APSCC Monthly e-Newsletter
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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 March 1 to March 31.

INSIDE APSCC

Mark Your Calendar for APSCC 2019 on November 19 – 21 in Bangkok, Thailand!
APSCC is pleased to announce that the APSCC 2019 Satellite Conference & Exhibition will be held in Bangkok, Thailand on 19th – 21st November 2019. For the first time held in November as Asia's must-attend executive event for the satellite and space industry, APSCC 2019 will incorporate industry veterans and new players through the 3-day of in-depth conference program to a broader audience. For more information please visit www.apsccsat.com

APSCC Industry Briefing: Satellite in Asia @ConnecTech Asia
June 18, Satcomm Hall, Marina Bay Sands, Singapore
APSCC will hold a Satellite Industry Briefing on 18th June at the ConnecTech Asia Satcomm hall. Open to all exhibitors and visitors at the Satcomm hall, APSCC will have this one day program focused on existing satellite trends, NewSpace in Asia and the WRC-19 campaign. Please join this interactive and energetic satellite program during ConnecTech Asia! https://apscc.or.kr/apscc-industry-briefing/

SATELLITE BUSINESS

Hughes Communications India Receives Flight and Maritime Connectivity (FMC) License
March 1, 2019 - Hughes Communications India Ltd has received a Flight and Maritime Connectivity (FMC) license from the Department of Telecommunications, Government of India. The first company to be granted the FMC license in India, HCIL is now authorized to provide in-flight connectivity and high-quality broadband services to Indian and foreign airlines and shipping companies operating within Indian territory. HCIL has already set up a base mobility platform and is in discussion to enhance the services in India. Since the policy was first published by regulatory authorities in mid-December 2018, it has generated a lot of interest from India's maritime and airline industries. HCIL looks forward to supporting them in the rapidly growing opportunity for inflight and maritime connectivity services, which Hughes is powering globally with its advanced aero and maritime broadband solutions. The FMC license has been granted for a period of 10 years, and HCIL will pay spectrum charges based on revenue earned from providing these services, which can be delivered using both satellites and telecom networks on the ground. HCIL will provide FMC services in India operating over domestic and foreign satellites permitted by the Department of Space.

Speedcast Wins Contract to Deliver Communications to Global Integrated Energy Provider
March 1, 2019 - Speedcast International has been awarded a new master service agreement and multi-year contract to deliver fully-managed communications onboard assets for Sapura Energy Berhad (Sapura Energy), a leading global integrated oil and gas services and solutions provider headquartered in Malaysia. The scope of the contract is to provide secure satellite communications systems for the customer's fleet of engineering & construction vessels supporting its operations in over 20 countries. Taking advantage of Speedcast's global scale that combines extensive satellite coverage with terrestrial networks and local engineering resources, Speedcast will provide a robust combination of C-band, Ku-band, Fleet Broadband and 4G/LTE connectivity to the customer's fleet of vessels located in remote and harsh environments.

SAS Network Reseller Contract Signed with Indonesian Telco Service Provider
March 2, 2018 - Sky and Space Global Ltd (SAS) signed a Reseller MoU with Cendrawasih Teknologi

Nusantara (CTN). CTN was established in 2018 and is based in Jakarta, Indonesia. It is a hardware and software communications provider, supplying data connectivity services via satellite for its customers across multiple sectors. CTN's goal is to provide comprehensive solutions to customer needs through speed, availability, robust and cost optimisation. Under the terms of the new Reseller Contract, SAS and CTN will fast-track work to incorporate SAS's nano-satellites into CTN's network. It will also authorise CTN on a non-exclusive basis to resell, market, distribute and support SAS services and products. The contract could lead to multiple opportunities for SAS to service a market that have more than 260 million people and provide residents more affordable and reliable connectivity networks. It also provides SAS with the ability to expand its existing connectivity offering across the entire Asia Pacific region. CTN have already approached some of their existing clients within the mining, oil & gas and plantation sectors and a number have since expressed interest in the SAS technology. Use cases for their clients include telemetry and also for replacing VSAT for data text only, for use of phones in shipping and marine areas, or while out at sea.

Inmarsat Brings Crew Xpress to Market with Unique 'Fleet Hotspot' for Seafarers

March 4, 2019 - Inmarsat is staying ahead of fast-changing dynamics in ship connectivity by launching Crew Xpress, a new service for crew available as part of an ever increasing number of services on Fleet Xpress. The new service package includes a managed Wi-Fi solution 'Fleet Hotspot', a leased antenna, a business use data package, automated billing and a usage revenue recovery scheme to incentivise ship managers to invest in crew connectivity. The Crew Xpress package consists of a 60cm Fleet Xpress antenna and a 6GB business allowance plan with an antenna offered on lease terms, with separate, managed crew internet access through the 'Fleet Hotspot'. Accessing the internet via a unique login, the 'Fleet Hotspot' user secures time or data with allocated vouchers or by making online payments via a range of different methods. A number of Asian shipping companies have been trialing the new Crew Xpress service on board vessels since January 2019. Full commercial launch of the service is due in April with a wholesale version available in H2.

Cobham and Inmarsat Launch SB-Helo X-Stream Helicopter Satcom

March 5, 2019 - Cobham Aerospace Communications and Inmarsat announced the launch of SB-Helo X-Stream helicopter satcom solution for Cobham AVIATOR SP systems. The new system will improve communications through rotor blades by reducing packet loss by up to 40%. Few solutions exist in the market to transmit data such as video imagery to a satellite network in the same way as is possible from fixed wing aircraft. This is due to the interference caused by the rotors, which leads to intermittent, jittery data streams and distorted video at the receiving station. After extensive testing, Inmarsat and Cobham have developed a protocol in network Quality of Service (QoS) selection, as an enhancement of the Swiftbroadband X-Stream service; one of Inmarsat's streaming services offering guaranteed on-demand high-streaming data rates over its L-band network. This allows data from rotary wing aircraft to be transmitted to the Inmarsat satellite network, via dedicated modulation schemes.

Es'hail-2 Enters Commercial Service

March 6, 2019 - Es'hailSat announced that Es'hail-2 entered commercial service to serve government, broadcast and telecommunications sectors in Middle East and North Africa. Es'hail-2, designed with Ka-band spot beams and Ku-band wide beams, joins Es'hail-1 at 25.5°E / 26.0°E MENA broadcast hotspot and will augment the capacity already available at the hotspot to support premium services in the region. Broadcasters and channel owners can leverage on the reliability of the satellite to provide high quality service and enhanced viewing experience to consumers, with high definition and ultra-high definition content. The satellite will also enable telecommunication companies and ISPs to provide reliable and secure telecommunications and broadband services. Built by Mitsubishi Electric Company (MELCO) and launched by Space X aboard Falcon 9 rocket, Es'hail-2 has a proven, modular platform with high power capability and flexibility for a broad range of applications. It will support the growth of 25.5°E / 26.0°E broadcast neighborhood, and also features multi-transponder Ka-band payload with sophisticated anti-jamming capabilities providing business and government sectors with secure communications across the MENA region. In addition, it carries the first ever payload on geostationary satellite to support amateur radio community across the visible earth from its orbital location.

RSCC Joins the Unmanned Navigation Project

March 7, 2019 - Russian Satellite Communications Company (RSCC) has joined the pilot project of Maritime Unmanned Navigation (MUNIN). In this project, the company intends to provide communication services on mobile platforms using the maritime VSAT technology. The MUNIN pilot project provides the

development and testing of technologies for automated navigation and remote control of vessels. The project is implemented with the assistance of the Russian Ministry of Industry and Trade as part of the National Technological Initiative to support high technologies in the most promising areas of the maritime industry. In autumn 2018, MARINET Industry Association announced the launch of an unmanned navigation project to be implemented by leading Russian shipping companies and developers of marine navigation solutions and control systems. VSAT satellite communication technology with GEO satellites and special motorized stabilized satellite dishes on vessels is used to transmit larger volumes of information between offshore facilities and the shore. An innovative solution using modern Russian satellites of the Express-AM series based on maritime VSAT technology allows RSCC to provide a wide range of digital communication and broadcasting services on vessels of various classes and purposes. RSCC's VSAT network covers the Arctic and Atlantic oceans, the Mediterranean, Baltic, Northern, Black, Caspian seas, the seas of Japan and Okhotsk as well as all northern seas washing Russia (including almost the entire length of the Northeast Passage). At present, more than 260 marine vessels operate in RSCC's VSAT network.

iSAT Selects ND SatCom's SKYWAN 5G for Secure Data Transmission
March 11, 2019 - ND SatCom announced the partnership with iSAT Africa, a fast growing fixed-satellite solution service provider in Africa. iSAT Africa is establishing new VSAT networks using the highly reputable and reliable SKYWAN 5G technology. ND SatCom FZE, situated in Dubai, UAE, is delivering the product and providing technical support. In a current project, iSAT is connecting a UK location with multiple stations in the Democratic Republic of the Congo (DRC) and the Union of the Comoros. This network uses channels for data and Internet traffic segregated at the VLAN level with end-to-end VLAN tagging. The available satellite capacity is pooled, with a restricted bandwidth share for data and Internet for the Comoros, and with the potential for DCR stations to get the entire pool capacity when it is not fully used by other stations. With additional MF-TDMA channels, this shared network can grow in the future. ND SatCom's SKYWAN 5G now supports data encryption for security-conscious customers through a hardware module featuring the 256-bit advanced encryption standard (AES-256). iSAT's Satellite Solutions, backed by powerful satellites, teleport infrastructure and the latest technology solutions, are unique in the industry, whether it's for transmission of video, internet, data or voice services.

Marlink Signs Multi-year Agreement to Supply Global Connectivity Services for O.A.T. Small Ships
March 11, 2019 - Marlink entered into an agreement with Overseas Adventure Travel (O.A.T.) to supply its market-leading satellite voice and data connectivity services for use on five adventure cruise ships in the O.A.T. fleet. Under the terms of the arrangement, Marlink will provide the O.A.T. Small Ships with a sophisticated suite of solutions; equipment, bandwidth and operations to reliably meet and exceed guest voice and data requirements; uninterrupted voice and corporate connectivity to facilitate ship management tasks; and flexible connectivity services to support the integration of a third-party GSM operator. The onboard system will be reinforced in turn by an L-band out-of-band back-up enabling remote access to Marlink's Maritime Network Operations Centre (MNOC). This VSAT support service allows experienced network and antenna engineers to proactively monitor onboard connectivity performance and manage any bandwidth and coverage amendments during the contract life cycle.

iDirect Government Receives Wideband Global SATCOM Certification
March 11, 2019 - iDirect Government received Wideband Global SATCOM (WGS) certification for the company's 9-Series Defense portfolio of satellite routers and line cards operating on Evolution 3.4 software. The new Army certification (18-004), along with certification 18-001, confirms that all Evolution 3.4 hardware and software will operate on the WGS constellation with no performance certification restrictions, enabling enhanced military communications. The certification includes the 900 Satellite Router board, 9350 Satellite Router, the 950mp, 9050 OM, Tactical Hub and DLC-T and DLC-R line cards. The 9-Series Defense products underwent stringent evaluation and testing as part of the Army's certification process. The WGS certification ensures that iDirectGov's 9-Series Defense products work effectively with WGS to support military missions.

Thuraya and IEC Telecom Set Sail for Commercial Availability of VSAT+
March 12, 2019 - Thuraya Telecommunications Company announced that its ground-breaking maritime satellite service, Thuraya VSAT+, is now commercially available from IEC Telecom. As the Master Distributor for VSAT+, IEC Telecom will serve all main maritime market segments and customers, including high-end fisheries, offshore installations and merchant fleets. In a win-win partnership for both

companies and the maritime industry, IEC Telecom will offer VSAT+ across Europe, Asia-Pacific (APAC) and Middle East and Africa (MEA). IEC Telecom has been a leading provider of value-added voice and data services to the maritime industry for more than 20 years and was awarded best Maritime Thuraya Service Partner in 2018. Thuraya launched VSAT+ in Q4 2018. The service offers global coverage, best-in-class data rates to meet growing demand for high-throughput services, and high levels of reliability, security, resilience and flexibility. VSAT+ ensures optimum flexibility by combining Ku-band (for high-speed data) and L-band (for backup and fall back). The service is scalable to meet global and regional needs for essential communications such as voice calls, email and position reporting, and for high-bandwidth requirements such as training, publications, condition-based maintenance, enterprise resource planning and content for crew welfare.

Skyband Selects LeoSat for Innovative Data Network
March 12, 2019 - LeoSat Enterprises, which is launching a constellation of 108 low-earth-orbit communications satellites that will provide the fastest, most secure and widest coverage data network in the world, has entered into an agreement with SKYBAND, a member of the Inteltec Group and leading communications provider of satellite and networking solutions in the Kingdom of Saudi Arabia. SKYBAND will use LeoSat to upgrade its existing satellite solutions, giving customers access to a unique low-latency network which is expected to revolutionize data connectivity. LeoSat's system of low earth orbit communications satellites can achieve lower latency and stronger end-to-end security compared to traditional satellite and terrestrial solutions used today. This is achieved through an advanced and unique system architecture utilizing optical inter-satellite laser links which connect the satellites, creating fiber-like symmetry at Gigabits speeds while providing total security as the data is encrypted and secured from end-to-end across the network, with no terrestrial touch points.

Newtec Collaborates with Arabsat to Deploy Newtec Dialog Hubs in Europe
March 12, 2019 - Newtec announced it has successfully deployed two Newtec Dialog hubs in the UK and Finland for Middle East satellite operator Arabsat to enable the company to deliver High Throughput Satellite (HTS) services into the Middle East and African markets. Arabsat is the leading satellite service provider in the Arab world and has been serving the region with its telecommunications and broadcast services for more than 40 years. Despite the complexity of the project, and the many elements involved to bring it to completion, the commitment from both companies further reinforced the strong partnership that exists between Newtec and Arabsat, established over many years. The contract, that will enable Arabsat to deliver a new suite of services including Enterprise and VNO services, IP Trunking and Mobile Backhaul for 3G and 4G services, was signed in September last year and the first hub was installed in December 2018.

Speedcast Continues Providing Connectivity Services for Nabors in North and South America
March 12, 2019 - Speedcast International announced that Nabors Industries has renewed contracts with Speedcast to provide three years of onshore and offshore connectivity services at Nabors' sites throughout North and South America. Nabors owns and operates one of the world's largest land-based drilling rig fleets and provides offshore drilling rigs globally. Speedcast's services enable data and voice connectivity globally, providing cost effective and dependable links to onshore and offshore remote sites. Speedcast also augments land-based VSAT links with L-Band backup, providing VSAT connectivity to deliver communications to remote, land-based sites. The connectivity services are supported by Speedcast's 24/7/365 global customer support centers, with local field engineers in the region to provide fast, reliable support. Speedcast has supported Nabors with similar networks and services, both onshore and offshore, in multiple locations around the world.

RSCC and ChronoSat Expand Cooperation for Satellite Communications Services in the Middle East
March 13, 2019 - The RSCC and ChronoSat GmbH (Germany) signed an agreement on the use of more than 100 MHz of the Express-AM7 spacecraft for providing communication services in the Middle East. Collaboration between RSCC and ChronoSat GmbH (Germany) got under way in 2017, when the European company began to use the capacity of the Express-AM7 heavy-class satellite. At that same year, at the South African exhibition AfricaCom, the RSCC and ChronoSat GmbH in the presence of the Head of the Federal Agency of Communications Oleg Dukhovnitsky signed a strategic agreement on broader cooperation.

OmniAccess Signs Contract for Broadband Service on Telesat's New LEO Satellite Constellation

March 14, 2019 - Telesat and OmniAccess have signed a major, multi-year contract for broadband service on Telesat's revolutionary, global Low Earth Orbit (LEO) satellite constellation, which is planned to enter commercial operations in 2022. OmniAccess is a leader in specialized maritime connectivity solutions and is the first broadband provider worldwide to contract for Telesat's LEO services. They will become an important partner for Telesat LEO and the agreement provides OmniAccess with certain limited exclusivity to serve the superyacht market. Telesat LEO's advanced combination of high throughput, low latency and full global coverage (including over the poles) will allow OmniAccess to deliver an unsurpassed user experience to its customers, including vessels on the most difficult to serve ocean routes. Telesat LEO will have the added capability to concentrate capacity into areas of highest demand, such as major seaports, providing substantially more capacity than is available from other systems.

Lockheed Martin Develops World-first LTE-over-Satellite System

March 14, 2019 - Lockheed Martin has developed a new LTE-over-Satellite system designed to provide connectivity to remote regions, including areas without cellphone coverage, boats off-shore, or during natural disasters like hurricanes, wildfires, earthquakes, catastrophic floods or volcanoes. New hotspots connect existing phones to satellites for reliable 4G connections. Typically, during an emergency that knocks out cellular networks, specialized satellite phones are the only option for mobile connectivity. While satellite phones will still play a key role in disaster recovery, Lockheed Martin's LTE-over-Satellite solution lets people complement satellite phones with their existing commercial phones to connect to a pop-up cellular network that is connected directly to a satellite. The system takes advantage of the fact that 4G devices are now widespread across the world. According to a 2018 Global mobile Suppliers Association (GSA) report, LTE now accounts for more than a third of all mobile subscriptions globally (35.7%). LTE offers broadband data rates in addition to voice and SMS, so important photos, files and commerce can still take place even if traditional communications infrastructure is disrupted. The new mobility system isn't limited to use during natural disaster or terrorist attacks, it can be potentially used by offshore fisherman located far from cell towers, remote mineral production outposts, scientific and research stations, and in agriculture operations.

OneWeb Secures $1.25 Billion in New Funding After Successful Launch

March 18, 2019 - OneWeb has secured its largest fundraising round to date with the successful raise of $1.25 billion in new capital. This brings the total funds raised to $3.4 billion. This round was led by SoftBank Group Corp., Grupo Salinas, Qualcomm Technologies Inc., and the Government of Rwanda. The new funds, following the successful first launch of OneWeb's satellites, enable the company to accelerate the development of the first truly global communications network by 2021. OneWeb's system will deliver high speed, low latency, seamless broadband access, everywhere on Earth. OneWeb's satellites, produced through its joint venture with Airbus doing business as "OneWeb Satellites", will ramp-up production this spring at its new, state-of-the-art manufacturing facility in Exploration Park, Florida. Following the company's successful launch of satellites on February 27th, OneWeb will embark on the largest satellite launch campaign in history. Starting in Q4, OneWeb will begin monthly launches of more than 30 satellites at a time, creating an initial constellation of 650 satellites to enable full global coverage. After this first phase, OneWeb will add more satellites to its constellation to meet growing demands.

Viasat, MDA Win Competitive Award for Canadian Army's Airspace Coordination Centre

March 18, 2019 - Viasat Inc. in partnership with MDA, a Maxar Technologies company announced Viasat's KOR-24A Small Tactical Terminal (STT) was selected by the Canadian Department of National Defence in September 2018 to support its ASCCM project. Viasat's STT is the world's only multi-channel, software-upgradable radio capable of performing Link 16 communications in a small form factor and includes interoperable functionality to improve communications between U.S. and international military agencies requiring information from multiple networks. Through the award, Viasat and MDA will support the Canadian Armed Forces' efforts to modernize computer suite and data link radios. Viasat's STT will be a key enabler of improved interoperable network communications by significantly enhancing voice and data capabilities across air, land and sea platforms.

AirMedia Announces the Strategic Cooperation with Honeywell

March 19, 2019 - AirMedia Group Inc. announced that one of its subsidiaries, Air Esurfing Co. Ltd. ("ARE"), has been selected as the sole distributor of Honeywell's next-generation JetWave™ satellite communications hardware in China, enabling Chinese airlines to have access to an all-in-one solution that

provides high-speed, in-flight Wi-Fi service. Honeywell's JetWave™ satellite communications hardware provides high-speed in-flight Wi-Fi service worldwide by seamlessly establishing Ka-band communication links with the Global Xpress Network of the International Maritime Satellite Organization (Inmarsat Aviation) and satellite ChinaSat 16 and ChinaSat 18. Tailored to benefit both passengers and airlines, the cooperation is devoted to increasing the availability of fast, consistent, KA-band connectivity for passengers traveling with airlines originated in China and generating new revenues for airlines.

Orbit and Inmarsat Government Announce Airborne Satcom Terminal Agreement

March 20, 2019 - Orbit Communication Systems Ltd. and Inmarsat Government have announced a long-term agreement to offer end-users a new modular, multi-role aviation terminal, optimized for use over Inmarsat's Global Xpress (GX) network. The new terminal will operate over Inmarsat's GX constellation, the world's first and only globally available, high-throughput wideband network. It will deliver Inmarsat's 'SATCOM as a Service', featuring commercial Ka-band and military Ka-band capabilities, which are fully interoperable with the Wideband Global Satcom (WGS) system. The new compact Orbit terminal, GX46, features a 46cm (18") antenna and will be delivered fully integrated with modems, electronics and related software. The lightweight, small-foot print terminal couples high performance and Orbit's industry-leading reliability, which will open new communication opportunities for business jets, military mission aircraft and unmanned aerial vehicles (UAV). Following completion of the Inmarsat certification process, volume production of the terminal is planned at Orbit's U.S.-based facilities.

Speedcast to Deliver VSAT Services to Top Energy Operator's Worker Camp in Mozambique

March 21, 2019 - Speedcast International Limited has been awarded a new contract to deliver fully managed communications to a worker camp in Mozambique providing housing for employees of a top ten global oil and gas major operator. The camp will have 30 rooms for housing employees working in the region on nearby offshore LNG drilling and production assets, set to begin operations over the next four years. Speedcast's solution will leverage C-band VSAT to provide reliable internet communications across the camp, allowing those on base to communicate with colleagues, friends and family in addition to maintaining critical operational and emergency communications connectivity.

KVH Expands HTS Maritime Network for Entire Pacific Ocean Region

March 21, 2019 - KVH Industries announced that it has expanded its mini-VSAT Broadband HTS network to the Pacific Ocean via the Horizons 3e satellite, which is jointly owned by Intelsat and SKY Perfect JSAT. The high-performance Horizons 3e satellite immediately adds to the global coverage and capacity of KVH's mini-VSAT Broadband HTS network, which provides connectivity to vessels worldwide. Global containerships, commercial fishing fleets, and superyachts cruising to remote destinations are among the many types of vessels that transit key areas in the Pacific Ocean, Asia Pacific, and the U.S. Pacific Northwest. KVH launched its mini-VSAT Broadband HTS network in late 2017, and continually enhances the network with technological advancements. The network utilizes the Intelsat Flex Maritime service to deliver multi-layered Ku-band coverage, enabling vessels to see multiple HTS and wide beam satellites for maximum availability of broadband service. KVH's HTS network builds on the success of the original maritime satellite network that KVH introduced in 2007.

Hughes and PSN Launch Community Wi-Fi Service throughout Indonesia

March 22, 2019 - Hughes Network Systems and PT Pasifik Satelit Nusantara (PSN), the oldest private telecommunication and information service provider in Indonesia, have announced the deployment of their 2,000th Community Wi-Fi Hotspot in the country. With an average of 500 people having access to each hotspot, Hughes and PSN now enable Internet access for over one million Indonesians, helping to bridge the digital divide in this nation where the Internet penetration rate is 36%. Hughes Community Wi-Fi employs satellite backhaul to extend Internet service to users beyond the reach of terrestrial broadband, without requiring costly infrastructure. Installed at a local shop or community center, the solution includes a compact VSAT (Very Small Aperture Terminal) and Wi-Fi equipment, which delivers industry standard 802.11 signals across a 30-50 meter radius for customer use. The local merchant sells access to consumers on a cost-per-use basis, supporting affordable digital inclusion through a new service revenue stream. The Hughes Community Wi-Fi solution for PSN combines the Hughes JUPITER™ System, the next generation VSAT platform designed and optimized for broadband services, with capacity from the PSN VI High-Throughput Satellite. The JUPITER System enables PSN to achieve the highest possible capacity and efficiency while preventing fraud and misuse with the built-in ability to lock the Wi-Fi access point to the VSAT modem.

Comtech Introduces New Micro Deployable X/Y Antennas to the LEO/MEO and HAPS Markets

March 22, 2019 - Comtech Telecommunications' Space & Component Technology division, which is part of Comtech's Government Solutions segment, has introduced an exciting line of transportable, full motion antennas for tracking Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) satellites and High Altitude Pseudo-Satellites (HAPS). The Micro Deployable X/Y Tracking Antennas utilize the same two-axis pedestal technology and control software used on Comtech's larger X/Y systems, thereby eliminating the keyhole at zenith, cable wrap, and backlash problems found on traditional elevation/azimuth (El/Az) tracking antennas. These advantages of the X/Y design are now offered in very small and lightweight packages. This highly cost effective, full hemispheric coverage solution set can be transported on a commercial airliner and can be assembled for operation by one individual in less than 30 minutes without special equipment.

Avanti Announces its First Maritime Contract with Woodsons of Aberdeen

March 26, 2019 - Avanti Communications Group has announced its first maritime contract, valued at over $750,000, with Woodsons of Aberdeen Ltd (Woodsons), a specialised supplier of Marine Electronics to the Fishing, Commercial Oil and Gas and Renewables sectors. The service uses Avanti's dedicated Ka-band satellite capacity via HYLAS 4 and the iDirect X7 platform, enabling Woodsons to deliver connectivity solutions to Scottish passenger ferries. The partnership will support maritime communications such as high speed onboard Wi-Fi for passengers, as well as enabling staff communications and accepting card and mobile payments. The contract win for maritime communications further establishes Avanti within the mobility market. In 2017, Avanti announced its first mobility contract valued at $4.5m and has since proven its capabilities for the defence and security markets by providing Satellite on the Move ("SOTM") communications.

ST Engineering (Europe) Enters Agreement to Acquire a 100% Ownership in Newtec Group

March 27, 2019 - Singapore Technologies Engineering Ltd (ST Engineering or the Group) announced that its subsidiary Singapore Technologies Engineering (Europe) Ltd, has entered into a conditional share purchase agreement to acquire a 100% ownership in Newtec Group NV (Newtec) (the "Proposed Acquisition"), an established Belgium-based company in the satellite communications (satcom) industry. The consideration of €250m (approximately S$383m) on a cash-free and debt-free basis for the Proposed Acquisition, subject to closing adjustments, is payable in cash. Subject to regulatory approvals and conditions that include receipt of clearance from the Committee on Foreign Investment in the United States, Foreign Investment Review in France, and anti-trust approvals in Austria, the Proposed Acquisition is expected to complete in 2H2019.

Ritz-Carlton Yacht Collection to Provide Luxury Connectivity Experience Powered by SES Networks

March 27, 2019 - SES Networks will be providing an innovative, fully-managed hybrid broadband connectivity service to The Ritz-Carlton Yacht Collection, a luxury fleet comprising of three custom-built yachts. Representing a unique first for a luxury hotel operator, The Ritz-Carlton Yacht Collection will bring the brand's legendary service to the seas with a curated yachting experience for its guests. With the inaugural yacht setting sail in February 2020, The Ritz-Carlton Yacht Collection will provide an array of opportunities for network-enabled entertainment and enrichment, offering guests more flexibility and options with their onboard experience. Delivered as an end-to-end managed network service, SES Networks' Signature Maritime Solution combines the low latency of the O3b medium earth orbit (MEO) satellite constellation with the resiliency and reach of SES's large fleet of geostationary (GEO) satellites for a highly reliable, high-performance guest broadband experience.

Marlink and Mahd Group Further Expand Partnership to Offer Connectivity Services in Oman

March 27, 2019 - Marlink's enduring partnership with Mahd Satellite has been further cemented with the installation of a new Terralink Hub and RF uplink station at its headquarters in Muscat, in the Sultanate of Oman. The flexibility of this fully-managed network operator service from Marlink enables Mahd Satellite to offer a comprehensive range of VSAT communications capabilities for its customers while controlling the infrastructure to function within the country's regulatory framework. Marlink's managed Terralink Hub service supplies a complete end-to-end VSAT connectivity solution which features 24/7 Level 2 monitoring and control plus full marketing and engineering support, with value-added IP services including internet backbone access, routing, firewalling and a customer portal. For Mahd Satellite, the breadth and adaptability of the Terralink Hub's managed service translates into a highly efficient and cost-effective means of meeting network capacity requirements and providing internet access for end-users to access diverse applications from business-critical email and video streaming to web browsing and support

of internet apps. The service is specially adapted to sectors including defence, oil and gas, security, telecoms and IT, construction and utilities.

SKY Perfect JSAT Corporation & PASCO form Partnership

March 28, 2019 - SKY Perfect JSAT Corporation has reached a business partnership agreement with PASCO CORPORATION with the goal of creating high added-value services and mutually making effective use of the technologies and resources owned by both companies in the wide range of fields from the satellite to geospatial data business, while also seeking increased efficiency for the low-earth-orbit (LEO) satellite-based services currently offered by both companies and expanding the markets for these services. The types of services which will be bolstered as a result of this agreement are as follows: 1) Satellite ground station services Utilize the applied technologies, expertise, and resources owned by both companies to expand the earth observation business of SKY Perfect JSAT, while also expanding business by offering network services with the ground stations for LEO satellites in Japan and in other countries for earth observation and telecommunications companies; 2) Satellite data utilization Begin developing new services by mutually making effective use of the earth observation satellite data and services of both companies; 3) Market expansion Start to develop business models that promote effective use of the resources such as the services and sales channels of both companies with the aim of growing the markets in the fields of satellite communications, positioning satellites, and earth observation services.

KVH Introduces World's Fastest 1 Meter Ku/C-band Maritime VSAT Antenna for Global Connectivity

March 28, 2019 - KVH Industries introduced the TracPhone V11-HTS, the world's fastest 1 meter Ku/C-band maritime VSAT antenna, designed to deliver data speeds as fast as 20 Mbps down/3 Mbps up to commercial maritime vessels and superyachts around the world. The fast data speeds support the critical needs of commercial ships today for operations, Internet of Things (IoT) applications, and crew connectivity. Superyacht guests can now enjoy fast connectivity for streaming HD content and accessing Internet and social media platforms at sea. Designed, engineered, and manufactured by mobile tech innovator KVH, the TracPhone V11-HTS features a dual Ku/C-band design with automatic switching to deliver expanded global coverage, including Northern and Southern latitudes, and reliable connectivity, even in extreme weather. In addition, the antenna system features the Integrated CommBox Modem (ICM), a streamlined belowdecks unit including high-throughput modem, Voice over IP (VoIP) adapter, CommBox network management software, and built-in Wi-Fi and Ethernet. The ICM also receives onboard news, entertainment, and operations content sent via KVH's IP-MobileCast content delivery service.

Iridium Enhances Network with New Southern Hemisphere Ground Station

March 28, 2019 - Iridium Communications Inc. announced the commercial service activation of a new southern hemisphere ground station, located in Punta Arenas, Chile. The addition of the Punta Arenas teleport network site adds geographic diversity to Iridium's ground stations as its only southern hemisphere site, establishing a new layer of network redundancy for the constellation. This new site strengthens an already exceptional space and ground network by enhancing Iridium's ability to manage network traffic, capacity and availability rates. The Punta Arenas site was built in partnership with Kongsberg Satellite Services (KSAT) of Norway, a long-time Iridium partner in supporting celestial-to-terrestrial connectivity.

BROADCASTING

Himalaya HD Bolsters MEASAT's HD Video Neighbourhood

March 4, 2019 – MEASAT Satellite Systems Sdn. Bhd. (MEASAT) announced the launch of Himalaya TV HD ("HTV") for distribution across Nepal and Asia Pacific via the MEASAT-3 satellite. HTV, founded in 2010 is a Kathmandu-based private television company of Nepal. HTV produces news and entertainment programs that raises awareness of human issues and embraces the diverse needs of a multicultural society. The addition of Himalaya HD regional feed increases MEASAT's video neighbourhood in Nepal to 8 channels featuring news, general entertainment and factual programming. The 91.5°E prime video hot slot is home to the MEASAT-3, MEASAT-3a and MEASAT-3b satellites, forming the region's strongest video neighbourhood. From 91.5°E, MEASAT supports broadcasters and DTH operators to distribute UHD, HD and SD channels to audiences across Asia, Australia, East Africa and South-Eastern Europe.

RT and Yahlive Introduce 'RT France HD' to the Middle East

March 6, 2019 - Global television news network RT has expanded its partnership with Yahlive, the Abu Dhabi-based satellite joint venture between world leading satellite operator SES and the UAE satellite company Yahsat, by introducing RT France HD to French speakers in the MENA region via Yahlive's MENA beam. For the next three years, RT France HD will be added to Yahlive's existing bouquet of other popular TV channels, and will reach more than 10 million households across Algeria, Tunisia, and Morocco. A long-term partner of Yahlive, RT renewed its agreement with Yahlive in 2018 to continue broadcasting RT International HD & RT Arabic HD. RT is a leading news source in the Middle East and North Africa region, with a weekly audience of 11 million people across 15 countries, and remains one of Yahlive's key broadcasters in the region. In 2018, RT's reach has significantly increased across Yahlive's Arabic-speaking communities, to 10.3 million DTH and 0.2 IPTV households or 42 million viewers, according to the SES Satellite Monitor, an annual market research conducted by the leading satellite operator. RT France will now bring local, regional, national and international stories to the French-speaking viewers in the region.

Anevia and Quadrille Strengthen Partnership

March 12, 2019 - Anevia, a leading provider of OTT and IPTV software solutions, and Quadrille, a leader in delivering file and live content over satellite, have strengthened their partnership to offer OTT over satellite. The joint solution will enable content providers and operators to offer cost-effective live-TV services, without sacrificing stream quality, in situations where it was previously unavailable due to limited bandwidth – such as high-speed trains, inflight entertainment, off-shore sites and university campuses. This complete OTT-over-satellite solution includes Anevia's GENOVA smart transcoder and NEA-LIVE packager to prepare live channels. The OTT stream is delivered via satellite using Quadrille's QuadriLive™. On the receiving side, Anevia's Flamingo embeds Quadrille's software to re-transform the signal and enable a multi-screen viewing experience on any smart device. This highly scalable multiscreen TV solution provides ultra-low latency and high-quality video services, anywhere and at any time. The latest collaboration between Anevia and Quadrille strengthens a partnership that started with the launch of an innovative approach to a Replay solution for Canal+ to address the hospitality and healthcare markets. This solution has already been deployed in many French hotels and hospitals and is being used by 20,000 unique viewers every day.

Mondo Globo Selects Eutelsat CIRRUS to Launch New Arabic TV Offer

March 12, 2019 - Eutelsat Communications has secured the first customer for its recently launched Eutelsat CIRRUS delivery solution, with rapidly-growing video distributor, Mondo Globo/MCNC. Telearabia PRO, Mondo Globo's new TV platform of Arabic-language SD channels, specifically targets the European hospitality sector. It comprises six premium Arabic lifestyle and entertainment channels, including three MBC Group channels. Fully-assembled through Eutelsat CIRRUS, the platform is available on Eutelsat's HOTBIRD neighbourhood located at 13° East and features live channel broadcasting, channel numbering, programme information and content security.

FCC Streamlines Reauthorization Process for TV Satellite Stations

March 12, 2019 - The Federal Communications Commission (FCC) eliminated unnecessary regulatory expense and delay by streamlining the process for reauthorizing television satellite stations when they are assigned or transferred. As a result of the vote adopting this item, the proposal will be removed from the agenda of the FCC's March Open Meeting. Television satellite stations are full-power terrestrial broadcast stations that generally retransmit some or all of the programming of a parent station. Stations that the Commission has authorized as satellites are excepted from the broadcast ownership limits, most notably the local television ownership rule. If a satellite station is assigned or transferred to another owner and the new owner wishes to continue operating the station as a satellite, the new owner must seek reauthorization, a process that until today required the same evidentiary showing necessary for an initial authorization. Today's action reduces the costs and burdens of this reauthorization process by permitting assignment and transfer applicants to use streamlined procedures when there has been no material change in the underlying circumstances supporting the satellite station's existing authorization.

Benin Accelerating Roll-out of Digital Terrestrial Television with SES

March 13, 2019 - Viewers in the Republic of Benin are now receiving 15 new Free-to-Air (FTA) channels from satellite, thanks to a new agreement the Government of the Republic of Benin has signed with SES,. As part of the agreement a number of High Definition (HD) channels will be broadcast over Benin, making it the first HD channels to be available over Digital Terrestrial Television (DTT) service across Africa. This

marks an important step forward in the digital switchover for the country, which intends to switch off analogue service in 2020. To meet the high service availability and nationwide coverage requested by Benin, SES will be utilizing powerful spot-beam capacity on SES-14. This satellite with a high throughput payload will deliver video feeds to the DTT infrastructure across Benin, with Direct-to-Home (DTH) service filling in any gaps of DTT coverage. SES-14 was launched in January 2018 and is located at 47.5 degrees West.

Speedcast Media Network Expands Global Connectivity and Media Service Offerings

March 28, 2019 - Speedcast International Limited has expanded its Speedcast Media Network™ global infrastructure by integrating satellite, fiber, and cellular networks from Globecomm, the company's recent acquisition. Speedcast Media Network provides secure point-to-point and point-to-multipoint live and linear digital video delivery anywhere in the world, with low latency and high availability. Speedcast has also added multiplatform processing and content management capabilities from Globecomm to Speedcast Media Network's portfolio of cloud video processing services, enabling increased efficiency and agility for any size media organization. The combined hybrid network backbone and cloud video processing services offering from Speedcast Media Network is ideal for transporting video and data content from any origination source to any destination – in any format for multiple platforms – and for everything from aggregation and contribution to integrated channel playout, OTT streaming, and distribution.

LAUNCH / SPACE

NASA, SpaceX Launch First Flight Test of Space System Designed for Crew

March 4, 2019 - For the first time, a commercially-built and operated American crew spacecraft and rocket, which launched from American soil, has arrived at the International Space Station. The SpaceX Crew Dragon spacecraft lifted off at 2:49 a.m. EST Saturday on the company's Falcon 9 rocket from Launch Complex 39A at NASA's Kennedy Space Center in Florida. Known as Demo-1, SpaceX's inaugural flight with NASA's Commercial Crew Program is an important uncrewed mission designed to test the end-to-end capabilities of the new system. It brings the nation one-step closer to the return of human launches to the space station from the United States for the first time since 2011 – the last space shuttle mission. Teams still have work to do after this flight to prepare the spacecraft to fly astronauts. The best way to advance the system design was to fly this spacecraft and uncover any other areas or integrated flight changes that might be required. The program demonstrates NASA's commitment to investing in commercial companies through public-private partnerships and builds on the success of American companies, including SpaceX, already delivering cargo to the space station. Demo-1 is a critical step for NASA and SpaceX to demonstrate the ability to safely fly missions with NASA astronauts to the orbital laboratory.

China Preparing for Space Station Missions

March 4, 2019 - The China Manned Space Engineering Office (CMSEO) announced that the core module of the country's space station, the Long March-5B carrier rocket and its payloads will be sent to the launch site in the second half of this year, to make preparations for the space station missions. China is scheduled to complete the construction of the space station around 2022. It will be the country's space lab in long-term stable in-orbit operation. The space station will have a core module and experiment modules, which are under development and will be launched into space by the Long March-5B. Joint exercises will be carried out in the Wenchang Space Launch Center at the end of 2019 for the maiden flight of the Long March-5B. Programs to select and train astronauts are underway. China is committed to making the country's space station an international platform for scientific and technological cooperation, according to the CMSEO. In June this year, the CMSEO will work with the United Nations Office for Outer Space Affairs to complete the application selection of China's space station and launch a number of cooperation projects. China's Tiangong-2 space lab, launched on Sept. 15, 2016, is conducting in-orbit tests and will de-orbit after July this year.

GMV Controls the First Satellites of OneWeb's Mega-constellation

March 4, 2019 - On 27 February at 21.37 UTC the first six satellites of OneWeb's constellation were successfully launched on a Soyuz rocket from the Kourou spaceport. This launch marks the transition from successful proof-of-concept to the commercialization of OneWeb "for everyone, everywhere", all in the interests of bridging the so-called digital divide. OneWeb has now struck out on the deployment of the biggest satellite constellation ever produced; from the end of this year it will regularly be launching about

30 satellites a month. To set an eyecatching example, OneWeb has undertaken to connect up 6 schools in formerly unconnected regions of the world: Alaska, Nepal, Honduras, Ecuador, Rwanda and Kyrgyzstan. GMV, undisputed number one in the supply of control centers for satellites of all types, will be helping to achieve all the above goals. In 2016 GMV won the contract for developing the command and control (C2) center of the whole constellation, thus taking on a great challenge. GMV's C2 system has been installed in the constellation's UK and USA operation centers and will be providing access to the command process and telemetry, automation of contacts between the satellites and ground antenna, as well as keeping track of the overall state of the constellation. GMV's command and control center includes different solutions from its inhouse real-time product line, such as hifly, for satellite monitoring and control; flyplan, for automation of contacts, and fleetDashboard, developed in collaboration with OneWeb's operations team, which provides global knowledge on the state of the constellation.

D-Orbit Signs Framework Agreement with Firefly to Acquire Launch Capacity

March 4, 2019 - D-Orbit S.p.A., an Italian service provider of the New Space sector, signed a multi-year framework agreement with US-based launch operator Firefly Aerospace Inc. (Firefly) to purchase launch capacity of the Firefly Alpha launch vehicle. The agreement grants D-Orbit the status of a preferred launch aggregation partner for the European market, allowing D-Orbit to purchase, market, and resell launch vehicle capacity, and to provide logistics support and integration activities at its operational premises in Italy. Alpha is the first of a series of launchers being developed by Firefly for the needs of the small satellite market. The first Alpha launch is scheduled for the end of 2019, with frequent launches in 2020 and beyond. Firefly will have launch sites at Vandenberg Air Force Base and Cape Canaveral Air Force Station, enabling missions to polar, SSO and lower inclination orbits.

China's New Huge Solid Rocket Booster Completes Test

March 5, 2019 - China announced that the country's new solid rocket booster, with 200-tonne thrust engine, completed hot firing tests, proving its readiness for commercial launches. With a diameter of 2.65 meters, the booster engine is expected to be used on the modified version of the Long March-11 rocket. The rocket is the only series in the Long March family that uses solid propellants, and it can be launched within 24 hours. Developed by the Academy of Aerospace Solid Propulsion Technology under the China Aerospace Science and Technology Corporation, it will be China's most powerful rocket booster engine, delivering a maximum thrust of 200 tonnes and carrying an explosive payload of 71 tonnes. To increase its carrying capacity and market competitiveness, the new booster is covered with filament winding composite shell, which is better and can be applied more widely than metal shell, said Wang Jianru, chief designer of the booster.

China's Commercial Carrier Rocket to Make Maiden Flight

March 5, 2019 - China's first carrier rocket for commercial use is scheduled to make its maiden flight in the first half of 2019, according to the China Academy of Launch Vehicle Technology (CALT). The rocket, named Smart Dragon-1 (SD-1), is the first member of the Dragon series commercial carrier rockets family to be produced by CALT. The SD-1, with a total length of 19.5 meters, a diameter of 1.2 meter, and a takeoff weight of about 23.1 tonnes, is capable of sending over 150 kg payloads to the solar synchronous orbit at an altitude of 700 km. It takes only six months to produce one such rocket, and 24 hours to prepare for the launch. It can be used for launching either single satellite or multiple satellites at a time.

Thales Alenia Space to Supply Nepal with Telecommunication Satellite

March 11, 2019 - The Nepal Telecommunications Authority and Thales Alenia Space signed an agreement under which Thales Alenia Space will build the national satellite telecommunication system for Nepal. This agreement is following the Letter of Intent previously signed on March 5 in Paris. This very high-performance C/Ku Band satellite, yet to be named by Nepal, is to be launched by 2022 and to be positioned at the 123.3° E orbital slot reserved for Nepal by ITU. It will be based on the SpaceBus National Satellite System solution developed by Thales Alenia Space. The main mission is to make high-speed internet available throughout Nepal, spearheading services such as telemedicine, e-learning, e-government, disaster management, information technologies, agriculture, tourism, hydropower and other value-added services, along with the provisions of Direct-to-Home television and mobile phone backhauling. The ubiquitous and versatile communication services provided by the satellite are primarily targeted at reducing the digital divide, especially in the underserved rural areas.

Vega-C Enters Qualification Phase for Maiden Flight

March 11, 2019 - The Vega-C launch system recently passed its Critical Design Review and is now ready to complete manufacturing and final testing as part of the qualification phase. This Critical Design Review is a major milestone. Independent experts from European Space Agency (ESA), national institutions and industries confirmed the consistency and maturity of the entire Vega-C launch system design, authorising the programme to enter the design qualification phase for the inaugural flight planned in the first quarter of 2020. The review included all the elements of the Vega-C launch system, as well as integration activities for the launch base and launch range. It encompassed all detailed design aspects and test campaigns performed on all launch system elements, such as the solid rocket motors (P120C and Z40), structural components, avionics equipment, and related integrated system aspects. The review Board meeting, chaired by Toni Tolker Nielsen, ESA's Inspector General, and Daniel Neuenschwander, ESA Director of Space Transportation, concluded the review by commending the teams, and giving the green light to proceed to the next phase.

Atos and OneWeb Satellites Make the World First Mass-Production of Satellites Real

March 12, 2019 - Atos is supporting OneWeb in the successful launch of 6 satellites on February 27th, providing all the Assembly, Integration and Testing (AIT) equipment while achieving the world's first mass production of satellites. Atos supports the OneWeb Constellation Program primed by Airbus OneWeb Satellites, that consists of the design, development and manufacturing and test of more than 600 satellites which would provide affordable high-speed Internet access across the globe. The challenge is immense as satellites have never been mass-produced to this extent before. The demand to produce several small satellites a day and bridge the digital divide by 2027 are what inspired the Airbus OneWeb Satellites team to develop innovative designs and processes that could lower the costs with large volumes for high-performance space applications. Atos ensures optimal satellites performance with its integrated suite of electrical satellite testing solutions Atos EGSE suite of solutions enables satellites to be tested on the ground prior to launch to prevent or fix any issues and make sure all requirements are met, thus reducing the strategic and financial impact of a potential single faulty component.

JAXA and Toyota Reach Agreement to Make Future Lunar Mobility a Reality

March 12, 2019 - The Japan Aerospace Exploration Agency (JAXA) and Toyota Motor Corporation (Toyota) agreed today to study the possibility of collaborating on international space exploration. As a first step, JAXA and Toyota agreed to further cooperate on and accelerate their ongoing joint study of a manned, pressurized rover that employs fuel cell vehicle technologies. Such a form of mobility is deemed necessary for human exploration activities on the lunar surface. Even with the limited amount of energy that can be transported to the moon, the pressurized rover would have a total lunar-surface cruising range of more than 10,000 km. International space exploration, aiming to achieve sustainable prosperity for all of humankind by expanding the domain of human activity and giving rise to intellectual properties, has its sights set on the moon and Mars. To achieve the goals of such exploration, coordination between unmanned missions, such as the recent successful touchdown by the asteroid probe Hayabusa2 on the asteroid Ryugu, and manned missions, such as those involving humans using pressurized rovers to conduct activities on the moon, is essential. When it comes to challenging missions such as lunar or Martian exploration, while various countries are competing in advancing their technologies, they are also advancing their cooperative efforts.

Long March Rockets Complete 300 Launches

March 13, 2019 - With a Long March-3B rocket putting a new communications satellite into orbit on March 10, China's Long March carrier rocket series completed 300 launches, having sent more than 500 spacecraft into space since 1970. The Long March carrier rocket series, developed by CASC, is responsible for about 96.4 percent of all the launch missions in China. It took 37 years for the Long March rockets to complete the first 100 launches, 7.5 years to complete the second 100 launches, and only about four years to accomplish the final 100, with the average number of launches per year increasing from 2.7 to 13.3 and then to 23.5. The success rate of the 300 launches of the Long March rockets stood at 96 percent. During the third 100 launches, the Long March rockets sent a total of 225 spacecraft, weighing about 240 tonnes, into space, with a success rate of 97 percent, reaching a high level in the world. From October 1996 to August 2011, the Long March rockets set a world record for 15 years of successful consecutive launches. In 2018, the Long March rockets completed 37 consecutive successful launches, ranking a global first for highest number of successful launches.

Khrunichev: Program to Ensure Reliability of Proton Launches will Continue

March 13, 2019 - The following press release was published by Khrunichev on March 6, 2019: One of the top priorities at Khrunichev State Research and Production Space Center (Khrunichev Center) is to ensure the quality and reliability of the Proton launch vehicles. The three-stage upgraded Proton M Launch Vehicle (LV) outfitted with a Breeze M Upper Stage is currently the main Russian vehicle used to launch unmanned spacecraft to high Earth orbits and Earth-escape trajectories for both Federal and commercial space programs. In collaboration with Roscosmos State Corporation, Khrunichev Center developed a three-year "Program to Maintain Proton M LV and Breeze M Upper Stage Reliability during the 2016-2018 timeframe." Nearly 60 activities have been implemented under this program. The scope of activities includes identifying, analyzing and eliminating defects and malfunctions in the process of manufacturing and operating rocket and space equipment, updating design and operational documentation, and Proton M/Breeze M component quality improvement measures. The comprehensive effort to ensure reliability of Proton M launches will continue. Roscosmos and Khrunichev Center management came to a decision to develop a similar program aimed at the reliability and capability of the Proton M/Breeze M system for the next three-year period (2019 to 2021).

Australian Space Agency Looks to Sign MoUs with All States and Territories following ACT Deal

March 15, 2019 - The Australian Space Agency is looking to sign memorandums of understanding with other states and territories following its first such deal with the ACT government this week. The MoU with the ACT will establish a framework of cooperation in the development of space-related industries and outlines key areas where the agency can work with the ACT government to boost the space industry. Some of the areas of cooperation under the MoU include quantum communications, deep space communications, design, test and qualification of space hardware, space situational awareness, and space law.

United Launch Alliance Successfully Launches WGS-10 Mission

March 15, 2019 - A United Launch Alliance (ULA) Delta IV rocket carrying the tenth Wideband Global SATCOM (WGS) satellite for the U.S. Air Force lifted off from Space Launch Complex-37 on March 15. ULA has been the exclusive launch provider for all ten WGS satellites. The WGS-10 satellite, built by the Boeing Company, is an important element of the new high-capacity satellite communications system. Each WGS satellite provides more wideband communications capacity than the entire Defense Satellite Communications System. This mission launched aboard a Delta IV Medium+ (5,4) configuration vehicle, built in Decatur, Alabama, including a 5-meter Payload Fairing and standing at 218 feet. The common booster core for Delta IV was powered by the RS-68A engine, and the Delta Cryogenic Second Stage was powered by the RL10B-2 engine, both supplied by Aerojet Rocketdyne. Northrop Grumman provided the four solid rocket motors. At liftoff, the main engine and four solid rocket motors comined to produce approximately 1.7 million pounds of thrust.

Airbus Enters MoU with Firefly Aerospace to Partner on Launch Solutions for Constellations

March 19, 2019 - Firefly Aerospace, Inc. announced the execution of a Memorandum of Understanding (MOU) with Airbus Defence and Space (Airbus) to develop new space launch solutions for Airbus customers. This initial MOU covering several launches is the first step of a long-term relationship which will provide Airbus customers the highest level of flexibility for their small satellite launches. The partnership with Firefly will provide launch options with direct access to specific orbits, flexibility, and short notice. The Alpha vehicle addresses an unmet need in small satellite launch and will provide a further option for our customers in addition to legacy medium and large launchers in Europe.

Ariane 6 Maiden Flight Will Deploy Satellites of the Oneweb Constellation

March 19, 2019 - Ariane 6 will be available to OneWeb from the second half of 2020 to provide launch capacity that supports the full deployment and replenishment of the OneWeb constellation. The launch service agreement specifies the use of the qualification launch of the Ariane 62 version, scheduled for the second half of 2020; the two Ariane 6 options (either in its 62 version, accommodating up to 36 OneWeb satellites, or in the 64 version, up to 78 OneWeb satellites) will be utilized starting in 2023. The OneWeb satellites will be launched by the first Ariane 62 into a near-polar orbit at an altitude of 500 kilometers before raising themselves to their operational orbit. The Ariane 6 launch vehicle has two variants – Ariane 62 and Ariane 64 – which allow Arianespace to offer a wide new range of launch services and solutions to customers. OneWeb already has entrusted Arianespace with 21 Soyuz launches to ensure the timely deployment of its constellation, whose first successful launch occurred on February 27, 2019, from the Guiana Space Center (CSG), French Guiana, South America.

1st Arab Space Group Established in UAE

March 19 - Eleven Arab states, including the United Arab Emirates (UAE), set up the first Arab space organization, whose first project will be developing a satellite to monitor environmental and climate changes. Sheikh Mohammed bin Rashid al Maktoum, UAE vice president and ruler of Dubai, attended the ceremony of signing the charter for the Arab Group for Space Collaboration, held on the opening day of Global Space Congress in Abu Dhabi. Sheikh Mohammed said the group's first project would be developing a satellite named as 813, the year the House of Wisdom in Baghdad reached the height of its reputation. The satellite will be developed in the UAE. He noted that the House brought together scientists and translated books of knowledge, and became a place for the region to unleash its scientific energy. The Global Space Congress, held on March 19-21, is one of the key events bringing together space sector leaders of the Middle East and North Africa region. The UAE cabinet on March 11 adopted the National Space Strategy 2030, which includes 36 objectives and 119 initiatives benefiting more than 85 entities in the UAE. The strategy is seen as the general framework for UAE's space industry and activities until 2030.

Lockheed Martin's First Smart Satellites are Tiny with Big Missions

March 20, 2019 - Lockheed Martin has announced a new generation of space technology launching this year that will allow satellites to change their missions in orbit. Satellites that launched one, ten or even fifteen years ago largely have the same capability they had when they lifted off. That's changing with new architecture that will let users add capability and assign new missions with a software push, just like adding an app on a smartphone. This new tech, called SmartSat, is a software-defined satellite architecture that will boost capability for payloads on several pioneering nanosats ready for launch this year. This year Lockheed Martin is integrating SmartSat technology on ten programs and counting, including the Linus and Pony Express nanosats, which will be the first to launch. These are rapid-prototype, testbed satellites using internal research and development funding, ready for 2019 launches on the first LM 50 nanosatellite buses. SmartSat uses a hypervisor to securely containerize virtual machines. It's a technology that lets a single computer operate multiple servers virtually to maximize memory, on-board processing and network bandwidth. It takes advantage of multi-core processing, something new to space. That lets satellites process more data in orbit so they can beam down just the most critical and relevant information – saving bandwidth costs and reducing the burden on ground station analysts, and ultimately opening the door for tomorrow's data centers in space.

Thales Alenia Space Reaches Key Milestone for NanoRacks' Airlock Module

March 20, 2019 - Thales Alenia Space has announced that the shell for Bishop airlock module is ready for ship to the NanoRacks integration facility in Houston, Texas. The NanoRacks airlock module – dubbed "Bishop" – is the first-ever commercial airlock that will operate on the International Space Station. Owned and operated by NanoRacks, Bishop will be a permanent commercial module on the ISS. It can also be removed from the ISS for use on future commercial platforms under the NanoRacks Space Outpost Program. Bishop will offer five times more satellite deployment volume than opportunities available on the ISS today. It is scheduled to launch on the SpaceX CRS-21 service mission in January 2020. Thales Alenia Space produced and tested the critical pressure shell for Bishop, as well as various secondary structures, including the Micrometeoroid and Orbital Debris (MMOD) shields with multilayer insulation (MLI) panels, the power and video grapple fixture support structure and other structural components. NanoRacks is responsible for project management, mechanical and avionics design engineering, safety, operations, quality assurance, mockups and crew training, as well as the final assembly, integration and testing of the Bishop airlock.

Arianespace Orbits 600th Satellite, PRISMA Earth Observation Satellite for the Italian Space Agency

March 21, 2019 - On its third launch of the year, Arianespace has successfully orbited the PRISMA Earth observation satellite on behalf of the ASI Italian space agency, within the scope of a contract with OHB Italia. This was the first Vega launch in 2019, and the 14th successful launch in a row for this light launcher since its introduction at the Guiana Space Center (CSG) in 2012. The launch took place on Thursday, March 21 in French Guiana. PRISMA is the 600th satellite to be orbited by Arianespace and the eigth for Italian institutions or operators. PRISMA was built for the Italian ASI space agency by OHB Italia as prime contractor, with Leonardo responsible for the payload. Lofted by Vega into low Earth orbit (LEO), PRISMA will provide major applications to protect the planet and ensure Italy's environmental safety. The satellite is fitted with a state-of-the-art electro-optical instrument, comprising an innovative hyperspectral sensor and a medium-resolution panchromatic camera (sensitive to all visible wavelengths), and will employ these capabilities for environmental monitoring, the management of resources, identification and

classification of crops, the fight against pollution, etc.

Axelspace and ODYSSEUS SPACE to Provide EO Data from AxelGlobe Constellation to Taiwan
March 26, 2019 - Axelspace Corporation, a Japanese company with extensive experience in small satellite platforms development, and ODYSSEUS SPACE, a Taiwanese company developing innovative space technologies for small satellites, announced a partnership to provide Earth Observation data in Taiwan from the new AxelGlobe constellation. AxelGlobe is the Earth observation infrastructure for a new era. It will have the ability to image the whole civilized world with a resolution of 2.5 m – enough to distinguish large cars – every day. Axelspace has begun the development of AxelGlobe, an Earth observation service based on a multiple-satellite single plane constellation. With it, they will be able to obtain imagery of more than half of the planet's dry land once every single day, with consistent imagery at 2.5m resolution. As a first step to construct the constellation, the company launched the first satellite named GRUS on December 27 last year. The first light from the satellite was successfully shared and the commercial service is to begin in May 2019. After that, Axelspace expects to launch 3 more GRUS satellites in 2020 and to complete the entire constellation by 2022.

Space Flight Laboratory to Build HawkEye 360 Next-Gen Microsatellite Cluster
March 27, 2019 - Space Flight Laboratory (SFL) has been awarded the prime contract to develop the next generation cluster of formation-flying microsatellites for HawkEye 360 Inc. of Herndon, Va. The HawkEye Constellation, comprised of multiple clusters of three satellites each, is the first of its kind to detect and geolocate radio frequency (RF) signals for maritime, emergency response, and spectrum analysis applications. SFL built the platforms and integrated the HawkEye 360 Pathfinder cluster which was launched into low-Earth orbit in December 2018 and commissioned early this year. The three formation-flying Pathfinder microsatellites have successfully demonstrated geolocation of VHF, emergency position-indicating radio beacon (EPIRB), automatic identification system (AIS) and marine radar signals.

Rocket Lab Successfully Launches R3D2 Satellite for DARPA
March 28, 2019 - A Rocket Lab Electron launch vehicle successfully lifted off from Launch Complex 1 on New Zealand's Mahia Peninsula. The mission launched a prototype reflect array antenna to orbit for the Defense Advanced Research Projects Agency (DARPA). Rocket Lab was selected for the launch because of the company's proven mission heritage and its ability support rapid acquisition of small satellite launch capabilities. Due to Rocket Lab's streamlined acquisition practices, DARPA's R3D2 mission was launched just over 18 months from conception – a significant reduction in traditional government launch acquisition timeframes. With proven flight heritage from four orbital missions, Rocket Lab is the only fully commercial small satellite launch service provider in operation. The experienced Rocket Lab team has delivered 25 satellites to orbit, including innovative new space technologies that provide vital capabilities such as weather monitoring, Earth observation and Internet of Things connectivity. The R3D2 mission was Rocket Lab's first of 2019, as the company heads into a busy year of launches booked for lift-off every four weeks. To support the small satellite industry's highest launch cadence, Rocket Lab is currently producing one Electron launch vehicle every 30 days across its Huntington Beach, California, and Auckland, New Zealand, production facilities.

Chinese Gaofen-5 and Gaofen-6 Satellites Put into Service
March 29, 2019 - Two Chinese Earth observation satellites, the Gaofen-5 and Gaofen-6, were officially put into service on March 25 after completing in-orbit tests. During the tests, the two satellites provided precise data on environmental monitoring, natural resources and natural disasters. Launched on May 9, 2018, Gaofen-5 is the first China-developed satellite that can monitor air pollution. It can dynamically reflect the state of air pollution in China through the monitoring of air pollutants, greenhouse gases and aerosols. With a designed life of eight years, Gaofen-6 was launched on June 2, 2018, and can provide high-resolution images covering a large area of the Earth. Its data can be applied in monitoring natural and agricultural disasters, estimating crop yields and surveys of forest and wetland resources. The Gaofen-5 and Gaofen-6 will form a constellation with other Gaofen satellites in orbit.

EXECUTIVE MOVES

Eutelsat Announces the Appointment of New Company Secretary, Julie Burguburu
March 14, 2019 - Eutelsat Communications announces the appointment of Julie Burguburu as Company

Secretary of the Group and a member of the Executive Committee. Julie will oversee Eutelsat's legal, compliance, regulatory and governance issues by heading the company's teams in charge of these functions. She will succeed Edouard Silverio, who has decided to pursue new professional projects beyond Eutelsat. As a senior counsel member ("maître de requêtes") to the French Conseil d'Etat, Julie Burguburu was, up until now, a State rapporteur to the Administrative Litigation Division. She has held several top management positions in the French State administration. From 2014 to 2016, she was Deputy Chief-of-Staff to Claude Bartolone, President of France's National Assembly, then from 2016 to 2017, to Bernard Cazeneuve, in his role of Interior Minister and then Prime Minister. Julie previously spent four years in Shanghai, China, where she was Vice-President of Veolia China, with the responsibility of transforming the company. In particular, she steered the reorganization of the Chinese and Japanese structures as well as the merger of Veolia's water and waste management entities in China. Prior to that, she had served seven years at the French Conseil d'Etat from 2003 to 2010.

Singtel Appoints Dominic Barton to Board of Directors

March 25, 2019 - Singtel has announced the appointment of Dominic Barton as an independent director of the Board with immediate effect. Barton has been Chair of the Board of Canadian mining company Teck Resources since 1 October 2018. A McKinsey & Company veteran, Barton was Global Managing Partner of McKinsey until July 2018, a role he held for nine years. He is currently Global Managing Partner Emeritus. Before becoming managing partner, Dominic served as McKinsey's chairman in Asia from 2004 to 2009. He also headed McKinsey's office in Korea from 2000 to 2004. Barton is the Chancellor of the University of Waterloo, the chairman of the International Integrated Reporting Council, Canadian Minister of Finance's Advisory Council on Economic Growth and the Seoul International Business Advisory Council. He is also a trustee of the Brookings Institution, a founding member of non-profit organisation FCLT Global (Focusing Capital on the Long Term), a member of the Singapore Economic Development Board's International Advisory Council, and a member of the boards of Memorial Sloan Kettering in New York City and the Asia Pacific Foundation of Canada.

C-band Alliance Appoints Peter Pitsch to Lead Advocacy and Government Affairs

March 27, 2019 - The C-Band Alliance (CBA) has announced the appointment of Peter Pitsch as Head of Advocacy and Government Affairs. The CBA is the entity that proposes to implement a safe and efficient clearing and repurposing of mid-band 'C-band' downlink spectrum to accelerate the deployment of 5G services in the U.S. The CBA was formed by Intelsat, SES, Eutelsat and Telesat, the band's incumbents and the leading continental U.S. satellite services operators. Pitsch previously served as Associate General Counsel for Intel Corporation, where he was responsible for global telecommunications policy, a position from which he retired in 2018. Since October 2017, Pitsch advocated in support of the CBA's market-based proposal on behalf of Intel. He has over three decades of experience advocating for public policy issues in front of the Federal Communications Commission(FCC) and U.S. Congress. Positions of note prior to his career at Intel included serving as Chief of the Office of Plans and Policy and Chief of Staff to the Chairman of the FCC during the Reagan Administration.

Former Senior Intelliegence Leader Joins Lockheed Martin

March 28, 2019 - The former deputy director of the National Reconnaissance Office (NRO), Major General (ret.) Stephen Denker, will join Lockheed Martin to lead key satellite ground programs, effective April 1. Denker will oversee Intelligence and Analytic Development programs in support of space ground systems within the Mission Solutions line of business for Lockheed Martin Space. Gen. Denker brings a wealth of experience and leadership skills from his 33-year Air Force career, including managing all Air Force personnel and assets assigned to NRO and serving as the agency's senior military advisor from 2015 to 2018. The Intelligence and Analytic Development area encompasses cloud-based satellite mission management solutions, command and control, data processing and analysis for the Intelligence Community.

REPORTS

NSR Report Finds Satellite Capacity Pricing Plunges 18% on Average from 2018-2019

March 11, 2019 - NSR's *Satellite Capacity Pricing Index, 5th Edition (2019)*, finds accelerated pricing decline across operator segments, with a global average decline of 18% over the past 12 months. NSR's Global Mean Price Index for video declined by 7.1%, mobility by 13%, with the data segments declining by as

much as 24%. The key driver for such a large market correction is attributed to cheap and bulk supply of HTS capacity that has rendered legacy satellites increasingly obsolete. Increasing backhaul, cruise, and broadband deployments have given a boost to the capacity demand, albeit underscoring the topline through price elasticity. NSR projects video will continue to decline at a faster rate of 11% in 2019-2020 on account of increased compression rates and high market saturation. Mobility is also expected to decline faster with developing country opportunity and increase of cruise bandwidth demand in the total maritime market share.

NSR Report Forecasts $4.5 Billion in Cumulative Revenues from In-Orbit Satellite Services by 2028
March 19, 2019 - NSR's *In-Orbit Servicing Markets, 2nd Edition (IoSM2)* report forecasts $4.5 billion in cumulative revenues from In-Orbit Satellite Services by 2028. While growth is anticipated across all applications in all orbits, GEO satellite life extension will yield the largest share of revenues. As more LEO constellations start to launch, NGEO players represent an emerging target market, with de-orbiting services expected to dominate this segment. However, despite the abundance of opportunities for In- Orbit services, systems will be most constrained by the need for government and legal administration support.

UPCOMING EVENTS

Global Conference on Space for Emerging Countries (GLEC 2019), April 24-26, Marrakesh, Morocco, http://www.iafastro.org/events/global-series-conferences/

Satellite 2019, May 6-9, Washington DC, USA, www.satshow.com

Space Tech Expo 2019, May 20-22, Pasadena, CA, USA, http://www.spacetechexpo.com/

Australasia Satellite Forum 2019, May 21-22, Sydney, Australia, http://www.talksatellite.com/asf2019flyer.html

Satellite Industry Forum 2019, June 17, Singapore, https://asiavia.org/events/sif-2019/

ConnecTechAsia2019 Summit, June 18-20, Singapore, https://www.connectechasia.com/the-summit
ConnecTechAsia2019 Summit is the preferred conference in Asia for innovative sessions by technology's rising stars and thought-provoking conversations with fellow industry peers. This is your chance to be part of a connected ecosystem – think three packed days of inspiring keynotes, focused tracks and engagement sessions with decision makers, sectoral stakeholders and digital communities. A supercharged arena powered by strong thought leadership, the Summit is inspired by innovators and enablers, tech superstars and leading organisations at the forefront of digital disruption. Reimagine the entire business value chain and help shape tomorrow's digital societies at ConnecTechAsia2019 Summit! Register now!

APSCC Industry Briefing @ ConnecTechAsia 2019, June 18, Singapore, https://apscc.or.kr/apscc-industry-briefing/

Satellite Track @ ConnecTechAsia 2019 Summit, June 19, Singapore, www.connectechasia.com/

Small Satellite Conference, August 3-8, Logan, Utah, USA, www.smallsat.org/

IBC 2019, September 13-17, Amsterdam, the Netherlands, https://show.ibc.org/

IAC 2019, October 21-25, Washington DC, USA, www.iac2019.org

China Satellite 2019, October 30 – November 1, Beijing, China, www.china-satellite.org

Asia Video Summit 2019, November 4-6, Hong Kong, 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://apsccsat.com

APSCC 2019 Youth Development Workshop, November 21, Bangkok, Thailand, https://apsccsat.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.

Editorials and Inquiries
News, comments, and suggestions can be sent to the editor at:

Inho Seo, Editor, APSCC Publications
Asia-Pacific Satellite Communications Council (APSCC)
T-1602, 170, Seohyeon-ro, Bundang-gu, Seongnam-si,
Gyeonggi-do, SEOUL 13590, Rep. of KOREA
Tel: +82 31 783 6247   Fax: +82 31 783 6249
E-mail: editor@apscc.or.kr   Website: www.apscc.or.kr

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.apscc.or.kr.