

APSCC Monthly e-Newsletter

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News in this issue has been collected from February 1 to February 28.

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SATELLITE BUSINESS

Financial Closing for the SATRIA Indonesian Telecommunication Broadband Satellite to Reduce the Digital Divide over Indonesia

February 26, 2021 - Satelit Nusantara Tiga (SNT) and Thales Alenia Space announce today the financial closing to fully develop the SATRIA program dedicated to reduce the digital divide over Indonesia. This crucial milestone follows the September 2020 signature of a Preliminary Work Agreement allowing to start the activities. Thales Alenia Space, acting as prime contractor for this program, initially signed on July 2019 for a consortium led by the domestic satellite operator Pasifik Satelit Nusantara (PSN) on behalf of Indonesia's Ministry of Communication and Information Technology (Kominfo), will deliver the High Throughput Satellite (HTS) based on its Spacebus NEO 200 full electric platform and fitted with a fifth-generation digital processor (5G). The company will also be in charge to provide two satellite control centers (main and backup), the telecommand and telemetry stations, and the ground mission segment linked to the fully processed payload. Since early September, the company has implemented all the planned contractual steps so far, including the preliminary design phases and has started the fabrication of the structure hosting the payload's equipment. The SNT consortium as well as Kominfo are actively involved in all these phases taking advantage from now from the operational flexibility offered by the fifth-generation digital processor embarked on SATRIA. The full Ka-band SATRIA satellite, to be positioned at 146°E, will carry more than 150 gigabits per second over the full Indonesian territory. Dedicated to narrow the digital divide, SATRIA has the ambition to connect around 145,000 areas including 90,000 schools, 40,000 hospitals and public buildings as well as regional government sites not linked by existing satellite or terrestrial infrastructure. The satellite will contribute to the digital infrastructure developments in Indonesia counting more than 17,500 islands.

ST Engineering Geo-Insights and NUS-CRISP Join Forces to Co-Develop Advanced Remote Sensing and Geospatial Imagery Analytics Solutions

February 25, 2021 - ST Engineering announced that its earth observation and geospatial analysis business, ST Engineering Geo-Insights, has signed a Memorandum of Understanding (MOU) with the National University of Singapore's (NUS) Centre for Remote Imaging, Sensing and Processing (CRISP) on the joint research and development, and commercialisation of advanced remote sensing technologies and geospatial imagery analytics solutions. These have global commercial applications in enabling smart and sustainable cities especially in areas such as urban planning, mega infrastructure development, maritime safety and security, environmental monitoring, as well as agricultural growth tracking. Under the MOU, both parties will co-develop advanced remote sensing solutions leveraging CRISP's unique intellectual properties, artificial intelligence and big data analytics, and collaborate on the commercialisation of these solutions in Singapore and in overseas markets. In addition, a geospatial imagery data hub will be set up to provide satellite imagery access to a wider pool of geospatial developers. This will help to accelerate the

development of novel geospatial platforms and applications, and foster a vibrant local geospatial ecosystem.

KVH Partners with Smart Ship Hub for KVH Watch Maritime IoT Solution

February 25, 2021 - KVH Industries, Inc., announced that remote vessel and voyage management platform Smart Ship® Hub is now a KVH Watch® Solution Partner and will offer KVH Watch services as part of its wide range of remote technical and operational management solutions. The Smart Ship Hub platform provides performance advisory and predictive diagnostics for vessel performance optimization as well as remote video-based maintenance and surveys and a wide range of related services that rely on real-time data feeds. KVH Watch is an IoT Connectivity as a Service solution that provides Flow, secure 24/7/365 machine-to-cloud satellite connectivity for remote monitoring of onboard equipment plus the ability to perform on-demand Remote Expert Interventions using video, voice, or text via KVH's global HTS network. KVH Watch is designed for maritime equipment manufacturers, multivendor service providers, and shipyards seeking affordable monthly subscription-based connectivity that L-band and cellular services cannot deliver at deep sea.

SES Networks to Power Ultimate Guest Connectivity Experience on Virgin Voyages' Scarlet Lady

February 24, 2021 - SES Networks has announced today that it is working with Virgin Voyages to provide its fleet with the industry's leading high-speed, low-latency connectivity. The ultra-modern Wi-Fi service will be free for every sailor. That's pretty fly for Wi-Fi! Virgin Voyages' Lady Ships will boast incredible speeds, unprecedented reliability, and all the bandwidth passengers could possibly need thanks to SES Networks' satellite-enabled Signature Cruise Solution. Sailors on board the fleet will be able to stream their favourite HD movies, game online without lag, and seamlessly keep posting to the 'gram while living for the moment and getting their full dose of Vitamin Sea. SES Networks' Signature Cruise Solution is an end-to-end service that combines SES's low-latency O3b satellite constellation, its upcoming next-generation O3b mPOWER system and its highly reliable geostationary (GEO) fleet to ensure seamless connectivity across the globe. Both O3b and O3b mPOWER systems are operating in the medium earth orbit, around 8,000km above earth's surface. The O3b mPOWER, when operational in 2022, will deliver significant increase of flexibility and throughput, and can deliver multiple gigabits per second to any Virgin Voyage ship sailing anywhere on earth during seasonal peaks and in areas of high density.

Comtech Awarded Fast Tracking Ground Station Antenna System Contract from NASA

February 24, 2021 - Comtech Telecommunications announced today that its Mission-Critical Technologies group's Space & Component Technology Division, which is part of Comtech's Government Solutions segment, was awarded a contract from NASA's Glenn Research Center for a Ka/S-band antenna system and radome to be installed at its new Aerospace Communications Facility in Cleveland, OH, supporting high bandwidth space and aeronautics communications research.

Yahsat Enters Into Two Strategic Partnerships to Deploy Mission Ready Defense Vehicular Systems

February 24, 2021 - Al Yah Satellite Communications Company has announced that its dedicated government arm, Yahsat Government Solutions, has signed two Memorandums of Understanding (MoU) – one with NIMR, the leading manufacturer of combat-proven wheeled military vehicles and the other with L3Harris Technologies, the global aerospace and defense technology innovator – during the International Defence Exhibition and Conference (IDEX 2021) in Abu Dhabi. With this announcement, Yahsat has further cemented its leadership as a provider of satellite-enabled Comms-On-The-Move (COTM) solutions for ground defense vehicular mounted systems. The two separate MoUs with NIMR and L3Harris underpin Yahsat's commitment to service excellence when fulfilling the needs of its customers and the communities it serves. They pave the way for Yahsat and its technology partners to provide an exclusive suite of offerings for key defense and civil government customers, backed by round-the-clock maintenance and support. Yahsat's ready-to-deploy solutions unlock countless opportunities for defense users, supporting a wide array of land-based applications, ranging from Command, Control, Communications, Intelligence, Surveillance, and Reconnaissance to Border Control and Beyond Line of Sight (BLoS) operations.

UK and Australia Signed New 'Space Bridge' Partnership

February 23, 2021 - New Space Bridge will unlock improved access to trade, investment and academic research opportunities, better advice to businesses and innovative bilateral collaborations. The UK and Australia share future ambitions for space and have similar plans to increase the size and job creation potential of the sector. This agreement will further develop the longstanding relationship between the two countries which dates back to the 1970s when the Prospero satellite built in Farnborough, UK, launched

from Woomera, South Australia. The arrangement enhances cooperation between the UK Space Agency, UK Department for International Trade, Australian Trade & Investment Commission, and the Australian Space Agency, coordinating opportunities for the UK and Australian governments and companies to work on space-related activities, from sharing Earth Observation data to collaborating on robotic and artificial intelligence.

Comtech Telecommunications Awarded \$2.8 Million Contract for High-power Amplifier Systems

February 23, 2021 - Comtech Telecommunications Corp. (NASDAQ: CMTL) announced today, that during its second quarter of fiscal 2021, its New York-based subsidiary, Comtech PST Corp., which is part of Comtech's Government Solutions segment, was awarded a \$2.8 million contract for high-power amplifier systems from an international prime contractor. These very broad frequency band amplifier systems, which utilize the latest in solid-state GaN transistor technology, will be incorporated into electronic warfare systems. This order supplements an installed base of Comtech solid-state high-power amplifiers previously delivered to this international prime contractor.

SES Transforms Leading Cruise Companies with O3b mPOWER for Connected Guest Experiences

February 23, 2021 - Four of the top five major cruise companies have entered into long-term strategic framework agreements, with the majority extending through 2026 and beyond, for services delivered over SES's next-generation O3b mPOWER communications system, SES announced today. These agreements will enable enhanced connectivity experiences onboard their current fleets as well as ships planned as part of their extensive new-build programmes, and result in a backlog of over EUR 220 million. The advanced connectivity solutions delivered by SES will elevate guest connectivity to provide an ultimate digital immersive experience, enabling more wearable technologies and unlocking more personalised services. This reflects a major trend across the cruise industry and the priorities of leading cruise companies as they prepare to resume sailing. The latest contracts with SES Networks reinforce that SES is the clear market leader within the cruise connectivity segment, having secured significant market share of the cruise companies' mega new-build ship programmes. Dating back to 2019, SES has provided over 13 Gbps – or 2/3 of the total capacity delivered to the cruise industry.

Svitzer, Kongsberg Maritime, and ABS Join to Develop World's First Fully Remote Commercial Tug

February 23, 2021 - Today, global towage operator Svitzer A/S, Kongsberg Maritime, and ABS announced that they have signed an agreement to jointly develop RECOTUG™, the world's first fully operational, and fully remotely controlled tugboat. While Svitzer is bringing the needed operational experience, a newly built tug with crew as well as tug-specific technical solutions, Kongsberg Maritime will provide the remote control systems and the autonomous technology and lead the integration of systems and technology. ABS will bring the guidance and expertise necessary to obtain regulatory approval. The aim of the RECOTUG™ project is to develop a remotely controlled tug that will be able to perform a full towage operation with all operations controlled from a remote operations centre. The solution and the achieved safety level shall lead to maritime authorities (class and flag) approving the technology, ultimately permitting Svitzer to conduct commercial remote tug operations in the Port of Copenhagen. The project is expected to run for the years to come.

Santander Teleport Partners with Kymeta to Broaden Customer Support Coverage

February 23, 2021 - Santander Teleport, a leader in the teleport operations industry, and Kymeta Corporation, the communications company making mobile global, have entered into an agreement to open a technical and customer support center at the Santander Teleport facilities in Spain. The new venture will extend Kymeta's existing support operations to the other side of the Atlantic. The technical center will be operated by highly skilled multilingual engineers and will launch later this month. The agreement supports Kymeta's goal to deliver unmatched and world-class support that is available 24x7. Kymeta Support provides a first line of support and seamless workflow from order placement to delivery.

Tawazun and Yahsat Collaborate to Develop 'Made in the UAE' SATCOM Solutions

February 23, 2021 - Tawazun Economic Council and Yahsat have signed a Memorandum of Understanding (MoU) to establish a new company to develop critical in-country capabilities in relation to the development and manufacture of advanced satcom solutions within the UAE, with a focus on building intellectual property locally for increased national security and advanced technology development. Under the MoU, the new company will develop technologies and produce products around three main streams: Aeronautical Satcom Technologies, Satellite Modem Technologies and Enablement of other Satcom Products and Technologies. It will leverage the significant knowledge and expertise establishment in the

UAE and will be complemented by select international experts to build a global leader in this sector. The first seed project entails the development of a protected, multi-platform satellite modem for government and defense markets in the UAE and internationally. Yahsat will play an integral role in ensuring that the new company's products meet the requirements of its government customers with a differentiated and targeted product strategy, enabling the UAE Government and other local and international users to address key technology development. It will source key product development capabilities from leading solution providers and manufacturers to lay the foundation for local production lines and integrated value chain management.

SES Government Solutions Provides High-throughput Loopback Services to U.S. DoD

February 22, 2021 - SES Government Solutions, in close partnership with a key U.S. Government customer, designed, developed and is fielding an O3b Medium Earth Orbit (MEO) loopback capability to provide greatly improved mission-critical communications for Department of Defense operations in remote locations in Southwest Asia. The awarded task order is against the single-award Blanket Purchase Agreement (BPA) with the U.S. Department of Defense (DoD) for Medium Earth Orbit (MEO) low-latency High Throughput Satellite (HTS) services. Using the loopback configuration, U.S. Government customers can take advantage of the high-throughput, low-latency capability without using a commercial gateway. The configuration leverages an in-theatre hub and provides in-beam connectivity, similarly to a hub-spoke configuration, and is managed and controlled from an SES Network Operations Centre (NOC) via a Skala Network terminal. The solution utilises two MEO beams in loopback mode across five sites, each providing up to 450 Mbps of capacity, connecting users to required points of presence.

TheAngle and ABS Extend Partnership to Serve Customers in the MENA Region

February 22, 2021 - ABS and TheAngle have extended their partnership in the MENA region, serving customers across the ABS' MENA coverage at 75 degrees East. The expanded and upgraded services focus on the provision of secure and reliable communications services for government, military institutions, and energy companies - oil and gas especially in the GCC countries and Iraq. For such industries, satellite remains strategic and the preferred solution to ensure quality communications, notably from/to remote locations and offshore facilities. In general demand for satellite services in the MENA market remains robust, driven by increased activities in the traditional verticals of corporate data services and governmental applications, key applications carried over ABS satellites and TheAngle networks.

SES Government Solutions to Provide New Portable Maritime Solution

February 19, 2021 - SES GS) SES Government Solutions (SES GS), a wholly-owned subsidiary of SES, today announced the award of a new portable maritime solution task order against the single-award Blanket Purchase Agreement (BPA) with the U.S. Department of Defense (DoD) for Medium Earth Orbit (MEO) low-latency High Throughput Satellite (HTS) services. The solution leverages the O3b MEO satellite constellation operating 8,000km away from Earth. The Department of Defense procured a portable MEO service to support forward deployed U.S. military personnel. Initial deployment of the service exceeded customer expectations and was very well received. This represents a significant breakthrough with the DoD using O3b MEO capabilities for portable high-throughput, low-latency services. SES GS's solution integrates the O3b MEO system with a portable antenna and is designed to support both portability and freedom of movement. The self-contained ruggedized design houses all equipment in a rack system with AC unit, power distribution and a battery backup system and can achieve upwards of 400 Mbps x 200 Mbps of throughput over the O3b network. With its new portable maritime solution, SES GS is proud to provide unprecedented connectivity in support of the deployed U.S. DoD personnel and looks forward to continuing mission support with its next-generation O3b mPOWER capability.

Telesat Lightspeed to Receive \$400 Million Investment from the Government of Québec

February 18, 2021 - Telesat has entered into a Memorandum of Understanding (MOU) with the Government of Québec for an investment of \$400 million into Telesat Lightspeed, Telesat's highly advanced Low Earth Orbit (LEO) satellite network. Telesat will invest \$1.6 billion into Québec, both directly and through its supply chain, which will include a significant portion of Lightspeed manufacturing and operations. The Lightspeed program will create 600 high-paying STEM jobs, leverage Québec's substantial aerospace expertise and infrastructure, and allow the province to harness the significant economic growth from the burgeoning New Space Economy. Lightspeed, the most innovative, cutting-edge broadband satellite network ever conceived, will bridge the Digital Divide both in Canada and throughout the rest of the world. All \$ amounts referenced in this release are in Canadian dollars. Under the terms of the MOU, the investment by the Government of Québec will consist of \$200 million in preferred equity as

well as a \$200 million loan. It is expected that a final agreement will be completed in the coming months. This collaboration comes on the heels of Telesat's selection of Thales Alenia Space as prime contractor for Lightspeed and its recently completed \$600 million partnership with the Government of Canada to affordably bridge Canada's digital divide through Telesat Lightspeed.

Gilat Launches Next Generation VSAT Family Supporting 5G Networks and LEO/MEO Constellations

February 18, 2021 - Gilat Satellite Networks Ltd. announced the launch of its next generation family of VSATs, Aquarius, supporting 5G networks and LEO/MEO constellations. The ultra-high-performance, multi-orbit VSATs provide over 2 Gigabits per second of concurrent speeds and support seamless satellite handover. As 5G networks are deployed and customer demands continue to exponentially grow, Gilat's Aquarius VSATs are designed to serve, with maximum efficiency, data and media intensive applications such as cellular 5G backhauling, maritime and enterprise. The VSATs exhibit ultra-high processing capabilities achieving unprecedented high throughputs for both downloads and uploads including high packets-per-second processing to meet the high-performance demands. The Aquarius VSAT capabilities, coupled with Gilat's long-time experience and patented cellular backhaul technology, make it the solution of choice for enabling Mobile Network Operators (MNOs) to deliver their customers a true 5G experience over satellite. In addition, the Aquarius family is designed to provide uninterrupted service, supporting next-generation software-defined satellites in GEO and NGSO constellations. Aquarius enables seamless operation, "make before break", utilizing open standard terminal interfaces, especially important in LEO constellations that require frequent satellite handovers.

Australian Space Agency Signs with Indian Space Research Organisation

February 17, 2021 - The Australian Space Agency and Indian Space Research Organisation have signed a Memorandum of Understanding (MOU). This confirms interest from both organisations to increase their cooperation across civil space activities. The agreement will encourage collaboration between both countries in the fields of: civil space research technology and capability development educational activities the use of outer space for peaceful purposes. The Memorandum of Understanding between the Australian Government and the Government of the Republic of India was signed by Head of the Australian Space Agency, Enrico Palermo and Chair of ISRO and Head of the Indian Department of Space, Dr K Sivan on 17 February 2021.

Mitsubishi Electric to Expand Product Range of Ku-band GaN HEMTs

February 17, 2021 - Mitsubishi Electric Corporation announced that two new 13.75–14.5 GHz (Ku-band) 30W (45.3dBm) gallium-nitride high-electron-mobility transistors (GaN HEMTs) will be added to the company's GaN HEMT lineup for satellite-communication (SATCOM) earth stations. The two products, one for multi-carrier¹ communication and the other for single-carrier² communication, will support increased data-transmission capacity and smaller earth stations. Sales will begin on March 15. Ku-band satellite systems are increasingly being deployed for emergency communication during natural disasters and for satellite news gathering (SNG) by TV broadcasters in remote areas where cable networks do not exist. Meanwhile, in addition to the growing use of conventional single-carrier communication, multi-carrier communication is increasingly needed for fast, high-volume communication and to support the downsizing of mobile stations for purposes such as SNG. So far, Mitsubishi Electric has introduced five GaN HEMTs for multi-carrier and single-carrier SATCOM earth stations. The two new 30W GaN HEMTs will enable more flexible amplifier designs, including for rated power levels and the use of GaN drivers. They also will support the downsizing of earth stations as well as faster, larger-capacity satellite communication.

Hughes and COMSovereign's Virtual NetCom Announce New SatCell Connect Partnership for RAID 4G/LTE Backpack Solution

February 16, 2021 - COMSovereign, a U.S.-based developer of 4G LTE Advanced and 5G Communication Systems and Solutions, today announced that its Virtual NetCom (VNC) business unit has entered into a reseller agreement with Hughes Network Systems. The new agreement is for the integration and resale of VNC's man-portable RAID 4G/LTE (Rapid Access Independent Deployable) tactical and emergency communication solution into Hughes' SatCell Connect service. VNC's RAID combines the key elements of an LTE broadband communications network into a secure, highly portable system using the latest technological advancements such as network function virtualization, cloud native services and orchestration. RAID powers the LTE network portion of the SatCell Connect service, which is a novel, rapidly-deployable wireless communication solution that is integrated seamlessly with Hughes' satellite backhaul. SatCell Connect delivers the same features and functionally as commercial mobile wireless networks while uniquely being self-contained and portable for deployment to areas where existing

communication networks have been damaged or are non-existent. As a self-contained and rapidly deployable communications system, SatCell Connect is ideal for emergency response events, temporary remote work environments, Military/Government operations and to provide cost-effective wireless access in unserved or underserved rural areas.

Comtech Telecommunications Corp. Awarded \$1.3 Million Renewal from Canadian Carrier

February 16, 2021 - Comtech Telecommunications Corp. (NASDAQ: CMTL), a world leader in secure and highly reliable location, public safety, navigation, and communication technologies, announced today, that during its second quarter of fiscal 2021, its Location Technologies group, a division of Comtech's Commercial Solutions segment, has finalized a renewal agreement worth \$1.3 million for maintenance and support with a Canadian mobile network operator.

Intellian's Innovative New v45C Antenna Brings VSAT to Smaller Vessels

February 15, 2021 - Intellian announced the v45C, the smallest antenna the company has yet developed for the maritime satellite communications market. The C in the product name represents its compact form factor: this new 45cm unit will bring VSAT to new markets where there is limited space available for communications equipment, such as workboats, leisure craft, fishing boats, small commercial and government vessels. Intellian is committed to empowering connectivity for all, and recent launches have focused on enhancing user experience and capabilities with smaller VSAT solutions; first with the 60cm v60E antenna launched last year, and now the v45C. The v60E has been a global success across multiple markets, with a significant volume of installations and sustained growth demonstrating that small VSAT is a key area of interest for both new and existing customers. The v45C extends the portfolio still further, opening up a new market of smaller vessels which have yet to benefit from the data speeds and capacity delivered by VSAT.

Paradigm VSAT Terminals Accredited for Use on Avanti Communications' Fleet of Satellites

February 15, 2021 - Paradigm's portfolio of HORNET man-portable satellite terminals has been successfully accredited for use on Avanti Communications' fleet of satellites. Avanti's high-capacity connectivity paired with Paradigm's rapidly deployable and rugged terminals provides an exceptionally capable communications package, well-suited to early-entry or first responder missions. In the past, being first in to an area unserved by terrestrial connectivity meant making compromises with communications. With Avanti satellite connectivity over Paradigm's HORNET terminals, first in users can now be fully connected in minutes. Avanti Communications owns and operates a number of high throughput Ka-band satellites, providing very high-capacity connectivity across Europe, the Middle East and Africa. Paradigm's suite of HORNET terminals are compact, portable and simple to use, providing optimal connectivity in situations where a tough and rugged solution is needed without compromising simplicity and throughput.

Intelsat Files Plan of Reorganization with the Support of Key Creditor Groups

February 12, 2021 - Intelsat S.A. has obtained the support of key creditor constituencies on the terms of a comprehensive financial restructuring that would reduce the Company's debt by more than half - from nearly \$15 billion to \$7 billion - and position the Company for long-term success. The Company is filing a proposed Plan of Reorganization in its Chapter 11 proceedings pending before the U.S. Bankruptcy Court for the Eastern District of Virginia, Richmond Division, accompanied by an explanatory Disclosure Statement. The Plan, which has been the subject of extensive negotiations with the Company's creditors and resolves a multitude of complex issues among them, has the support of holders of approximately \$3.8 billion of the Company's funded debt. These supporting creditors have executed a Plan Support Agreement that binds their support for the Company's Plan. Intelsat looks forward to continuing to engage with all stakeholders to gain additional support for its Plan across the capital structure. The Company is requesting a hearing on March 17, 2021 to seek Court approval of the Disclosure Statement and establish procedures to solicit votes on the Plan.

Gilat Ships Initial Aero Modems to China

February 11, 2021 - Gilat Satellite Networks has shipped initial aero modems, out of a multi-million-dollar potential in China. A leading Chinese system integrator, to install Gilat's aero modem, for the Ka-band In-flight Entertainment and Connectivity (IFEC) system, on the entire fleet of the first airline in China and on additional domestic airlines. IFEC on-board the first aircraft is already operational, providing commercial service with remarkable performance, enabled by Gilat's aero modem, Taurus. The Chinese airline is the first fleet out of a potential of 3,500 commercial aircraft operating in China.

Speedcast Connects Kinross Russia Far East Mining Development Project

February 10, 2021 - Speedcast International has launched a high-capacity very small aperture terminal (VSAT) service for Udinsk Gold, a subsidiary of Canadian-based Kinross Gold Corporation – one of the world's leading gold mining companies. The corporate networking solution connects a regional office in Magadan, Russia, with the Company's open pit mining development project, Chulbatkan, located in the Far East. The end-to-end connectivity solution is fully managed by Speedcast's local operations support and will scale up bandwidth quickly and efficiently as site development progresses. This high-capacity, resilient and secure communications service manages SD-Wan and transmits data, voice and video traffic, and is vital to the project's safety and efficiency.

Viasat, Gazprom Space Systems and TMC to Bring In-Flight Connectivity Services to Russia

February 10, 2021 - Viasat, Russian satellite operator Gazprom Space Systems (GSS) and Russian telecom operator TMC today announced the signing of a Memorandum of Understanding (MOU) that aims to advance in-flight connectivity (IFC) for airlines flying into and over Russia. Russia is a key region for in-flight communications, comprised of 11 time zones, and providing, among other things, the shortest flight routes between North America and Asia, as well as between Europe and Asia. Per the MOU, the three companies will work in partnership to provide Russian and international airlines IFC service when flying into and over Russian Federation airspace. This cooperation is expected to offer Viasat's global airline customers roaming connectivity when flying over Russia; providing IFC services on domestic flights within Russia; and enabling Russian and international airlines access to roam onto the Viasat global satellite network when outside of Russian airspace. The MOU establishes an initial roaming agreement between current Viasat and GSS satellites, with Viasat operating in Russia leveraging TMC's telecom license. The partnership commenced with Viasat procuring access to Ku-band capacity on the GSS satellite, Yamal-401, while creating a path for Viasat and GSS to leverage capabilities on future satellite constellations. Each company will maintain its own intellectual property and will operate its equipment using a secure, multi-layered approach to network services. This non-binding MOU initially covers IFC services, but could extend into other mobility or emerging markets within Russia.

Marlink Provides Value Added VSAT for Turkey's Gungen Maritime & Trading

February 10, 2021 - Marlink has been selected by leading Turkish tanker operator Gungen Denizcilik ve Ticaret A/Ş (Gungen Maritime & Trading) to provide Inmarsat's Fleet Xpress service on four of its six vessels. The agreement was concluded through Marlink's local partner Ozsay Satellite which worked with the company to provide a high quality package of enterprise and crew welfare services. Well-known within Turkey as an early adopter of technology solutions for compliance, efficiency and environmental performance, Gungen will use the high throughput Ka-band service together with Marlink's own voice service provided via XChange for Fleet Xpress. The Gungen Suezmaxes will use the services provided by Marlink together with the operator's own firewall and server system for remote access and synchronization, Cyberoam. Marlink will provide Fleet Xpress with a bundled L-Band back-up solution, both of which will benefit from enhanced network transparency, which provides users and shore staff with immediate information on which network is in use for specific tasks. This unique tool enables ship and shore staff to analyse usage and prioritise data intensive downloads when in the areas of strongest coverage. Marlink will also provide its own high quality voice service, configured to provide local Turkish telephone numbers for the ships, which provides added flexibility of two voice communications options, allowing the ship to focus on cost efficiency or highest quality. Gungen has a proactive strategy towards personnel selection and retention, employing highly skilled and qualified staff on shore and at sea, investing in its seafarers with regular online training delivered onboard.

ANYWAVES & PIXXEL, a Franco-Indian Cooperation to Boost NewSpace

February 9, 2021 - ANYWAVES, the only European « pure player » antenna equipment manufacturer for satellites constellations, opens up the Indian market doors thanks to a contract signed with Pixxel, a cutting edge NewSpace startup with operations in India. It was one of the main objectives set by ANYWAVES in early 2020: to make India a key market and establish long term collaboration with Indian NewSpace companies. Just one year after a very first mission on the occasion of the Space Technology Conclave Thiruvananthapuram, the challenge is met! Indeed, last December, ANYWAVES got an order for two flight models of its S-band TT&C antenna. They will equip a microsatellite planned to be put into orbit by Pixxel in late 2021. Optimized for platforms' telemetry and telecommand, these antennas have space heritage and will be used to pilot the satellite, send instructions and ensure the platform's proper functioning. Pixxel's satellites used for earth-imaging aim to provide global coverage every 24 hours enabling organisations around the globe to detect, monitor and predict global phenomena in near real

time.

Telesat to Redefine Global Broadband Connectivity with Telesat Lightspeed

February 9, 2021 - Telesat announced today that it has entered into an agreement with Thales Alenia Space to be the prime manufacturer of Telesat's global LEO constellation, Lightspeed, initially comprised of a fleet of 298 next-generation satellites integrated with an advanced ground network. Lightspeed is the most innovative, cutting-edge broadband satellite network ever conceived. Thales Alenia Space and its affiliate Telespazio have made a Lightspeed capacity commitment in connection with the agreement. Telesat and Thales Alenia Space have engaged in substantial and sustained collaboration on Lightspeed's innovative design. Specifically, Lightspeed has been optimized to serve the fast-growing broadband connectivity requirements of fixed and mobile network operators, aeronautical and maritime users, enterprise customers and governments. Operating under Telesat's global Ka-band priority spectrum rights, the first Lightspeed satellites are expected to be launched in approximately two years, with customer beta testing beginning shortly thereafter and commercial services commencing in the second half of 2023. Lightspeed will provide fibre-like connectivity across the entire Earth at price points that allow network operators to efficiently and economically enhance their network coverage, performance and profitability. Designed with a deep understanding of the bandwidth intensive applications and cloud-based network connectivity that users require, Lightspeed will eliminate the hurdles that telecommunications service providers face today when incorporating satellite into their networks.

Viasat Awarded Contract to Upgrade the UK Ministry of Defence's Ultra High Frequency Satellite Communications Network Control Stations

February 9, 2021 - Viasat announced today that Airbus has awarded Viasat's UK entity an \$8.5 million (GBP 6.7m) contract to upgrade the Ultra High Frequency (UHF) satellite communications (SATCOM) Network Control Stations (NCS), delivering the UHF Skynet capability to the UK Ministry of Defence (MOD). This upgrade will leverage Viasat's Visual Integrated Satellite communications Information, Operation and Networking (VISION) software platform, enabling the MOD to comply with the latest Integrated Waveform (IW) requirements, known as IW Phase 2. Airbus contracted this upgrade with Viasat to further enhance the UK Armed Forces' mission situational awareness and operational insights; provide greater communications interoperability and scalability to more users on the battlefield; and ensure increased flexibility across legacy and next-generation NCS platforms. Airbus has been using Viasat's UHF SATCOM technology since 2012, within the Skynet satellite network, which currently benefits UK MOD and coalition forces, including NATO and Five Eye (FVEY) nations.

Eutelsat to Host EGNOS GEO-4 Payload Again for the European GNSS Agency (GSA)

February 9, 2021 - The European GNSS Agency (GSA) has selected Eutelsat Communications (Euronext Paris: ETL) for the development, integration and operation of its next-generation EGNOS GEO-4 service. The contract agreed between Eutelsat and GSA covers 15 years of service provision and represents a total value of €100m, of which €85m is subject to the confirmation of funds allocated to the EGNOS program from the European Union budget for the period 2021-2027. EGNOS is the European Geostationary Navigation Overlay Service that acts as an augmentation service to global positioning systems, to improve the reliability of positioning information. This is ensured by a crucial integrity message which is essential in aviation where the Global Navigation Satellite System (GNSS) alone does not satisfy strict operational requirements set by the International Civil Aviation Organization (ICAO). It is especially important during critical flight stages such as the final approach. Other transport means including maritime and rail benefit from this EGNOS Safety of Life service. EGNOS also increases the positioning accuracy for other land-based applications, notably precision farming, geomatics, and land management. Eutelsat already operates the EGNOS GEO-3 payload on its EUTELSAT 5 West B satellite which entered into service in February 2020. Built by Airbus Defence and Space, EUTELSAT HOTBIRD 13G satellite, which will host the EGNOS GEO-4 payload, is scheduled to be launched in the first half of 2022.

Iridium Adds Kyoritsu Radio as Iridium Certus® Service Provider

February 9, 2021 - Iridium Communications Inc. announced the addition of Kyoritsu Radio Service Co., Ltd as an Iridium Certus® service provider. Through this agreement, Kyoritsu Radio will also support the provisioning of Iridium Certus service by Furuno Electric Co., Ltd, expanding their portfolio of Iridium® satellite communication services. The Iridium Certus service is ideal for cargo ships, tankers, fishing vessels, workboats, and other watercraft as a primary or VSAT companion satellite communications solution. Operating on the Iridium network, it features truly global coverage and offers the fastest L-band speeds in the industry. Kyoritsu Radio Service is a leading provider of satellite communications services

and has been an Iridium partner since 2016. Furuno, a global leader of maritime navigation and communications equipment, has been an Iridium partner since 2015. As a subsidiary of Furuno, Kyoritsu will now expand its Iridium portfolio of offerings by marketing Iridium Certus services with Furuno's support and global sales network. Kyoritsu and Furuno will jointly pursue Iridium Certus adoption in various maritime sectors including commercial shipping, fishing, leisure, and government. Delivered through small form factor, cost-effective antennas and terminals, Iridium Certus has seen growing adoption by the maritime industry with thousands of terminals in service today.

Viasat Demonstrates Major Advancement in Beyond Line of Sight Satellite Connectivity to a U.S. Army Rotary-wing Helicopter

February 8, 2021 - Viasat today announced it successfully demonstrated through-the-blades Beyond Line of Sight (BLOS) Ka-band satellite communications (SATCOM) connectivity to a U.S. Army UH-60M rotary-wing helicopter. The demonstration highlighted Viasat's ability to deliver resilient command and control (C2) communications, feature-rich situational awareness (SA) and Intelligence Surveillance and Reconnaissance (ISR) feeds – disseminating C2/SA from a simulated Tactical Operations Center to the UH-60M aircraft and down to dismounted soldiers. The Viasat system proved it could meet the Army's quest to enhance its aging airborne C2 system. Viasat used BLOS Ka-band SATCOM service coupled with its Ka-band airborne terminal to facilitate U.S. Army Battle Command Systems to send and receive bandwidth-intensive, full-motion high-definition (HD) video; conduct high-quality, real-time video teleconferencing; exchange information on the WinTak application for precision targeting; and other advanced connectivity-based capabilities through the rotors of a UH-60M helicopter.

Isotropic Systems Secures over \$40m in Funding to Accelerate Growth and Development of Unique Multi-beam Antenna ahead of 2022 Launch

February 8, 2021 - Isotropic Systems, a leading developer of transformational broadband terminal technologies, announces that it has fully secured funding of over \$40 million providing the necessary capital required to develop its game-changing multi-beam antennas. The round brings together equity and grant funding support from the UK Government and market leaders in Aerospace and Telecommunications. SES led the round, along with participation from specialised space investors Orbital Ventures, UK government's Future Fund and existing investors Boeing HorizonX Global Ventures, Space Angels and Firmament Ventures. Demand for the oversubscribed round was driven by recent development contracts for Isotropic Systems' transformational terminal, advanced over-the-air testing, and the accelerated development and roll-out of its phase one terminal expected early 2022. With funding in place, Isotropic Systems plans to accelerate its production phase in time to support new constellations and satellites launching in all satellite orbits from 2022 onwards. Isotropic will also open a 20,000 sq. ft. technology and testing facility near the company headquarters in Reading, UK, and will see the company create an additional 150 highly skilled engineering roles to the UK over the next two years.

Comtech Telecommunications Corp. Awarded Multi-Million Dollar U.S. Military Contract

February 8, 2021 - Comtech Telecommunications Corp. announced today, that during its second quarter of fiscal year 2021, its Santa Clara, California-based subsidiary, Comtech Xicom Technology, Inc., a world leader in high-power amplifiers, was awarded a multi-million dollar contract to develop and manufacture 190W Q-band amplifiers for the U.S. military. Comtech Xicom has a long history with Q-band amplifiers, shipping its first Q-band amplifier in 2001. Since that time, the Company has manufactured more than 200 Q-band Traveling Wave Tube Amplifiers (TWTA). Comtech Xicom manufactures a wide variety of tube-based and solid-state power amplifiers for military and commercial satellite uplink applications. The product range encompasses power levels from 8 W to 3 kW, with frequency coverage in sub-bands within the 2 GHz to 52 GHz spectrum.

Dragonfly and Addvalue Inked Business Collaboration MOU to Expand Market Outreach Globally

February 8, 2021 - Addvalue Technologies Ltd, a leading player in the mobile satellite communications industry, announced that its wholly-owned subsidiary, Addvalue Innovation Pte Ltd (Addvalue), has entered into a memorandum of understanding (MOU) with Dragonfly Aerospace, a leading South African-based space engineering cum space mission company, for a joint marketing collaboration in cross promoting Dragonfly's imaging payloads and satellites and Addvalue's Inter-Satellite Data Relay Service (IDRS). Dragonfly, fortified with relevant strong experience and heritage in the space arena, started its business first with earth observation satellite missions in 1980s before progressing to satellite launch in 2018 and subsequently to imager launch in 2020. It aims to ride on the Business Collaboration to tackle two high priority challenges of earth observation, namely, the quality of the images and the latency of

imaging between LEO satellites and satellite operators. Pursuant to the MOU, Addvalue and Dragonfly, tapping on each other local knowledge and clients' networks, will collaborate to cross promote and market the following services and products of each other globally.

Thales Alenia Space Partners with KT SAT for the 5G Satellite Backhauling Demonstration

February 4, 2021 - Thales Alenia Space is partnering with South Korean operator KT SAT, subsidiary of the world's first 5G commercial service provider Korea Telecom, to lead 5G demonstration using the geostationary Koreasat 5A telecommunication satellite to provide 5G network to remote areas. KT SAT will use 5G backhauling as the first stone of satellite integration in the 5G world. This unprecedented experiment consists in backhauling the connection between a 5G Core Network and a 5G gNB through KT SAT Koreasat-5A(GEO satellite). In this case, the satellite is not only a complement to terrestrial 5G network but a fully integrated part of it by receiving 5G network from Earth and then returning it to remote areas where traditional backhauling technologies (wired, fiber, radio beams) are not suitable for technical and/or economic reasons. This demo was implemented from the KT SAT's Kumsan teleport.

Bridging the Digital Divide with CONNECTme NOW High-Speed Satellite Broadband Prepaid Service for Kampung Waluhu, Ranau, Sabah

February 4, 2021 - Kementerian Sains, Teknologi dan Inovasi Sabah (KSTI), Malaysian Communications and Multimedia Commission (MCMC) and MEASAT Global Berhad ("MEASAT") have successfully deployed CONNECTme NOW community broadband via satellite to the villagers of Kampung Waluhu, Ranau, Sabah. The initiative arose following a recent incident involving several students who had to enter the forest and possibly encounter wild animals in their journey to get internet access for online learning in January 2021. CONNECTme NOW is employing Very Small Aperture Terminal ("VSAT") and High Throughput Satellite (HTS) technology and the service is delivered through a sustainable prepaid business model for rural broadband connectivity. With no contract or fixed monthly charges, subscribers only pay for what they use with Prepaid Access Code (PAC) vouchers at CONNECTme NOW community WiFi hotspots. CONNECTme NOW has been making waves in providing community-focused satellite broadband services to realize national broadband aspirations. Today, CONNECTme NOW is rapidly connecting the unconnected Rakyat with over 100,000 broadband connections nationwide for the Rakyat residing outside of 4G or terrestrial coverage, empowering rural communities to be part of the digital economy.

ST Engineering iDirect Deployed by BSNL to Connect Remote Indian Islands

February 4, 2020 - ST Engineering iDirect has been awarded a contract by system integrator Shaf Broadcast, Pvt. Ltd, on behalf of the Indian state-owned telecommunications company, BSNL, to augment satellite bandwidth to the offshore Indian islands of Andaman, Nicobar and Lakshadweep under a Universal Service Obligation (USO) project funded by the Department of Telecommunications. Utilizing the award-winning Newtec Dialog® platform to provide internet and 2G, 3G and 4G services, the connectivity will boost social and economic activity to islands that previously had limited access to bandwidth. Lakshadweep is a tropical archipelago of 36 atolls and coral reefs off the coast of Kerala, South West India, with a total population of some 70,000 people. The Andaman and Nicobar Islands are located at the juncture of the Bay of Bengal and the Andaman Sea, and are home to some 380,000 people scattered over 38 inhabited islands. Both archipelagos are Union Territories, which the Central Government of India is keen to develop as tourist destinations and economic hubs. Under the USO-funded Project, BSNL will make it possible to deliver a broad range of applications to these Indian islands, from cellular backhaul and enterprise connectivity to maritime and remote community Wi-Fi, as well as the ability to connect with other Indian states.

CORPAC Awards Gilat Contract to Provide Mission Critical Telecom Systems for Peru's Airports

February 4, 2021 - Gilat Satellite Networks announced today that it was awarded a multi-million-dollar contract to provide mission critical telecom systems for 29 of Peru's airports. The award of high-availability communication system was granted by CORPAC, the Peruvian Corporation of Commercial Airports and Aviation. This award follows Gilat's successful execution of large government projects and well positions Gilat for additional large deals in Peru. CORPAC, is a government entity in charge of the administration of most of the airports in Peru. Gilat will design, supply, implement and commission equipment for Communication Navigation and Surveillance (CNS) services in Peru's airports.

Kongsberg Maritime to Launch Next Generation HUGIN Endurance AUV

February 4, 2021 - Kongsberg Maritime is proud to announce the next generation of its advanced HUGIN Autonomous Underwater Vehicle (AUV). Named HUGIN Endurance, the new AUV boosts operational

duration to approximately 15 days, enabling extended survey and inspection missions far from shore. His longevity allows HUGIN Endurance to undertake extensive missions without the support of a mothership. Shore-to-Shore operations offer the opportunity to reduce carbon footprint for commercial activities and yet retain unrivalled data resolution and accuracy. With this in mind, KONGSBERG has added its Maritime Broadband Radio (MBR) communications system to HUGIN Endurance's payload, allowing it to surface and share large quantities of data swiftly with any suitably equipped installation, such as another vessel, shore station or a wind turbine fitted with an MBR antenna. For defence applications, HUGIN Endurance makes persistence a reality. Whether it is long range military survey; wide area mine detection, classification and identification; or even patrolling a choke point listening for submarines, this new extended range capability offers new solutions to existing and future challenges.

APSTAR-6D Represents the Latest Enhancement to the Panasonic's Global Gen-3 In-flight Connectivity Network

February 3, 2021 - Panasonic Avionics Corporation (Panasonic Avionics) announced a major evolution in its in-flight connectivity offering as its first extreme high throughput satellite (XTS) enters service over the Asia-Pacific region. The APSTAR-6D satellite is Panasonic Avionics' latest investment in in-flight connectivity for passengers on commercial aircraft. It is an integral part of its third-generation communications (Gen-3) network of high speed, high bandwidth Ku-band satellites, placing capacity where it is most needed to meet the growing needs of airlines and their passengers. Panasonic Avionics is set to complete the upgrade of the 2,544 aircraft installed with its connectivity service to its Gen-3 network within the next month. Over 1,000 commercial aircraft are committed to being installed with its connectivity services and linked to the Gen-3 network from the outset. Connectivity is integral to the success of Panasonic Avionics and enables a wide range of services to airlines and their passengers. In addition to in-flight WI-FI, these include Live Television with the world's only global live sports channels delivered in partnership with IMG, an integrated solution with OneMedia to deliver real-time ads, real-time transactions that open up a huge range of in-flight retail possibilities, and the ability to personalize the passenger experience through solutions such as Panasonic Avionics' Companion App and much more. APSTAR-6D was jointly designed by APSATCOM and Panasonic Avionics. It will provide airlines with multiple gigahertz of new Ku-band capacity over China and high-density routes around East Asia, including Tokyo, Seoul, Beijing, Shanghai, Hong Kong, Malaysia, Singapore and Indonesia using narrow XTS spot beams.

ND SATCOM's New Addition to the TWTA Sphere: HPA 4-Series

February 3, 2021 - Another dimension of ND SATCOM's satellite communications is unveiled: the 4th generation of HPAs in the TWT realm. ND SATCOM has a longstanding relationship with the German company WORK Microwave and offers WORK's superior quality L-band BUC as an option. For customers who opt for ND SATCOM's Linearizer, it provides a larger operating power range with typically 1dB less back-off required. These additions further enhance overall power and performance. ND SATCOM is reshaping the TWTA sphere with its 4th generation HPAs. Dive into a new dimension of satellite communication with ND SATCOM.

Viasat Demonstrated Multi-Path Networking Capabilities at the U.S. Army's Cyber Quest Exercise

February 2, 2021 - Viasat Inc. securely and reliably transmitted high performance cloud- and artificial intelligence (AI)-based data in a variety of challenging tactical communication scenarios during the U.S. Army's Cyber Quest 2020 exercise – a collaborative, live event where military, commercial and defense industry, worked alongside academia and government to examine how electronic warfare, cyber, networking and communications capabilities could aid global military forces. During the event, Viasat showed its NetAgility Virtual and Mobile Software Defined Networking (SDN) bonding router delivering advanced multi-path networking transmission and management capabilities over a variety of tactical communication links in a number of U.S. Army Medical Command (MEDCOM) and Operational Virtual Health (OVH) situations. Tactical communication technologies leveraged included SATCOM, LTE and multiple Line of Sight tactical radios.

Omnispace Continues to Advance the Development of its Global 5G Hybrid Mobile Network

February 2, 2021 - Omnispace announced today that it closed on a round of \$60 million in equity financing that advances its development of its 5G non-terrestrial network (NTN) and expands its 2 GHz spectrum footprint in key markets globally. The Omnispace network will power critical global communications, including 5G and mobile Internet of Things (IoT) connectivity, directly from its satellites in space to mobile devices around the world. Led by new investor Fortress Investment Group, the latest round includes

funding from existing investors Columbia Capital, Greenspring Associates, TDF Ventures and Telcom Ventures. This funding enables the company to build upon the investments it has already made to validate 3GPP standards-based 5G products and technologies, and demonstrate 5G connectivity from space. The financing also paves the way for Omnispace to accelerate market access initiatives to secure 2 GHz mobile satellite service (MSS) and complementary ground component (CGC) spectrum globally, which will anchor its next-generation hybrid mobile system. Together these efforts provide the foundation for commercial partnerships with mobile network operators, who enable the terrestrial component of the hybrid network, and wireless technology and device manufacturers.

Skylo Partners with Beetel to Deliver End-to-End IoT Solution to Connect Billions of Machines, Devices, and Sensors across India

February 2, 2021 - Skylo has partnered with Beetel, a leading technology brand offering contemporary solutions for modern India's connectivity and IT needs. The two companies have partnered to rapidly scale the adoption of end-to-end Internet of Things (IoT) solutions to connect the billions of machines and remote assets in hundreds of industries across India. As part of this partnership Beetel will provide sales, customer support, and product fulfillment to support Skylo's fast-growing customer progress. Skylo's end-to-end solution meets this need with its Skylo Satellite Network, its elegant Skylo Hub, and its immersive Skylo Platform, accessible on mobile and desktop. Together, these components increase safety, drive economic development and job creation, and help with disaster preparedness. Skylo successfully serves customers across public and private sectors in industries including agriculture, fishing, logistics, transportation, machine health, and others.

Orbit Communication Systems Delivers Two Additional Gaia-100 Ground Antenna Systems for ATLAS Space Operations Global Network Expansion

February 2, 2021 - Orbit Communication Systems Inc. announced today delivery of two additional Gaia-100 3.7M S/X band systems as key enablers to support ATLAS' Global Network expansion and performance. The Gaia-100 empowers utilization of ATLAS' Freedom™ Software Platform. ATLAS Space Operations is making access to space easier for satellite companies by negating the need to invest in and operate ground infrastructure around the world. The new approach allows ATLAS' clients to focus on the development and launch of new innovative satellites and payloads to collect information from sensors, cameras, radar systems, etc. The Freedom™ Software Platform allows clients to leverage a common ground network whenever and wherever needed. The newly deployed Gaia systems enable ATLAS to expand its footprint and service offering to an increasingly demanding market where the speed, security and reliability of data acquisition is paramount to the success of ATLAS' clients. Coupled with Freedom™, ATLAS Space Operations is changing the way enterprises and governments acquire and utilize earth observation data to improve the daily lives of people anywhere on the planet.

L3Harris Technologies Wins Next Phase of Missile Defense Contract

February 1, 2021 - L3Harris Technologies was awarded a \$121 million U.S. Missile Defense Agency contract to build space flight hardware to demonstrate the company's solution for the Hypersonic and Ballistic Tracking Space Sensor (HBTSS) program. HBTSS is one of several proposed missions within the Department of Defense's next-generation proliferated low-Earth orbit space architecture. The program's objective is to detect and track traditional and emerging missile threats using infrared sensors and advanced processing capability. The Missile Defense Agency awarded L3Harris a study contract in 2019 as the prior phase in this development program. L3Harris has also been competitively selected for two other layers of the missile warning and defense architecture. In December 2020, the Space Development Agency selected L3Harris to build and launch four space vehicles to detect and track ballistic and hypersonic missiles for launch in 2022. In April 2019, the U.S. Air Force selected L3Harris to design prototype payload and mission concepts for what has evolved into the U.S. Space Force's medium-Earth orbit track custody demonstration.

Telemedia Partners with ABS for Earth Station and Teleport Services

February 1, 2021 - Telemedia has partnered with ABS, to provide teleport services for the Middle East and Africa (MEA) region. Under this agreement the companies are forming a strong alliance with ABS gaining a full suite of telecom services provided by Telemedia at its Johannesburg teleport. Its diverse facility provides seamless integration of satellite ground station and teleport services. "Our collaboration with Telemedia reinforces and strengthens our presence in the MEA and provides an extension to our global connectivity network. Telemedia was chosen to provide teleport fiber connectivity, data center hosting and satellite uplink capabilities," said Ron Busch, ABS' EVP Engineering and Operations. "Its infrastructure

offering with a solid track record, excellent customer support and can-do attitude during the Covid-19 pandemic shows its commitment to excellent customer service.” Steve Bretherick, CEO of Telemedia said, “This partnership with ABS invigorates Telemedia’s ground infrastructure potential and its global coverage enables us to further expand our broadcast and satellite connectivity services in the MEA. The technical teams on both sides are working closely to leverage expertise to establish technical ground support within the region.”

Eutelsat and TelOne to Bring High Quality Broadband Connectivity to Zimbabwe

February 1, 2021 - Eutelsat Communications and TelOne, one of Zimbabwe’s leading Internet Service Providers, have signed a master service agreement to bring high quality satellite broadband to Zimbabwe. Under the terms of the multi-year agreement with Eutelsat’s broadband division, Konnect Africa, beginning in March 2021, TelOne (Pvt) Limited will leverage the operational flexibility and power of the EUTELSAT KONNECT satellite to bring connectivity to households and businesses located in remote and rural locations across Zimbabwe. EUTELSAT KONNECT is a new-generation, High Throughput Satellite offering unprecedented operational flexibility that has been gradually entering service since November 2020. With 75 Gbps of Ka-band capacity across a network of 65 spotbeams, it provides quasi-complete coverage of Europe and Sub-Saharan Africa.

Wavestream to Supply Gateway Solid State Power Amplifiers for Low Earth Orbit Constellation

February 1, 2021 - Gilat Satellite Networks' subsidiary Wavestream has received an award estimated at more than \$50M from a leading satellite operator to support the gateways for a Low Earth Orbit (LEO) broadband satellite constellation. Wavestream has been selected to supply Gateway Solid State Power Amplifiers (SSPAs) for the project. Wavestream’s Gateway-Class PowerStream 160Ka SSPAs, designed specifically for networks using wide bandwidth uplinks and high order modulation schemes, were selected because of their best-in-class technical performance and their unmatched reliability in harsh environments, best addressing the stringent requirements of Non-Geostationary Satellite Orbit (NGSO) constellations.

Orbitare Selects Spire’s Orbital Service to Launch Their Innovative IP Communications Service

February 1, 2021 - Orbitare and Spire Global today announced the execution of an agreement to begin deploying Orbitare’s Spacelooop on Spire’s nanosatellite constellation starting with a dual-mission in-orbit validation of its communications protocols. Spacelooop is Orbitare’s personal satellite communication network in Low Earth Orbit developed and built in Europe and designed to deliver IP messaging, email and file transfer capabilities to any location in the world, at the most affordable price and ease of use. Spacelooop aims at keeping people always safe and connected, and will allow Orbitare to provide services dedicated to both personal safety – be it at sea, in the mountains or wherever the land network may not be accessible – and to fulfil the growing need for connectivity for social and professional reasons. The development of Spacelooop is co-funded by the Government of Luxembourg within the Luxembourg National Space Programme LuxIMPULSE, which aims at providing funding to help companies established in Luxembourg to bring innovative ideas to market. The programme is managed by the Luxembourg Space Agency and implemented by the European Space Agency. The early demonstrator missions will leverage Spire’s advanced Software Defined Radios (SDRs) infrastructure to host Orbitare’s Spacelooop communications protocols as early as April 2021. Following its success, both companies are looking into further expansion of the Spacelooop service across other satellites in the Spire constellation which will facilitate early and fast access to market and further increase the reach of Orbitare’s satellite fleet.

BROADCAST

WDR Expands HD Capacity with SES on ASTRA 19.2 Degrees East

February 26, 2021 - The leading German public broadcaster Westdeutscher Rundfunk (WDR), regional member of the ARD broadcasting group operating in North Rhine-Westphalia, has expanded its partnership with SES to secure an additional transponder for High Definition (HD) programming on ASTRA 19.2 degrees East orbital position in a multi-year contract. Starting 3 March 2021, viewers in the region will be able to receive WDR’s entire programming in HD quality, including the popular "WDR Lokalzeit", a regionally focused program produced by WDR’s numerous local studios. Viewers who do not own an HD-capable television set will continue to receive WDR’s programming in SD format until termination of SD transmitting.

SES Extends Long-term Partnership with Sky UK

February 25, 2021 - Sky UK has extended its contract with SES for satellite capacity in a new agreement that will add over EUR 90 million in secured backlog. This renewal is in addition to capacity already under contract that extends through 2027. By the end of the renewed contract, Sky UK will have been an SES customer continuously for almost four decades, illustrating the strength and value of the partnership to Sky UK's business in terms of the reliability, performance, high-quality viewing experience and the reach of SES's satellite services. As part of the contract, SES will deliver Sky UK's channels in a mix of standard definition (SD), high definition (HD) and ultra-high definition (UHD) from the 28.2/28.5 degrees East orbital slots to the operator's subscribers across the United Kingdom and Republic of Ireland. 28.2/28.5 degrees East is one of SES's prime TV neighbourhoods reaching 12 million homes in United Kingdom and Republic of Ireland.

Azercosmos and View Satellite Network Announce Partnership to Provide Services in Africa

February 25, 2021 - Azercosmos has signed an agreement with View Satellite Network, who provides global broadcasting services for television and radio channels over multiple platforms worldwide. View Satellite Network will provide digital satellite services in High Definition (HD) to its customers in Africa via the Azerspace-2 satellite. The company currently broadcasts more than 20 TV and radio channels in West Africa and ensures easy distribution of video content to carriers through its high-quality infrastructure.

AEB and EBC Channels Now Exclusively Broadcast via Ethiosat at 57 Degrees East

February 24, 2021 - SES announced today that the Ethiosat platform is now broadcasting all channels of the Association of Ethiopian Broadcasters (AEB) and the Ethiopian Broadcasting Corporation (EBC) exclusively, including many of Ethiopia's most popular channels such as EBS, ETV News and FANA TV. The variety of lifestyle, news, sport and educational channels – more than 90 channels, out of which 21 are in high definition (HD) – from 57 degrees East, offers unmatched quality and convenience previously not experienced by Ethiopians. In December 2020, the Ethiopian Government announced that all satellite TV channels should be moved to SES's NSS-12 satellite so that Ethiosat can meet the local TV audiences' desire for local and international news and entertainment channels while fuelling growth in the Ethiopian media sector. Since then, the AEB and the EBC have had their members migrate their TV channels and broadcast them from one orbital position rather than have their viewers navigate through a multitude of foreign channels. To support this migration, SES, through its established Elevate Installer Training programme, and supported by local partners Ethiopian Broadcasting Authority (EBA) and Ethiopian Science and Space Institution (ESSTI), has carried out daily training sessions. As a result, there are now 20,000 certified installers from all regions across Ethiopia who are equipped to help Ethiopian viewers repoint their dishes and continue to watch their favourite local channels without any disruption.

NHK WORLD-JAPAN Extends Multi-year Contract with SES on ASTRA 19.2 Degrees East

February 23, 2021 - Japan International Broadcasting Inc. (JIB), a subsidiary of Japan's sole public broadcaster NHK and official distributor of NHK WORLD-JAPAN, has renewed its multi-year contract with SES for satellite capacity. The agreement will permit NHK's free-to-air, English-language news and information channel in High Definition (HD) to continue to be distributed in SES's prime orbital neighbourhood at 19.2 degrees East to over 45 million satellite TV-equipped homes across Europe. NHK WORLD-JAPAN provides the latest information on Japan and Asia through television, radio and online to a global audience. During the COVID-19 pandemic, NHK WORLD-JAPAN has observed a growing interest in its news and other programming as viewers seek trustworthy sources of updates as well as compelling new entertainment, underscoring the importance of satellite-delivered content.

Novelsat Powers AXS TV & HDNET Movies' C-band Spectrum Transition

February 23, 2021 - Novelsat has successfully completed the deployment of Novelsat's advanced video solution, supporting C-band spectrum transition for two of Anthem Sports & Entertainment's channels - AXS TV, a popular U.S. based music, entertainment and lifestyle television network and HDNET MOVIES, which delivers popular and cult classic films to its American audience. Novelsat worked with Anthem to transition hundreds of earth stations to a leading satellite operator video service for primary distribution of video feeds and to deploy Novelsat's FUSION solution for video transmission, edge transcoding and BISS2-CA encryption/decryption.

European Public Broadcasters Sign Multi-year Capacity Contracts on SES's Prime TV Neighbourhoods

February 22, 2021 - SES announced today that it has signed multi-year capacity agreements totalling over EUR 66 million in backlog with multiple public broadcasters in Europe throughout 2020, enabling millions of satellite TV households across Europe to continue watching SD and HD content delivered with world-class reliability. The public broadcasters who have signed contracts directly with SES include ARD and ZDF in Germany, BBC in the UK, BVN in the Netherlands, as well as TV5Monde and France 24 from France via its partner Globecast, strengthening SES's position as the world's leading global content connectivity provider. With almost the entire global population being impacted by some form of COVID-19 containment measures throughout 2020, public broadcasters have seen a surge in viewers across all age groups relying on linear television programs to get the latest, official and well-researched news about the pandemic. The increase in linear content in 2020 also reinforces satellite as the most reliable way to broadcast to the widest possible audience and in the best quality desired by the viewer. The latest agreements signed between public broadcasters and SES illustrate how European broadcasters are leveraging SES's satellites at the prime orbital slots of 19.2 degrees East and 28.2 degrees East to reach more than 89 million satellite TV homes, surpassing other satellite or terrestrial operators.

iKO Media Group Launches New Broadcast Platform on Galaxy 18

February 10, 2021 - iKO Media Group, a global end-to-end service provider for broadcasters has been examining options for transitioning many of its customers' services to new satellites and frequencies as a result of the upcoming use of C-band spectrum for 5G mobile services in the US. Of the different solutions available iKOMG chose Intelsat's Galaxy 18 as the most effective. Currently, iKOMG is successfully transitioning customers over to the new satellite, working in coordination with Intelsat. This transition is a complex and challenging undertaking – one that Intelsat has been preparing for with more than two years of planning and engineering undertaken in conjunction with Intelsat's customers, industry stakeholders, vendors, and other space station operators. While there are a number of component parts to Intelsat's Transition Plan, they have been carefully coordinated and are highly interdependent making the collaboration with iKO Media Group a major factor in their success.

Vislink Inks Deal with Asharq News

February 9, 2021 - Vislink today announced its latest contract in the Middle East with Asharq News, a Pan Arab 24/7 television network and dedicated digital platform, that provides Arabic-language variety of news and information. Vislink will supply six manual Mantis MSAT satellite antennas to Asharq News in order to connect its regional news centers together to feed economic markets in Riyadh, Cairo, Abu Dhabi and key Arab capitals with low latency financial news. Vislink's Mantis MSAT antennas are easy to use, lightweight and highly portable. The antennas enable broadcast teams to arrive at the scene, deploy equipment and get up and running in as little as five minutes. Whether individuals are reporting live or collecting footage for upcoming news, the system allows for rapid deployment in extreme environments. Partnering with Asharq News – the Middle East's first economic- and financial-focused news channel – is a strategic order for Vislink. For over 30 years, the Company has supplied satellite communications solutions to the live news production, entertainment, defense, public safety, border security, counterterrorism and military surveillance sectors, and currently has several thousand satellite terminal installations active worldwide. Asharq News is headquartered in Riyadh, with central offices in the Dubai International Financial Centre, UAE, and Washington D.C., and has major hubs and studios in Cairo and Abu Dhabi. It also has regional offices and correspondents across key Arab countries and in global capitals, in addition to access to the content produced by hundreds of reporters from Bloomberg's network around the world.

Viya's New TV+ Service Goes Live with ATEME in the US Virgin Islands

February 4, 2021 - ATEME, the leader in video delivery solutions for broadcast, cable, DTH, IPTV and OTT, announces that its multiplatform video-delivery solution has gone live on ATN International's Viya, the largest telecommunications and entertainment service provider in the US Virgin Islands. The newly launched Viya TV+ service gives islanders throughout the region access to a cutting-edge television experience using cloud-based connectivity. Subscribers gain access to linear and on-demand content through a dedicated media player, Smart TV, iOS or Android device. They can also enjoy seamless viewing between all devices in the household, at their preferred time. ATEME has provided several key CDN and cloud DVR technologies to implement a scalable and cost-effective network with efficient storage, that provides the flexibility necessary for a multi-network deployment. The system's architecture supports traditional as well as multiscreen OTT services.

Intelsat and Telenor Satellite to Add New 4K/UHD Channels to Key Regions across Europe

February 2, 2021 - Intelsat and Telenor Satellite are extending their longstanding partnership at 1° West to expand 4K/Ultra High Definition (UHD) channel distribution to Nordic and Central Eastern European (CEE) countries, and directly into the homes of nearly 18 million Pay TV households in the region. The Intelsat and Telenor Satellite 1° West media distribution solution is an ideal platform for 4K UHD, which offers the best quality picture for viewers. The Intelsat-Telenor Satellite partnership at 1° West is already helping broadcasters in the region reach a much larger audience, across a broader geographic area, when broadcasting 4K channels. Now, Intelsat and Telenor Satellite are introducing new 4K/UHD channels, beginning with NASA TV and WOW 4K, with additional channels coming soon. The new 4K channels will be broadcast to CEE and Nordic viewers on the Intelsat 10-02 satellite and Telenor Satellite's THOR 7.

iWedia DVB Stack Gets Certified by Netflix on a Hailstorm Hybrid STB

February 2, 2021 - iWedia, a leading provider of software components and solutions for TV devices for first-class service operators and consumer electronics manufacturers, today revealed that its broadcast stack has been certified on a Hybrid Hailstorm operator STB. Hailstorm is a Netflix device scaling program based on Android TV, that aims for faster time to market and lower engineering efforts. The Hailstorm Hybrid program objective is to accelerate Operator' pre-integration work on an Android TV Hybrid set-top box (STB) and to achieve a shorter time to market deployment while ensuring all Netflix performance/quality metrics are met. By leveraging existing Android framework to its full potential and integrating with TV Input Framework (TIF), iWedia's DVB stack features amongst the best and was granted certification as part of the Hybrid Hailstorm STB. Involved as System Integrator in Hailstorm program from its start, iWedia took great care of ensuring that the Broadcast playback does not affect Netflix UX and that all transitions and resources allocation/release are done properly. They claim quality and performance was at the heart of their development. Part of their System Integration service, iWedia has built strong domain expertise in Netflix service integration and certification processes and has played a significant role in deploying the service on many operator devices worldwide.

LAUNCH / SPACE

PSLV-C51 Successfully Launches Amazonia-1 and 18 Co-passenger Satellites from Sriharikota

February 28, 2021 - India's Polar Satellite Launch Vehicle PSLV-C51 successfully launched Amazonia-1 along with 18 co-passenger satellites today (February 28, 2021) from Satish Dhawan Space Centre SHAR, Sriharikota. PSLV-C51 lifted off from the First Launch Pad of SDSC SHAR at 10:24 hours (IST) as planned. After a flight of about 17 minutes 23 seconds, the vehicle injected the Amazonia-1 into its intended orbit and in the succeeding 1 hour 38 minutes, all the 18 co-passenger satellites successfully separated from the PSLV in a predetermined sequence. Amazonia-1 is the optical earth observation satellite of National Institute for Space Research (INPE). This satellite would further strengthen the existing structure by providing remote sensing data to users for monitoring deforestation in the Amazon region and analysis of diversified agriculture across the Brazilian territory. PSLV-C51/Amazonia-1 is the first dedicated commercial mission of NewSpace India Limited (NSIL), a Government of India company under Department of Space. The 18 co-passenger satellites onboard PSLV-C51 includes four from IN-SPACE and fourteen from NSIL. Out of 4 satellites from IN-SPACE, three were UNITYsats designed and built as a joint development by Jeppiaar Institute of Technology, Sriperumbudur (JITSat), G.H.Raisoni College of Engineering, Nagpur (GHRCEsat) and Sri Shakti Institute of Engineering and Technology, Coimbatore (Sri Shakti Sat) and one was Satish Dhawan Sat (SDSAT) from Space Kidz India. The fourteen satellites from NSIL carried were the commercial satellites from India (1) and USA (13). PSLV-C51 is the 53rd flight of PSLV and 3rd flight of PSLV in 'DL' configuration (with 2 strap-on motors). This was the 78th launch vehicle mission from SDSC SHAR, Sriharikota.

General Atomics Partners with Rocket Lab to Launch Argos-4 Advanced Data Collection System

February 24, 2021 - General Atomics Electromagnetic Systems (GA-EMS) announced today that it has signed a contract with Rocket Lab to launch the GA-EMS developed Orbital Test Bed (OTB) satellite carrying the Argos-4 Advanced Data Collection System (A-DCS) hosted payload. The contract was awarded to GA-EMS by the United States Space Force's (USSF) Space and Missile Systems Center (SMC) under a USSF Hosted Payload Solutions (HoPS) delivery order, on behalf of the National Oceanic and Atmospheric Administration (NOAA). The anticipated launch will occur between late 2021 and early 2022 using Rocket Lab's Electron launch vehicle. The Argos-4 A-DCS mission is supported by the NOAA Cooperative Data and Rescue Services Program. Argos is an international program that collects data from thousands of sensors

and transmitters located around the world. Currently, data is collected and distributed for use in numerous applications, including ocean buoy tracking, wildlife and fishery monitoring, and maritime security, as well as non-environmental uses.

Blue Canyon Technologies to Develop Six Additional DARPA Blackjack Satellites

February 24, 2021 - Blue Canyon Technologies (BCT), a wholly-owned subsidiary of Raytheon Technologies, today announced it will develop an additional six satellites for the Defense Advanced Research Projects Agency's Blackjack program under a Phase 3 contract. By incorporating commercial sector advances, including designs used for LEO broadband internet service, Blackjack will demonstrate that a constellation of LEO satellites can meet Department of Defense performance and payload requirements at a significantly lower cost, with shorter design cycles and with easier and more frequent technology upgrades. Designed specifically for LEO missions, BCT will use the final design of its multi-mission X-SAT bus to begin procurement for the additional six satellites. The customized bus includes state-of-the-art electric propulsion, a robust power system, command and data handling, radio frequency communications and dedicated payload interfaces capable of hosting different DoD payloads. In late 2020, BCT and DARPA completed the bus's Critical Design Review at BCT's Satellite Constellation Factory in Lafayette, Colorado. BCT is currently building the first four satellites to be delivered by the close of 2021. To support DARPA's demonstration schedule, the company will deliver the additional six satellites by the close of 2022.

ClimaCell to Launch Constellation of Radar-Equipped Satellites into Space to Bring Critical Weather Radar Coverage to the Entire Globe

February 24, 2021 - ClimaCell announced Operation Tomorrow Space. To improve global forecasting technology and capabilities, ClimaCell has designed proprietary radar-equipped satellites and will begin launching dozens into space over the coming years. Known for pioneering a number of weather technology advancements in recent years, ClimaCell's radar-equipped small-satellite constellation represents a first in the history of the weather industry. While weather-focused satellites have been in space for decades, most existing satellites still are not able to accurately detect precipitation from space. The few that can cost more than \$1 billion each and offer refresh rates in the order of a few days, rendering them practically useless for day-to-day weather applications such as hurricane forecasting and even less severe storm predictions. Through technological breakthroughs ClimaCell achieved a significant (over 95%) reduction in size and cost of weather-radar satellites, making the dream of true global radar coverage closer than ever.

Sateliot Partners with Thales Alenia Space and Telespazio for Development of a Constellation of Nanosatellites

February 23, 2021 - The satellite telecommunications operator Sateliot will rely on the experience and know-how of The Space Alliance between Thales Alenia Space and Telespazio for the development of a constellation of nanosatellites to ensure that IoT connectivity is compatible with the 5G standard. Acting as telecommunications celltowers in space, the space assets – the plan envisages 16 satellites from 2022 to reach 96 satellites by 2025 with an investment of around 100 million euros – will enable the deployment of IoT services in sectors such as maritime, logistics, energy, agri-food, infrastructures and environmental monitoring. Sateliot has reached an agreement with Thales Alenia Space in Spain and France to coordinate the design and development of the technologies required to offer the envisaged IoT services with 5G coverage from 2022. The agreement between Sateliot and Telespazio is aimed at promoting the development of the IoT market. In particular, Sateliot will leverage Telespazio's experience and penetration in the international space services market to assess the main needs of customers in different sectors, while Telespazio will use Sateliot's capabilities to boost its offering in an IoT sector that already includes global hybrid coverage based on the integration of LTE/WiFi/Lora/Satellite technologies.

Airbus Defence and Space Kicks off In-space Manufacturing and Assembly Technologies for Orbit

February 17, 2021 - Being able to manufacture and assemble objects in space using 3D printing and in-orbit robots may sound like pure science fiction – but these game-changing techniques are set to become reality...and Airbus is making it happen. The company kicked off its in-space manufacturing and assembly (ISMA) activities four years ago, a reflection of the disruptive thinking currently taking hold in the global space industry. Among Airbus Defence and Space's key breakthroughs so far is development of Metal3D – the first-ever metal 3D printer to be deployed to space, in a project co-funded by the European Space Agency (ESA). Manufacturing and assembling objects in space has significant advantages over the traditional approach – where everything is produced on Earth and subsequently transported to space. For

example, objects manufactured/assembled in space are not constrained by the size of a launch vehicle, nor must they be “over-designed” to withstand rigorous launch conditions. ISMA activities are now in full swing at Airbus. A transnational robotics team is developing the company’s robotic capabilities, exploring how best to carry out in-orbit servicing in the future. This year, the team will deliver their boundary-breaking metal 3D printer that will one day go to the International Space Station and they are targeting European projects to achieve in-orbit demonstration of in-space manufacturing the following year.

Spaceflight Inc. Readies its Largest Satellite Contracted to Date, Amazonia-1, for Launch

February 17, 2021 - Spaceflight Inc. today revealed details about the upcoming launch of its largest customer satellite launch to date, the Amazonia-1 spacecraft. To accommodate the nearly 700-kilogram satellite, Spaceflight purchased an entire NewSpace India Limited’s (NSIL) Polar Satellite Launch Vehicle (PSLV). The mission, named PSLV-C51/ Amazonia-1, is targeted for launch at the end of February from Satish Dhawan Space Center, Sriharikota (SDSC, SHAR), India. The spacecraft was produced by INPE, the National Institute for Space Research (in Portuguese: Instituto Nacional de Pesquisas Espaciais), Brazil’s leading entity dedicated to space research and exploration and is the first Earth observation satellite to be completely designed, integrated, tested and operated in Brazil. Amazonia-1 will launch under a commercial arrangement with NSIL, an Indian government company under Department of Space (DOS) and the commercial arm of ISRO.

ABL Space Announces L2 as Customer for First RS1 Launch

February 16, 2021 - ABL Space Systems and L2 Aerospace have signed a launch services agreement for launch of two spacecraft on ABL’s first demonstration flight of RS1 in Q2 2021. ABL is preparing for an initial flight of its RS1 launch vehicle, capable of lofting 1,350 kg to Low Earth Orbit, in the first half of 2021. The integration and deployment of these spacecraft will demonstrate new technology on orbit and on the ground. L2’s satellites will provide infrastructure to rapidly test new technology and support new concepts for training scenarios. On the ground, ABL’s GS0 mobile launch system, a fully containerized, deployable system will demonstrate the rapid capabilities and minimal infrastructure needed to launch RS1.

Momentum and Qosmosys Announce First Singaporean Lunar Mission on Momentum’s Ardoride Service Vehicle

February 16, 2021 - Momentum and Qosmosys, a new space venture founded in Singapore last year, announced today a service agreement to deliver two cubesats to low lunar orbit as early as 2024 via Momentum’s inaugural lunar mission. The new contract builds and expands on the agreement announced in January 2021 for delivery of up to four cubesats in low Earth orbit by Momentum’s Vigoride service vehicle, starting in 2022. Qosmosys will expand its novel business ideas to the Moon using a specific bus named Zeus-MS, a version of its Zeus platform it has been developing in cooperation with NuSpace from Singapore, and made specific for lunar missions. Zeus-MS is the precursor to a series of multi-mission platforms that will allow organizations and businesses to host their payloads, and will offer individuals a bespoke, unprecedented line of services to the Moon on regularly scheduled flights. Ardoride, the next generation service vehicle after Vigoride, will extend the range and capabilities of Momentum’s services beginning in 2023.

Airbus Defence and Space Completed Manufacturing of the First Eurostar Neo Satellite

February 12, 2021 - Airbus Defence and Space has successfully completed a key milestone in the manufacturing of the first Eurostar Neo satellite, with the successful integration of the Service and Communication Modules of EUTELSAT HOTBIRD 13F. Airbus’ Portsmouth team delivered the EUTELSAT HOTBIRD 13F Communications Module to Toulouse at the start of January 2021 where it joined the Stevenage and Toulouse produced Service Module. The EUTELSAT HOTBIRD 13F satellite is now beginning its final series of tests in preparation for its launch. With the new Eurostar Neo platform, the payload capacity can be greatly increased, with the Communication Module able to accommodate up to 2 tons of payload and provide payload power of more than 25kW. EUTELSAT HOTBIRD 13F and 13G will both have spacecraft power of 22 kW and a launch mass of only 4,500 kg. Airbus’ Eurostar Neo platform has been developed in the frame of the European Space Agency’s (ESA) Partnership Projects, together with the French space agency CNES, and strongly supported by the UK Space Agency and other agencies across Europe.

Momentum Announces Service Agreement with Xona Space Systems

February 11, 2021 - Momentum and Xona Space Systems, a San Mateo-based startup creating a secure and

precise Position, Navigation, and Timing (PNT) satellite service, today announced a service agreement to advance Xona's 2022 Alpha mission. Xona's patent-pending system architecture is combining the efficiency and innovation of the new space era with the world of satellite navigation to help enable modern intelligent systems to operate safely in any conditions, anywhere on the planet. Once complete, their low Earth orbit smallsat constellation will provide a resilient alternative to Global Navigation Satellite Systems (GNSS) with more than 10x better accuracy.

Firefly Aerospace and Exolaunch Announce Launch Services Agreement

February 10, 2021 - Firefly Aerospace today announced a Launch Services Agreement with Exolaunch to integrate and launch multi-satellite clusters aboard Firefly's Alpha launch vehicle beginning in 2022. Just weeks away from the maiden launch of its Alpha rocket, Firefly plans to swiftly accelerate the frequency of Alpha flights through collaborative partnerships, including this strategic partnership with Exolaunch, a German small-satellite integrator known for its substantial flight heritage, flight-proven deployment technologies and high reliability. Exolaunch has previously launched 140 small satellites for its customers and continues to see increasing demand for its launch and integration services across the global launch and small satellite market. Firefly will leverage Exolaunch's payload integration expertise and flight-proven launch hardware: shock-free microsatellite separation systems CarboNIX and CubeSat deployer EXOpod along with EXObox sequencers and EXOport multi-satellite adapters, to help ensure successful joint missions as part of the Alpha launch manifest through 2022 and beyond.

Virgin Orbit Pens Launch Deal with SatRevolution

February 9, 2021 - Virgin Orbit announced today it has signed a new launch agreement with SatRevolution, a NewSpace satellite company headquartered in Wroclaw, Poland. For this contract, Virgin Orbit will launch a pair of small satellites, STORK-4 and STORK-5 (MARTA), later this year onboard its LauncherOne rocket. Based on the state-of-the-art UniBus 3U CubeSat platform developed by SatRevolution, STORK-4 and MARTA are the first optical satellites to be launched as part of the company's 14-satellite STORK constellation. Once deployed, STORK-4 and MARTA will collect multispectral medium-resolution imagery and data for agricultural and energy customers in the US, in Poland, and abroad. The mission will also feature a reduced timeline integration of the STORK-4 and MARTA satellites as part of a critical first step in demonstrating a responsive launch service. Future LauncherOne missions will be designed to offer a rapid launch capability, with the companies working closely to ensure that quick call-up capabilities are readily available.

Rocket Lab's Next Mission to Launch 100th Satellite and Deploy Next-generation Photon Spacecraft

February 9, 2021 - Rocket Lab has today announced its next mission will deploy a range of satellites for commercial and government satellite operators, and place a next-generation Photon spacecraft in orbit to build spacecraft heritage ahead of Rocket Lab's mission to the Moon for NASA in Q3 this year. Scheduled to lift-off from Launch Complex 1 on New Zealand's Māhia Peninsula in mid-March, the 'They Go Up So Fast' mission will be Rocket Lab's 19th Electron launch overall and second mission of 2021. The launch will bring the total number of satellites launched by Electron to 104. The six customer payloads will be integrated onto Photon, which will initially act as a Kick Stage space tug to circularize and deploy the satellites to precise orbits. After deploying the first five satellites to a 550 km circular orbit, Photon's Curie engine will reignite to lower its attitude and deploy the final satellite to a 450 km orbit. The Curie engine's unique ability to perform multiple relights on orbit enables Rocket Lab to deploy satellites to different orbits on the same launch. This level of payload deployment flexibility is typically reserved for dedicated missions but is a standard capability on all Electron missions.

Large-scale 3D Printing Goes to Space on Airbus' Eurostar Neo Satellites

February 9, 2021 - Radio frequency components are at the heart of every telecommunications satellite, and such parts are now being produced by Airbus in large volumes with innovative Additive Layer Manufacturing (ALM) technology – also known as 3D printing – for its latest spacecraft: the Eurostar Neo-series relay platform. A total of 500 radio frequency (RF) components, composed of multi-waveguide blocks and switch assembly networks, have been 3D manufactured by Airbus Defence and Space in Portsmouth, UK for two Eurostar Neo spacecraft that will join the in-orbit fleet of Eutelsat, a major provider of satellite communications services. These two satellites are called Hotbirds. They will be launched in 2021 to reinforce and enhance Eutelsat's TV broadcasting services over Europe, the Middle East, and North Africa. Utilising 3D printing for the Hotbirds provides major labour savings and significantly reduces the number of individual required parts, according to Gareth Penlington, the Hotbird Payload Manager at Airbus.

Thales Alenia Space to Build Telesat's Broadband 298-satellite Constellation Lightspeed

February 9, 2021 - Thales Alenia Space has signed an agreement with leading global satellite operator Telesat to be the prime contractor on the construction of Lightspeed, its advanced LEO network, a multi-billion dollar project initially comprised of a fleet of 298 satellites. Following the intense work done on Lightspeed's innovative design, this selection represents a major step in the deployment of the project, as Telesat and Thales Alenia Space significantly increase the momentum of activities in parallel with the finalization of the Lightspeed project's financial close. Telesat will rely on Thales Alenia Space not only to provide the space and mission segments, but also to be responsible for the end-to-end network performance and related specifications of the system. Lightspeed's space segment will initially be comprised of 298 satellites, in the 700-750 kg class. The network will deliver multiple terabits per second across the globe for secure, low-latency, high-performing broadband professional services.

NASA Selects SpaceX to Launch Initial Elements for Lunar Outpost

February 9, 2021 - NASA has selected Space Exploration Technologies (SpaceX) of Hawthorne, California, to provide launch services for the agency's Power and Propulsion Element (PPE) and Habitation and Logistics Outpost (HALO), the foundational elements of the Gateway. As the first long-term orbiting outpost around the Moon, the Gateway is critical to supporting sustainable astronauts missions under the agency's Artemis program. After integration on Earth, the PPE and HALO are targeted to launch together no earlier than May 2024 on a Falcon Heavy rocket from Launch Complex 39A at NASA's Kennedy Space Center in Florida. The total cost to NASA is approximately \$331.8 million, including the launch service and other mission-related costs. The HALO is the pressurized living quarters where astronauts who visit the Gateway, often on their way to the Moon, will work. It will provide command and control and serve as the docking hub for the outpost. HALO will support science investigations, distribute power, provide communications for visiting vehicles and lunar surface expeditions, and supplement the life support systems aboard Orion, NASA's spacecraft that will deliver Artemis astronauts to the Gateway. NASA's Launch Services Program at Kennedy will manage the SpaceX launch service. The HALO is being designed and built by Northrop Grumman Space Systems of Dulles, Virginia, and the PPE is being built by Maxar Technologies of Westminster, Colorado. NASA's Johnson Space Center in Houston manages the Gateway program for the agency. NASA's Glenn Research Center in Cleveland is responsible for management of the PPE.

Lockheed Martin Selects ABL Space Systems Rocket to Power First UK Vertical Satellite Launch

February 8, 2021 - Lockheed Martin has contracted ABL Space Systems, of El Segundo, California, a developer of low-cost launch vehicles and launch systems for the small satellite industry, to supply a rocket and associated launch services for the company's first UK vertical satellite launch. The project known as UK Pathfinder Launch is planned to be the first ever vertical small satellite launch from UK soil, from Scotland in 2022. It will also be the first UK commercial launch for U.S.-based ABL Space Systems' new RS1 rocket. ABL Space Systems' flexible, integrated GSO launch system, and RS1 rocket, allows for a rapid and cost-effective deployment with outstanding launch performance. Lockheed Martin's UK Pathfinder Launch supports the UK Space Agency's commercial spaceflight programme - Launch UK. In October, the UK Space Agency confirmed Lockheed Martin's plans to move its programme to the Shetland Space Centre and in January, planning proposals were submitted for the space launch facility in Unst. The addition of ABL Space Systems as a partner completes Lockheed Martin's UK Pathfinder Launch programme team. On launch day, ABL Space Systems' RS1 rocket will lift off from Shetland Space Centre, in Unst, Shetland, the UK's most northerly island. Once in orbit, the rocket will release a small launch orbital manoeuvring vehicle, an agile platform built by MOOG, in Reading, UK, which can carry and deploy up to six 6U CubeSats, optimising orbital placement and timing for each small satellite's respective missions.

NASA Selects Firefly Aerospace for Artemis Commercial Moon Delivery in 2023

February 4, 2021 - NASA has awarded Firefly Aerospace of Cedar Park, Texas, approximately \$93.3 million to deliver a suite of 10 science investigations and technology demonstrations to the Moon in 2023. The delivery, planned for Mare Crisium, a low-lying basin on the Moon's near side, will investigate a variety of lunar surface conditions and resources. Such investigations will help prepare for human missions to the lunar surface. The award is part of the agency's Commercial Lunar Payload Services (CLPS) initiative, in which NASA is securing the service of commercial partners to quickly land science and technology payloads on the lunar surface. The initiative is a key part of NASA's Artemis program. Firefly Aerospace will be responsible for end-to-end delivery services, including payload integration, launch from Earth, landing on the Moon, and mission operations. This is the sixth award for lunar surface delivery under the CLPS initiative.

ULA Modifies Launch Pad and Facilities in Advance of First Vulcan Centaur Launch This Year

February 2, 2021 - United Launch Alliance (ULA) has modified Space Launch Complex-41 and the processing facilities in support of Vulcan Centaur's inaugural launch later this year. The multi-year project to prepare for the larger and more capable launch vehicle culminated in the new mobile launch platform being rolled to the launch pad for final testing. Modifications also have been made to the Vertical Integration Facility (VIF), where rockets are stacked and tested prior to being rolled to the launch pad. These modifications will enable the VIF to handle the 12-foot-diameter Atlas V with up to five Solid Rocket Boosters (SRBs) and the 18-foot-diameter Vulcan Centaur rockets with up to six SRBs. In support of Atlas V and Vulcan Centaur rockets launching from the same pad, ULA partnered with Hensel Phelps to build a new mobile launch platform. The Vulcan Launch Platform (VLP) successfully completed its first trip to the launch pad and will remain there for additional testing and checkout. Vulcan Centaur is ULA's next-generation, innovative new launch vehicle that provides higher performance and greater affordability while continuing to deliver unmatched reliability. In 2020, ULA's Vulcan Centaur was competitively selected by the U.S. Space Force as the best value launch provider for 60 percent of the launches occurring through 2027. Vulcan Centaur is on track for a first launch later this year.

MDA Announces Radarsat-2 Continuity Mission

February 2, 2021 - MDA announced that the company has embarked on a major new initiative to build a commercial Earth observation satellite mission which will serve to extend MDA's market-leading geospatial data, products and analytics services business well into the future. The satellite mission will be based upon its leading space-based C-band Synthetic Aperture Radar (SAR) technology, and will provide operational continuity for its existing RADARSAT-2 customers, including commercial, government and institutional clients. The new mission will carry forward many of the strong attributes of Canada's RADARSAT program, while at the same time bringing innovative new technologies and operational concepts to deliver a significantly enhanced world-leading capability. This next generation system will change how and when our clients see the world. As part of this program, MDA will leverage our industry-leading multi-mission Earth observation ground stations as well as advances in Artificial Intelligence (AI) techniques, including machine learning and deep learning, to manage large volumes of data across multiple sensor platforms and enhance our data analytics capabilities. MDA's RADARSAT-2, a public-private partnership with the Government of Canada, was launched in 2007 and continues today to offer reliable, near-real-time access to all-weather imagery and surveillance information for a wide range of mission-critical civil, commercial and defence applications, producing over 75,000 images per year. Providing coverage from 144 km² to 265,000 km² in a single scene using 20 imaging modes looking both right and left, RADARSAT-2 provides the greatest flexibility and commercial capacity of any SAR mission.

Airbus Wins ESA Contract for Three More European Service Modules for NASA's Orion Spacecraft

February 2, 2021 - The European Space Agency (ESA) has signed a further contract with Airbus for the construction of three more European Service Modules (ESM) for Orion, the American crewed spacecraft for the Artemis programme. With these additional Service Modules, ESA ensures continuity in NASA's Artemis programme beyond the three modules which are already under contract with Airbus. The European Service Module will be used to fly astronauts to the Moon. As the powerhouse of the new Orion spacecraft for NASA's Artemis missions, it will provide critical functions such as the propulsion system to get the astronauts to the Moon, and the consumables the astronauts need to stay alive. The ESM is cylindrical in shape and about four metres in diameter and height. It has four solar arrays (19 metres across when unfurled) that generate enough energy to power two households. The service module's 8.6 tonnes of fuel can power one main engine and 32 smaller thrusters. The ESM weighs a total of just over 13 tonnes. In addition to its function as the main propulsion system for the Orion spacecraft, the ESM will be responsible for orbital manoeuvring and position control. It also provides the crew with the central elements of life support such as water and oxygen, and regulates thermal control while attached to the crew module. During the development and construction of the ESM, Airbus has drawn on its experience as prime contractor for ESA's Automated Transfer Vehicle (ATV), which provided the crew on board the International Space Station with regular deliveries of test equipment, spare parts, food, air, water and fuel.

EXECUTIVE MOVES

Inmarsat Announces Appointment of Rajeev Suri as CEO

February 24, 2021 - Inmarsat announces that Rajeev Suri, former Nokia CEO, will join the business and assume the role of CEO and become a director of Connect Bidco Limited, the holding company for

Inmarsat, from 1 March 2021. Rupert Pearce will step down as CEO from 28 February 2021. Rajeev's most recent role was President and CEO of Nokia, a position he held for six years. Prior to that, he was the CEO of Nokia Siemens Networks for five years, a joint venture company that merged Nokia's and Siemens' networks businesses. Since stepping down in August 2020, Rajeev has worked in senior advisory roles with private equity firms Warburg Pincus and Apollo Global Management.

Virgin Galactic Announces Doug Ahrens as Chief Financial Officer

February 25, 2021 - Virgin Galactic today announced the appointment of Doug Ahrens as its new Chief Financial Officer, effective March 1, 2021. Ahrens will succeed Jon Campagna, who is stepping down as Chief Financial Officer following Virgin Galactic's successful transition from private to public company. Ahrens is a seasoned executive with over 25 years of operational and strategic finance experience at multinational corporations. He has led global teams at rapidly growing public and privately held companies in complex technology and manufacturing environments. Ahrens most recently served as CFO at Mellanox, a public company in the semiconductor industry, where he was responsible for all finance functions until the successful acquisition by NVIDIA Corporation in 2020. Prior to Mellanox, Ahrens served as CFO for GlobalLogic, a large software engineering company, where he led the finance, IT, and legal teams to support the rapid growth of the business.

Per Norén Appointed New CEO at Ovzon

February 19, 2021 - Ovzon's Board of Directors has today appointed Per Norén as the CEO of Ovzon AB effective latest May 1 2021. The company's current CEO Magnus René will continue to lead the company until then and will thereafter remain in his role as a member of the Board of Directors. Per Norén has a background from leading Swedish and US technology companies. He most recently served as President of Global Eagle, the satellite and connectivity services provider. Prior to that, he was Vice President at Boeing in Seattle and CEO at Carmen Systems. Carmen Systems was a fast-growing Swedish technology company acquired by Boeing. Per Norén is both a Swedish and US citizen and has lived in the US since 2007. Per will be located at Ovzon's US office in Herndon, VA. Magnus René has been a board member of Ovzon since the IPO in May 2018 and assumed the role of CEO in May 2019 for a time-limited assignment to further develop the business plan and strengthen the organization. Over the past year, the company has strengthened its management with Tom Hopkins, COO, Dan Gager, CCO and Nils Norén, CDPS. The company has also engaged a broad network of agents, launched new terminals and services and expanded its business outside the US DoD, with customers in Italy and the UK.

Virgin Orbit Names Tony Gingiss as Chief Operating Officer

February 17, 2021 - Virgin Orbit announced today that Tony Gingiss has joined the team as their Chief Operating Officer (COO). As the first person to hold this position, Tony will oversee day-to-day operations at Virgin Orbit's state-of-the-art manufacturing facility in Long Beach, CA. His arrival follows the successful LauncherOne mission in January and completes a sequence of enhancements to the company's executive team as Virgin Orbit pivots to commercial operations. Tony brings more than 30 years of aerospace experience in design, production, operations and leadership to this new role. Most recently, he served as the Chief Executive Officer (CEO) of OneWeb Satellites, where he led that company through design, low-rate-initial production, pilot launches, and into full production. Under his leadership, the company built a new factory and scaled to a production rate of two satellites per day – the successful realization of a fundamentally new approach to aerospace manufacturing.

Slingshot Aerospace Names Melanie Stricklan as CEO

February 11, 2021 - Slingshot Aerospace announced today that the company's Co-founder Melanie Stricklan has been named Chief Executive Officer effective immediately as the company gets laser-focused on space. Co-founder and former CEO David Godwin will remain active within the company as Chairman of the Board where he will focus on expanding corporate development activities. Stricklan previously served as the company's Chief Strategy Officer where she developed strong traction within the space industry having secured millions of dollars in customer contracts with the U.S. Space Force, NASA, U.S. Air Force, BAE Systems, Boeing, Northrop Grumman, and more. Having proudly served in the U.S. Air Force for 21 years, she logged over 1,500 flight hours onboard ground surveillance aircraft, commanded over 200 experimental spacecraft missions, and led the development of advanced space control technologies for the Department of Defense. She holds a Master of Science in Space Operations Management with an emphasis in Space Systems Engineering from Webster University. A decorated veteran, Stricklan is well positioned to grow Slingshot Aerospace's presence within the space industry with her unique blend of leadership and technical expertise.

Yahsat Announces New Board Appointments and Chief Executive Officer

February 9, 2021 - Al Yah Satellite Communications Company (Yahsat) has announced the appointment of three new members to its Board of Directors. Musabbeh Al Kaabi, CEO of the UAE Investments platform at Mubadala Investment Company PJSC (Mubadala), will assume the position of Chairman of the Board, and Badr Al Olama, Executive Director of the UAE Clusters unit within Mubadala's UAE Investments platform, will join as a Board member. Masood Sharif Mahmood will also join the Board of Directors, stepping down from his current role as CEO of Yahsat Group with effect from 18th April, after nearly 9 years in the role. Ali Al Hashemi, the current CEO of Thuraya Telecommunications Company and the General Manager of Yahsat Government Solutions, will take over as the new Chief Executive Officer of Yahsat Group from 18th April, 2021.

Virgin Orbit Adds Two Seasoned Pros to Executive Team

February 4, 2021 - Virgin Orbit announced today the addition of two well-respected space industry leaders to its executive team. Kirk Pysher has joined the company as its new Vice President of Mission Assurance, Quality and Safety, and Janice Starzyk as Vice President of Government Operations. Kirk Pysher brings over 30 years of experience in the design, development and operation of expendable launch vehicles. Kirk most recently served as the President of International Launch Services (ILS) where he oversaw the implementation of sweeping changes to the quality management system through the introduction of factory efficiencies and automated processes, resulting in a new run of successful Proton launches. In her role as VP of Government Operations, Janice Starzyk will head up Virgin Orbit's Washington, DC, office. Her extensive experience and contributions in the space industry include leading the consulting practice at Bryce Space and Technology and the commercial strategy and market intelligence for launch service providers United Launch Alliance (ULA) and International Launch Services (ILS).

SpaceLink Adds Seven More Industry Leaders to its Team

February 1, 2021 - SpaceLink, a company that is redrawing the map of space connectivity, announced it continues to grow a highly accomplished team to implement its business strategy for a game changing satellite relay service. Following a previous announcement of its top executives, SpaceLink added seven more industry leaders to its team. They bring deep expertise in technical and business operations to drive forward the space relay service that provides secure, continuous, high-capacity service between LEO spacecraft and the ground. Among the names that are familiar to many in the satellite and telecommunications industry, Dr. Larry Alder joins the team as Senior Vice President of Products & Services following more than a decade at Google and more recently several years as Chief Operating Officer at OneWeb. David Nemeth, who was previously at OneWeb, was named Senior Vice President of Systems Engineering, and Craig Moll, who was the Founder and President of PATHFINDER Space Advisors, is SpaceLink's Vice President of Commercial Business Development. Additional leaders joining the team include Lenny Low, who is the Vice President of Space Segment. Tom Leisgang is the new Vice President of Ground Segment. David Pattillo is now Vice President of Spectrum Management, and Doug Kotval is the company's Vice President of Supplier Management.

REPORTS

NSR releases Global Satellite Ground Segment, 5th Edition (GSGS5)

February 12, 2021 - NSR's *Global Satellite Ground Segment, 5th Edition* is the longest-standing and most complete analysis and forecast of the commercial satellite ground equipment sector. The study leverages NSR's extensive and in-depth satellite industry knowledge and provides shipments and equipment revenues for all key industry segments. The assessment covers shipments and equipment revenues in five regional markets, investigates trends impacting market growth and business models, and surveys technological trends shaping the future of the ground equipment and their impact on the satellite industry as a whole.

NSR: Satellite Constellations Drive \$3 Billion Optical Satcom Market

February 8, 2021 - NSR's newly released *Optical Satellite Communications, 3rd Edition (OSC3)* report projects a \$3 billion cumulative revenue opportunity through 2030 for laser communication terminals (LCTs) in both space and airborne markets. The Optical Satcom market is largely equipment-centric, with a significant portion of the revenue flow going to LCT manufacturers. Success in this market will be heavily dependent upon non-GEO constellation operators' ability to launch and close their business cases, as well

as market adoption from government / military institutions looking for alternative solutions in RF-denied environments.

NSR Report: In-orbit Satellite Servicing & Space Situational Awareness Present \$6.2B Opportunity

February 1, 2021 - NSR's *In-Orbit Servicing & Space Situational Awareness Markets, 4th Edition (IOSM4) report*, released today, forecasts In-Orbit Satellite services (IoS) cumulative revenues of \$6.2 billion by 2030. While growth is anticipated across all applications, GEO Satellite Life Extension is expected to generate the largest portion of revenues due to the sheer number of satellites expected to use this service. NSR's IoSM4 also sees growth in satellite constellations greatly increasing the addressable market in Non-GEO, where services will focus mostly on De-Orbiting and Space Situational Awareness (SSA). NSR's latest report forecasts both ground and space based SSA revenues to represent a cumulative revenue opportunity of over \$1B through the next decade.

UPCOMING EVENTS

APSCC 2021 Webinar Series, Virtual Event, <https://apscsat.com>
LIVE Every Tuesday 9AM HK | Singapore Time

Convergence India 2021, March 24-26, New Delhi, India, <https://www.convergenceindia.org/>

OTT Summit, March 29 - April 1, <https://ottsummit.asia/>

Future of Video India, April 29, https://avia.org/all_events/future-of-video-india/

CABSAT 2021, May 24-26, Dubai, UAE, <https://www.cabsat.com/>

Global Space Technology Convention (GSTC 2021), June 7-8, Singapore,
<https://www.space.org.sg/gstc/>

ConnecTech Asia 2021, June 14-16, Singapore, <https://www.connectechasia.com/home/>

SatelliteAsia Summit, June 14-15, Singapore, <https://www.connectechasia.com/satellite-asia/>

Australasia Satellite Forum 2021, June 22-23, Sydney, Australia, <http://talksatellite.com/EVENTS.htm>

Satellite 2021, July 26-29, Washington, DC., USA, <https://www.satshow.com/>

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@apsc.or.kr Website: www.apsc.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.apsc.or.kr.