

APSCC Monthly e-Newsletter

MAY 2020

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. To unsubscribe, send an email to info@apsc.or.kr with a title "Unsubscribe."

News in this issue has been collected from April 1 to April 30.

INSIDE APSCC

The APSCC Summit@ConnecTech Asia 29 September - 1 October, Singapore EXPO

The Asia-Pacific Satellite Communications Council (APSCC), in conjunction with Informa Markets will present three days of sessions at ConnecTechAsia 2020, Asia's biggest telecom industry event. The event will take place on the Satcomm exhibition floor, and will be open to all 35,000+exhibition attendees. The program will be focused on customer verticals, and will feature case studies, executive interviews, presentations and a series of themed interactive sessions – all intended to showcase APSCC members, and provide a value-added experience for participants.

Please contact info@apsc.or.kr for speaking & sponsorship opportunities. <https://apsc.or.kr/apsc-connectech-asia-2020/>

The APSCC 2020 Satellite Conference & Exhibition 17 - 19 November, Manila, Philippines

The 23rd edition of the must-attend event for Asia's space industry, the APSCC 2020 Satellite Conference and Exhibition will be held in Manila from 17-19 November. APSCC 2020 is where business leaders come together to gain market insight, strike partnerships, and conclude business deals. Incorporating industry veterans, local players, and new market entrants, the conference program reaches out to a wide-ranging audience.

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SATELLITE BUSINESS

Thuraya Aero Reaches Line-fit Milestone for Airbus Helicopters

April 30, 2020 - Thuraya and SCOTTY Group have announced that they have secured line-fit offerability for the Thuraya Aero mobile connectivity solution on Airbus H145 and H135 helicopters. For the first time, Airbus customers can install and customize their Thuraya Aero kit when ordering new aircraft. The system will be fitted on the production line, with no need for further tests and verification. The aircraft will be ready to use on delivery, with voice and data connectivity fully functioning. This means that it can be deployed immediately to deliver mission-critical capabilities. There is no need to have the aircraft grounded for months after delivery in order to retrofit communication systems. Thuraya Aero is an in-flight connectivity and data-sharing platform that uses mobile satellite communications to provide internet access, text messaging, phone calls, VOIP, video and audio conferencing as well as aerial surveillance, especially for BLOS missions. Thuraya and SCOTTY showcased the solution's live streaming capabilities at Dubai Air Show in November 2019, wherein surveillance data and video were transmitted to Dubai from an airborne Airbus H145 helicopter in Germany. Real-time streaming was made possible by Thuraya's L-band satellite network, which enables transmission over vast geographical areas. Thuraya has also demonstrated the advanced features of its aero mobility system to key UAE government customers.

ThinKom Completes Successful Antenna Interoperability Demonstrations on Ku-Band LEO Satellite Constellation

April 30, 2020 - ThinKom Solutions recently completed a series of interoperability tests that demonstrated the compatibility of its core antenna technology with a low-Earth orbit (LEO) satellite network. The tests took place during the first quarter of 2020, using commercially available airborne-certified hardware,

including a ThinKom Ku3030 phased-array antenna subsystem and a Gogo radome, adaptor plate and power amplifier that together comprise the “2Ku” aero satcom terminal. The 2Ku terminal demonstrated rapid acquisition and tracking of LEO satellites and provided continuous connectivity over all operationally relevant elevation angles. The switch time between individual satellite beams was less than 100 milliseconds (ms), and handoffs between satellites were completed in less than one second. Switches between LEO and geostationary (GEO) satellites were also achieved with similar results. The measured terminal performance demonstrated the potential that the combination of ThinKom antennas and LEO solutions will provide, with throughput rates in excess of 350 Mbps on the downlink and 125 Mbps on the uplink, at latencies of less than 50 ms.

UAE Ministry of Education Collaborates with Yahsat to Offer Free Satellite Broadband Services

April 30, 2020 - The UAE Ministry of Education (MoE) has announced that it is collaborating with Al Yah Satellite Communications Company (Yahsat) to extend the reach of its Remote Schooling initiative for students seeking to access e-learning platforms during the current COVID-19 situation. As part of the collaboration, Yahsat will provide high-speed satellite broadband services for students and teachers in multiple locations across the UAE, where terrestrial broadband alternatives are unavailable. Yahsat’s satellite links will provide remote users access to online libraries, educational applications and collaborative platforms, ensuring e-learning and knowledge sharing through this phase of home-based schooling. The company’s services will be available to users free of charge.

Cobham EXPLORER 323 and EXPLORER 6075LX Terminals Receive Inmarsat Type Approval

April 30, 2020 - Cobham SATCOM and Inmarsat have today announced the type approval of two new land satellite terminals. The low-profile vehicular Cobham EXPLORER 323 BGAN terminal and the auto-point ‘fly-away’ Cobham EXPLORER 6075LX VSAT terminal are now fully operational on the Inmarsat network with commercial shipments of each beginning immediately. The new EXPLORER 323 terminal represents the first class 12, electronically steerable terminal for use on Inmarsat’s L-band Broadband Global Area Network (BGAN). It combines the slimmest form factor of any vehicular BGAN terminal with a number of new innovative features and sets a new standard in robustness due to its lack of moving parts. In conjunction with Inmarsat’s highly reliable network, offering up to 99.9% uptime, it promises a new standard in mobile communications to organisations operating in remote locations across a wide array of industries.

COMSAT Inks Deal with ABS to Enhance C- and Ku-band US Connectivity Solutions on ABS-3A

April 29, 2020 - COMSAT has ratified an agreement with ABS to enhance and strengthen the COMSAT global network. The addition of the ABS-3A satellite to the COMSAT Southbury, Connecticut teleport services bolsters its reach throughout the Americas, Europe, North Africa and the Middle East to provide more resilient and robust connectivity solutions through its terrestrial fiber pathways. A 14.2M antenna delivering C-band services and a 9M antenna, providing Ku-band services, have been allocated to support the new partnership. As demand for data transmission increases globally the agreement focuses on providing multiple service options and strengthened satellite connectivity to deliver increased amounts of data, video, mobility, and government applications between the U.S. and international markets. COMSAT will participate in the ABSPlus program, which aggregates teleport infrastructures from around the world to seamlessly integrate ground networks with satellites globally. This complements an ambitious expansion plan currently in process at COMSAT’s Tier 4 WTA certified teleports in Southbury, CT. and Santa Paula, CA. On completion COMSAT will support more satellite constellation providers than any other terrestrial network.

Inmarsat Supports Aid and NGO Sector during Covid-19 Crisis

April 28, 2020 - Inmarsat has announced that it will provide further enhanced support to the vital aid and NGO sector during the Covid-19 pandemic. These new initiatives will enable enhanced offerings across both platforms and come as a direct response to the additional challenges caused by the Covid-19 pandemic, ensuring emergency responders can continue delivering critical aid and relief. Inmarsat’s Broadband Global Area Network (BGAN) and Isatphone 2 services are crucial connectivity tools for land-based organisations, especially for aid agencies and NGOs. The new initiatives include enabling Inmarsat’s BGAN Link plan for usage globally. This means that the normally static, geo-specific service can offer organisations the capability to operate cost-effectively and without complexity within a wider geographic range as they carry out their vital operations. Inmarsat will also offer its BGAN Pro Plan, with a new discount of 50% on the cost of any data used over the 30MB monthly allowance, delivering significant cost savings for the typical user. ThinKom has successfully tested its Ku- and Ka-band COTS phased-array aero

antennas across commercial and military frequency bands and a wide range of GEO and non-geostationary (NGSO) satellites over the past 12 months. In all cases, the phased-array antennas have consistently demonstrated high throughput operation and rapid reliable handoffs, including both intra- and inter-satellite switching.

Viasat Ships Over 200 Move Out / Jump Off Link 16 Tactical Gateway Systems to U.S. and International Military Forces

April 27, 2020 - Viasat Inc. has surpassed a significant milestone of shipping 200 production units of its advanced Move Out / Jump Off (MOJO) Link 16 expeditionary tactical gateway system. The MOJO system allows platforms with size, weight and power restrictions to communicate on a Link 16 network, and exchange near real-time tactical situational awareness data and secure voice with other, high-valued Link 16 platforms. The 200th milestone shipment marks a threefold increase year-over-year in production capacity of the MOJO system. MOJO systems are currently in use by all U.S. military services, the U.S. National Guard, and coalition partners, and are deployed throughout the U.S. Department of Defense's Combatant Commands. As a result of continued interest in Viasat's MOJO system, the Company plans to steadily increase its production run rate and establish a surge capacity in order to meet ongoing customer demand. MOJO is a significant contributor to Viasat's portfolio of Non-Developmental Item (NDI) offerings leveraging Link 16 communications for the U.S. and international defense markets. Viasat's NDI offerings are designed to rapidly deliver next-generation technology solutions ahead of the traditional government procurement model by leveraging Viasat's agile development process and flexible business model.

Comtech Telecommunications Corp. Supports Unprecedented Demand for SMS Text Messaging to Help Keep Americans Connected during Coronavirus Outbreak

April 27, 2020 - Comtech Telecommunications Corp., a world leader in secure and highly reliable location, public safety, navigation, and communication technologies, has announced their Comtech Location Technologies group, a division of Comtech's Commercial Solutions segment, is supporting unprecedented demand for SMS text messaging to help keep Americans connected during the coronavirus outbreak. In alignment with the FCC's "Keep Americans Connected Pledge," Comtech is working with its mobile network operator partners to provide ongoing and additional access to SMS text messaging, ensuring that Americans do not lose their mobile connectivity as a result of these exceptional circumstances.

Momentus Announces Working Arrangement with Swarm

April 23, 2020 - Momentus service model is well-matched with Swarm's need for low cost, dependable access to space with our unique capability to offer delivery into precision orbits. Swarm makes the world's lowest-cost global satellite communications network for customers in remote locations. Founded in 2017, the company currently has 9 satellites in orbit (with its full constellation of 150 to be deployed by 2021) and has full regulatory approval from the FCC to operate commercially. Momentus LTAN/LTDN options are particularly useful for Swarm. Beyond Momentus' ability to deliver Swarm's satellites into optimal altitudes, LTAN/LTDN matters to most LEO constellation operators including EO, IoT, communications and even scientific missions because it enables the constellation operators to have passes over the exact regions of interest for their customers at the desired times of the day. Many current LEO SSO launches are to an LTAN between 9 and 10 am which is becoming increasingly congested with satellites. For satellite operators desiring a different or unique LTAN destination, Momentus can provide the option to be delivered to any LTAN +/- 3 hours from the launch vehicle drop-off LTAN.

EM Solutions Secures Multiple Export Orders for Cobra Maritime Satellite Terminals

(23 April 2020 - Electro Optic Systems) Electro Optic Systems today announces that its wholly owned subsidiary, Brisbane-based EM Solutions has recently closed contracts to deliver its Cobra Maritime Satellite Terminals to four allied Navy end users in the EMEA region. These contracts, valued at approximately \$14M, will be delivered through 2020 and 2021. In addition to its strong existing order book with the Royal Australian Navy, these contracts result in a record backlog for the company, six months after being acquired by EOS. With its Cobra terminals now in use or on order with six of the world's largest navies across four continents, the contracts further validate the acceptance of EM Solutions satellite communications products as a technology of choice to some of the world's pre-eminent naval end users. Operating at X-Band, Military Ka-Band and Commercial Ka-Band and certified for operation on major global networks such as WGS and Inmarsat GX, the Cobra terminals provide users with robust and resilient beyond line-of-site communications with unprecedented flexibility and assuredness for their operations at sea.

Gilat Telecom Completes World's First Trials of SD-WAN for Both Satellite and Fiber in Africa

April 22, 2020 - Gilat Telecom has announced the commercial availability of its Software-Defined Wide Area Network (SD-WAN) for both satellite and fiber networks after extensive testing by a major pan-African operator in the DRC and ISPs in both Niger and Seychelles. Gilat Telecom is the first company in the world to have developed an SD-WAN solution for satellite traffic; SD-WAN technology for fiber is available from around 60 vendors worldwide. Gilat Telecom has designed its SD-WAN to specifically address the needs of African MNOs, ISPs and enterprises and is using AI and machine-learning algorithms to improve the user experience through improved traffic management and maximised bandwidth. Most MNOs and ISPs in Africa use both satellite and fiber networks to maximise coverage creating asymmetric traffic routes with end-customers receiving traffic over satellite and sending over fiber.

Telefónica Business Solutions Expands ST Engineering iDirect DVB-S2X Service in Latin and Central America

April 21, 2020 - ST Engineering iDirect, a company of ST Engineering North America, has announced that Telefónica Business Solutions has purchased its sixth iDirect hub to launch a new DVB-S2X-based service offering. Telefónica plans to sell wholesale satellite capacity to global operators seeking to expand mobile and multiprotocol label switching-based services coverage into remote areas across Latin and Central America. The network will also serve enterprise-class organizations operating throughout the area that require reliable connectivity in every geography. The new DVB-S2X network will operate on the iDirect Evolution® platform and will be powered by the iQ 200 and iQ Desktop modems, expanding the company's overall portfolio of satellite services. Through Telefónica's new DVB-S2X network, enterprise businesses will be able to extend their network, bypassing the high capital expenditure costs and lengthy implementation timelines associated with the buildout of other technologies.

SES Networks and OptimERA Scale Capacity for Remote Working, Distance Learning and Telemedicine in Rural Alaska City

April 21, 2020 - Residents, businesses, schools, healthcare clinics and other organisations in parts of Alaska can access city-wide WiFi and broadband services as always despite increased network demand due to the recent "Stay at Home" rule thanks to OptimERA Inc. significantly expanding its network capacity with SES Networks. The Alaskan Internet Service Provider (ISP) leveraged SES's NSS-9 satellite increased C-band capacity and ramped up its networks within days, underscoring the agility of SES's satellite services to rapidly address dynamic connectivity needs nearly anywhere in the world, SES has announced. OptimERA serves the city of Unalaska and its surrounding towns and islands, including world-famous Dutch Harbor, the largest fishing port in the United States. Located in the Aleutian Islands, Unalaska has the largest full-time resident population in Southwest Alaska as well as many seasonal and part-time residents due to the fishing industry. OptimERA started working with SES Networks in 2017 to provide backbone capacity so the ISP could serve the residents and businesses of this remote location that is 800 miles from the nearest fibre-based network.

SatADSL and YahClick Unite Their Efforts to Steer Sub-Saharan Africa across the Digital Divide

April 21, 2020 - SatADSL has partnered with YahClick to enhance its connectivity offering across Sub-Saharan Africa. The partnership appoints SatADSL as a new Virtual Network Operator (VNO) partner to YahClick, the UAE-based broadband satellite services provider owned by Yahsat and its partner Hughes Network Systems. The agreement will enable SatADSL to combine the capacity purchased from YahClick with its innovative cloud-based service delivery platform (C-SDP) to deliver a full range of flexible satellite services across Africa. In joining forces with SatADSL, YahClick gains full access to the Belgian operator's extensive licensed partner network spanning 45 countries worldwide and boasting over 3,500 deployments. This presents YahClick with new opportunities to expand its distribution reinforcing YahClick's status as Africa's number one satellite broadband internet service. Forged to maximise YahClick and SatADSL's efforts to eradicate digital exclusion on the continent, the partnership reiterates both companies' commitment to removing barriers to social and economic growth through the provision of world-class broadband solutions.

Comtech Achieves Key ISO 27001 Data Security Re-certification for Public Safety

April 20, 2020 - Comtech Telecommunications Corp. announced that its Safety & Security Technologies (SST) group, which is part of Comtech's Commercial Solutions segment, has obtained re-certification of its ISO 27001 designation. The ISO 27001 Data Security Standard is widely recognized as the blue-chip standard for protection of individual, customer, and company private and sensitive information. To meet ISO 27001 standards, a company must show it has a systematic and ongoing approach to managing

sensitive company and customer information. Comtech has implemented the prescribed ISO standards to ensure a secure environment and work processes that enable it to protect its intellectual property and assets, meet contractual security obligations and establish a robust risk assessment/treatment framework, which are critical to supporting its Public Safety customers. The certification is a key indicator of Comtech's program to protect vital customer data from a wide range of cyber threats and vulnerabilities that can lead to data loss. It provides third-party verification that the Company's Information Security Management System conforms to a standard that helps protect the integrity of customers' information assets. ISO 27001 certification also gives Comtech, its customers, shareholders and partners added confidence that Comtech subscribes to the best information security practices in the industry.

Golden Bauhinia Satellite to Build a Smart City of the Future

April 19, 2020 - The Smart City in the 5G era is on the way, as the satellite industry pioneer, Hong Kong Aerospace Technology Group, Ltd. (HKATG), has launched its first starlink project, the Guangdong-Hong Kong-Macao Greater Bay Area Golden Bauhinia Satellite Constellation. The project is also the first satellite starlink project in Hong Kong, which is dedicated to building smart cities in the future. It centers on covering the Greater Bay Area, involves rapidly-developing city agglomeration, and aims to achieve a dynamically in-depth integration of urban informationization, refinement, intelligentization as well as people-oriented sustainable development and innovation to boost Hong Kong's economy. The Golden Bauhinia satellite constellation is low-orbit, high-frequency constellation, and its huge constellation can obtain the whole ecological life cycle data of the entire city agglomeration. Moreover, the Golden Bauhinia satellite constellation has a space resolution of 3 meters to Earth Observation, with a spectral range between 400nm and 1000nm. Its orbit can cover the entire Greater Bay Area once every two days, which is an area of up to 56,000 sqkm.

Norsat International Launches New Ka-Band Terminal

April 19, 2020 - Norsat International Inc., a provider of unique and customized communication solutions for remote and challenging applications, announced the launch of a new satellite antenna in its WAYFARER series of portable and easy-to-deploy commercial terminals. The new 1.2-meter auto-pointing fly-away antenna ("WFA120KA") is a fast-deploying, easy-to-use, and compact SATCOM VSAT that is airline checkable. It is the first Ka-band satellite terminal in the WAYFARER series and ideal for communications in remote enterprise, energy, emergency and media applications. Known and trusted for rugged military-grade terminals, together with decades of LNB and BUC product development track record, Norsat has applied its expertise to bring its customers an offering of high-performance and reliable commercial products. The WAYFARER series of commercial terminals includes fly-away, drive-away and fixed terminal solutions available in both manual and auto-acquire capacity and in multiple reflector size.

Azercosmos Signed an Agreement with UltiSat, Inc.

April 16, 2020 - Azercosmos has signed an agreement with one of the world's leading satellite services company UltiSat, Inc. According to the agreement, UltiSat will provide data services in the Middle East and Europe using the resources of the telecommunication satellite Azerspace-1. Azercosmos is the premier satellite operator in the South Caucasus. Azerspace-1, the telecommunication satellite operated by Azercosmos, provides highly-reliable broadband and broadcast solutions to its customers in Europe, Africa, Middle East, the Caucasus, and Central Asia. The satellite was launched in February 2013 and is equipped with 24 C-band transponders and 12 Ku-band transponders and is located at 46° East longitude. UltiSat, Inc. provides mission-critical communications for military, government, non-governmental and intergovernmental organizations. Our fully managed communication solutions are enabled by multi-access technology and a multi-band, multi-orbit network of 80+ satellites and a global ground support network which provides a local point of presence in over 40 countries.

China Satcom Launches MarineTel High-throughput Satellite Maritime Service

April 16, 2020 - On April 11th, the MarineTel high-throughput satellite maritime service of Sino satellite Communications Co., Ltd. , a subsidiary of China Satcom was officially launched. Utilizing the resources of ChinaSat-16 satellite, this product can provide high-speed broadband communication services. It will provide higher-quality maritime satellite communication services for different types of ships, and help optimize and upgrade the maritime satellite communication industry.

De Boer Marine to Deliver Managed Data Services through SES Networks' Skala Global Platform

April 15, 2020 - De Boer Marine, a leading Dutch company specialised in maritime navigation and communication equipment, is now offering seamless, reliable managed data services to its international

maritime clients leveraging SES Networks' exceptional connectivity and its Skala Global Platform, the two companies have announced. De Boer Marine's customers will benefit from a superior customer experience with a cost-effective communications solution that reduces operational risk and cost. Crew and operators will stay connected to their friends and family anytime anywhere, while De Boer Marine and fleet operators will benefit from flexible bandwidth management, advanced automatic beam switching, and a sophisticated network management system to maximise their profitability and efficiency. The Skala Global Platform offers a combination of next-generation ground system technology, advanced satellite capabilities and service lifecycle expertise that enables scalable, flexible and high-quality managed data services for commercial shipping companies across the world.

Spire Maritime Announces Year-over-Year Organic Revenue Growth and Expansion into Asia

April 15, 2020 - Spire Global announced the year-over-year results for its maritime business unit. Spire Maritime expanded into Asia and celebrated a four-fold increase in bookings in 2019. It continued to build on its successes after launching in January 2019 offering its first weather product for the maritime industry and innovative tools like Dynamic AIS™. And it set a new industry standard by quadrupling AIS growth. These developments unlock unrivaled and instantaneous insight into vessel data and ship information. Spire Global runs the world's largest private constellation of nano satellites making radio occultation measurements, alongside other whole-earth observations that serve the maritime, weather and aviation industries. This breadth lets us tailor easy-to-use products that suit our partners' immediate needs and then continue to update the solutions as their demands evolve. With the creation of the new maritime business unit last year, the company is focusing on high-growth opportunities in AIS data and analytics for activities at sea. Maritime intelligence data has emerged as a critical component of the maritime industry, from tracking global fleets and monitoring illegal activity, adapting to changing weather, and maintaining safety at sea.

Ovzon Partners with Airbus

April 15, 2020 - Ovzon and Airbus Defence and Space has entered into a partnership through a reseller agreement in which Airbus will include Ovzon's innovative satellite communication services into its portfolio in the UK. Ovzon and Airbus will together market Ovzon's end-to-end services including Ovzon's mobile terminals and efficient, reliable support. Airbus will integrate the Ovzon solution in to its extensive satellite communications product and system portfolio. From late 2021, the offering will be expanded to include Ovzon's own first satellite, Ovzon 3. Ovzon 3 is an important step to further revolutionize mobile broadband by satellite, offering the highest bandwidth with the smallest terminals. Ovzon 3 is the first of a number of satellites planned for global reach of Ovzon's high-end service. Airbus is a leading integrator and provider of advanced secure satellite communication services and network management infrastructure. Airbus delivers flexibility, resiliency and security for governments, militaries and international agencies with an end-to-end service offer bringing the most comprehensive bandwidth and terminal portfolio coupled with leading capabilities in network services and solutions.

Hughes Extends Mobile Network Connectivity to Support Various Applications

April 14, 2020 - Hughes, in partnership with Virtual Network Communications, Inc. (VNC), will create new solutions to extend mobile network connectivity to support various global applications for government, militaries, first responders, and commercial Mobile Network Operators (MNOs). The joint solutions will integrate VNC's deployable LTE technology with Hughes JUPITER™ and HM satellite systems. The VNC LTE technology can be integrated with the JUPITER System to backhaul mobile traffic, enabling MNOs to quickly and cost-effectively provide 4G access to people in areas unserved or underserved by terrestrial connectivity – especially in remote and hard-to-reach areas. In tests, the integrated solution sent 4G LTE traffic to the core network at speeds of 200 Mbps. designed to provide wireless coverage for soldiers or first responders, the new Hughes HeloCell™ Solution integrates VNC's LTE technology with the Hughes HeloSat™ Solution, which provides Beyond-Line-of-Sight (BLoS) communications on rotary-wing aircraft. For military and emergency applications, the Hughes and VNC technologies combine to form an "airborne cell tower" when installed aboard a helicopter or an Unmanned Aerial Vehicle (UAV). The solution provides an extended cellular coverage radius of tens of kilometers, with the satellite terminal backhauling the mobile traffic to and from the network core. The solution can also scale to support more than 100 simultaneous active users on a single, layered system architecture.

GiTy to Provide Internet Services in Africa via Spacecom's AMOS-17

April 14, 2020 - Spacecom, operator of the AMOS satellite fleet, announced that the company signed a multi-year contract with GiTy, a.s., a leading telecom service provider based in the Czech Republic, for C-

band capacity on the AMOS-17 communication satellite, in order to deliver connectivity to embassies across Africa. AMOS-17 is an HTS satellite designed specifically to meet Africa's fast-growing communication demands. The satellites C-Band HTS, Ka-Band and Ku-Band capabilities enable the combination of broad regional beams and high throughput spot beams that maximize throughput and spectral efficiency. AMOS-17 supports connectivity between Africa, the Middle East, Europe, India and China.

IBM and Cloud Constellation Corporation Collaborate to Demonstrate Edge Computing in Space Using Machine Learning Services On SpaceBelt™ Satellite Hardware

April 13, 2020 - IBM's mission is to be the most trusted technology partner of the 21st century, and Cloud Constellation Corporation's mission with SpaceBelt™ is to offer a portfolio of cloud services on the most secure cloud infrastructure. Our combined strategy of a hybrid IBM- SpaceBelt™ cloud infrastructure will provide enterprise organizations the strongest security for their cloud services requirements in a seamless, global cloud environment. Working with our satellite edge computing technology partner Ramon.Space, we recently achieved an important milestone where we presented to IBM the results of our benchmarking project for Machine Learning applications hosted on our 1st generation satellite hardware. Benchmarking the VGG-13 Model performance on our SpaceBelt™ hardware demonstrates it is a scalable, secure and user-friendly platform for highly secure services and mission-specific ML applications for commercial, government and military organizations. Basically, an extension of an organization's enterprise network. Seamless hybrid cloud is at the core of IBM's strategy for its enterprise customers. Accordingly, a roadmap to support a portfolio of IBM cloud services, on a SpaceBelt™ OpenShift cloud infrastructure is central to our joint go to market strategy.

Thuraya MarineStar Bcomes a Major Success Story

April 9, 2020 - Thuraya, the mobile satellite services subsidiary of the UAE-based global satellite company, Yahsat, has announced that Thuraya MarineStar, its best in class, affordable maritime voice solution with advanced two-way tracking and monitoring capabilities is a bestseller, especially in the Asian maritime markets. This versatile solution was sold out within a month after its launch and first installations have been made successfully. Due to robust demand from fisheries, Thuraya's Service Partners are now placing new bulk orders for the hardware units. As an entry-level solution, Thuraya MarineStar is built on the same successful voice platform that has sold more than one million Thuraya satellite voice devices. Since it enables tracking and monitoring, in addition to voice communications, vessel operators do not have to invest more in their tracking systems or a brand new tracking application.

Advantech Wireless Technologies Receives Orders for its Satcom Frequency Converters

April 9, 2020 - Advantech Wireless Technologies recently received two orders for Satcom RF Frequency Converters that total over \$1M. These converters are being deployed to a major US carrier to support an increase in demand – and to NATO for a Naval Satcom Modernization program. Though Advantech Wireless Technologies has been producing Frequency Converters for decades, our new designs possess M&C features and utilize the latest in conversion technology and that meets or exceeds the requirements of network operators, government and military platforms for spectral purity, phase noise and frequency stability. Lightweight, rugged and compact, RF Converters from Advantech Wireless Technologies are the ideal solution for fixed and mobile ground station applications. A welded frame replaces the typical 'bent metal' chassis to provide greater strength and resilience against shake and vibration when required.

Maxar Announces Close of MDA Divestiture

April 8, 2020 - Maxar Technologies has closed the sale of MDA, previously a wholly owned subsidiary of the company, to a consortium of investors led by Northern Private Capital for CAD\$1 billion. Net proceeds, including customary adjustments, and after application of currency hedges related to the transaction is expected to be approximately US\$729 million.

Comtech Receives \$1.1 Million Order for SATCOM Antenna Feeds

April 8, 2020 - Comtech Critical Technologies group, which is part of Comtech's Government Solutions segment, received an order for \$1.1 million from a major U.S. satellite communications manufacturer for SATCOM antenna feeds for its 1.3 Meter Fly-Away Terminal. The Mission-Critical Technologies group is focused on ensuring its customers are able to successfully carry out their mission, whether that be communicating in an austere environment on land or at sea, launching or tracking a satellite, or protecting the cyber security posture of their network.

ThinKom Aero Satellite Antennas Fully Comply with International Non-Interference Rules

April 8, 2020 - ThinKom Solutions announced that its phased-array satellite antennas are in full compliance with the latest rules from international regulatory bodies governing evolving interference threats. The International Telecommunications Union (ITU) and the 2019 World Radiocommunications Conference (WRC19) have adopted standards to prevent interference between satellites in geostationary (GSO) and non-geostationary (NGSO) orbits and between aeronautical and 5G terrestrial services using shared frequencies. ITU Article 22 specifies that terminals operating on NGSO satellites must limit their emissions in the direction of GSO satellites. This can and will occur when NGSO satellites move in and out of alignment with GSO satellites.

Comtech Receives \$9.1 Million Order from U.S. Army for Mobile Satellite Equipment

April 7, 2020 - Comtech announced that its Mission-Critical Technologies group, which is part of Comtech's Government Solutions segment, received an order consisting of additional funding of \$9.1 million (of which \$7.7 million was in the third quarter), on the previously announced three-year \$124.2 million contract to provide ongoing sustainment services for the AN/TSC-198A SNAP (Secret Internet Protocol Router (SIPR) and Non-classified Internet Protocol Router (NIPR) Access Point), and baseband equipment. SNAP terminals provide quick and mobile satellite communications capabilities to personnel in the field. The contract has been funded \$87.0 million to date. The Mission-Critical Technologies group is focused on ensuring its customers are able to successfully carry out their mission, whether that be communicating in an austere environment on land or at sea, launching or tracking a satellite, or protecting the cyber security posture of their network.

Comtech Receives Orders from World's Largest Mobile Network Operator for Heights Networking Platform to Deliver Efficient Satellite Cellular Backhaul in China

April 6, 2020 - Comtech EF Data has received \$1.6 million in orders for satellite ground station equipment from the world's largest Mobile Network Operator (MNO) based in China. This equipment will be utilized to support the upgrade of its existing mobile backhaul and teleport technologies. After a competitive Request for Information (RFI) process was completed by the MNO, it selected Comtech EF Data's Heights Networking Platform as the premier solution, which can support its current 2G and planned 4G mobile backhaul services, while also being 5G ready for the future. In addition, the MNO selected a range of Comtech EF Data's RF Products and RAN/WAN Optimization solutions to complement the Heights Networking Platform. The Heights Networking Platform features high efficiency DVB-S2X shared outbound which, when coupled with the evolutionary Heights Dynamic Network Access (HDNA) technology and built in LTE optimization, provides the highest performance solution capable, while offering the best Total Cost of Ownership (TCO). Additionally, the solution delivers the highest Quality of Experience (QoE) by minimizing jitter and latency, making it ideal for full 2G/3G and 4G LTE service delivery.

Myriota Raises \$19.3M USD in Series B Funding to Grow Its Satellite Network to Support Billions of Devices

April 6, 2020 - Myriota announced a \$19.3M USD Series B funding round led by Hostplus and Main Sequence Ventures. Additional investors include In-Q-Tel, Inc., Right Click Capital, Singtel Innov8, Boeing HorizonX, South Australian Venture Capital Fund, and Malcolm Turnbull – the former Australian Prime Minister who led the government that established the Australian space agency in 2017. This latest round of funding brings Myriota's total funding to more than \$37M USD. As a testament to Myriota's strength in the market – all participants in Myriota's Series A have returned to participate in this new raise. With this new round of funding, Myriota plans to continue its exponential growth by scaling its platform to connect billions of devices to power energy-efficient technology for customers for years to come. Founded in 2015, Myriota has pioneered a new way to retrieve data from anywhere on Earth through the connectivity between its constellation of satellites and low-power IoT modules, revolutionizing the way companies share information across multiple industries, such as agriculture, defense, mining, transport & logistics, and more. Myriota's network of IoT solutions are breaking down cost-prohibitive barriers to maximize efficiency and accelerate industries. During a time of increasing global challenges, Myriota's technology offers unprecedented battery life, easier scalability, strong cryptographic security, and affordability. The company now has 60 granted national patents, and has more than tripled its headcount in the last two years.

Inmarsat Supports Seafarers during Global Health Crisis with 50% Voice Call Discounts and Free COVID-19 Video Call Service

April 3, 2020 - In a direct response to the COVID-19 pandemic and its impact on seafarer well-being, Inmarsat has formalised a sweeping 50% discount for crew voice calling services available for up to 40,000 ships for three months until the end of June. The leading maritime satellite service provider is also ensuring that calls made to the SeafarerHelp service provided by welfare organisation ISWAN (International Seafarers' Welfare Assistance Network) are available free of charge over the same period. In addition, Inmarsat is working with crew healthcare specialist Vikand and software platform provider FrontM, to provide a free COVID-19 video call service with a trained health professional. The voice call discount offer is available day and night from today for three months to Inmarsat retail customers using FleetBroadband ChatCard voice services and to wholesale partners offering FleetBroadband voice calls under the legacy Crew Calling 'SQT' brand. Steps are also being taken to accelerate the launch of ChatCard services for Fleet Xpress, with an introductory discount.

KONGSBERG Remote Services Now Available through Vessel Insight

April 3, 2020 - In the past weeks, KONGSBERG has experienced an increase in the need for remote support and services to the maritime industry. Now, the group has made their Remote Services solution available to customers using Vessel Insight. KONGSBERG Remote Services is a tool for KONGSBERG-certified engineers worldwide to connect to an installation – such as a vessel – upon customer request and provide remote support. When service engineers cannot inspect vessels physically, a practical alternative for customers is to use remote service sessions. To ensure that more customers can access this alternative, KONGSBERG has enabled Remote Services on KONGSBERG automation, navigation and bridge solutions using Vessel Insight.

Broadband Access Network Central Station in Ka-band Transferred from Express-AM6 to Express-AMU1 satellite

April 2, 2020 - Working together with the partner companies, RSCC technical services have arranged the transfer of the central station satellite broadband access network in the Ka-band, originally operating from Express-AM6 satellite, to Express-AMU1 satellite (36 degrees E). The service will be provided via 10 beams of the Express-AMU1 spacecraft. To ensure subscribers' linkup, their antennas will need to be tuned to the new satellite. RSCC expresses thanks to the industry community, including Eutelsat Networks, Ka-Internet, and Hughes Network System, for their support and assistance.

Speedcast International Signs Forbearance Agreement with Lender Group

April 2, 2020 - Speedcast has signed a Forbearance Agreement with its lender group in relation to certain obligations due 31 March 2020, and a potential covenant breach for the period to 31 December 2019. Speedcast continues to progress discussions with its lender group for an interim funding package, as part of an overall restructuring of the Company's balance sheet. Speedcast remains committed to working with its customers and suppliers through this unprecedented period to ensure continuity of their critical telecommunications services. The Forbearance Agreement is intended to assist with the Company's liquidity position, to provide stability and to allow ongoing trading while the terms of the interim funding are finalised. Speedcast continues to progress discussions with its lender group to implement an interim funding package to allow the Company to continue operating and progress its recapitalisation and restructuring to reduce the overall leverage of the Company. The Forbearance Agreement is scheduled to expire on 17 April 2020, and includes customary provisions that require Speedcast to continue to operate as far as possible, in the ordinary course.

L3Harris Technologies Awarded Contract to Modernize and Sustain US Space Force Capabilities

April 1, 2020 - L3Harris Technologies has been awarded a \$23 million contract to modernize and sustain critical space infrastructure used by the military to keep track of activities and objects in space. The current estimated contract value with the U.S. Space Force Space and Missile Systems Center is \$1.2 billion over 10 years. Under the Maintenance Of Space Situational Awareness Integrated Capabilities (MOSSAIC) contract, L3Harris will provide sustainment services for current and future ground-based space domain awareness sensors and space battle management command and control capabilities. MOSSAIC is a follow-on program to the Systems Engineering and Sustainment Integrator program, which L3Harris won in 2002.

BROADCAST

Canal Digital and Viasat Consumer Venture Approved

April 30, 2020 - The European Commission has approved the previously announced combination of Canal Digital, Telenor Group's satellite pay-TV business, with Viasat Consumer, Nordic Entertainment Group's

satellite pay-TV and broadband-TV business, into a new joint venture company. Telenor Group and Nordic Entertainment Group will each hold 50% of the shares of the new company. The Nordic consumer offering will focus on satellite distributed pay-TV (DTH) and streaming services, as well as IPTV on open fibre networks, and will continue to develop market-leading TV distribution services. The combination is expected to yield annual cost synergies of approximately SEK 650 million, with full effect from 2022. Integration and other related costs are expected to total approximately SEK 900 million. NENT Group and Telenor will provide a suite of services to the joint venture, including transponder capacity and technology, content and streaming services. The Board of Directors will have equal representation from NENT Group and Telenor, with a rotating chairmanship. The transaction is expected to close on 5 May.

Mondo Globo/MCNC Launch the First Legal Arabic Multi-delivery TV Platform in Europe

April 30, 2020 - Mondo Globo/ MCNC Group announces the launch of its new TV platform directed to the Arabic community in Europe. The platform includes over 50 TV channels of the most sought after programs among Arabic audiences. Arabic viewers in Europe can now enjoy watching their favorite programs via a multi-delivery platform including digital satellite box and Android TV OTT box in addition to digital applications for mobile, tablet, and Android Smart TVs. All of this comes at an attainable and competitive monthly subscription, pre-paid vouchers and reasonable setup cost. The premium content distributed across this platform is a result of cooperation between Mondo Globo/MCNC Group and major broadcasting groups and TV channels across the Arabic World to provide Arabic viewers with an attractive, safe and rich user experience.

SES Delivers over 8,300 TV Channels to 367 Million Homes Worldwide

April 23, 2020 - SES has announced that the number of global TV households it reaches directly or indirectly via satellite has increased by 12 million to 367 million in 2019. Findings from the company's annual Satellite Monitor market research validates, once again, SES's position as the world's leading video content distributor via satellite and shows the important role that satellite continues to play in reaching the largest possible audience globally. Much of the increase in the 12 million TV households is attributed to the leading infrastructure of TV reception – satellite and cable – which grew by 9 million in 2019 to 153 million and 149 million homes respectively. Internet Protocol TV (IPTV) and terrestrial TV grew by a combined 3 million to 43 million and 21 million homes. The Satellite Monitor study also showed that SES's technical reach has increased across several continents, including Europe, Africa, Asia-Pacific (APAC), and Latin America (LATAM). Europe continues to be the strongest market for SES, with 168 million total households served by the SES fleet, up by 1 million from 2018, followed by North America at 69 million.

Eutelsat Selected by RCS Ghana for DTH Broadcast

April 22, 2020 - Eutelsat Communications has secured a multi-year contract with RCS Ghana to provide capacity for the broadcast of its DTH bouquet bringing content to viewers in Ghana and beyond. RCS will use Ku-Band band capacity on EUTELSAT 7B to broadcast its fast growing free-to-air DTH bouquet comprising SD and HD channels to the Ghanaian market and over 40 other countries in Africa. The 7° East neighbourhood is a key orbital position for regional TV channels. Over 500 TV channels already broadcast from 7° East which has become a new DTH hotspot for Sub-Saharan Africa with some of the fastest growth rates in the region.

MYTV Expands its Operational Management with DataMiner

April 20, 2020 - Skyline Communications, the global leader in end-to-end multi-vendor network management and OSS solutions for the media and broadband industry, announces a large-scale expansion project at MYTV. MYTV Broadcasting is a company that owns and solely operates the Malaysian Digital Terrestrial Television network that provides free-to-air transmission to the country's population, as an initiative from the government. At the end of October last year, the company successfully completed a full nationwide switchover from analog to digital TV. MYTV effectively began the utilization of DataMiner at the start of the Malaysian DVB-T2 network deployment. At the time, it was set forth to manage a small subset of its infrastructure. Now, with this expansion, DataMiner will be given more responsibilities in terms of the management of their Digital Media Broadcast Hub (DMBH), the backup Disaster Recovery Center (DRC) and their entire nationwide T2 transmitter stations. The end goal: efficiency across MYTV's entire operation, maintenance processes and procedures through just a single pane of glass.

SES Secures Worldwide Satellite Distribution of BVN TV

April 7, 2020 - Public broadcaster BVN TV has signed a long-term worldwide distribution agreement with SES for the use of its satellite capacity and services. SES is delivering BVN TV via the company's premium

neighbourhood at ASTRA 19.2 degrees East across Europe and on the SES-5 satellite at 5 degrees East across Africa. In order to ensure seamless global distribution of BVN's content from a single signal source, SES is also leveraging non-SES satellite capacity as appropriate. BVN (Stichting Beste van Vlaanderen en Nederland) is a public free-to-air channel that provides Dutch-speaking viewers around the world with TV programming in their native language. Access to BVN TV through ASTRA 19.2 degrees East was made available from 1 April 2020 via the frequency 11.778 V, SR 29500, FEC 9/10 (SVB-S2 - QPSK) in H.264 (MPEG4). This requires a manual transponder search with the new reception data.

LAUNCH / SPACE

NASA Selects Blue Origin National Team to Return Humans to the Moon

April 30, 2020 - The Blue Origin National Team, which includes Lockheed Martin, Northrop Grumman, and Draper, was selected by NASA to begin to develop the Artemis Human Landing System. Using existing and in development technologies provides the head start needed to meet NASA's goal of landing at the South Pole of the Moon. Lockheed Martin's Ascent Element is based on Orion; Northrop Grumman's Transfer Element is based on Cygnus; and Blue Origin's Descent Element is based on the Blue Moon lander and BE-7 engine, which has been in development for several years. Each National Team partner brings industry-leading solutions: Blue Origin, as prime contractor, leads program management, systems engineering, safety and mission assurance, and mission engineering and operations; and develops the Descent Element; Lockheed Martin develops the reusable Ascent Element vehicle and leads crewed flight operations and training; Northrop Grumman develops the Transfer Element vehicle that delivers the landing system into low lunar orbit for final descent; Draper leads descent guidance and provides flight avionics. The National Team looks forward to embarking on the next steps with NASA and continuing progress to return to the Moon – this time to stay.

NASA Names Companies to Develop Human Landers for Artemis Moon Missions

April 30, 2020 - NASA has selected three U.S. companies to design and develop human landing systems (HLS) for the agency's Artemis program, one of which will land the first woman and next man on the surface of the Moon by 2024. NASA is on track for sustainable human exploration of the Moon for the first time in history. The human landing system awards under the Next Space Technologies for Exploration Partnerships (NextSTEP-2) Appendix H Broad Agency Announcement (BAA) are firm-fixed price, milestone-based contracts. The total combined value for all awarded contracts is \$967 million for the 10-month base period. The following companies were selected to design and build human landing systems: Blue Origin is developing the Integrated Lander Vehicle (ILV) – a three-stage lander to be launched on its own New Glenn Rocket System and ULA Vulcan launch system; Dynetics (a Leidos company) is developing the Dynetics Human Landing System (DHLS) – a single structure providing the ascent and descent capabilities that will launch on the ULA Vulcan launch system; SpaceX is developing the Starship – a fully integrated lander that will use the SpaceX Super Heavy rocket.

Arianespace to Resume its Launch Campaigns at the Guiana Space Center

April 29, 2020 - Following the measures presented by the French government on April 28 as part of the gradual resumption of activity planned from May 11, and the announcement of a restart of operational activities at the Guiana Space Center, Arianespace confirms its following launch objectives: Flight VV16/SSMS – The first "rideshare" Vega launch, carrying approximately 50 small satellites, in mid-June; Flight VA253 – A dual-payload Ariane 5 mission for two customers, Intelsat and B-SAT, at the end of July. All of these campaigns will be carried out in strict compliance with the health rules published by the Prefect of French Guiana, as well as the French CNES space agency and the Guiana Space Center. The objective is to preserve the health of launch site workers and those who are deployed to the space center, as well as the local population – all while ensuring the security and safety conditions required for preparation of the planned launches. After the suspension of launch campaigns that was imposed on March 16, standby measures and security controls for launch vehicles and satellite payloads were handled by the teams of Arianespace, CNES and all the companies involved in the Guiana Space Center, and carried out in accordance with standard procedures. The launch campaigns for two Soyuz missions – Flights VS24 and VS25 – will resume this summer. As of April 21, the measures to maintain the launch site in an operational configuration have been carried out with local teams based in French Guiana, applying social distancing measures.

Successful Deployment of First Guatemala Satellite

April 29, 2020 - On April 29th, 2020 (Japan time), the CubeSat developed by a team from the Universidad

del Valle de Guatemala was successfully deployed from the Japanese Experiment Module “Kibo” of the International Space Station. This CubeSat, named “Quetzal-1” was selected as the winner of the Second Round of KiboCUBE programme. The live streaming of the deployment was broadcasted online, and many people in Guatemala watched the successful deployment of their first national satellite through live streaming. Quetzal-1 was developed as Guatemala’s first satellite, and the Universidad del Valle de Guatemala will operate the CubeSat after its deployment from “Kibo.” The knowledge earned from the observation data of Quetzal-1 will be applied in Guatemala’s future remote sensing technology. KiboCUBE is a cooperative programme between UNOOSA and JAXA to offer opportunity to deploy CubeSats from “Kibo.” This programme aims to improve space technology of the developing and emerging space nations of the United Nations member states. Together with JAXA, our partners in the KiboCUBE project that made this deployment possible, we are delighted to welcome Guatemala to the growing community of space-faring nations! We stand ready to continue to support the utilization of this CubeSat and the overall development of the space sector in Guatemala. Today you made us immensely proud of having being part of this historic achievement.

Singapore’s Equatorial Space Reveals ‘Dorado’ Sounding Rocket Launch Services

April 29, 2020 - The Dorado, named after the swordfish constellation, will be Equatorial Space’s second rocket after the Low Altitude Demonstrator, pending launch due to the COVID-19 work and travel restrictions. The Dorado rocket will be the very first, commercial sounding rocket capable of exceeding the Karman Line, the conventional boundary of space, in Southeast Asia. The slender, 6.5m-long rocket will weigh approximately 370 kilograms once ready for its first mission in Quarter 4 this year. Equatorial Space is a Singapore-based space tech startup developing innovative technologies for space launch and exploration activities. With its proprietary hybrid propulsion, its technology allows for cheaper, safer and greener alternatives to existing solutions in both orbital launch systems, as well planetary landing missions. Aiming for the first orbital launch by 2022, ESI has previously been crowned the winner of MBRSC Innovation Cup 2018 in Dubai, a Top 500 Deep Tech Startup by Hello Tomorrow 2018, as well as the Most Promising Startup at the NAMIC Innovation Day 2019.

Maxar Selected to Deliver Change Detection and Land Cover Classification Services to National Geospatial-Intelligence Agency

April 28, 2020 - Maxar Technologies has signed \$20 million in contracts with the U.S. National Geospatial-Intelligence Agency (NGA) to deliver land cover classification and change detection services through a combination of the Janus Geography program and the General Services Administration’s IT Schedule 70. Maxar will produce updates and enhancements using its sophisticated change detection model and deliver land cover and classification solutions in support of NGA’s needs. Automated change detection visually exposes areas of important change, enabling rapid and effective intelligence gathering across thousands of images from multiple sources. Land cover classification provides a global view of the current landscape by applying machine learning to perform automated spectral, spatial and temporal classification, enabling a better understanding of how specific regions of Earth are being used on a micro scale. Janus Geography provides near real-time access to commercially created geospatial data, enriched content and community-sourced information in a cost-effective manner to improve decision-making timelines. As a prime contractor, Maxar leads a team of industry and university partners with proven production capacity and innovation to deliver content management of topographic and human geography data from a variety of sources. The General Services Administration’s IT Schedule 70 enables government customers to shorten procurement cycles, ensure compliance and get the best value for over 7.5 million innovative IT solutions from over 4,600 pre-vetted vendors.

Thales Alenia Space to Develop in Spain the TDRS Transmitter for VEGA Launchers

April 27, 2020 - Thales Alenia Space announced the signature of a contract with AVIO, the industrial prime contractor of the VEGA launch vehicle, in the frame of LEAP program of the European Space Agency (ESA), for the initial phases of design, development and qualification of a TDRS (Tracking and Data Relay Satellite) transmitter, intended to improve VEGA’s telemetry system both in terms of cost and performance. The present telemetry system of VEGA relies on the download of the telemetry data streaming directly to the telemetry ground stations, requiring the use of costly mobile ground stations. Sometimes the ground stations are not even sufficient to cover the launch trajectory. The new VEGA TDRS system is based on the transmission of the telemetry data streaming to TDRS geosynchronous satellites constellation, which then relay the signal to the TDRSS ground stations. This system will significantly improve the contact between the ground and the launcher by allowing continuous transmission of the telemetry data streaming all along the launcher trajectory thanks to the TDRSS coverage. The VEGA TDRS system will be compatible

with the current launcher version and easily adapted to its evolutions, as the VEGA-C launcher version.

Lockheed Martin's New Contract with DARPA Can Disrupt the Future of Space

April 27, 2020 - DARPA has awarded Lockheed Martin a \$5.8 million contract for the first phase of satellite integration on the Blackjack program. Lockheed Martin will define and manage interfaces between Blackjack's bus, payload and Pit Boss – its autonomous, space-based command and data processor. Additional scope includes testbed validation of internal and external vehicle interfaces. Program work will primarily be performed in Sunnyvale, California. DARPA's Blackjack program aims to develop and demonstrate the critical elements for a global high-speed network in low earth orbit (LEO) that provides the Department of Defense with highly connected, autonomous, resilient, and persistent coverage employing multiple payload types and missions. Future phases of Blackjack are expected to include build, test, and launch of a demonstration constellation in 2021-2022.

NEC to Provide Vietnam with "LOTUSat-1" Earth Observation Satellite System

April 23, 2020 - NEC Corporation has received an order from Sumitomo Corporation for the manufacture and launch of the "LOTUSat-1" Earth observation satellite system for the Vietnam National Space Center (VNSC). The order also includes development of a ground system and local human capacity building programs related to satellite development processes, and is expected to be worth approximately 20 billion yen. The satellite is scheduled to launch around 2023 and will contribute to measures against natural disasters and climate change in Vietnam as the first satellite system that NEC provides outside of Japan. The LOTUSat-1 Earth observation satellite will be equipped with Synthetic Aperture Radar (SAR) and developed based on NEXTAR, a standard satellite system that leverages NEC's long-standing expertise and enables rapid delivery times, reduced costs, and high functionality. The LOTUSat-1 will also feature systems modeled after the ASRARO-2 radar observation satellite that is currently in operation. NEC will provide a completed ground system, including a 9 meter-diameter parabolic antenna, satellite control center, and mission data utilization center and user interface which is based on NEC's "GroundNEXTAR" software package. The system will be installed at a space center in Hoa Lac being established and operated by the VNSC. NEC will also support the development of local human resources by providing training in technology related to satellite development and operation processes, which will contribute to improving monitoring capabilities and enhancing the ability to forecast natural disasters. This is the first satellite project by a Japanese company using Official Development Assistance (ODA) funds from the Japan International Cooperation Agency (JICA) under its Special Terms for Economic Partnership (STEP) program.

Firefly Aerospace and Spaceflight Inc. Sign Launch Services Agreement

April 22, 2020 - Firefly Aerospace, Inc., announced they have signed a Launch Services Agreement (LSA). The agreement confirms that Spaceflight will secure the majority of the payload mass aboard a Firefly Alpha launch, scheduled for lift off from Vandenberg Air Force Base in 2021. In addition to being the anchor customer, Spaceflight will sign, manage, integrate, and deploy multiple payloads on the flight, enabling Firefly to maximize its full 630 kilogram launch capacity on the commercial Alpha mission to Sun Synchronous Orbit (SSO). Also, according to the LSA, Spaceflight will help maximize payload capacity aboard future Firefly Alpha launches. The Alpha launch vehicle is designed to address the needs and demands of the burgeoning small-satellite market, combining the highest payload performance with the lowest cost per kilogram to orbit in its vehicle class. Alpha will provide launch options for both full vehicle and rideshare missions.

Airbus to Support France and India to Monitor Climate Change with TRISHNA

April 20, 2020 - The French Space Agency (Centre National d'Etudes Spatiales, CNES) has recently signed a contract with Airbus Defence and Space for the development and manufacture of the thermal infrared instrument for the TRISHNA satellite. TRISHNA (Thermal infraRed Imaging Satellite for High resolution Natural resource Assessment) will be the latest satellite in the joint Franco-Indian satellite fleet dedicated to climate monitoring and operational applications. CNES and ISRO (Indian Space Research Organisation) are partnering on the development of an infrared observation system with high thermal resolution and high revisit capability including a satellite and associated ground segment. TRISHNA observations will enhance our understanding of the water cycle and improve management of the planet's precious water resources, to better define the impacts of climate change, especially at local levels. In the international partnership workshare, ISRO will provide the platform, the visible and short wave infrared instrument and will be the prime contractor for the satellite, while CNES is co-responsible for the mission and will provide the thermal infrared instrument, to be developed by Airbus. The ground segment is shared between both

countries. For this mission, Airbus is leveraging the latest innovations and synergies from other programmes (IASI-NG, CO3D...) to offer an affordable high performance instrument, with the aim of encouraging development of a commercial market.

Intelsat 901 Satellite Returns to Service Using Northrop Grumman's Mission Extension Vehicle

April 17, 2020 - Intelsat announced that Intelsat 901 has returned to service following the successful docking with the first Mission Extension Vehicle (MEV-1) from Northrop Grumman Corporation and the company's wholly-owned subsidiary, SpaceLogistics LLC, on February 25 – the first time that two commercial spacecraft docked in geostationary orbit. Since the February rendezvous, MEV-1 has assumed navigation of the combined spacecraft stack reducing its inclination by 1.6° and relocating IS-901 to its new orbital location. Intelsat then transitioned roughly 30 of its commercial and government customers to the satellite on April 2. The transition of service took approximately six hours. IS-901 is now operating at the 332.5°E orbital slot and providing full service to Intelsat customers. Intelsat views life-extension services, like MEV technology, as a cost-effective and efficient way to minimize service disruptions, enhance the overall flexibility of its satellite fleet and better support the evolving needs of its customers. Under the terms of the contract, Northrop Grumman and SpaceLogistics will provide five years of life extension services to IS-901 before returning the spacecraft to a final decommissioned orbit. MEV-1 will then be available to provide additional mission extension services for new clients including orbit raising, inclination corrections and inspections. Intelsat has already also contracted with Northrop Grumman for a second MEV (MEV-2) to service Intelsat 1002 satellite later this year.

Equatorial Space Signs Letter of Intent with UK's Responsive Access for up to 12 Missions for Upcoming Volans Small Launch Vehicle

April 17, 2020 - Singapore's Equatorial Space has signed a letter of intent to work with Scottish launch aggregator, Responsive Access, on finding customers for launches of its small satellite launch vehicle. The company's fully hybrid launch vehicle, Volans, is being designed to carry up to 200kg of payload into near-equatorial Low-Earth Orbit - a rare capability for the many smallsat launch companies active in the burgeoning sector, and heavily regulated by technology export restrictions by their domiciles. Responsive Access is a participant in the European Space Agency's Business Incubation Centre and aims to simplify access to space through the use of innovative software and key partner relationships that provide a one-stop-shop for the launch of CubeSats into orbit. Equatorial Space is a Singapore-based space tech startup developing innovative technologies for space launch and exploration activities. With its proprietary hybrid propulsion, its technology allows for cheaper, safer and greener alternatives to existing solutions in both orbital launch systems, as well planetary landing missions. Aiming for the first orbital launch by 2021, ESI has previously been crowned the winner of MBRSC Innovation Cup 2018 in Dubai, a Top 500 Deep Tech Startup by Hello Tomorrow 2018, as well as the Most Promising Startup at the NAMIC Innovation Day 2019.

AAC Clyde Space Wins Order from Loft Orbital

April 16, 2020 - AAC Clyde Space has won an additional 2.5 MSEK (USD 250 000) order from Loft Orbital for power systems for two satellites. The systems will be delivered during 2020, starting with an engineering model in the current quarter to be followed by flight models for two satellites in the latter half of 2020. AAC Clyde Space will deliver its STARBUCK PCU (Power Conditioning and Distribution Unit), based on an existing design with flight heritage, enabling very short delivery times. The systems will be used on Loft Orbital's satellites, YAM-3 and YAM-5, to manage power distribution to multiple payloads hosted on the satellite platform. This order for power systems follows a previous order for Sirius on-board data handling systems, that enable the accommodation of different types of payloads on the standardized micro satellites. Loft Orbital Solutions Inc. is a U.S. company offering affordable, reliable and fast access to space through high-performance and high-reliability satellite platforms by utilizing specific technology for multi-payload interfacing, accommodation and satellite operations.

Exolaunch Signs Agreement with SpaceX for Launch of Small Satellites on a Falcon 9 Rideshare Mission

April 14, 2020 - Exolaunch has signed a Launch Services Agreement with SpaceX to launch small satellites on a Falcon 9 as part of SpaceX's SmallSat Rideshare Program. Under the launch contract, Exolaunch accommodates multiple microsatellites and cubesats on the first Falcon 9 smallsat-dedicated rideshare mission to sun-synchronous orbit, targeted for launch in December 2020. Exolaunch will provide comprehensive rideshare mission management, deployment and integration services for its customers participating in this launch. Core customers who signed up for this launch through Exolaunch's services

will be announced in the coming weeks. On this upcoming Falcon 9 mission, Exolaunch will utilize its brand new product, the EXOport, which is a flexible multi-port adapter designed to enable optimal accommodation of microsats and cubesats. The EXOport comes in various configurations and significantly optimizes slot capacity and launch budget for customers. EXOports mount Exolaunch's proprietary separation systems to accommodate multiple payloads on a single Falcon 9 ESPA port. These include the CarboNIX, a shock-free separation system for microsats that qualified in space in 2019, and the EXOpod cubesat deployer that was utilized to launch over 80 cubesats and can deploy any cubesat up to 16U. The EXObox sequencer will provide separation signals to multiple payloads to initiate their safe and precise deployment into orbit.

Rocket Lab to Launch Dedicated Mission for Japanese Space Industry Start-up Synspec

April 14, 2020 - Rocket Lab has signed a deal with Japanese satellite company Synspec to launch a synthetic aperture radar (SAR) satellite in late 2020. Synspec's StriX-α satellite will be launched on an Electron launch vehicle as a dedicated mission from Launch Complex 1 in New Zealand. The satellite will be the first in Synspec's planned StriX constellation of around 25 SAR satellites designed to provide geospatial solutions. SAR satellites actively observe and acquire Earth surface information by transmitting and receiving reflected microwaves. Compared with optical satellites, which rely on sunlight reflection, SAR can capture images of the ground surface in all weather conditions and at any time of the day or night. With the StriX constellation, Synspec aims to equip companies, governments, and research organizations with high-quality and user-friendly information data that can be used for urban development planning, construction and infrastructure monitoring, and disaster response. The StriX-α satellite will be the sole payload on the Electron launch vehicle for this mission, giving Synspec the ability to select the exact orbit, launch site, and launch timing that best suits the company's needs.

US Space Force to Launch Three Smallsat Missions on LauncherOne

April 10, 2020 - VOX Space has been selected to launch three dedicated missions for the U.S. Space Force (USSF), delivering multiple spacecraft to orbit for the Department of Defense (DoD) Space Test Program-S28 (STP-S28). This launch service contract – awarded by the USSF Rocket Systems Launch Program (RSLP) Office in Albuquerque, NM – is the first task order under the Orbital Services Program-4 (OSP-4) Indefinite Delivery/Indefinite Quantity (IDIQ) contract. OSP-4 allows the U.S. government to rapidly acquire flexible, resilient and affordable launch services, unlocking the ability to launch missions to space within 12 to 24 months of the task order award. This responsiveness is a critical capability in today's contested space domain. The goal of the STP-S28 mission is to deploy multiple technology demonstrations to Low Earth Orbit, enabling advancements in space domain awareness and communications and informing future developments of the USSF space architecture. VOX Space and Virgin Orbit will complete the mission by conducting three separate launches with the LauncherOne system, delivering more than three dozen small satellites to orbit. The schedule for these flights is subject to change, but the first launch could occur as early as October 2021.

Omnispace Selects Thales Alenia Space to Develop Satellite-based IoT Infrastructure

April 9, 2020 - Omnispace, the company that is reinventing mobile communications by building a global hybrid network, announced it has selected Thales Alenia Space to develop the initial component of its satellite-based Internet of Things (IoT) infrastructure. This will advance Omnispace's vision to deliver a global hybrid communications network based on 3GPP standards. Thales Alenia Space will design and build an initial set of two satellites for operation in non-geostationary orbit (NGSO). These initial satellites will support 3GPP-defined (the 3rd Generation Partnership Project telecommunications specifications that unite standard development organizations) Narrow-Band IoT radio interface and will serve to advance the development and implementation of Omnispace's global hybrid network. This announcement marks a key milestone as Omnispace initiates the development of its new generation NGSO satellite constellation which will operate in the S-band. The development of this initial set of satellites will begin immediately and they are scheduled for launch in 2021. Omnispace and Thales Alenia Space, along-side other industry stakeholders, will contribute to the development of the 3GPP NTN friendly standard for global implementation.

China's Launch Mission on Palapa-N1 Satellite Fails

April 9, 2020 - China's launch mission on the LongMarch-3B carrier rocket carrying a communication satellite of Indonesia, Palapa-N1, suffered a failure. The rocket blasted off at 7:46 p.m. Beijing Time from the Xichang Satellite Launch Center in southwest China's Sichuan Province. The rocket worked in normal conditions in the first-stage and second-stage. And abnormal conditions happened in the third-stage.

Debris of the third-stage rocket and satellite had fallen, and the launch mission suffered a failure, according to the monitoring data. Investigations into the malfunction and following up works are underway.

Rocket Lab Successfully Completes Electron Mid-air Recovery Test

April 8, 2020 - Rocket Lab, a space systems company and the global leader in dedicated small satellite launch, has successfully completed a mid-air recovery test – a maneuver that involves snagging an Electron test stage from the sky with a helicopter. The successful test is a major step forward in Rocket Lab's plans to reuse the first stage of its Electron launch vehicle for multiple missions. The test took place in early March, before 'Safer at Home' orders were issued and before New Zealand entered Alert Level 4 in response to the COVID-19 situation. The test was conducted by dropping an Electron first stage test article from a helicopter over open ocean in New Zealand. A parachute was then deployed from the stage, before a second helicopter closed in on the descending stage and captured it mid-air at around 5,000 ft, using a specially designed grappling hook to snag the parachute's drogue line. After capturing the stage on the first attempt, the helicopter safely carried the suspended stage back to land. The next phase of recovery testing will see Rocket Lab attempt to recover a full Electron first stage after launch from the ocean downrange of Launch Complex 1 and have it shipped back to Rocket Lab's Production Complex for refurbishment. The stage will not be captured mid-air by helicopter for this test, but will be equipped with a parachute to slow its descent before a soft landing in the ocean where it will be collected by a ship. This mission is currently planned for late-2020.

Hong Kong Aerospace Technology Group Prepares to Launch their First Satellite

April 3, 2020 - Hong Kong Aerospace Technology Group announced it aims to launch the "Golden Bauhinia No.1" low-orbit high frequency satellite in June from China. The planned launch marks an important milestone in the company's "Golden Bauhinia" space remote sensing project. The rapid development of international commercial aerospace makes it one of the most dynamic industries after the Internet, AI and 5G. According to the US Satellite Industry Association (SIA), commercial aerospace revenue was US\$277.4 billion in 2018 and is expected to increase 10 percent per year. Humanity is shifting from needing an aerospace industry to dependency; with the strategic and commercial value of space infrastructure becoming ever more apparent. As the modern aerospace industry takes shape, the value of orbit and spectrum base resources will become highly sought-after "space real estate." The strategic value of the aerospace industry has driven investment into commercial aerospace organizations in Europe and America; with the market value of commercial aerospace enterprises listed in the US continually reaching new heights.

Oita Partners with Virgin Orbit to Establish First Horizontal Spaceport in Asia

April 2, 2020 - Virgin Orbit announced a new partnership with Oita Prefecture to bring horizontal launch to Japan. With the support of regional partners ANA Holdings Inc. and the Space Port Japan Association, Virgin Orbit has identified Oita Airport as its preferred pilot launch site – yet another addition to the company's growing global network of horizontal launch sites – in pursuit of a mission to space from Japan as early as 2022. Virgin Orbit and Oita Prefecture have agreed to commence a joint technical study to facilitate development of the future spaceport. Oita Prefecture is widely recognized in Japan as not only a top-ranked tourist destination, but also as a hub for numerous high-tech ecosystems, including the steel, petrochemical, semiconductor, and automobile industries. The Oita Prefectural Government now has ambitions to extend that leadership into the space domain.

AAC Clyde Space Wins Order for Commercial Satellite from Orbital Micro Systems (OMS)

April 2, 2020 - AAC Clyde Space has won an 8 MSEK (£642 000) order for a 6U satellite from Orbital Micro Systems (OMS), to be launched as part of the UK Space Launch Programme. The satellite will be included in the company's commercial GEMS program that will deliver accurate and timely weather information to businesses worldwide to improve operational efficiencies and to minimize damage caused by extreme weather. The satellite is scheduled for delivery in April 2021. The order follows the in-orbit success of IOD-1 GEMS, a 3U satellite, produced by AAC Clyde Space carrying a payload from OMS, in a demonstration mission financed by the UK Satellite Applications Catapult. OMS decision to go ahead with a 6U satellite on which it will place a dedicated payload, transitions the Global Environmental Monitoring Satellite (GEMS) program to a commercial project, and marks an important step towards the realization of OMS plan to deploy a full constellation of small satellites as part of its GEMS program.

EXECUTIVE MOVES

Intelsat Announces Tahmin O. Clarke as New Investor Relations Vice President,

April 30, 2020 - Intelsat, operator of the world's largest integrated satellite and terrestrial network, has announced that Tahmin O. Clarke has joined the company as Vice President of Investor Relations. Based in the company's McLean, Va. office, Clarke is responsible for managing the company's relationships with shareholders, bondholders and lenders, and the equity and fixed income research analyst community. He will report to Intelsat Executive Vice President and Chief Financial Officer David M. Tolley. Clarke comes to Intelsat with nearly 20 years' expertise in investor relations and corporate finance in the telecommunications industry. Most recently, he was Vice President of Investor Relations for Reston, Va.'s Ligado Networks, a communications company that operates satellites and wireless networks.

Arqiva Announces the Appointment of Paul Donovan as Chief Executive Officer

April 22, 2020 - Arqiva Group Ltd announced that Paul Donovan has been appointed Chief Executive Officer with immediate effect. Paul Donovan has over twenty years' experience in senior executive roles across the technology, media and telecommunications sectors. He is currently non-executive Director on Arqiva's Board and has previously been CEO of Odeon and UCI Cinemas Group and, before that, CEO of eir, Ireland's leading telecommunications business. He was also a member of the Group's Executive Committee at Vodafone where he led the Group's emerging markets businesses. Paul Donovan succeeds Simon Beresford-Wylie who has been Chief Executive Officer since August 2015. During Simon Beresford-Wylie's tenure as CEO he has simplified the business and successfully driven year on year improvement in both revenue (four year CAGR of 3.9% to £999.5m last financial year) and EBITDA (CAGR of 5.9% to £526.4m in 2019). Paul Donovan's appointment is with immediate effect. He will work with Simon Beresford-Wylie over the coming months to ensure a smooth and orderly transition. Simon will formally leave Arqiva on the 30 June 2020.

Astroscale U.S. Appoints Dave Fischer as VP, Business Development and Advanced Systems, and David Hebert as Director of Communications

April 21, 2020 - Astroscale U.S. Inc., announced that Dave Fischer and David Hebert, two experienced and highly respected space industry professionals, will join the Astroscale U.S. management team. Fischer joins the company as Vice President of Business Development and Advanced Systems, and Hebert joins as Director of Communications with appointments effective as of March 2020. Fischer joins Astroscale with over 30 years of experience in business and technology management. Most recently, he was Director of Business Development for RUAG Space USA. Hebert comes to Astroscale from The Aerospace Corporation where he most recently served as Senior Communications Strategist for policy, and civil and commercial systems. His nearly 20 years of experience includes strategic communications, public engagement and content development. Fischer and Hebert will play leading roles in expanding Astroscale U.S.' collaboration and engagement with partners, potential clients and other groups in the commercial and government space and technology communities. Fischer will help lead the company's exploration of new opportunities to fulfill its mission of making space sustainability a reality. Hebert will drive positioning, perception and brand strategy for the company.

latakoo Expands in Europe as Ivo Guilini Appointed Sales Director for EMEA Region

April 2, 2020 - latakoo, a leading video transfer and workflow company offering a cloud-based platform that is the fastest, easiest and most secure way to get video from anywhere to anywhere, regardless of connectivity or file size, announces the appointment of Ivo Guilini as Sales Director for Europe, Middle East, Africa (EMEA) region. latakoo is currently expanding its video transfer and workflow product portfolio to support production companies as well as its traditional broadcast production customer base. Ivo Guilini, based in Belgium, will oversee the direction of all sales and marketing activities in the EMEA region. Ivo Guilini was previously Director of Sales, Northern Europe for Ross Video coordinating sales and marketing efforts in Northern Europe including the Nordics, Benelux, UK and Ireland. Prior to this, Ivo was a channel manager for Avid Technology handling direct sales and channel sales for non-linear digital media product. Ivo began his career as a manager in the multimedia unit for DM&S.

Massimo Claudio Comparini Appointed as Deputy CEO at Thales Alenia Space and CEO of Thales Alenia Space Italia

April 1, 2020 - Thales Alenia Space, a joint venture between Thales (67%) and Leonardo (33%), announced the appointment of Massimo Claudio Comparini as Deputy CEO and Senior Executive Vice President Observation, Exploration and Navigation Business Line at Thales Alenia Space as well as CEO of

Thales Alenia Space Italia, with immediate effect. He succeeds to Donato Amoroso. Massimo Claudio Comparini, former CEO at eGeos since 2016 and Director Line of Business Geo Information at Telespazio, has a long and proven track record in space industry, from technology to services, and in the earth observation domain. He started his career in 1983 at Selenia Spazio (later Alenia Spazio), holding various management positions, up to the role of Chief Technology Officer. In 2013 he was appointed CTO of Telespazio, a joint venture between Leonardo (67%) and Thales (33%). In 2016 he became the CEO of eGeos, an ASI (20%) and Telespazio (80%) company, an established international leader in the Earth Observation and Geo-Spatial Information, and, in his role, Chairman of GAF and EarthLab Luxembourg.

Astroscale UK appoints Kumar Singarajah as Director of Government & Regulatory Affairs

April 1, 2020 - Astroscale has announced the strengthening of its management team with the appointment of Kumar Singarajah as Director of Government & Regulatory Affairs (UK & Europe) effective 23 March 2020. Kumar joins with 30 years experience in senior positions in the space and telecommunications sectors with companies such as Avanti Communications, ICO Global Communications, Global, Inmarsat and SES ASTRA. He is the current chair of the joint techuk/UKspace Satellite Telecommunications Committee and a faculty member of the London Institute of Space Policy and Law. In his new role, Kumar will lead governmental, regulatory and space policy matters with UK and European government organisations and will work closely with John Auburn, Chief Commercial Officer and Managing Director, UK, as well as the Global Policy team.

REPORTS

Inmarsat Report Highlights Critical Role of Partnership in Japan's Connected Maritime Innovation Ecosystem

April 23, 2020 - A new study, *'A quiet revolution – the maritime innovation ecosystem in Japan'*, explores the commitments to Internet of Things (IoT)-based ship and crew management already made by corporate Japan, then goes on to offer unique insights into the country's emerging start-up culture. The report, sponsored by Inmarsat, the world leader in global, mobile satellite communications, is the first in a series of in-depth profiles into maritime technology and start-ups in specific countries. It builds on 'Trade 2.0: How start-ups are driving the next generation of maritime trade', a global study launched by Inmarsat in 2019 during London International Shipping Week. Both studies are the work of renowned maritime experts Nick Chubb (MNI) and Leonardo Zangrando (MSc, MBA). Nick Chubb is a former seafarer and Founder and Director of Thetius Maritime Innovation Intelligence. Leonardo Zangrando is a Naval Architect and Founder and Managing Director of Startup Wharf Ltd, an Independent Global Hub of Startup-driven Maritime Transformation.

The 2020s: the Space Exploration Decade with \$260 Billion Invested by Governments

April 14, 2020 - According to Euroconsults latest research, *Prospects for Space Exploration*, global government investment in space exploration totaled nearly \$20 billion in 2019, a 6% increase year-on-year. Thirty-one countries and space agencies lead this global investment with the U.S. accounting for 71% of spending. Funding for space exploration is forecast to increase to \$30 billion by 2029, driven by Moon exploration, transportation, and orbital infrastructure. Approximately 130 missions are expected over the coming decade, compared to 52 missions conducted over the past 10 years.

WTA Releases Research Report "New Paths to Teleport Profitability"

April 14, 2020 - The World Teleport Association (WTA) has released *New Paths to Teleport Profitability*, a research report that explores how teleport operators, facing fast change in markets and technologies, can sustain profits and target new revenue sources today and in future years. The report is sponsored by Talia, a top-tier provider of internet, voice and video services headquartered in the UK and operating a WTA-certified teleport in Raisting, Germany. In this report, WTA talks with technologists and operators to uncover the service, technology and market changes that present the most challenge to profitability today as well as those that open new paths to higher margin business.

UPCOMING EVENTS

OTT Summit, June 29-30, Singapore, <https://ottsummit.asia>

APOS (Asia Pacific Operators Summit), September 1-3, Bali, Indonesia, <https://visitapos.com/>

6th Asia-Pacific Spectrum Management Conference, September 2-3, Jakarta, Indonesia, <https://spectrummanagement.asia/>

APSAT 2020, September 23-24, Jakarta, Indonesia, <https://apsat.assi.or.id/>

Satellite Industry Forum, September 28, Singapore, <https://www.aviasif.com/>

ConnecTechAsia 2020, September 29 - October 1, Singapore, www.connectechasia.com

APSCC Summit @ConnecTech Asia, September 29 - October 1, Singapore, <https://apscc.or.kr/apscc-connectech-asia-2020/>

Future of Video India, October 6, Mumbai, India, https://avia.org/all_events/the-future-of-video-india-2020/

Convergence India 2020, October 20-22, New Delhi, India, www.convergenceindia.org

CABSAT 2020, October 26 - 28, Dubai, UAE, www.cabsat.com

CABSAT now in its 26th edition presents SATEXPO, the only platform in the MEASA region bringing senior buyers in sat-comms, tech and business solutions together for 3 days under one roof. SATEXPO represents the entire ecosystem of satellite carriers, manufacturers, service providers and integrators serving government and military.

Asia-Pacific Regional Space Agency Forum (APRSAF-27), October 27 - 30, 2020, in Hanoi, Vietnam, https://www.aprsaf.org/annual_meetings/aprsaf27/meeting_details.php

Asia Video Summit 2020, November 9-11, Singapore, <https://asiavideosummit.com/>

World Satellite Business Week, November 9-12, Paris, France, <http://www.satellite-business.com/en>

APSCC 2020 Satellite Conference & Exhibition (APSCC 2020), November 17-19, Manila, Philippines, <https://apsccsat.com/>

APSCC 2020 Youth Development Workshop, November 19, Manila, Philippines, <https://apsccsat.com/workshop/>

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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.apscc.or.kr.