategies for deploying connectivity globally.

### **ILS Names Peter Stier as Vice President of Sales**

August 28, 2017 - Peter Stier has been appointed Vice President of Sales for International Launch Services (ILS), leading the global sales activities for the company with overall responsibility for Customer interaction and satisfaction. ILS, a leader in launch services for over 22 years, markets Proton Breeze M, Proton Medium, and Angara 1.2 launch services to satellite operators worldwide. Stier joined ILS in 2016 as Senior Director of Sales, leading the sales and business development activities of Proton and Angara launch services for Customers in the Americas region. A veteran of the space industry for over 20 years, he has significant expertise in coordinating and executing business development strategies for commercial launch and telecommunications services and technology businesses. Prior to joining ILS, Stier held increasingly responsible business development and sales positions with L-3 Communications Electron Technologies, Sea Launch S.A and Boeing Launch Services.

## REPORTS

### **NSR Report Projects Satellite Ground Segment Reaching \$158 Billion in Next Decade**

August 22, 2017 - NSR's forecasts 2016-2026 cumulative global revenues for Commercial Satellite Ground Equipment to surpass \$158 billion. Satellite TV continues to be the largest segment by shipments and revenues. Consequently, Set-Top-Boxes and Antennas generate the largest revenue shares. However, in terms of growth VSAT platforms (modems + baseband equipment), driven by verticals such as Consumer Broadband and Mobility, will exhibit the highest levels. RF chains will also see applications like Aeronautical Satcom booming, while other verticals, such as Satcom Earth Stations, will contract. This leads to overall flat revenues of approx. \$1.3 billion per year.

## UPCOMING EVENTS

**World Satellite Business Week**, 11-15 September 2017, Paris, France, [www.satellite-business.com/en](http://www.satellite-business.com/en)

**21st Summit for Satellite Financing**, 11-14 September 2017, Paris, France, [www.satellite-financing.com/en](http://www.satellite-financing.com/en)

**IBC 2017**, 14-18 September 2017, Amsterdam, the Netherlands, [www.ibc.org](http://www.ibc.org)

**Myanmar Connect 2017**, 19-20 September 2017, Nay Pyi Taw, Myanmar, [www.capacityconferences.com/Myanmar-Connect.html](http://www.capacityconferences.com/Myanmar-Connect.html)

**VSAT Global 2017**, 19-22 September 2017, London, U.K., <https://tmt.knect365.com/vsat-global/>

**ITU Telecom World 2017**, 25-28 September 2017, Busan, Korea, <http://telecomworld.itu.int/>

ITU Telecom World 2017 in Busan, Republic of Korea, from 25 to 28 September, hosted by the Ministry of Science, ICT and Future Planning (MSIP). The event is the global platform where policy-makers and regulators meet industry experts, investors, and SMEs to exhibit solutions, share knowledge and network at the highest level. The event focus on global opportunities of smart digital transformation, including smart ABC (AI, Banking, and Cities) – five pillars: exhibition, forum, Awards, Business Matching, and side events.

**SATCOMS 2017**, 25-28 September 2017, London, U.K., <http://events.theiet.org/satcoms/index.cfm>

**Satellite Innovation Symposium**, 2-3 October 2017, Silicon Valley, CA, USA, <https://satelliteinnovation.com/>

**APSCC 2017 Satellite Conference Exhibition**, 10-12 October 2017, Tokyo, Japan, [www.apsc2017.com](http://www.apsc2017.com)

**SCAT India 2017**, 12-14 October 2017, Mumbai, India, [www.scatmag.com/scatindia](http://www.scatmag.com/scatindia)

**China Satellite 2017**, 25-27 October 2017, Beijing, China, [www.china-satellite.org](http://www.china-satellite.org)

**Communic Indonesia 2017**, 25-27 October 2017, Jakarta, Indonesia, [www.communicindonesia.com](http://www.communicindonesia.com)

**SATCOMRUS 2017**, 1 November 2017, Moscow, Russia, [http://satcomrus.ru/page41/register\\_2017\\_eng/](http://satcomrus.ru/page41/register_2017_eng/)

**CASBAA Convention 2017**, 6-9 November 2017, Macau, [www.casbaaconvention.com](http://www.casbaaconvention.com)

**Global MilSatCom 2017**, 7-9 November 2017, London, U.K., [www.globalmilsatcom.com/APSCC](http://www.globalmilsatcom.com/APSCC)

Described as "the best networking event" by its audience, SMI's 19th Global MilSatCom Conference and Exhibition will yet again raise the bar with an agenda featuring a line-up of high-level speakers and unmissable interactive opportunities offered during four days of conference sessions, workshops and networking receptions. Europe's leading military event for satellite professionals returns to London this November, gathering 500 international senior military and key industry representatives to network, benchmark, and learn about the latest developments in SatCom technology, discuss strategies to fulfill capability gaps, and address critical military and government requirements. View full agenda and register now at [www.globalmilsatcom.com/APSCC](http://www.globalmilsatcom.com/APSCC).

**The 3rd Global SatShow**, 8-9 November 2017, Istanbul, Turkey, [www.globalsatshow.com](http://www.globalsatshow.com)

**VSAT Congress**, 14-15 November 2017, Washington, D.C., USA, [www.vsatcongress.com](http://www.vsatcongress.com)

**Asia-Pacific Regional Space Agency Forum (APRSF-24)**, 14-17 November 2017, Bengaluru, India, [www.aprsaf.org](http://www.aprsaf.org)

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## About APSCC

*APSCC is a non-profit, international organization representing all sectors of satellite and space-related industries. The aim of the organization is to exchange views and ideas on satellite technologies, systems, policies and outer space activities in general along with satellite communications including broadcasting for the betterment of the Asia-Pacific region. Conferences, forums, workshops, and exhibitions are organized through regional coordination with its members in order to promote new services and businesses via satellite as well as outer space activities. APSCC membership is open to any government body, public or private organization, association, or corporation that is involved in satellite services, risk management or associate fields such as data-casting, informatics, multi-media, telecommunications and other outer-space related activities with interests in the Asia-Pacific region. More information is available at [www.apsc.or.kr](http://www.apsc.or.kr).*