

APSCC Monthly e-Newsletter

NOVEMBER 2019

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

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

INSIDE APSCC

APSCC 2019 Satellite Conference & Exhibition on Nov 19 – 21 in Bangkok, Thailand Intercontinental Hotel Bangkok, Thailand

[The APSCC Satellite Conference and Exhibition](#) is Asia's must-attend executive event for the satellite and space industry where industry leaders come together to gain market insight, strike partnerships and conclude business deals. APSCC 2019 incorporates industry veterans, local companies and new players in order to reach a wide-ranging audience. [Conference Day 1](#) focuses on the "classics" of the geostationary communications market and the rapid changes this segment is undergoing. Day 2 makes a concerted effort to highlight New Space players as well as present specific focus sessions on Thailand, China and India. Day 3 offers a number of subject-specific discussions on a wide range of both emerging and critical issues facing the industry, from blockchain and quantum encryption to speculation on the outcome of key WRC'19 agenda items.

APSCC is also pleased to introduce a new element in the APSCC Conference with the launch of the first ever [APSCC New Space Pitch Competition](#), which will cap off the final day of the conference. This Pitch Competition will also bring together the conference attendees with the students participating in APSCC's 4th [Youth Development Workshop](#), which is co-presented by the International Space University.

[Join APSCC 2019 today!](#) For more information please visit www.apsccsat.com

NEW MEMBERS

APSCC Welcomes Integrasys as a Gold Member

Integrasys is a privately owned company specialized on engineering and manufacturing Satellite Spectrum Monitoring systems, broadcasting and VSAT telecommunications markets. Integrasys was founded in 1990 by Hewlett-Packard engineers' experts on Automated RF & Microwaves Test Systems and Software and the Marquess of Antella. Since then, Integrasys has evolved towards today's company, offering a wide range of Carrier Monitoring Systems and VSAT Commissioning Tools. Our mission is to provide the industry the best quality and fastest satcoms technology available in CMS & VSATs, with the customer service and care that our customers deserve.

APSCC Welcomes China Satcom as a Regular Member

China Satellite Communications Co., Ltd. (China Satcom) is a main subsidiary of China Aerospace Science and Technology Corporation (CASC) specialized in satellite communications and broadcasting services. At present, China Satcom is operating 16 quality geostationary communications and broadcasting satellites, which cover China, Australia, Southeast Asia, South Asia, Middle East, Europe and Africa etc. The Company owns well-developed infrastructure, reliable monitoring systems, professional teams, outstanding system integration capabilities as well as 24/7 quality service capabilities. The Company is able to provide secure and reliable TV broadcasting and transmissions to the public, customized clients and key industrial customers.

APSCC Welcomes Aon International Space Brokers as a Regular Member

Aon International Space Brokers (Aon ISB) is dedicated to space risk management with expertise in

insurance, satellite engineering, contract & financing, export compliance & government regulations. This enables to offer clients unrivalled breadth and depth of experience in relation to managing and mitigating risks in a rapidly changing and increasingly complex space industry. Aon ISB works for some of the world's largest space companies as well as for smaller satellite operators, financial institutions, law firms and government agencies which all benefit from its blend of disciplines and its commercial leverage on the space insurance market.

SATELLITE BUSINESS

ST Engineering Completes Acquisition of Newtec Group

October 1, 2019 - Singapore Technologies Engineering (ST Engineering) announced that further to its announcement made on 27 March 2019, its subsidiary Singapore Technologies Engineering (Europe) has completed the acquisition of a 100% ownership in Newtec Group following the fulfilment of completion conditions, including the receipt of applicable regulatory approvals. This Newtec acquisition, together with the recent acquisition of Glowlink Communications Technology, which possesses advanced satellite communications anti-jamming technology, will enable ST Engineering to harness their unique capabilities to create a highly differentiated global satcom business group. ST Engineering is now in a stronger position to lead in innovation and the transformation of the satcom industry to enable Smart Cities globally. To drive higher brand visibility, Newtec will be renamed as ST Engineering iDirect (Europe) NV. The acquisition is not expected to have any material impact on the earnings per share of ST Engineering for the current financial year. ST Engineering is a global technology, defence and engineering group specialising in the aerospace, electronics, land systems and marine sectors. The Group employs about 22,000 people across offices in Asia, the Americas, Europe and the Middle East, serving customers in the defence, government and commercial segments in more than 100 countries. Its employees bring innovation and technology together to create smart engineering solutions for customers in the defence, government and commercial segments.

Hughes Receives 2019 Innovation Award for Industry-First Combined LTE and Satellite Router

October 1, 2019 - Hughes Network Systems announced that TMC, a global, integrated media company, has named the Hughes HT2000L Multi-Path Terminal as winner of its 2019 TMC Labs INTERNET TELEPHONY Innovation Award. The first of its kind in the industry, the HT2000L provides connectivity for both satellite and LTE services in a single hardware terminal; either operates as the primary network path or as back-up, with automatic failover switching between the two paths.

Intellian's Pioneering v85NX Antenna Excels in Castor Marine Tests

October 1, 2019 - Dutch maritime connectivity and IT service provider Castor Marine has completed extensive network performance testing of the new Intellian v85NX, reporting that the world's first Ku- to Ka-band convertible 85cm VSAT antenna system displays RF capabilities well on par with larger, heavier and more costly VSAT antenna system alternatives. With clients in shipping, offshore and superyachts, Castor Marine was keen to assess Intellian's pioneering antenna system in a series of working trials. Intellian's innovative new industry benchmark system enables new levels of flexibility for global operation across a variety of vessel sizes and types, making it highly attractive to service providers with a diverse client base. The proven RF performance on Castor Marine's iDirect network positions the v85NX as a strong and viable alternative to 1m VSAT systems, while delivering significantly better link capabilities than current 80cm antenna systems. Ultimately, this enables Castor Marine to offer more choice with fewer inventory requirements, plus straightforward conversion between Ku- and Ka-band today, while retaining flexibility for customers wishing to move to new constellations and 2.5GHz wideband Ka networks when they become available.

Inmarsat and ESA Signs to Start Commercial Flight Trials of Iris Air Traffic Modernisation Program

October 2, 2019 - Inmarsat signed a contract with the European Space Agency (ESA) for phase two of the ground-breaking Iris air traffic modernisation programme, which will include important flight trials across Europe to assess the service in a real operational environment. Iris is being developed to deliver powerful benefits to European aviation by enabling high bandwidth, cost-effective satellite-based datalink communications over Europe. The programme contributes to the delivery of the 'Single European Sky', which focuses on modernising air traffic management and air navigation efficiency. Satellite communications reduces the pressure on ground-based frequencies, which third party reports have

indicated will be under significant capacity stress in the next 5-10 years. As part of the programme's second phase, flight trials will be conducted on approximately 20 aircraft flying commercially over a six-month period starting in 2020, allowing Iris to be assessed in a real operational environment. Selected airlines will take part in the demonstration, with the support of leading Air Navigation Service Providers (ANSPs), to evaluate the Iris programme for air traffic control (ATC) and airline operational communications (AOC) across continental Europe.

ICEYE and ST Engineering to Develop South East Asia Markets for SAR Imagery and Analytics

October 7, 2019 - ICEYE has signed a Memorandum of Understanding (MoU) and a commercial reseller agreement with ST Engineering Geo-Insights to serve the commercial and government markets in South East Asia. As a part of the agreement, the two companies will provide mutual support to develop the regional and global market for rapid revisit, high resolution SAR imagery and SAR based geospatial analytics. ICEYE recently announced its 3 SAR satellite constellation is now available for commercial access, receiving significant attention in the global Earth observation market. ICEYE is creating a growing SAR satellite constellation for frequent and reliable satellite-based information about any location on Earth, regardless of the time of day, and even through cloud cover. ST Engineering Geo-Insights Pte Ltd. is a joint venture company formed between DSO National Laboratories and ST Engineering's Electronics sector. Leveraging the strengths of its parent companies, ST Engineering offers geospatial analytics and value-added services based on satellite imagery data to address growing global demands for timely insights through its brand Geo-Insights. With this partnership, both parties are in a better position to exploit SAR imagery to provide insights for customers in the Energy and Infrastructure/Smart Cities markets.

SSC Adds Eight New Antennas at Florida Ground Station for OneWeb's Global Satellite Network

October 7, 2019 - Swedish Space Corporation (SSC) has completed assembly and installation of eight new antennas in Clewiston, Florida. The antennas will be used for supporting OneWeb, the global communications company with a mission to connect everyone everywhere through a global satellite constellation. SSC and OneWeb have entered into a strategic partnership regarding global ground network support for OneWeb's global network. This includes a specific service agreement for implementation and hosting of one of OneWeb's Satellite Network Portals (SNP) at SSC's ground station in Clewiston, Florida. Since then eight new antennas have been constructed and operations are now ready to begin at full strength.

Viasat Establishes Two Maintenance, Test and Integration Facilities in Australia

October 8, 2019 - Viasat Inc. announced the establishment of two sovereign Maintenance, Test and Integration Facilities (MTIF) in Canberra and Newcastle, Australia. The facilities are strategically located to align with the Commonwealth's needs and provide access to enhanced service and support capabilities for the Australian Defence Force (ADF). The first MTIF, established within the Canberra airport precinct, was developed to provide technical support, product demonstrations and repair capabilities for military satellite communications (MILSATCOM) products. The second MTIF, strategically located near the Williamtown airbase in Newcastle, will support training, technical support and repair capabilities for Viasat's expansive line of Link 16 products. In addition to providing training and technical support, these two facilities are equipped to provide Intermediate Level (I-Level) depot support for significantly faster repair capabilities. Viasat's Australia Government Systems business is headquartered in Canberra and provides a wide range of defence technology capabilities to Australia and New Zealand. Visit Viasat's website to learn more about the Company's growing presence in Australia.

Intelsat's FlexMaritime Powers KVH Elite Streaming Service for Yachts

October 9, 2019 - Intelsat announced that its FlexMaritime service will power KVH Elite – a new, unlimited VSAT streaming service that provides high-definition (HD)-quality, dedicated bandwidth for yachts and leisure charters. FlexMaritime provides a high-speed, flexible service that delivers the consistent and reliable performance that yacht owners need. The multi-layered satellite coverage ensures a clear advantage over competitive single-layer constellations, which often provide only best-effort service levels and don't always offer consistent connectivity wherever and whenever it is needed. The combination of Intelsat's global network infrastructure and KVH's maritime expertise continues to expand the quality and availability of communications for the entire maritime sector. KVH Elite is a global, high-performing, resilient network with multi-layered satellite coverage powered by Intelsat's FlexMaritime service, which provides KVH with dedicated, guaranteed throughput with a committed information rate. This means KVH Elite will perform at the highest levels and ensure that yacht owners have a fast, consistent, reliable

service regardless of their vessel's location in KVH Elite regions while still enjoying the benefits of the KVH mini-VSAT Broadband HTS network worldwide.

New Alliance Begins between KSAT and Japanese SAR Satellite Startup Synspec

October 9, 2019 - Norwegian ground network specialist and provider of EO services KSAT, and Japanese space industry start-up, Synspec have announced a global alliance. Tokyo based Synspec, will develop a constellation of small Synthetic Aperture Radar (SAR) satellites over the next few years aimed at providing solutions and data for the global market, using high resolution data. The first satellite is planned to launch in 2020. The partnership between the two companies will secure Synspec's cost effective ground support for their constellation, during LEOP and the operational phase. KSAT will be able to include SAR data and applications from the future constellation in their already extensive SAR portfolio.

Thaicom and China Great Wall Sign MoU on UAV and Space Technology Cooperation

October 10, 2019 - Thaicom Public Company Limited has entered into a Memorandum of Understanding (MoU) with China Great Wall Industry Corporation (CGWIC) – China's leader in commercial launch services, satellite systems, and space technology cooperation. The companies will cooperate in the area of application development for Unmanned Aerial Vehicles (UAV) and BeiDou – China's proprietary Global Navigation Satellite System (BDS). The deal is part of Thaicom's ambition to diversify its business and enter the emerging next technology markets through the integration of space, air, ground and maritime networks.

Aeromobile Partners with Truemove Thailand to Enable Customers to Connect whilst Inflight

October 15, 2019 - AeroMobile, a subsidiary of Panasonic Avionics, and leading telecommunications operator TrueMove Thailand, a subsidiary of True Corporation, have partnered to launch an inflight data roaming bundle for their customers. The inflight bundle, which commercially launched in September 2019, will place inflight mobility at the heart of TrueMove Thailand's roaming packages. As the first operator in the country to launch an inflight roaming bundle, this agreement further cements TrueMove Thailand's position as a market innovator and respected service provider, with a highly competitive offering that brings more value and a greater experience for their 28 Million+ customer-base. Customers who subscribe to the inflight service will be able to use their mobile phones to browse the internet, send and receive emails, texts and calls and stay in touch with friends on social networks, whilst travelling on AeroMobile equipped aircraft.

Marlink and Intelsat Expand Connectivity Services for Maritime Sector around the Globe

October 16, 2019 - Marlink and Intelsat announced that the companies have agreed to a multi-year renewal and expansion of their partnership to provide broadband services to maritime vessels around the world. The multi-year agreement will deliver additional throughput to vessels via multiple layers of space-based coverage, ensuring that ship owners and operators have the flexibility and access to reliable, high-quality, always-on connectivity. Initiated in 2014, the partnership between Marlink and Intelsat enabled Marlink to enhance its extensive portfolio of maritime VSAT services. It also unlocked applications that improve operational efficiencies for ship owners and operators across all maritime segments, including the oil/offshore, transportation, cruise and ferry, and fisheries sectors. The flexibility, reliability and reach provided by Intelsat's global network of wide beam and high-throughput Intelsat Epic^{NG} satellites provide unprecedented high-speed connectivity to maritime vessels, enabling the delivery of a diverse range of value-added services and applications such as asset tracking and improved cybersecurity that supports their current and future connectivity needs.

Queen Transportation Selects ORBCOMM's In-Cab Solution

October 16, 2019 - ORBCOMM Inc. announced that it has been selected by Queen Transportation, LLC, an asset-based truckload carrier and logistics provider headquartered in Hickory, NC, to provide its in-cab solution across their entire fleet of trucks. ORBCOMM's advanced solution provides wireless connectivity through its industry-leading hardware and integrated Cloud-based analytics platform and information management engine for optimal fleet management. Queen Transportation is using ORBCOMM's in-cab solution to enhance operational efficiency through increased visibility and auditing, along with more automated management of their drivers and trucks. ORBCOMM's in-cab solution delivers GPS fleet tracking and connects to the truck's CANbus to seamlessly collect important data from the engine, brake systems, fuel tanks and more, providing access to deep analytics and reporting via FleetManager, ORBCOMM's newest web platform.

Comtech EF Data Receives \$1.6 Million Satellite Modem Order from European Ministry of Defense

October 16, 2019 - Comtech EF Data Corp. received a \$1.6 million order for DMD2050E Satellite Modems from a European Ministry of Defense (MOD) during its first quarter of fiscal 2020. The DMD2050E Satellite Modems will be deployed at the MOD's teleports in Europe and the Caribbean. The MOD will leverage the technical capabilities of the DMD2050E Satellite Modems to upgrade an existing network, including higher operational data rates, embedded encryption and Information Throughput Adaptation (ITA). The DMD2050E Satellite Modem is designed to comply with the widest possible range of standards and is compatible with the largest number of satellite modems in the industry. It provides highly advanced and bandwidth efficient forward error correction and a complete range of modulation types. The advanced forward error correction and modulation capabilities are integrated with DoubleTalk® Carrier-in-Carrier® bandwidth compression technology allowing for maximum state-of-the-art performance under all conditions. The DMD2050E also supports Adaptive Coding and Modulation (ACM), which enables modems on each side of a point-to-point link to use the modulation and coding combination that maximizes throughput, and automatically adapts the optimum operating point as conditions change.

Iridium Adds Intellian to Iridium Certus Maritime Portfolio

October 22, 2019 - Iridium Communications announced Intellian as the newest manufacturer of Iridium Certus maritime terminals. Intellian is introducing the C700 terminal which will enable a variety of applications including safety, bridge and crew welfare communications, connected ship IoT capabilities like engine monitoring and remote diagnostics, as well as situational awareness reports. Developed for Iridium's global network and designed to provide the fastest L-band broadband service in the industry, the C700 will deliver up to 352kbps transmission and 704kbps reception speeds through the Iridium Certus platform. Its 12-element patch technology also ensures seamless connectivity, even in adverse weather or environments.

SES and Thales Reach Record Speed and Enhanced Coverage via Integrated GEO/MEO Network, Raise Bar for Inflight Connectivity

October 23, 2019 - SES and Thales have taken inflight connectivity to a new level, successfully demonstrating uninterrupted access to high-throughput broadband applications for the first time over a platform supporting multi-orbit interoperability, switching seamlessly between SES's geostationary (GEO) and O3b medium earth orbit (MEO) satellite beams. The demo flight from Melbourne, Florida to the Atlantic coast of Nicaragua saw dozens of switches successfully completed between GEO and MEO beams, and between multiple MEO satellites within a beam, using the Hughes JUPITER Aeronautical system high performance airborne modem system. Engineers aboard the test flight were able to simultaneously use a broad range of bandwidth-hungry services demonstrating rates in excess of 265 Mbps via the Thales FlytLIVE connectivity network featuring the Hughes JUPITER System and a Hughes ModMan integrated with the ThinKom Ka2517 phased-array airborne antenna. Leveraging the same high-powered, low-latency O3b MEO capacity that has already redefined connectivity at sea, the engineers were able to demonstrate quality and reliable delivery of 4K video streaming, super-fast social media networking, e-commerce transactions, audio conferencing, interactive gaming and web browsing on-board the Gulfstream G-III aircraft.

ThinKom Completes First-Ever In-Flight MEO-GEO Satellite Roaming Tests

October 23, 2019 - ThinKom Solutions, Inc. has completed a series of very successful in-flight connectivity tests of its Ka-band antenna on SES' O3b medium-Earth orbit (MEO) and geostationary (GEO) satellites. The tests provided the first live demonstration of airborne communication with the O3b MEO satellites and included seamless handovers between MEO and GEO satellites during flight. The in-flight demos used the Thales FlytLIVE connectivity network and incorporated the Hughes JUPITER™ ModMan integrated to the ThinKom Ka2517 antenna. The flights took place Sept. 17-18 over South Florida and the Caribbean Sea, using a commercially available ThinKom Ka2517 phased-array airborne antenna mounted on a Gulfstream G-III test aircraft. With the Hughes JUPITER Aeronautical system and ModMan, the antenna demonstrated the ability to achieve high data throughput rates while seamlessly switching among successive O3b MEO satellites, as well as transfers between O3b and SES' GEO constellations. The Ka2517 achieved downlink error-free data throughput rates in excess of 265Mbps, with beam switching speeds of less than one second, while automatically resolving adjacent satellite interference (ASI) issues.

Intellian Satcom Pairs with Hyundai Global Service's Smart Ship Solution

October 23, 2019 - Intellian has launched a satcom package for smart ships with marine engineering and

service provider Hyundai Global Service (HGS), a subsidiary of the world's No.1 shipbuilding company Hyundai Heavy Industries (HHI) group. This is the first joint project to come from the companies' signing of a Memorandum of Understanding (MoU) in July. This world-first service is a combination of HHI's 'Integrated Smart Ship (ISS)' solution – a digital ecosystem for vessel and fleet management which incorporates a powerful data analysis platform – and Intellian's satellite communications antenna systems. HGS selected Intellian as partner due to its broad range of innovative, resilient antennas, and its flexibility to operate with global service providers to provide comprehensive service to customers. The new package will provide HGS with a standardized smart ship package to supply for newly-built HHI ships, while Intellian will secure new customers. Moreover, as it offers internet provision right from the sea trial, customers are freed from the inconvenience of fitting network services to the vessel. HGS will also provide customer support for any smart ship solution issues, guaranteeing faster response times and trustworthy service.

Pacific Gas Chooses Inmarsat's Fleet Xpress Connectivity, Protected by Fleet Secure Endpoint

October 23, 2019 - The largest Liquid Ethylene Gas (LEG) ship owner in China has agreed a commitment to install Fleet Xpress connectivity from Inmarsat. This will also include Inmarsat's Fleet Secure Endpoint, the new line of defence in the multi-layered strategy to thwart cyber threats. Pacific Gas has committed to the new Fleet Secure Endpoint solution within the terms of its agreement to install Fleet Xpress across all their operational ships by the end of this year as well as on its future vessels. The Hong Kong-headquartered group has the capacity to carry 3 million tons of cargo annually and has signalled intentions of an expansion beyond its existing focus on very large gas carriers and liquefied ethylene gas carriers into Liquefied Natural Gas (LNG) carriers and Very Large Ethane carriers (VLECs).

Speedcast Upgrades Major Norwegian Fleet's VSAT Connectivity

October 24, 2019 - Speedcast International Limited announced that it has signed a multi-year fleet contract extension with a major Norwegian ship owner to deliver significantly increased VSAT connectivity along with the latest Iridium Certus back-up solution. In addition to the provision of Global VSAT and L-Band connectivity, Speedcast will install its industry-leading SIGMA Gateway network management platform across the entire fleet of over 40 vessels. SIGMA Gateway seamlessly manages Speedcast's global VSAT, L-Band, 4G/LTE and Wi-Fi services, bringing powerful capabilities to support vessels with advanced technology requirements.

Vishipel Selects Orbcomm's Vessel Monitoring System for Commercial Fishing Market in Vietnam

October 24, 2019 - Orbcomm announced that it has been selected by Vishipel, a leading provider of telecommunications services and maritime equipment, to provide its Vessel Monitoring System (VMS) for commercial fishing vessels throughout Vietnam. Orbcomm's VMS delivers complete visibility and control of fishing vessels and maintains vital communications links with home ports utilizing Orbcomm's satellite service offering. Vishipel is using Orbcomm's robust VMS as a major component of their VIFISH 18 kit in order to improve the monitoring, control and management of fisheries resources by the Vietnamese government to help prevent Illegal, Unreported and Unregulated (IUU) fishing. Orbcomm's VMS provides Vishipel's customers with detailed, continuous reports on vessel location and fishing route tracking along with the ability to establish geofences for authorized fishing zone monitoring.

Kacific Secures Infrastructure Location with Petro1 for its Broadband Services to Indonesia and the Wider Region

October 28, 2019 - Kacific Broadband Satellites Group (Kacific) has selected PT. Petro One Indonesia (Petro1) to provide ground infrastructure services in Indonesia for its brand-new satellite, built by Boeing, which will launch at the end of 2019. Petro1 will host, operate and provide first level support for Kacific's gateway hub at its secure facilities in Surabaya and Pasuruan, East Java, Indonesia. The state-of-the-art primary gateway will include a 9-metre antenna and associated equipment to transmit and distribute data to and from the satellite. An additional diversity site, over 60 kilometres away, will ensure better availability and a redundancy capability. Petro1 will provide a high-grade, well-fibered secured data center environment for the system servers, 24/7 service care, which includes onsite service staff 24/7. The satellite's high-power beams cover Indonesia's many islands and surrounding ocean, delivering affordable, high-speed broadband to telecommunications companies, internet service providers and governments. This contract with local partners represents a multi-million dollar infrastructure investment into Indonesia by satellite operator Kacific.

Eutelsat Launches an Integrated IoT Connectivity Service via Satellite

October 28, 2019 - On the eve of the IOT Solutions World Congress in Barcelona, Eutelsat Communications announces the launch of a pioneering satellite-based IoT connectivity service: Eutelsat IoT FIRST. Having recently unveiled its ELO constellation of nanosatellites in Low Earth Orbit, dedicated to the Internet of Things, Eutelsat has taken further steps towards its ambition to become a leading satellite IoT company through the launch of Eutelsat IoT FIRST: a fully integrated IoT connectivity service operating in Ku-band via Eutelsat's geostationary satellites. Targeted companies include selected satellite service providers, telecom operators and IoT service providers. At a price point proposed on a par with cellular-based IoT connectivity services, Eutelsat IoT FIRST integrates satellite terminals, space and ground segments, packaged within an API-based service delivery framework. With this product, Eutelsat is further addressing the connectivity challenges of industries spanning across retail, banking and security, through to energy, mining and agriculture, which seek a cost-effective and reliable IoT solution to connect their fixed assets, irrespective of their location. Eutelsat IoT FIRST also acts as an IoT backhaul service, enabling telecom operators to connect IoT base stations and gateways to their core network. Focusing currently on treating fixed assets, as of next year Eutelsat will then expand its portfolio of IoT services to incorporate the connectivity of mobile assets.

Satellite Industry Calls for Pragmatic Spectrum Allocation Decisions ahead of WRC19

October 28, 2019 - The Global Satellite Coalition (GSC) calls on national policymakers to make realistic and pragmatic allocation decisions at the forthcoming World Radiocommunication Conference (WRC-19), where critical discussions will be held about the use of spectrum across a range of frequency bands including 3.8 GHz, 26 GHz, 40/50 GHz and 66-71 GHz. The GSC represents the global satellite ecosystem – satellite operators, manufacturers, launchers, systems integrators and many others. Together they deliver critical communications services via hundreds and in the future many thousands of satellites across the globe. As WRC-19 begins, the satellite sector calls on policymakers to ensure that spectrum decisions at the conference take a practical approach to addressing both the unresolved communications challenges existing in the world today and the technological imperatives of the future.

Gilat and China Satcom Lay Foundation for Future Chinese Satellite Communication for Aero, Maritime, Land Mobility and Fixed Applications

October 29, 2019 - Gilat Satellite Networks Ltd announced the strengthening of the already established strategic partnership to jointly provide advanced satellite communication services covering: Aero, Land and Maritime fixed and mobility applications. Gilat and China Satcom will work in partnership to enable and deploy Gilat's DVB-S2X technologies throughout China while supporting all business verticals. China Satcom is a licensed telecommunications service provider in China which also owns and operates the most capable and extensive Ka-band spot beam satellite system in China, the only Ka-band system currently available for IFC service in the country.

Gogo Meets Significant Inflight Connectivity Demand through Deal with Eutelsat

October 29, 2019 - Gogo, a leading global provider of broadband connectivity products and services for aviation, together with Eutelsat Communications, announced a new satellite capacity agreement for high-speed inflight connectivity services. As part of the new multi-year agreement, Gogo has leased HTS bandwidth on EUTELSAT 10B satellite, to be leveraged over Europe and the Middle East. The new satellite is set to launch in 2022.

C-Band Alliance Proposes to Clear 300 MHz of Spectrum for Nationwide 5G Deployment

October 29, 2019 - The C-Band Alliance (CBA) announced that it will commit to clear 300 MHz of C-band spectrum to support fast 5G wireless deployment throughout the continental U.S. In an updated filing with the U.S. Federal Communications Commission (FCC), the CBA detailed that the 300 MHz of spectrum includes a 20-MHz guard band to protect existing satellite services from 5G interference. Further enhancing its plan to clear spectrum quickly, the first tranche – which clears spectrum within 18 months of an FCC order in 46 top metropolitan zones – is now increased to 120 MHz, inclusive of the 20-MHz guard band. The second tranche of the remaining spectrum will be made available within 36 months from a CBA-led auction, providing cleared spectrum throughout the entire continental U.S.

EchoStar Acquires Helios Wire Corporation

October 31, 2019 - EchoStar Corporation announced that its subsidiary, EchoStar Global LLC has acquired Helios Wire Corporation ("Helios"), a satellite-enabled IoT connectivity company headquartered in

Vancouver, Canada. The acquisition includes Helios' Australian subsidiaries Sirion Holdings Pty Ltd. and Sirion Global Pty Ltd. ("Sirion Global"). Sirion Global holds global spectrum rights for S-band Mobile Satellite Service (MSS), administered by Australia, and has been working to develop solutions for high volume asset tracking and monitoring applications by satellite.

Telesat and NSSLGlobal Confirm Ultra-low Latency of Telesat's LEO System

October 31, 2019 - Telesat and NSSLGlobal, a leading independent provider of satellite communications and IT solutions, have completed live testing with multiple government customers using Telesat's Phase 1 Low Earth Orbit (LEO) satellite. By leveraging the ultra-low latency of Telesat's LEO system, the companies demonstrated superior broadband performance – in terms of speed, latency and jitter – for high demand applications including 4K video conferencing, live video streaming, encrypted services for government use and live calling over mobile devices. Satellite operators are now introducing a new generation of space-based networks, some of which will be in geostationary (GEO) orbit and some far closer to earth in LEO. Telesat is one of the few companies with significant experience in both orbits and is convinced that innovative LEO constellations can offer superior broadband services versus GEO systems. This recent round of live testing with NSSLGlobal, a longstanding Telesat partner, provides further confirmation that Telesat LEO's patent-pending design will deliver the most secure, robust and resilient infrastructure for assured connectivity.

BROADCAST

Kartina TV Expands Reach via SES Satellite at 19.2 Degrees East

October 1, 2019 - Over-the-Top (OTT) platform Kartina TV will be broadcasting the tailored bouquet of Russian-language TV channels across Western Europe as they aim to increase the number of viewers watching their content, SES announced. The content, which soon will be available on a new FTV (Free-to-View) encrypted DTH platform on ASTRA 1N satellite at 19.2 degrees East, will continue to be available over IP networks. One of the leading pay TV operators in Europe and the US for Russian-language programming, Kartina TV caters to the Russian-speaking diaspora who can access Russian-language content via OTT set-up boxes and apps. The new Kartina Satellite Verimatrix encrypted FTV platform will carry around 30-40 SD Channels in HEVC encoding and is available for users who have a dedicated 4K / UHD HDR Android based hybrid cardless STB with categorized lists of FTA channels and extended EPG support.

Blake Broadcasting/CBNN Signs a Major Satellite TV Distribution Deal throughout Europe, Asia and North America

October 2, 2019 - BBN (Blake Broadcasting) has executed a 3-year+ deal with SES as its exclusive broadcast Satellite Network Provider for CBNN Networks in Europe, Asia and North America. CBNN is a growing network of cable (linear television) properties and OTT Networks reaching over 400 million homes. SES is the largest satellite operator in the world, representing the most significant reach in the broadcast industry. SES also works with the world's largest live sports, news and event organizations, and takes care of the distribution networks, playout workflows, content management and monetization services and all backend services, so that CBNN can focus on delivering the highest quality content to their audiences worldwide.

Foxtel Selects CommScope to Help Redefine TV Viewing in Australia

October 7, 2019 - CommScope announced its continued partnership with Foxtel, Australia's leading Pay TV operator, to bring The New Foxtel Experience to subscribers across the country. The New Foxtel Experience leverages CommScope technology to deliver thousands of hours of TV and on-demand movies as well as access to Netflix® for subscribers through Foxtel's iQ4 set-top box. Whether subscribers are streaming videos, recording live programming, or browsing through Foxtel's massive on-demand library, the iQ4 makes it simple to get everything they want all in one place. CommScope's Professional Services group worked with Foxtel to deliver the iQ4's full-stack software platform, which integrates to multiple back-office systems to provide a seamless broadcast and IP connected user experience. The iQ4 combines broadcast satellite and IP capabilities in a single, powerful device capable of delivering 4K broadcast resolution, 802.11ac Wi-Fi®, and a 1TB hard-drive – allowing subscribers to watch what they want, when they want, the way it was meant to be watched.

Lumina Broadcast Systems Australia and Integrasys Form New Partnership

October 10, 2019 - Lumina Broadcast Systems Australia and Integrasys announced business partnership for Australia to represent the award winning Integrasys Satellite Carrier Monitoring Systems used by many Satellite Teleports for monitoring VSAT Systems around the world. Integrasys have several modules available for Satellite Operators, Teleport Operators, VSAT Installers and SNG Operators.

BBC Studios Renews Distribution Deal with MEASAT in Partnership with Globecast

October 15, 2019 - MEASAT Satellite Systems Sdn. Bhd., in partnership with Globecast, has announced that BBC Studios, the commercial arm of the BBC, has renewed its agreement to distribute its BBC channels across Asia via the MEASAT-3 satellite. The channels include BBC Earth HD, which inspires audiences by sharing the incredible wonders of the universe; CBeebies HD, which provides preschool age programming to encourage learning through play; and BBC Lifestyle Asia, which provides a wealth of inspiration for home, family and life. Globecast provides MEASAT satellite capacity, ground and uplink services to BBC Studios, carrying these channels to viewers across the Asian market. MEASAT-3 is collocated with the MEASAT-3a and MEASAT-3b satellites at Asia's prime video hot slot of 91.5°E. The three satellites form the region's strongest video neighbourhood, providing UHD, HD and SD channels across Asia, Australia, East Africa and Eastern Europe. The MEASAT fleet will be further strengthened with the addition of MEASAT-3d in 2021.

Globecast Selected by Orby TV to Provide Media Operations for New US DTH satellite service

October 16, 2019 - Globecast has been selected by Orby TV to provide a wide range of turnkey broadcast media operational services for the nascent pay TV startup. Launched throughout the lower 48 United States in spring 2019, Orby TV offers a high-quality and affordable prepaid, pay-as-you-go satellite pay TV service directly to consumers at a low cost with no contract and no Internet service required. Globecast is handling Orby TV's full broadcast operations on a 24/7 basis at its Globecast Media Center in Culver City, CA. Using its extensive fiber and satellite network, Globecast is managing for Orby TV channel aggregation, providing Orby TV's co-location services, handling technical operations and the uplinking of the channels to the high-powered Ku-band capacity on Eutelsat's EUTELSAT 117 West A satellite at 117° West. This deal with Globecast allows Orby TV to benefit from advanced DTH delivery services, along with the satellite space segment and disaster recovery services from a geographically diverse third-party uplink site. This collaboration provides a complete and fully integrated satellite transmission infrastructure, giving Orby TV a fully managed and resilient transmission solution.

Discovery Selects Synamedia to Support its Asia Pacific Migration to Cloud Encoding

October 22, 2019 - Synamedia announced that Discovery, Inc. has chosen its virtualized Digital Content Manager (DCM) from its video network portfolio to increase operational efficiencies for its Asia Pacific distribution. A long-time Synamedia PowerVu customer, Discovery is centralizing its Asia Pacific uplink compression systems to its Sterling, Virginia broadcast center. The company is turning to Synamedia's virtualized DCM to distribute signals across regions without interruptions. The platform, which complements traditional satellite distribution, enables Discovery to efficiently transition its distribution architecture to an IP-based virtualized video processing environment while protecting its revenue. Synamedia's virtualized DCM offers exceptional video services for linear pay TV broadcast and live OTT streaming, including live transcoding to multiple bit rates and formats, scalable video functions, best-in-class video quality, and an intuitive user interface. Discovery has employed Synamedia's PowerVu Network Center to securely distribute its live linear international channels from hardware to a virtualized environment in the U.S. to feed the Asia Pacific region distribution.

NENT Group and Telenor Group to Merge Viasat Consumer and Canal Digital

October 24, 2019 - Nordic Entertainment Group (NENT Group), the Nordic region's leading streaming company, has entered into an agreement with Telenor Group to combine its Viasat Consumer (satellite pay-TV and broadband-TV operations) with Canal Digital (satellite pay-TV). The combination will result in the parties each holding 50 percent of the shares of the new joint venture company and is expected to create substantial synergies and shareholder value, as well as provide an enhanced proposition for customers. The combination generates a scale Nordic player with combined net sales of approximately SEK 7.6 billion and 1,257k subscribers at the end of June 30, 2019. The combination is expected to yield annual cost synergies of approximately SEK 650 million, with full effect from 2022. Furthermore, there are expected to be substantial sales synergies arising primarily from Viaplay upsell opportunities and reduced churn in the joint entity. Integration and other related costs are expected to total approximately SEK 900

million, and will be reported in the new joint venture. The joint venture will be reported as an associated company in NENT Group and Telenor, and is expected to distribute available cash to its shareholders. The combination is subject to EU regulatory approval and expected to be completed during the first half of 2020.

Mediahouse.PH and SES Launch CLUBTV across the Philippines

October 24, 2019 - Millions of homes in the Philippines will be able to enjoy new international TV channels thanks to CLUBTV, a new thematically-focused TV platform launched by Mediahouse.PH, a division of Magistan Media, a project management firm specialising in television operations and advertising, on SES's satellite SES-9. Starting with six channels, CLUBTV offers a wide variety of genres that will bring additional choices and popular thematic topics that interest young Filipinos: GINX Esports TV, HealthWellness, Pet & Pal, Luxe&Life, My Cinema Europe and Motorvision TV. The platform will allow the channels to address existing audiences of pay-TV operators, including Cignal TV as of December, bringing a new selection of content to subscribers at no additional cost. Mediahouse.PH serves as the aggregator and marketer of the TV channels. Projections show TV households in the Philippines increasing to 20.7 million by 2024 from 18.7 million in 2019. For TV households, satellite Direct-to-Home (DTH) TV is the fastest-growing TV reception mode against terrestrial and cable TV in the Philippines, with the number of satellite TV households estimated to be 3.7 million by year end and forecast to increase to 5.8 million in 2024. SES will provide both satellite capacity via SES-9, located at the prime orbital location of 108.2 degrees East, and managed media services such as ad insertion, encoding, monitoring and multiplexing. SES has established a strong presence in Asia Pacific via its premium video neighbourhood at 108.2 degrees East, which currently broadcasts channels to over 17 million TV homes across the Philippines and Indonesia.

Broadpeak Drives Higher-quality Television Experiences in the Android TV Environment

October 30, 2019 - Broadpeak, a leading provider of content delivery network (CDN) and video streaming solutions for content providers and pay-TV operators worldwide, today announced that its nanoCDN™ multicast ABR and umbrellaCDN™ CDN selection solutions are gaining significant momentum in the Android TV environment. As the popularity of Android TV dramatically grows, with 99.2 million devices expected to be shipped by 2022 and more than 140 pay-TV operators using Android TV, Broadpeak's video delivery solutions are empowering content providers and pay-TV operators around the world to offer better-quality television experiences on Android TV screens.

LAUNCH / SPACE

Ariane 6 on the Home Stretch

October 1, 2019 - The detailed definition of the design of Europe's new Ariane 6 launcher was validated at the closing meeting of the Critical Design Review (CDR) held in Paris on September 25, which brought together the project management teams from the European Space Agency (ESA), French space agency CNES, Arianespace, and ArianeGroup. This step marks the end of the detailed design phase for the Ariane 6 launcher and its means of production – a major milestone in the ESA program, for which ArianeGroup is lead contractor and design authority. Final technical adjustments and verifications will now be carried out. The next major milestone for Ariane 6 is the start of combined testing of the launcher and its launch pad in Kourou, French Guiana, scheduled for the first half of 2020. The different parts of the launcher will be transferred to Kourou, where the ArianeGroup teams will carry out final assembly in the Launcher Assembly Building (BAL). The launcher will then be installed on the launch pad (ELA-4) for coupling with the boosters and the fairing. All interactions and interfaces with the launch pad will then be tested, with several core stage test firings.

Intuitive Machines Selects SpaceX to Launch Nova-C to the Moon in 2021

October 2, 2019 - Houston-based Intuitive Machines selected SpaceX to launch its lunar lander, Nova-C, to the Moon in 2021 on a Falcon 9 rocket. NASA awarded Intuitive Machines the first mission task order under the CLPS contract, May 31, 2019. It calls for Intuitive Machines to develop, launch and land Nova-C on the lunar surface with a payload of NASA-provided instruments that will conduct science investigations and demonstrate advanced technologies on the lunar surface. Intuitive Machines reviewed proposals from multiple launch providers and ultimately selected SpaceX for its proven record of reliability and outstanding value. Nova-C will launch on a Falcon 9 rocket from historic Launch Complex 39A at NASA's Kennedy Space Center in Florida. Powered by the liquid methane main engine, Nova-C can deliver at least

220 pounds of space technology and instrumentation cargo to anywhere on the lunar surface. On its maiden mission in 2021, Nova-C will carry 5 NASA CLPS payloads to the lunar surface and transmit scientific data back to Earth during 13.5 days of activity on the moon. Intuitive Machines is in the process of adding additional payloads from other customers to the 2021 mission to fill out the available cargo manifest.

Kepler Communications to Launch Satellites with ISL and GK Launch Services on a Soyuz in 2020

October 7, 2019 - Kepler Communications has signed a launch agreement with Innovative Space Logistics (ISL) working with GK Launch Services to deploy two satellites into sun-synchronous orbit in Q2-Q3 2020. The satellites will be the first of multiple batches of the next-generation platform, forming part of Kepler's Low-Earth Orbit (LEO) constellation for global data services. Kepler's next generation of satellites will incorporate both a high-capacity Ku-band communications system and a narrowband payload, for both high-speed data transfers and low-power direct-to-satellite IoT connectivity. Planning to place approximately 140 satellites in LEO in three incremental phases, from 2020 to 2023, Kepler continues to execute on schedule against plan. Kepler has two demonstration satellites in orbit that are currently delivering Kepler's high-capacity data transfer service to a number of early customers. The company's LEO constellation will grow to become a space data relay system to serve other constellations with high-speed data backhaul capabilities. Today, Kepler is focused on building the install base for Global Data Service, its pole-to-pole wideband connectivity service for mobile and fixed applications. EverywhereIoT, Kepler's affordable solution for Internet of Things (IoT) devices, will enter user trials in the coming months.

Maxar Opens New Facility to Support U.S. National Geospatial-Intelligence Agency Programs

October 9, 2019 - Maxar Technologies announced that it will open a new facility in St. Louis, Missouri, to support growth in several U.S. National Geospatial-Intelligence Agency (NGA) programs. The facility will be located in the historic Globe Building, in the heart of downtown St. Louis. Maxar expects 48 employees to initially staff the facility, most of whom are new hires that will support the NGA's Global EGD, Janus Geography and SBIR Phase III contracts. St. Louis is the Midwest geospatial hub of the United States in part due to its proximity to the National Geospatial and Intelligence Center West facility, the T-REX Geospatial Resource and Innovation Center and several other commercial GEOINT companies. The operations of DigitalGlobe, SSL (Space Systems Loral) and Radiant Solutions were unified under the Maxar brand in February; MDA continues to operate as an independent business unit within the Maxar organization.

Proton Successfully Launches EUTELSAT 5 West B / Mission Extension Vehicle-1 Satellites

October 9, 2019 - International Launch Services (ILS) has successfully inserted the EUTELSAT 5 West B and the Mission Extension Vehicle-1 (MEV-1) satellites into their planned Supersynchronous Transfer Orbits (SSTO) for Eutelsat and SpaceLogistics. The satellites are both manufactured by Northrop Grumman and based on the GeoStar-2 (EUTELSAT 5 West B) and GeoStar-3 (MEV-1) platforms. EUTELSAT 5 West B is a Ku-band satellite that will be located at 5° West, a key video neighborhood addressing predominantly French, Italian and Algerian broadcast markets. The new satellite will provide business continuity and improved quality for these markets via a Ku band payload of 35 equivalent 36 MHz transponders connected to three service areas. MEV-1 will deliver a groundbreaking on-orbit servicing satellite life-extension through Northrop Grumman's wholly-owned subsidiary SpaceLogistics LLC. MEV-1 will dock to client vehicles in geosynchronous orbit to provide attitude and orbit control of the combined vehicle stack. MEV-1 has the ability to dock and undock several times during its 15 year design life, allowing it to service multiple customers. SpaceLogistics LLC's initial service, using MEV-1, will extend the life of the Intelsat 901 satellite for five years.

Qualcomm Supports India's NavIC Satellite Navigation System

October 14, 2019 - Qualcomm Technologies, in collaboration with the Indian Space Research Organization (ISRO), announced support for India's Regional Navigation Satellite System (IRNSS), Navigation with Indian Constellation (NavIC), in select chipset platforms across the Company's upcoming portfolio. The initiative will help accelerate the adoption of NavIC and enhance the geolocation capabilities of mobile, automotive and the Internet of Things (IoT) solutions in the region – with the backing of engineering talent in India. The solution is built on Qualcomm Technologies' leading foundational inventions in location-based position technology. As part of the updated platforms, the Qualcomm Location Suite now supports up to seven satellite constellations concurrently, including the use of all of NavIC's operating satellites for more accurate location performance, faster time-to-first-fix (TTFF) position acquisition, and improved robustness of location-based services. These enhancements will enable select mobile,

automotive and IoT platforms to better serve key industries and technology ecosystems in the region and will help improve user experience for location-based applications especially in dense urban environments where geolocation accuracy tends to degrade. Support for NavIC will be available in select Qualcomm Technologies' chipset platforms starting in late 2019 and commercial devices with NavIC support are expected to be available during the first half of 2020.

Boeing Contracted to Build Rocket Stages for NASA's Artemis Missions

October 14, 2019 - NASA and Boeing have initiated a contract for the production of 10 Space Launch System core stages and up to eight Exploration Upper Stages to support the third through the twelfth Artemis missions. Up to 10 additional core stages may be ordered under the contract, leveraging active labor, materials, and facility resources and supply chain efficiencies for production savings. SLS is NASA's deep space exploration rocket that will launch astronauts in the 27-metric ton Orion crew vehicle, plus cargo, from Earth to the moon and eventually to Mars. Boeing is the prime contractor for the rocket's core stage, avionics, and variations of the upper stage. The rocket is designed to be evolvable for missions beyond the moon. Boeing designed, developed, tested and built the first SLS core stage under the original NASA Stages contract, including refurbishing the company's manufacturing area at the Michoud Assembly Facility (MAF) in New Orleans, building test versions of the SLS structures, and designing more efficient, modern tooling, all while abiding by stringent safety and quality standards for human spaceflight. The second core stage is simultaneously in production at MAF.

Thales Alenia Space Starts the Construction of its New Facilities in Spain

October 16, 2019 - The construction of the new clean room that Thales Alenia Space is setting up in Spain has already started. This cutting-edge facility will become a reference for the integration and test of large space systems in Spain. The construction works will span for a little less than a year. Once finished, the company will have the capacity to pursue high complexity activities such as the integration of the telecommunication payloads for Spain's next generation governmental satellites SPAINSAT NG and other large systems in the field of Earth observation and science instruments. This investment will result into a unique, cutting-edge facility in Spain. The new clean room will add more than 600 m² clean area to the existing 2000 m². With a free height of 12.5 meters in the inside, the facility will be equipped with bridge cranes with lifting capacity up to 12 tons each, prepared for the integration of payloads and instruments of large dimensions for all type of space missions, spanning telecommunications, navigation, Earth observation and science.

Rocket Lab Successfully Launches Ninth Electron Mission, Deploys Payload to Highest Orbit Yet

October 17, 2019 - Rocket Lab has successfully launched its ninth Electron mission, deploying a single spacecraft to orbit for satellite manufacturer Astro Digital. The mission, named 'As The Crow Flies,' lifted off from Rocket Lab Launch Complex 1 on New Zealand's Māhia Peninsula. Approximately 71 minutes after lift-off, Electron's Kick Stage deployed the payload to a circular orbit of more than 1,000 km – more than twice the altitude of any Electron mission to date. The mission successfully demonstrated recent upgrades to the Kick Stage's 3D-printed Curie engine, including the move to a bi-propellant design for improved performance. Curie also serves as the propulsion system on Rocket Lab's Photon satellite bus, and the flight-proven engine upgrades support enduring missions in LEO, as well as higher orbits. This mission takes the total number of satellites deployed by Rocket Lab to 40 and continues the company's track record of 100% mission success for customers. The spacecraft on board was a Palisade technology demonstration satellite – a 16U CubeSat with on-board propulsion and next generation communications systems developed by Astro Digital, and software developed by Advanced Solutions Inc. including an advanced version of ASI's MAX Flight Software.

Vietnam to Get Japan's Earth Observation Satellite as Part of Disaster Prevention Initiative

October 17, 2019 - A Japan-developed weather satellite will be exported to Vietnam under a Japanese public-private initiative, it was reported by Japan Times. Representatives of Japan and the Vietnamese government are in the final stages of talks on the matter, according to sources. The ¥20 billion initiative is aimed at supporting disaster prevention efforts in the emerging economy, as an increasing number of extreme climate events are occurring around the globe. Under the initiative, general trader Sumitomo Corp. will shortly take an order for the satellite from the Vietnamese government. The satellite will be produced by NEC Corp. The production cost will be mostly covered with low-interest yen loans from the Japan International Cooperation Agency. This is believed to be the first export of a Japanese Earth observation satellite, the sources said. The small satellite to be exported to Vietnam was developed with support from

the industry ministry. It is based on NEC's Asnaro 2 test satellite launched in January 2018. The new satellite, weighing about 500 kilograms, can be launched using Japan's Epsilon solid-fuel rocket. Vietnam is poised to introduce a satellite to monitor its climate and environment in the wake of recent rain disasters. The Southeast Asian country plans to operate one satellite initially, and is considering the introduction of a second if necessary.

China Launches New Communications Technology Experiment Satellite

October 18, 2019 - China sent a new communications technology experiment satellite into planned orbit from the Xichang Satellite Launch Center in southwest China's Sichuan Province on October 17. The satellite, launched by a Long March-3B carrier rocket, will be mainly used for multi-band and high-speed communication technology experiments. The satellite and the carrier rocket were respectively developed by the China Academy of Space Technology and the China Academy of Launch Vehicle Technology under the China Aerospace Science and Technology Corporation.

Spaceflight Announces Next Three Rideshare Missions on ISRO's PSLV

October 21, 2019 - Spaceflight announced it will launch 14 more spacecraft from India's Polar Satellite Launch Vehicle (PSLV) this year. Payloads will launch on PSLV's C47, C48 and C49 missions, scheduled to launch in November and December 2019 from India's Satish Dhawan Space Center. Customers aboard the missions include Analytical Space, Spire, iQPS and Kleos Space. Analytical Space Inc.'s (ASI) second technical demonstration spacecraft, dubbed Meshbed, will be launching on PSLV C47 in November. ASI's mission is an on-orbit demonstration intended to test technology that will enable users on Earth to gain faster access to satellite data. The spacecraft features a patented antenna from MITRE that could help enable faster access to space-based data, as well as government missions including tactical communications and intelligence, surveillance and reconnaissance. PSLV C48, slated for early December, will carry Japan's iQPS SAR microsatellite and four multi-payload Earth observation nanosatellites that add to Spire Global's constellation of maritime, aviation and weather monitoring satellites. PSLV C49, also scheduled in December, will take Luxembourg-based Kleos' Scouting Mission satellites, the foundational system in the company's radio frequency monitoring constellation, and additional Spire nanosats to orbit.

Rocket Lab Partners with KSAT for Electron and Photon Ground Station Support

October 22, 2019 - Rocket Lab has partnered with Kongsberg Satellite Services (KSAT), the world's largest provider of ground station services, to be the sole provider of ground station services for the Electron launch vehicle and Photon satellite bus customers. The agreement sees Rocket Lab deliver a complete solution for small satellite operators, including satellite design and build, launch, and ground segment support leveraging an existing global network of ground stations. Rocket Lab's Electron launch vehicle is currently the only commercial, dedicated small satellite launch vehicle operating a regular service to orbit, making space more accessible for small satellites. With a proven launch vehicle in operation since January 2018, the next evolution of Rocket Lab's mission services is the Photon satellite bus. Designed for seamless pairing with Electron, the Photon satellite bus streamlines the entire end-to-end satellite experience for customers from design to build to launch. Likewise, KSAT's KSATlite ground network is designed and optimized for small satellite systems, providing streamlined access (through standardized API driven interfaces) and scalable support that grows to meet mission needs.

Maxar Delivers Robotic Arm for NASA's Mars 2020 Rover

October 22, 2019 - Maxar Technologies announced that it has delivered the robotic Sample Handling Assembly (SHA) for NASA's Mars 2020 rover. As the Mars 2020 rover explores the red planet, the SHA will process and store samples acquired from the Martian surface. The SHA is the sixth robotic arm that Maxar has designed, built and delivered for use on Mars. As part of NASA's Mars Exploration Program, the Mars 2020 rover will attempt to answer critical questions about the potential for life on Mars. Maxar's expert roboticists will now work closely with NASA's Jet Propulsion Laboratory to integrate the arm with the Mars 2020 rover. After its planned launch in July 2020, the rover will land at Jezero Crater to search for signs of livable conditions and microbial life from the ancient past. The Mars 2020 rover will use its drill to collect core samples of the most promising rocks and soils and set them aside in a cache on the surface of Mars. A future mission could potentially return these samples to Earth. As part of the Adaptive Caching Assembly, the Maxar-built SHA will manipulate, assess, encapsulate, store and release collected Martian soil and rock samples.

Blue Origin Announces National Team for NASA's Human Landing System Artemis

October 22, 2019 - Blue Origin announced a national team to offer a Human Landing System for NASA's Artemis program to return Americans to the lunar surface by 2024. Blue Origin has signed teaming agreements with Lockheed Martin, Northrop Grumman and Draper. These partners have decades of experience supporting NASA with human space flight systems, launch vehicles, orbital logistics, deep-space missions, interplanetary navigation and planetary landings.

Maxar Technologies and Australian Space Agency Sign Cooperative Agreement

October 22, 2019 - Maxar Technologies has signed a joint statement of strategic intent and cooperation with the Australian Space Agency. Under the statement, Maxar and Australian Space Agency will investigate collaboration in areas of mutual strategic interest related to Earth intelligence and space infrastructure capabilities, and space-related Australian education and training initiatives. These projects may include development of next-generation space robotics, ground stations focused on optimized servicing of large satellite constellations, optical and communications satellites, space-based maritime surveillance and artificial intelligence and machine learning technologies that extract insights from Earth observation data at scale.

China to Launch Private Reusable Rocket in 2021

October 23, 2019 - A Chinese reusable carrier rocket that uses liquid oxygen-methane propellants made its first public appearance at the 2019 Zhongguancun Forum in Beijing. The rocket named the Hyperbola-2, will be launched for the first time in 2021. It may make up for China's lack of reusable liquid-propellant rockets. The Hyperbola-2 was developed by a Beijing-based private rocket developer i-Space. Its primary stage can be reused, reducing more than 70 percent of the rocket production cost, according to Dong Yanmin, the company's vice president of technology. It will not only meet the growing demand for small and medium-sized satellite launches but also provide emergency and ride-share launches, Dong said. The 28-meter-long rocket, with a takeoff weight of 90 tonnes, has a lift capability of sending 1.9 tonnes of payload to low-Earth orbit. The rocket is low-cost and reliable, which can provide high-quality satellite launches, Dong said.

Thales Alenia Space to Build EUTELSAT 10B Satellite

October 29, 2019 - Thales Alenia Space has signed a letter of agreement with Eutelsat Communications for the procurement of a new all-electric satellite, EUTELSAT 10B. The EUTELSAT 10B satellite is based on the Spacebus NEO Thales Alenia Space product line and will address particularly HTS (High Throughput Services) missions over Europe, the Mediterranean basin, the Middle East as well as over the Atlantic Ocean, Africa and the Indian Ocean. Two of the satellite's payloads will be to provide timely continuity of services, in C and Ku Bands, on EUTELSAT 10A. The HTS missions will allow Eutelsat to access new customers and markets, delivering high capacity Ku Band mobility services in Aviation and Maritime. The missions will be supported by a digital 14kW multibeam digital payload allowing dynamic service allocation, essential to provide extensive flexibility and robustness with respect to market evolutions. A Thales Alenia Space SpaceFlex™ VHTS Processor of 5th generation will be integrated at the heart of the payload, achieving high flexibility performance and efficiency in throughput and bandwidth. Scheduled to be launched in 2022, EUTELSAT 10B will be located at 10°E, for a lifespan of at least 15 years.

Arianespace and ESA Announce the Earth Explorer Biomass Launch Contract

October 30, 2019 - The Earth Explorer Biomass – the seventh mission in ESA's Earth Explorer program – will provide global maps of the amount of carbon stored in the world's forests and how it changes over time, mainly through absorbing carbon dioxide from fossil fuel burning, deforestation and change in land use. Biomass also will provide essential support to United Nations treaties on the reduction of emissions from deforestation and forest degradation. The Biomass mission will utilize a Vega launch vehicle, with the launch period starting in October 2022 from the Guiana Space Center, Europe's Spaceport in French Guiana. Vega is part of the Arianespace launcher family, along with the Ariane 5 heavy launcher and the medium-lift Soyuz; all three are operated from the Guiana Space Center. The industrial prime contractor for Vega is Avio, based in Colleferro, Italy. The satellite will have a mass at liftoff of approximately 1,200 kg. and will be placed in a dawn-dusk, Sun-synchronous orbit at an altitude of 666 km. Forest type and forest cover worldwide can be detected by today's satellites, but Biomass will take the information to the next level. The satellite will carry the first P-band synthetic aperture radar (SAR), able to deliver accurate maps of tropical, temperate and boreal forest biomass in terms of tons/hectare with a resolution of 50 to 100 meters. The global mass of trees is not obtainable by ground measurement techniques.

Arianespace Announced Contract with a Soyuz Launch Vehicle for the EarthCARE Satellite

October 30, 2019 - EarthCARE (Cloud, Aerosol and Radiation Explorer) satellite – the sixth mission in ESA's Earth Explorer program – will advance our understanding of the role clouds and aerosols play in reflecting incident solar radiation back into space and trapping infrared radiation emitted from Earth's surface. EarthCARE is a joint collaborative satellite mission conducted between ESA and the Japan Aerospace Exploration Agency (JAXA) that delivers the Cloud Profiling Radar (CPR) instrument. ESA is responsible for the entire system – including the Spacecraft, three instruments including ATmospheric LIDar (ATLID), a Multi-Spectral Imager (MSI) and a Broad-Band Radiometer (BBR), plus the Launcher and Ground Segment (with exception of the CPR data segment). The EarthCARE mission will utilize a Soyuz launch vehicle, with the launch period starting in June 2022 from the Guiana Space Center, Europe's Spaceport in French Guiana (South America). The satellite will have a mass at liftoff of approximately 2,350 kg and will circle Earth in a Sun-synchronous polar orbit, crossing the equator in the early afternoon to optimise daylight conditions, at an altitude of 390 km.

EXECUTIVE MOVES

Comtech Telecommunications Corp Names Rich Luhrs as President of Comtech Systems, Inc.

October 4, 2019 - Comtech Telecommunications Corp. announced that Rich Luhrs has been promoted to President of its subsidiary, Comtech Systems, Inc. and that Dick Burt will be retiring after 40 years with the Company. Comtech Systems provides high-performance transmission products including over-the-horizon microwave and troposcatter systems and is part of Comtech's Government Solutions segment. Rich Luhrs has decades of technical management experience and a diverse background in providing secure wireless communications. Luhrs started his career in the U.S. Air Force, which he served in for 9 years. He began as a Nuclear Weapon Systems Specialist and completed his military service as a Space Systems Engineer. He joined Comtech Systems in 2004 and quickly demonstrated his leadership and management skills. Luhrs was named General Manager of Comtech Systems in 2017 in anticipation of Burt's retirement.

Khrunichev Space Center Announces Changes in ILS Management

October 10, 2019 - Khrunichev State Research and Production Space Center, the majority shareholder of ILS International Launch Services, (ILS) announced the departure of Kirk Pysher as ILS President. John Palme, ILS Chief Operations Officer, will serve as interim President until a successor is appointed. In a separate action, the ILS Board of Directors announced that it has engaged outside counsel, Thomas P. Tshudy, former Senior Vice President and General Counsel for ILS, to serve as special counsel to advise the company on a variety of legal matters to assure legal and regulatory compliance as the company makes organizational changes and transitions to providing broadened customer offerings.

CPI Appoints Andrew Ivers as Chief Operating Officer

October 15, 2019 - Communications & Power Industries (CPI) has announced that Andrew C. Ivers will join the company as its new chief operating officer, effective November 4, 2019. Ivers will report directly to Bob Fickett, president and chief executive officer of CPI, and will be responsible for implementing the company's growth strategies and helping lead operational excellence initiatives. Ivers is an experienced manager and engineer in the electronic components and subsystems industry, and a seasoned veteran of defense and communications companies. Prior to joining CPI, Ivers served as an executive for 18 years at L3 Technologies, most recently as corporate senior vice president and the president of its Communications Systems business segment. Under his leadership, this business segment reported significant growth in both revenue and operating income. He also held previous management roles at Harris Corporation and Raytheon Co.

Shane McCarthy Joins Irdeto as Chief Operating Officer, Video Entertainment

October 17, 2019 - Irdeto announced that Shane McCarthy has been appointed to the role of Chief Operating Officer for its video entertainment business. A developer by background, McCarthy previously held a number of roles at Pace, including the President of the International Business, where he achieved strong growth on the way to building a near USD \$1B business. In his new role at Irdeto, he will be responsible for defining the strategy and overseeing execution within Irdeto's video entertainment business. McCarthy has spent the past five years as an entrepreneur and consultant in the media and entertainment and technology sectors. He previously spent nine years at Pace and worked for Cisco prior to this. With his extensive industry experience, McCarthy will play an instrumental role in further

developing Irdeto's global leadership position within the media and entertainment industry.

NBN Restructures: New Regional Business Unit for Fixed Wireless and Satellite

October 31, 2019 - NBN Co is establishing a new regional business unit encompassing the fixed wireless and satellite networks, as well as other customer facing functions. The regional business unit will be led by a member of NBN Co's senior management team who will hold the title of Chief Development Officer, Regional & Remote, and report directly to NBN Co Chief Executive Stephen Rue. Gavin Williams will be appointed to the role of Chief Development Officer, Regional & Remote. He steps up from his current role at NBN Co as Executive General Manager Products, in which he was instrumental in delivering key regional-focused initiatives including the Sky Muster Plus satellite service. The announcement coincides with NBN Co's launch today in Toowoomba Queensland of the Business NBN Satellite Service for medium-to-large business, regional enterprise and government users.

REPORTS

New Report from WTA, "The Top 5 Threats to Cybersecurity for Teleports" Provides Key Guidance for Anticipating Cyberattacks

October 1, 2019 - The World Teleport Association (WTA) released *The Top 5 Threats to Cybersecurity for Teleports*, the second in a series of new reports, that calls on cybersecurity experts in Europe, Asia and the United States for guidance on anticipating threats when making cybersecurity decisions. The report addresses the five most common forms of cyberattack that affect businesses of all kinds and teleport operators in particular.

NSR: Satellite Industry Financials show 6% Growth, but Challenges Persist

October 23, 2019 - NSR's *Satellite Industry Financial Analysis, 9th Edition (SIFA9)* report finds a 6% industry growth in 2018-2019, on the back of strong IFC contracts and broadband subscriptions, with several integrated operators posting large double-digit growth. While EBITDA margins improved and cash flows increased, top-line growth remains a big concern for SES, Intelsat, Eutelsat, and Telesat. A prolonged decline in media revenues is met with modest gains for data networks, with flat to declining revenues the norm. Decline in Return on Capital Employed also denotes a transition phase from FSS to HTS until 2020, after which growth is expected to take off again. For 3 years in a row, Service Providers posted large top-line gains with Speedcast, Hughes, and Gogo leading the way. EBITDA margins have improved, but are still far away from generating positive cash flow. Finally, 2018-19 has been a breakthrough for M&A, with Hispasat, Asiasat, and Inmarsat going private on the back of strong performances towards cash generation, backlog, and debt reduction.

NSR Reports Chaos in Satellite Broadband Ecosystem Spurs Growth

October 30, 2019 - NSR's *VSAT and Broadband Satellite Markets, 18th Edition* report forecasts healthy revenues in the next decade with Enterprise VSAT gaining a slight edge over Consumer Broadband, accounting for greater than 50% of total revenues. Backhaul & Trunking will be the key application globally, but broadband to households, consumers, and hotspots will account for healthy demand as well. The satellite broadband ecosystem is in its transition phase with multiple ongoing parallel developments. "Incumbents extending to new geographies, emergence of GEO/MEO/LEO HTS offerings, entry of new players, innovation in the ground segment, dropping capacity prices, new solution offerings, system upgrades, and new business models; all add to a chaotic, but game-changing, recipe where ecosystem development will lead to market growth," according to Vivek Suresh, NSR Analyst and author of the report.

Market for Earth Observation Data and Services Forecast to Grow by 9% over Next Decade

October 31, 2019 - In its new survey titled, *"Satellite-Based Earth Observation Market Prospects to 2028"*, Euroconsult, the world's leading authority on space and satellite-based application markets, forecasts that the market for data and services derived from Earth observation (EO) satellites is expected to grow by 9.4 percent each year for the next ten years for a total upside market value of \$12.1 billion by 2028. This will be supported by the arrival of new constellation operators with lower-cost solutions, attracting new customers to the one-meter resolution market. At the same time, some revenue from this segment is expected to move to the 50-centimeter and below resolution market, dominated by traditional satellites.

UPCOMING EVENTS

Asia Video Summit 2019, November 4-6, Singapore, <https://asiavia.org/insight/events/>

Global MilSatCom 2019, November 5-7, London, UK, <https://www.smi-online.co.uk/defence/uk/global-milsatcom>

APSCC 2019 Satellite Conference & Exhibition, November 19-21, Bangkok, Thailand, <http://apscsat.com>

APSCC New Space Pitch Competition, November 21, Bangkok, Thailand <https://apscsat.com/newspace-competition/>

APSCC 2019 Youth Development Workshop, November 21, Bangkok, Thailand, <https://apscsat.com/workshop/>

Broadband India Forum, November 27-28, New Delhi, India, www.broadbandindiaforum.com
Broadband India Forum is organizing 5th International Summit - India SatCom 2019 on 27 & 28 November, 2019 at New Delhi. The conference would deliberate on Policy and Regulatory measures required to facilitate rapid and barrier free deployment of Next Gen Satellite communications technologies to achieve the objectives of Govt's flagship programme on Digital India.

PTC'20: Vision2020 and Beyond, January 19-22, Honolulu, Hawaii, USA, www.ptc.org
PTC's Annual Conference is a strategic springboard for the global communications industry, providing all attendees with a three-day platform to focus on planning, networking, and discovering what lies ahead for the ICT industry. Start the new year off right at PTC'20: Vision 2020 and Beyond, 19-22 January 2020. See you in Honolulu!

Editorials and Inquiries

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About APSCC

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