

APSCC Monthly e-Newsletter

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

INSIDE APSCC

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The most frequent and largest ongoing virtual conference in the Asia Pacific satellite community – the APSCC 2021 Webinar Series incorporates industry veterans, local players, as well as new market entrants in a single event to reach a wide-ranging audience. The APSCC 2021 Webinar Series continues to play a vital role in supporting the industry in the Asia Pacific region and beyond with a brand-new format, a lengthened timeline, and a potentially unlimited reach. Register now and get access to the complete APSCC 2021 Webinar Series with a single password. To register go to <https://apscsat.com>.

SATELLITE BUSINESS

Atos Selected by Eutelsat to Provide Next-Generation Satellite Payload Monitoring Solution

April 29, 2021 - Atos has been selected by Eutelsat to deliver an innovative satellite payload monitoring solution, as part of a 5-year contract. Thanks to advanced satellite carrier management features, Atos' next-generation SkyMon solution will help Eutelsat meet the growing challenges of a new space era which include new satellite communications technologies, the need to integrate 5G and the potential increase of signal interferences caused by the growing number of satellite mega constellations. The new system will enable Eutelsat to continually monitor the radio-frequency payloads on all its commercial satellites and to identify and localize satellite interferences in one single and intuitive solution, to take counteractive measures immediately. The solution consists of a cloud-based state-of-the-art microservice architecture on top of a high-performance generic core, allowing flexible adaptation on changing requirements with minimal risks.

HughesNet Celebrates Two Years of Connecting Chileans in Rural and Remote Areas with Satellite Internet Service

April 29, 2021 - Hughes Network Systems celebrates the second anniversary in Chile of HughesNet®, the company's flagship high-speed satellite internet service. Reaching 98% of the population of Chile, HughesNet is available from Arica down to the north of the Aysen Region, providing connectivity to the country's most remote locations, even places where land-based Internet access, such as fiber and cable, is not available. With service plans for homes and SMEs, HughesNet brings families and professionals the access they need to work, take online classes, surf the web, connect with social media, and conduct business activities such as processing credit card transactions and managing inventory. Service is available in sectors as remote as Isla Mocha or Isla Santa María in the Biobio Region, the mining areas of northern Chile and the village of Melimoyu in the Aysen Region, bringing essential connectivity whilst also creating new employment opportunities for a network of distributors.

SES's Next-gen NGSO System Readies for Launch with 8 Initial O3b mPOWER Satellite Ground Stations

April 28, 2021 - SES announced that it has signed agreements with key infrastructure service providers around the world to build its eight initial O3b mPOWER satellite ground stations. Construction has already started on these advanced technology satellite ground stations, which will become operational in the second half of this year. The eight sites will provide telemetry, tracking and control capabilities to enable SES's management of the constellation. They will also be leveraged to raise the satellites into the right orbit after the scheduled launches. As previously announced, two of the satellite ground stations are located at Dubbo, NSW, Australia (operated by Pivotal) and Thermopylae, Greece (operated by OTE). Other locations include Merredin, Perth, Australia; Phoenix, Arizona, US; Chile; the United Arab Emirates;

Senegal as well as SES's own satellite ground station in Hawaii. Four out of the eight sites will be co-located and operated with Microsoft's Azure data centres; the one-hop connectivity to the cloud from remote sites will provide O3b mPOWER customers the ability to optimise business operations with significant flexibility and agility. The O3b mPOWER satellite ground stations have many technically advanced features compared to the existing O3b satellite ground station. They include a new generation of fast-install 5.5-metre carbon fibre antennas which can be installed without the need for expensive and time-consuming photogrammetry. In addition, they will utilise energy-efficient solid-state power amplifiers, and a low electrical load for the antenna control unit (ACU). The satellite ground stations will use SES's gateway management system for automated operations and handovers, which will be tightly integrated with SES's unique resource management capability, Adaptive Resource Control (ARC) and other SES software sub-systems. With this configuration, SES will dynamically manage and optimise space and ground resources to meet the changing needs of its customers.

Inmarsat and Honeywell Partner to Deliver Innovative Satcom Solutions to the U.S. Government

April 28, 2021 - Honeywell and Inmarsat announced an agreement to develop and deliver innovative commercial satellite communications (COMSATCOM) solutions to the U.S. government. The solutions will be focused on fixed-wing and non-fixed wing aeronautical platforms operating worldwide, including in Arctic regions. The agreement extends the companies' best-in-class COMSATCOM services to U.S. Defense customers while continuing to advance solutions that meet mission-specific requirements. Through the new strategic alliance, Inmarsat and Honeywell will offer U.S. government users access to a unique suite of products and services across Inmarsat's worldwide networks operating in L-band, as well as in the commercial and military Ka-bands. L-band frequencies are lower radio frequencies between the 1 and 2 GHz range employed for a variety of applications to include highly resilient mobility satellite communications. Ka-band radio frequencies in the 26 to 40GHz range offer higher throughput for satellite communications and other applications.

Eutelsat Enters LEO Space through Investment in OneWeb

April 27, 2021 - Eutelsat Communications has entered into an agreement with OneWeb for the subscription of a c.24% equity stake, becoming a leading shareholder of the company alongside the UK Government and Bharti Global. Eutelsat will invest \$550 million in OneWeb, with closing expected in H2 2021 subject to regulatory authorisations. Eutelsat's investment leaves OneWeb almost fully funded and the company is well advanced in terms of securing its remaining funding needs this year. Eutelsat's investment will come with similar governance rights to the UK Government and Bharti, including board representation, where its position and expertise as one of the world's leading satellite operators will help to drive the success of the new constellation. In a context where LEO features will enable the extension of the addressable market for satellite operators well beyond their current reach, the complementarity of Eutelsat's and OneWeb's resources and assets is expected to optimize both companies' commercial potential thanks to Eutelsat's strong commercial and institutional relationships, recognized technical expertise and global geostationary fleet, and OneWeb's ability to address the multiple applications requiring low latency and ubiquity.

ST Engineering iDirect Secures Deal to Drive Cellular Backhaul Network Expansion across Brazil

April 27, 2021 - ST Engineering iDirect has been selected by a Tier 1 mobile network operator (MNO) in Latin America to extend the ground infrastructure for its upcoming satellite which is slated for launch in late 2021. The network expansion will deliver 3G, 4G and corporate internet services across Brazil, with the potential to expand into other regions. The multi-gigabit augmentation builds upon the long-term relationship and significant success of the MNO's existing network which is powered by the Dialog® platform. The scalable and flexible multiservice platform allows the MNO to access a wide range of markets, effectively manage operational and capital costs, and create unique value for its customers. It also allows cellular backhaul and corporate internet offerings to be combined into one platform, enabling the ability to expand into other areas and applications as opportunities arise.

Satcom Global Extends Aura VSAT Coverage in the North and South Pacific

April 27, 2021 - Satcom Global announced a significant enhancement to its Ku-band Aura VSAT network, with the addition of the Eutelsat 174A (E174A) North Pacific and South Pacific satellite beams. The new coverage will strengthen and extend the Aura network across the North Pacific and Oceania regions, supporting the high-quality connectivity demands of a diverse range of maritime sectors including shipping, commercial fishing, workboat, offshore supply and leisure. The E174A North Pacific beam will benefit customers sailing Transpacific routes and operating out of the West Coast of North America,

providing an additional layer of satellite coverage over key US maritime regions such as Alaska, Vancouver, Seattle, and the major ports in California, ultimately extending coverage down to the Western coast of Mexico. The E174A South Pacific beam will overlap existing Aura network beams covering Western and Northern Australia, enhancing Ku-band service quality for vessels operating in those areas, as well as extending service coverage to the East of New Zealand. Satcom Global has secured the high capacity E174A North and South Pacific beams with a guaranteed level of service quality (Committed Information Rate), with the option to scale up capacity, futureproofing emerging requirements. Adding new satellite beams to the Aura network is part of Satcom Global's approach to deliver the most inclusive geographic coverage, as well as the highest quality connectivity to customers, with overlapping beams that provide both redundancy and abundant capacity.

Spire Maritime Announces Expansion of Data Analytics with New Platform and Features

April 27, 2021 - Spire Global, Inc. announced the launch of a new platform and a new analytics product for the maritime industry. Spire Bridge and Spire Analytics will allow customers to create their own dashboards and alerts customized to their specific use cases. Through the Spire Bridge portal, customers can now access our new product, Spire Analytics, to monitor data usage, get support, documentation, and product updates to activate and operationalize the data Spire measures and provides. Having a dedicated location for all of these features will allow data users to access insights and support faster. To expand Spire Maritime API data services, the team has introduced new analytics capabilities that provide valuable time savings for developers and data engineers. Spire Analytics transforms maritime data into actionable insights to help solve the Maritime industry's business challenges. This tool allows customers to graph, report, and visualise the data. It can also filter searches by ship type, voyage, density map, and more. For customers looking for a faster way to get information about a fleet, port, anchorage, or terminal event, our easy-to-use dashboard can filter the information and deliver the data they need to make data-driven decisions, case by case, without all the background noise.

Kratos Demonstrates SATCOM Situational Awareness to an Operationally Secure Environment Using Commercial Resources

April 26, 2021 - Kratos Defense & Security Solutions announced today that they were the first to successfully exhibit an integrated SATCOM capability providing real-time Situational Awareness (SA) to an operationally secure environment. The demonstration included roaming among different networks to optimize wideband satellite communications (SATCOM) using Enterprise Management and Control (EM&C). EM&C is an effort by the DoD to plan, initiate, monitor and restore rapid, automated access to hybrid satellite constellations and networks, operated by various service providers. The demonstration was part of a multi-national Joint All Domain Command and Control (JADC2) demonstration hosted by U.S. European Command, U.S. Air Forces in Europe and Air Forces Africa, and the Department of the Air Force Chief Architect Office. EM&C capabilities provided by Kratos and its industry partners highlighted a means for providing real-time satellite communication end-to-end connectivity status and operational readiness including spectral data, link and equipment status and detecting/geolocating electromagnetic interference (EMI).

SSC Announces Four New Polar Antennas to Strengthen Polar Connectivity

April 26, 2021 - Swedish Space Corporation (SSC) strengthens polar capability with four new antennas at its polar ground stations; two in Canada and two in Sweden. First out is a new 7,3m tri-band antenna at the Inuvik Satellite Station Facility (ISSF) in Canada. Together these four antennas will extend the SSC's capacity and capability by adding further connectivity for polar orbiting satellites. The announcement marks yet another step in SSC's major extension towards a fully global Ka-band connectivity by the end of 2021. The new 7,3 meter antenna, owned and operated by SSC, features tri-band capability accommodating S-, X- and Ka-band frequencies. Together with the two existing SSC antennas at the ISSF site, the new establishment will add to the company's unmatched polar connectivity for satellite operations. As part of the overall polar sites extension, three additional antennas will also be introduced later this year; one at the Inuvik Satellite Station in Canada and two at Esrange Space Center in Sweden.

Tier-1 Telco in Latin America Awards Gilat \$3M+ to Provide Broadband Bridging the Digital Divide

April 26, 2021 - Gilat Satellite Networks Ltd., a worldwide leader in satellite networking technology, solutions and services, announced today that a Tier-1 Telco in Latin America awarded Gilat over \$3M to provide broadband connectivity over satellite to support bridging the digital divide. The project includes thousands of VSATs to be deployed in remote schools to further children's education in Latin America and is expected to expand further. Gilat's SkyEdge II-c network was chosen due to its vast experience and

expertise in delivering high quality broadband connectivity and in deploying tens of thousands of VSATs for Universal Service Obligation (USO) projects throughout Latin America and in the world at large.

KLM Introduces Viasat In-flight Wi-Fi on European Flights

April 22, 2021 - Viasat and KLM Royal Dutch Airlines, will bring connectivity to 18 of the airlines' Boeing 737-800 fleet and 21 of its Embraer E195 aircraft. The 737-800's are expected to be outfitted with Viasat's latest in-flight connectivity (IFC) equipment by the end of 2021, and in service by early 2022, and specifics around the Embraer E195 fleet will be announced at a later time. Both fleets will operate European flight routes only. Viasat's IFC equipment is currently installed on two KLM narrow-body Boeing aircraft. During the first week of service, which began today, KLM will encourage passengers to trial the service free-of-charge and provide insights to further optimize the onboard Wi-Fi experience. KLM will initially offer three in-flight connectivity packages – Messaging, Surf, and Stream –on all Viasat-equipped aircraft. The Messaging option will give all passengers 30-minutes of free text messaging via WhatsApp, Facebook Messenger, WeChat, among other messaging apps. The Surf and Stream options, which can be purchased in-flight, will give passengers the ability to do more on board, with options to surf the internet/email as well as enjoy full video and audio streaming.

SES Joins UN Global Compact Initiative, Accelerates Purpose-led ESG Programme in 2021

April 21, 2021 - SES today announced it has joined the United Nations Global Compact, the world's largest corporate sustainability initiative, underscoring the company's purpose-led Environmental, Social and Governance (ESG) programme. By committing to the UN Global Compact framework, SES is now firmly aligning its long-standing societal and environmental impact efforts to the company's purpose – doing the extraordinary in space to deliver amazing experiences everywhere on earth – and delivering on its ambitions to provide cloud-enabled, satellite-based intelligent connectivity and to make a difference worldwide. The UN Global Compact is a corporate initiative that encourages both business and non-business organisations to establish and define strategies, policies and procedures aligned with the 10 principles of the Global Compact. SES is well aligned with these principles and will report on their execution. Under this new commitment, SES will evaluate its existing ESG activities while aligning them with the company's purpose and ambitions, as well as with the UN's Sustainable Development Goals, to ensure that SES is making the necessary positive social and environmental impact on the world. SES will also develop a formal impact strategy that will determine how to adopt best-in-class ESG policies while delivering services to its customers. It will also produce ESG reports that adhere to international standards to highlight the extent of SES's impact.

Viasat, 19Labs Collaborate to Deliver Real-time, Enhanced Telemedicine and Remote Patient Monitoring Solution for Unserved and Underserved Communities

April 21, 2021 - Viasat Inc. and 19Labs announced a collaboration to deliver a real-time, enhanced telemedicine and remote patient monitoring (RPM) solution aimed at providing affordable, comprehensive clinic experiences, where patients, clinicians and healthcare providers can securely connect and share healthcare information – even in the hardest-to-reach communities. Beyond just videocalls, enhanced telemedicine replicates the clinical experience, integrating smart diagnostic devices to deliver vital real-time data during the consult, enabling medical staff to make better, more accurate assessments. The enhanced telemedicine solution leverages Viasat's reliable, high-speed satellite-based broadband service combined with 19Lab's cloud-based, HIPPA-compliant telehealth healthcare platform, to aid in secure doctor-patient communications where bandwidth-intensive diagnostic and health information can be safely and securely transmitted over Viasat's network.

Gilat Receives over \$5M for Cellular Backhaul Expansion from Tier-1 Mobile Network Carrier in Japan

April 22, 2021 - Gilat Satellite Networks Ltd., a worldwide leader in satellite networking technology, solutions and services, announced today that it received over \$5M for cellular backhaul over satellite expansion from Tier-1 Mobile Network Carrier in Japan. The Mobile Carrier will utilize Gilat's SkyEdge II-c platform to quickly expand coverage to rural zones that are lacking fiber access, as well as to provide emergency response in the case of earthquakes or other natural disasters. An aggressive deployment schedule was put in place to fulfil the carrier's requirements.

WARPSPACE Aims to Commercialize World's First Intersatellite Optical Communication Network

April 20, 2021 - WARPSPACE Co., Ltd. a spin-out space startup from the University of Tsukuba, announced that it has closed Series A round with additional funding of 400M JPY (3.6M USD) from The Space Frontier

Fund (operated by Sparks Innovation for Future Co., Ltd.) and KSK Angel Fund LLC, which is led by professional soccer player Keisuke Honda. This funding marks the first close of the Series A round and the second close is scheduled to be in May. In addition, as of March 8, WARPSPACE has transitioned to a company with a board of directors. Misuzu Onuki, who is in charge of investment in the Space Frontier Fund and also serves as a member and director of space industry-related organizations, is taking the role of an outside director at WARPSPACE. With the new management structure, we will reinforce our management system. Through a series of efforts, we will accelerate the development of "WarpHub InterSat", which is scheduled to be launched at the end of 2022.

SES Signs MoU with Kazakhstan Government on O3b mPOWER Connectivity Services

April 19, 2021 - The Republican Center for Space Communications (RCSC), a subsidiary of the Ministry of Digital Development, Innovation and Aerospace Industry, and SES, the leading global content connectivity solutions provider, have signed a Memorandum of Understanding (MoU) to explore service agreements for satellite-enabled, high-speed connectivity services using SES's O3b mPOWER communications system in Kazakhstan to accelerate the Digital Kazakhstan project. Under this MoU, RCSC will explore utilising SES's next-generation, high-performance, low-latency constellation scheduled to launch in Q3 2021. Located at 8,000km away from the Earth's surface in a medium earth orbit (MEO), the fully-funded O3b mPOWER system will provide global coverage with as few as six satellites, and will ramp capacity with its current plan of 11 satellites. The system is capable of delivering dedicated services at multiple gigabits per second with unprecedented flexibility and resiliency, ensuring constant, efficient usage of bandwidth. The parties will also explore creating an in-country gateway for O3b mPOWER. SES has committed to knowledge transfer programmes to advance the digital transformation process of enterprise and government sectors in Kazakhstan. SES has also established a local presence in Kazakhstan as of last year and will be making a direct in-country investment. In addition, RCSC and SES will also look into using O3b mPOWER services for other Central Asian countries with ubiquitous broadband access to the Internet.

ESA Awards Euroconsult and ESPI with Study on the Future of European Space Transportation

April 19, 2021 - Euroconsult has been commissioned by the European Space Agency (ESA) to conduct a study on the future of the European space transportation sector. Euroconsult, the leading global consulting firm specializing in space markets, has partnered with ESPI to investigate European institutional mission scenarios for the period beyond 2030 following the ITT on New European Space Transportation Solutions (NESTS). Euroconsult and ESPI will deliver an independent analysis focusing on the demand drivers of the future space transportation solutions in the period 2030–50 along already awarded contracts to ArianeGroup, Avio and Rocket Factory Augsburg (a subsidiary of OHB SE). The Euroconsult and ESPI assignment will be completed before June 2021 and will feed the preparation of proposals to be submitted for decision at the next Council Meeting at Ministerial level in 2022.

Gilat Awarded over \$20 Million in Orders for Support of Low Earth Orbit (LEO) Constellation

April 19, 2021 - Gilat Satellite Networks Ltd., a worldwide leader in satellite networking technology, solutions and services, announced today that it received orders of over \$20 million for support of gateways of Low Earth Orbit (LEO) constellations. Gilat's subsidiary, Wavestream, was chosen as the vendor of choice to supply Gateway Solid State Power Amplifiers (SSPAs) to a leading satellite operator to support the LEO constellation gateways. The orders were received as part of the previously announced contract. 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.

ViaLite C-Band RF over Fiber Links Deployed at Orange Teleport

April 19, 2021 - ViaLite has deployed its C-Band RF over fiber links at the Orange Telecom Teleport in Bercenay-en-Othe, France, as the facility undergoes further improvements. RF over fiber experts, ViaLite and their French distributor Eurosatcom – specialists in the Satcom market – collaborated to help upgrade the teleport operations as part of Orange's maintenance and upgrade program. ViaLite was selected to provide C-Band operational links for both uplink and downlink paths within the teleport's facility, with high dynamic range, which exceeds others, and also due to full integration with its monitoring and control chassis system which included dual redundancy.

FAA and EASA Approve Viasat's Ka-band In-Flight Connectivity System for Bombardier Challenger 300-Series Aircraft

April 15, 2021 - Bombardier and Viasat have announced regulatory approval for the installation and use of Viasat's Ka-band in-flight connectivity (IFC) business aviation system on in-service Challenger 300 and Challenger 350 aircraft, for the fastest available download speeds in the super midsize segment. This solution is also offered for new Challenger 350 business jets, further strengthening the aircraft's winning combination of performance and cabin experience. Supplemental Type Certificates (STC) have been successfully received from the U.S. Federal Aviation Administration (FAA), as well as from the European Union Aviation Safety Agency (EASA). Viasat first announced it would bring enhanced cabin connectivity to Bombardier Challenger 300 and Challenger 350 business jets in July 2020. Regulatory approval clears the way for operators of those aircraft to have Viasat's Ka-band Global Aero Terminal 5510 installed for a premier in-cabin internet experience over the most heavily travelled flight routes and regions. Installation of the Viasat system will be available at Bombardier's worldwide network of service centers.

KVH Increases Data Speed and Expands Coverage for Smaller Commercial Vessels

April 15, 2021 - KVH Industries, Inc. announced today that its AgilePlans® Regional solution designed for fishing vessels, workboats, and smaller commercial vessels now features data speeds as fast as 6 Mbps down/2 Mbps up and worldwide coverage providing vessels that typically work in regional waters with greater geographic flexibility. AgilePlans Regional is a Connectivity as a Service (CaaS) subscription-based model that includes a choice of hardware (TracPhone® V30, KVH's newest and easiest-to-install ultra-compact system or the 37 cm TracPhone V3-HTS antenna with expanded network management), unlimited email and texting, installation in as many as 4,000 ports and locations, cybersecurity protection, KVH OneCare™ maintenance, and no commitment, all for one monthly fee. The AgilePlans Regional service complements KVH's AgilePlans Global service, which is offered with the 60 cm TracPhone V7-HTS (with data speeds as high as 10/3 Mbps down/up) and the 1 meter TracPhone V11-HTS (with data speeds as high as 20/3 Mbps down/up), making AgilePlans available for commercial vessels of all sizes.

Satcom Global and AnsuR Technologies Form Strategic Global Partnership to Deliver Unique Visual Communications Technology

April 15, 2021 - Leading satellite communications provider Satcom Global is delighted to announce a strategic partnership with software specialist AnsuR Technologies (AnsuR). The collaboration will enable Satcom Global to support its maritime and remote-land based communications customers with access to innovative visual technology, globally. AnsuR develops software solutions for use in challenging environments, supporting optimised and cost-effective transmission of important and often vital, visual information over satellite communications, without compromising on quality or precision. ASIGN is an interactive tool which enables users to send photos and video clips in a quick, bandwidth-efficient way. The sender and receiver can interact with each other to get the optimum visual detail and resolution required, without overuse or overspend on data transfer. ASMIRA is a customisable streaming video solution designed for use over satellite, enabling quality live video with a data speed connection of just 200kbps or lower.

Comtech Awarded Orders Totaling \$3.8M with Tier-One Mobile Network Operator

April 14, 2021 - Comtech Telecommunications Corp., a world leader in secure wireless communication technologies, announced today, that during its third quarter of fiscal 2021, its Location Technologies group, a division of Comtech's Commercial Solutions segment, has finalized orders aggregating over \$3.8 million with a tier-one mobile network operator. These orders are for additional capabilities on Comtech's Virtual Mobility Location Center platform including Kubernetes, which provides a system for automating deployment, scaling, and operations of application containers across clusters of hosts.

Inmarsat and OneOcean Partner to Deliver Digital Solutions for Navigation and Compliance

April 14, 2021 - Inmarsat and OneOcean, the global leader in compliance and navigation services for the maritime industry, are delighted to announce a partnership that focuses on the next phase of the digitalisation of navigation and compliance in the maritime industry. The multi-phase agreement which will see OneOcean become an Inmarsat Certified Application Provider (CAP) is centred on leveraging Inmarsat's technology platform and OneOcean's digital solutions to transform the way voyage planning software is deployed, updated and integrated between ship and shore. Remote deployment of OneOcean technology is the first of many benefits of the partnership, enabling reduced set-up time, minimum disruption and, most importantly, reduced cyber risk. Physical deployment of all software has unavoidably been affected due to lockdown restrictions and growing onboard cyber security concerns. This agreement

will address these issues, by enabling global deployment of software through on-demand, cyber secure, digital operations. The software will be deployed over Inmarsat's high-speed Fleet Connect dedicated bandwidth service, which is completely separate from crew and business traffic and helps free-up constrained bandwidth for other essential tasks onboard and ensure safety critical navigational tools remain up to date.

Indonesia Deploys Iridium Push-to-Talk, Overcoming Remote Communications Challenges

April 13, 2012 - Iridium Communications today announced that the Republic of Indonesia's government has adopted Iridium Push-to-Talk (PTT) devices to support communication efforts across the country. By fully deploying 500 Iridium PTT handsets, the Indonesian government now has a reliable "grab-and-go" real-time satellite communications solution, ideal for communications on-the-move applications across the country's diverse island landscapes. Iridium service provider PT Amalgam Indocorpora supported the implementation by providing the Indonesian government with customized Icom IC-SAT100 PTT devices. With one-to-many communication at the push of a button and Iridium's truly global coverage, the devices help ensure Indonesian government personnel remain connected. This capability brings immense value to the Indonesian government as they bridge the previous connectivity gap, allowing deployed teams to efficiently communicate with one another across the country's islands over the Iridium network.

ST Engineering iDirect Launches Mx-DMA MRC, the Satcom Industry's Most Powerful Return Technology

April 13, 2021 - ST Engineering iDirect has successfully delivered its transformational Mx-DMA MRC (Multi Resolution Coding) technology to its flagship customers, including satellite service provider Ningbo BIRDSAT which is leveraging the technology to offer differentiated services in the highly competitive fishing market. Building on the award-winning Mx-DMA HRC (High Resolution Coding) technology, Mx-DMA MRC offers unprecedented service agility, extending the availability of Mx-DMA to very large networks while lowering the total cost of ownership. Mx-DMA is a patented multi-access waveform that incorporates the scalability of MF-TDMA with the efficiency of single channel per carrier (SCPC) into a single return technology. For the first time, service providers can now cover a myriad of use cases in a single return link without making tradeoffs between speed, efficiency, scale and cost. Mx-DMA MRC scales in MHz and is independent of the number of terminals used. Customers can now be served with a single return link for the majority of their use cases, minimizing operational complexity and maximizing statistic multiplexing. Now available to first adopters, it offers the highest level of intelligent, real time bandwidth allocation at SCPC efficiencies. Designed to seamlessly adapt to changing network traffic and link conditions while avoiding jitter and latency, it maximizes the utilization of available bandwidth resources and allows satellite service providers to deliver the best Quality of Experience (QoE).

Speedcast Selected to Expand Connectivity Solution to Future-Proof Stena Drilling Fleet

April 13, 2021 - Speedcast has announced it has secured a five-year contract with Stena Drilling to expand its existing communications service with a newly designed solution to maximize operational effectiveness and support digital transformation efforts for Stena's global fleet. Aberdeen-based Stena Drilling is a leading independent drilling contractor with operations across the globe. Speedcast has provided corporate networking and crew welfare connectivity long-term across the driller's fleet of four drill ships and two semi-submersible rigs and will now be adding enhanced communications design and technologies for the fleet. The service contract follows Stena's implementation of a digital transformation program to invest in innovation and technology to future-proof their global assets. As part of the solution, Speedcast will provide advanced, very small aperture terminal (VSAT) modem technology; multi-orbit and tri-band antenna systems; SD-WAN, out-of-band management (OBM) and telemetry applications; and an enhanced design to maximize LTE coverage. All services will be backed by Speedcast's 24x7 Customer Support Center (CSC).

Tuvalu Telecommunications Corporation Partners with Kacific to Deliver Internet Nationwide with Maximum Flexibility

April 13, 2021 - Kacific's flexible satellite broadband services are providing Tuvalu with a platform for digital transformation across Government, schools, businesses and communities. The Government of Tuvalu is undertaking a major reform to the nation's telecom sector in order to digitally transform government services and provide the widest possible range of efficient, reliable, and affordable telecommunications and information services to all of Tuvalu. These reforms aim to promote socio-economic development and create a modern environment that encourages innovation, investment, and job creation. Tuvalu Telecommunications Corporation (TTC), the State Owned Enterprise that manages

telecommunications, sought a provider that could offer them high-speed bandwidth, which could be delivered easily and affordably to communities in Tuvalu's nine islands. The provider needed to have solutions that could support both highly secure Government and business-level connectivity, as well as smaller scale residential and community uses. TTC chose Kacific to supply a comprehensive internet service via a dedicated beam from the powerful Kacific1 satellite. Under the five-year agreement, TTC will access all available capacity – a total commitment of 400Mbps to 600Mbps of satellite capacity depending on size of terminals – from the high-throughput satellite beam positioned over Tuvalu's Exclusive Economic Zone. As of April 2021, TTC has connected more than 50 enterprise-level customers including local and central Government offices, and schools, and has a growing waitlist of customers who are keen to experience the new services. With Kacific services, TTC has been able to reduce the retail price of internet for Tuvalu's citizens by around 50%.

C-COM Completes Integration with Spacebridge U7400 Professional Mobility/Trunking VSAT Router

April 13, 2021 - C-COM Satellite Systems Inc. has completed integration of the SpaceBridge U7400 Professional Modem Series for Mobility/Trunking VSAT Router with its iNetVu® antenna controllers. The latest SpaceBridge VSAT networking platform, which encompasses several new modems, is now fully compatible with all C-COM Flyaway and Driveaway antenna systems. Using the SpaceBridge U7400 VSAT router and testing for satellite acquisition, C-COM's 98cm Ka-band driveaway antenna system configured with the iNetVu® 7710 controller, was able to seamlessly acquire satellite in under 2 minutes. C-COM's 'Best in Class' antenna controllers offer interoperability with 15 different modem manufacturers and with more than 37 different models.

OneWeb and Government of Kazakhstan Develop Partnership to Accelerate Connectivity

April 12, 2021 - OneWeb has announced that it has signed an MoU with subsidiaries of the Ministry of Digital Development, Innovation and Aerospace Industry: national satellite operator Republican Centre of Space Communications JSC, national company Kazakhstan Gharysh Sapary, and Ghalam LLP, a spacecraft component supplier. The MoU develops OneWeb's partnership with the Government of Kazakhstan which began in 2020 to support Kazakhstan's ambition to digitize its economy and become a pioneer of the latest satellite communications technologies. The MoU encompasses several areas of cooperation, including use of OneWeb's low latency, high throughput satellite connectivity platform to provide broadband to remote and hard-to-reach rural communities, building a ground station to provide connectivity to Central Asian countries, and localisation of the supply chain for OneWeb's Low Earth Orbit satellites. At the same time, OneWeb has now received its Certificate of Incorporation for OneWeb Kazakhstan Ltd registered in Astana International Financial Centre. This subsidiary company will facilitate the establishment of a Low Earth Orbit Centre of Excellence in the country and enable OneWeb's service delivery across the whole of Central Asia. OneWeb always partners with local telecom operators who know the market and their customers and seeks to distribute its connectivity services to the private and public sector, including businesses, schools, hospitals and civil services across Eurasia.

Singtel Launches GENIE, World's First Portable 5G-in-a-box Platform to Accelerate 5G Innovation

April 12, 2021 - Singtel today launched GENIE, the first portable 5G platform in the world to enable enterprises to experience 5G's capabilities and trial use cases in their own premises. Without the need for prior installation of equipment or infrastructure, GENIE creates an independent 5G network at any location where it is deployed and is suitable for enterprises which want to conduct trials but don't yet have a 5G network. GENIE can also be used to run short-term events like hackathons that require a temporary 5G network. Designed to be compact and transportable, GENIE comes in a suitcase-sized container consisting of a 5G network control kit and a standing mount with 5G radio antenna. The simple setup can be installed under an hour and requires only a standard electrical outlet to power and access to a window for the platform to determine its location via Global Positioning System. GENIE is designed to work with Singtel 5G Multi-access Edge Compute (MEC) infrastructure to test ultra-low latency applications indoors. Enterprises can work with Singtel's ecosystem partners to test Industry 4.0 applications such as autonomous robots in a smart factory, augmented, virtual or mixed reality, drones, and holographic projection. With the completion of successful trials, enterprises can quickly deploy the applications on Singtel's 5G MEC.

mu Space Granted BOI Investment Incentives to Compete in Global Space Industry

April 12, 2021 - Satellite and space technology company, mu Space and Advanced Technology Co., Ltd., has secured a Thailand Board of Investment (BOI) investment promotion to take on the international space

technology market. mu Space is granted A1 level of investment promotion incentives and privileges, the highest rank of any eligible incentives, with the manufacturing of its small satellite components in a category of high technology industry; Manufacture or repair of Aircraft, or Aerospace Devices and Equipment section. The company aims to be the leader and put Thai space-tech company on the map. Its investment plan focuses on two aspects including machinery and Research & Development (R&D). The main objective of mu Space's investment in machinery is to serve the manufacturing process. These machines include raw materials and equipment both domestically and internationally such as 3D Printer or Additive Manufacturing, CNC Machine, Robotic Arms, Attitude Control Test Bed, Air Bearing, Helmholtz Cage, and Sun Simulator. For investments in R&D and spacecraft engineering systems, the company plans to impart knowledge on satellites and space technology.

AXESS Networks Establishes Commercial Maritime Business Unit

April 12, 2021 - AXESS Networks today announced the creation of a new business unit: AXESS Networks Maritime. This highly specialized business unit was established to respond to the growing and sophisticated demands within the maritime sector. AXESS Networks looks to further demonstrate its global leadership by delivering a fully managed hybrid communications solutions to an evolving digitalized maritime market which constantly seeks reliable, secure, and flexible connectivity. Operating across the spectrum as diverse from merchant maritime commercial fleets to private yachting charter, the demands for higher secure throughput rates are critical. Crew and passengers require and expect the experience of broadband connectivity to that found onshore. And in addition to connectivity, a trusted first-class support and secure infrastructure being fundamental to the overall user experience.

Marlink Group Obtains Regulatory Approval to Acquire ITC Global

April 12, 2021 - Marlink Group, backed by Apax Partners, has obtained final regulatory approvals to acquire 100% of ITC Global from Panasonic. The Marlink and ITC Global management teams are preparing for a swift closing of the transaction in the coming weeks, while remaining fully focused on providing best-in-class services to their customers across the world. Both the Federal Communications Commission (FCC) and the Committee on Foreign Investment in the United States (CFIUS) have given their approval to the deal. All is now on track for ITC Global to join the Marlink Group on 30th April, supporting the expansion of the Group's global leadership in the energy and enterprise markets. As part of the Marlink Group, ITC Global will mainly focus on energy and high-end customers who demand specific and complex managed network solutions. Furthermore, ITC Global will extend and complement Marlink Group's global footprint with a strong presence in the US, the UK and Australia.

Airbus and TNO to Develop Aircraft Laser Communication Terminal

April 8, 2021 - Airbus and the Netherlands Organisation for Applied Scientific Research (TNO) have launched a programme to develop a laser communication terminal demonstrator for aircraft, known as UltraAir. The project, which is co-financed by Airbus, TNO and the Netherlands Space Office (NSO), is part of the European Space Agency's (ESA) ScyLight (Secure and Laser communication technology) programme. Airbus is leading the project and brings its unique expertise in laser satellite communications, developed with the SpaceDataHighway programme. It will coordinate the development of the terminal and testing on the ground and in the air. As key partner of the project, TNO provides its experience in high-precision opto-mechatronics, supported by the Dutch high-tech and space industry. Airbus Defence and Space in the Netherlands will be responsible for the industrial production of the terminals. Airbus' subsidiary Tesat brings its technical expertise in laser communication systems and will be involved in all testing activities.

Intellian's New v45C Antenna Qualified for Intelsat FlexMaritime Network

April 8, 2021 - Intellian's newly-launched v45C antenna has been qualified for operation on the Intelsat FlexMaritime network. By combining Intellian's compact, high-performance antenna with Intelsat's cutting-edge FlexMaritime High Throughput Satellite (HTS) service, this approval will deliver global connectivity to customers in the smallest package available to date. Until now, service providers have required antennas of 60cm or larger to deliver high throughput services owing to the higher power demanded by smaller units, but with the advent of HTS technology teamed with innovative antenna design, the use of more compact antennas has become possible. The v45C has been developed to 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.

Telespazio Announces Support for AWS Ground Station with its Cloud-based Service Platform

April 8, 2021 - Telespazio Germany today announced support for AWS Ground Station within Telespazio's

cloud-based service platform for space operations ENABLE. The collaboration provides customers with access to an expanded network of satellite ground stations, simplified satellite management, and AWS services for data processing, storage, and analysis. AWS Ground Station enables customers to downlink data and efficiently control satellite communications across multiple regions, process data, and scale operations without having to worry about building or managing their own ground station infrastructure. Telespazio's service platform allows customers to safely plan and execute their missions both in the space and aviation domain, being flexible and scalable to any specific need. The combined technologies and services from AWS and Telespazio will therefore provide a cost effective and scalable solution that allows customers to rapidly transform large amounts of raw data into actionable intelligence, collaborate and experiment with new applications, and deliver products to market faster without buying, leasing, or maintaining complex and expensive infrastructure.

Telesat Joins MEF to Advance Digital Transformation through Telesat Lightspeed

April 8, 2021 - Telesat has joined MEF, a global federation of network, cloud, and technology providers working together to empower enterprise digital transformation. Telesat is building the advanced features that enterprise customers, telecom operators and service providers require, and its involvement with MEF will enable members to seamlessly integrate with the Telesat Lightspeed network to enhance their network coverage, performance and profitability. Through MEF, Telesat Lightspeed services will be certified, ensuring that they conform to the rigorous certification standards established by MEF. With MEF's 3.0 Underlay Connectivity Service standards, companies can easily understand the capabilities provided by Telesat Lightspeed and how these software-defined digital services can be procured and integrated into their networks. By designing Telesat Lightspeed to MEF standards, customers can take advantage of ubiquitous, high capacity and low latency connectivity, without the complexities inherent in integrating traditional satellite-based solutions. Telesat will participate in MEF work committees and incorporate the latest standards into the Telesat Lightspeed implementation.

Telenor and Axiata in Advanced Discussions to Merge Malaysian Operations

April 8, 2021 - Telenor Group and Axiata Group Berhad are in advanced discussions regarding a potential merger of its Malaysian mobile operations Digi and Celcom, in which the parties will have an equal ownership of 33.1 percent each. The new company will be a leading provider of telecommunication services in the country, with competence and scale to meet increasing expectations and demand from a digitally connected society. The parties aim to create a leading telecommunication service provider in Malaysia with the capabilities to drive research and innovation and facilitate a platform for accelerated digital growth in the local ecosystem. A progressive digital economy is important to Malaysia's future economic resilience and competitiveness, and the merged company will be well positioned for delivering industry innovation, high-quality connectivity and a diversified value proposition to the customers. As part of the transaction, Axiata will receive newly issued shares in Digi which represents 33.1% of the merged company. The transaction will realize synergies and provide value for shareholders in line with our strategy of developing value from core telco assets. Celcom Digi will continue to be listed on Bursa Malaysia and will be amongst the top stocks in terms of market capitalisation and contribute to the attractiveness of the local capital market. Telenor Group and Axiata will work towards finalizing agreements in relation to the proposed transaction within the second quarter of 2021 following due diligence.

Orbcomm Enters into Agreement to be Acquired by GI Partners

April 8, 2021 - Orbcomm, a global provider of Internet of Things (IoT) solutions, today announced that it has entered into a definitive agreement to be acquired by GI Partners, a leading US-based investor in data infrastructure businesses, in an all-cash transaction that values Orbcomm at approximately \$1.1 billion, including net debt. Under the terms of the agreement, Orbcomm stockholders will receive \$11.50 in cash per outstanding share of common stock upon closing of the transaction, representing a premium of approximately 52% to Orbcomm's closing share price on April 7th and a 50% premium over the 90-day volume-weighted average share price through that date. The investment by GI Partners will support Orbcomm's strong momentum in the industrial IoT as it increases its investment in sales, marketing and technology innovation to accelerate growth, execute on its long-term strategic plan and global market expansion, and provide added flexibility as a privately-held company.

Intelsat Announces Compact FlexMaritime 45cm Antenna Class

April 7, 2021 - Intelsat released a smaller antenna class for its FlexMaritime service today that will bring a new level of broadband connectivity performance and affordability to leisure, fishing and light-commercial maritime vessels around the world. The 45 centimeter antennas are small enough to hand carry aboard

vessels and easy to install. They are also easy to connect to the Intelsat FlexMaritime network, which provides fast data speeds of up to 6 x 2 megabits per second (Mbps), enabling everything from accessing real-time online weather forecasts to livestreaming the “catch-of-the-day” on social media. The new Intelsat maritime mobility solution enabled by the 45cm antenna is ideal for fishing, leisure, tugs and other workboats, as well as smaller or coastal merchant ships looking for fast, affordable and reliable broadband connectivity. 45cm terminals from KNS and Intellian are qualified on the Intelsat FlexMaritime network. They come with a choice of separate or integrated Antenna Control Unit (ACU) and a modem powered by ST Engineering iDirect. Connectivity is provided by the high-performance Intelsat FlexMaritime network, which delivers unparalleled, multi-layered global coverage through more than 140 satellite beams. Intelsat FlexMaritime services are available in user-friendly month-to-month or annual service agreements. Wholesale, end-terminal package models come with a choice of monthly, gigabyte volume-based plans and no long-term usage commitments. In addition, Intelsat’s Service Management Portal gives solutions partners full visibility and control over their end-user packages. The addition of the 45cm terminal represents the third terminal class for Intelsat FlexMaritime services, adding to Intelsat’s existing 60cm and one-meter antenna service offerings.

OneWeb and AST Group Partner to Broaden Access to Fast, Seamless Connectivity at Sea

April 7, 2021 - As part of its mission to deliver low latency, ‘fibre-like’ connectivity to the maritime and offshore industries, Low Earth Orbit (LEO) broadband satellite communications company OneWeb, has signed a Memorandum of Understanding (MoU) with The AST Group (AST), a global leader in satellite communications systems. By working together, AST and OneWeb will offer fixed-land and maritime customers access to OneWeb’s fast, flexible and affordable connectivity solutions seamlessly in even the most remote locations on land and at sea. Customer beta trials will be undertaken with AST before the end of the year and will be focused on delivering fixed services to support remote connectivity in Northern Europe. Once full commercial service is available in 2022, OneWeb seeks to provide AST’s customers, primarily in the commercial shipping, fishing and high-end offshore sectors, with access to viable, high speed, low latency connectivity as an alternative to the current VSAT internet solutions to truly enable digitalisation and deliver the long awaited leap in operational efficiencies. This comes at a time when regulatory and commercial influences are driving demand for companies in maritime and offshore industries to decarbonise, improve broader sustainability and governance standards as well as improving business performance – all of which are underpinned by the need for more technology and data.

Eutelsat Supports The Rural Connectivity Group to Deliver Telecommunications to New Zealand

April 7, 2021 - Eutelsat Communications and The Rural Connectivity Group (RCG), a joint venture between New Zealand’s three mobile network operators, have signed a contract to bring an upgraded telecommunications network to New Zealand’s Chatham Islands. Under the terms of this multi-year agreement, RCG will leverage the EUTELSAT 172B satellite to support the Rural Connectivity Group in delivering an upgraded telecommunications network bringing crucial connectivity to the islands, under the New Zealand government’s Rural Broadband Initiative Phase 2. Eutelsat’s high-performance satellite EUTELSAT 172B, located at a premium orbital position covering the South Pacific Ocean, allows 100% coverage of this region. It will provide the backhaul telecommunications link from New Zealand to five cellular sites positioned around Chatham Island. Bringing 4G mobile coverage for the first time along the majority of the islands’ roads as well as across their marine territories, this initiative will also maximise broadband coverage to residents on the Chatham Islands, providing support to its key activities of tourism, fishing and farming.

Parallel Wireless Partners with Etisalat to Deliver Central Asia’s 1st O-RAN Solution in Afghanistan

April 7, 2021 - Parallel Wireless, Inc., the leading U.S.-based Open RAN company, today announced its partnership with Etisalat, one of the world’s leading telco operators in Afghanistan (recognized by Ookla® Speedtest® as the world’s fastest mobile network in 2020) to deliver the world’s first cloud-native O-RAN compliant 5G 4G 3G 2G Open RAN solutions, in collaboration with Intel and Supermicro, becoming the first in Central Asia to implement Open RAN. Afghanistan has seen a strong increase in mobile broadband with penetration reaching 22% in 2019 up from 1% in 2013. While mobile broadband is still in its early stages of development, growth is expected in 2022. Mobile network operators in Central Asia are facing strong pressure to evolve their businesses and operations to drive profitability. Addressing these challenges requires industry innovation focused on reducing CAPEX and OPEX and opening the networks to avoid any vendor lock-in. Traditional hardware-defined 2G, 3G or 4G networks require expensive and bulky equipment to deploy, operate or upgrade.

HughesNet in Puerto Rico Expands to Serve Increased Demand for Broadband

April 6, 2021 - Hughes Network Systems, LLC has secured additional capacity over Puerto Rico for HughesNet®, the leading satellite Internet service. Made possible by engineering the Hughes 63 West satellite payload, the capacity increase will enhance the customer experience for current HughesNet customers across Puerto Rico and enable Hughes to serve even more customers on the island with affordable, reliable Internet access. Recently named the Best Satellite Internet Provider of 2021 by U.S. News & World Report 360 Reviews, HughesNet connects more than 1,500,000 families and businesses across the Americas at broadband speeds in areas that cable and wire-line providers have largely bypassed. Available in rural and remote locations – even in the most difficult to reach places – HughesNet provides Puerto Ricans with fast and reliable Internet access so they can browse the web, access government and health information, watch videos, send and receive email, enjoy social media, conduct online banking and more. Hughes continuously innovates to better serve its customers and connect more people to the Internet, as evidenced by these latest capacity enhancements in Puerto Rico.

Orbit GX46 Airborne SATCOM Terminal Receives Inmarsat Global Xpress Ka-band Type Approval

April 6, 2021 - Inmarsat and Orbit Communication Systems today announced that the Orbit GX46 multi-purpose terminal (MPT) has received full type approval for use over Inmarsat's Global Xpress (GX) network. GX is the world's first and only, globally available, seamless mobile wideband service. In U.S. government service since July 2014, GX has established itself as the gold standard for reliable communications across land, sea, and air domains for assured mobile connectivity. GX46 is a modular, multi-role terminal that operates in the GX commercial and military Ka-bands through a 46cm (18") antenna. The terminal is fully integrated with modems, electronics and software to ensure reliable operations worldwide. The terminal enables a wide range of communications capabilities for business aircraft, military aircraft and unmanned aerial vehicles (UAVs). It complies with industry regulations and standards including Federal Communications Commission (FCC), European Telecommunications Standards Institute (ETSI), Inmarsat GX, and RTCA DO-160G for the entire spectrum of aircraft.

Inmarsat Launches Programme to Drive Global IoT Adoption through Satellite Connectivity

April 1, 2021 - Inmarsat has today launched its Application and Solution Provider (ASP) Programme, an ecosystem for providers of software, hardware and solutions, as well as original equipment manufacturers (OEMs) in commercial land markets. ASPs will gain access to Inmarsat's global satellite connectivity and regional presence to scale their solutions into new sectors and geographies. The development of the ecosystem will ensure that companies operating in areas without reliable connectivity, or with mission-critical connectivity needs, are able to access a broad choice of Internet of Things (IoT) solutions to enhance the efficiency, safety and sustainability of their businesses. The ASP Programme launches with two innovative partners on board and with plans to bring more partners in over the coming months. Australian-based agri-tech IoT innovators Farmbot Monitoring Solutions are on a high-growth trajectory within Australia and have been working with Inmarsat for more than a year. MinFarm Tech are a Swedish-owned engineering product company, focused on supporting hardware engineering for extreme environments. The programme is open to new entrants, disruptors and established brands of any size who have developed an innovative digital product or service but may need additional support to exploit the benefits of satellite-enabled IoT solutions. Inmarsat will provide dedicated technical guidance on how to integrate and support its highly-reliable satellite services, go-to-market strategy planning and exposure to the Inmarsat distribution channel to enable access to new markets.

Gogo Announces Convertible Debt Exchange and Begins Refinancing Process

April 1, 2021 - Gogo Inc. announced a convertible debt exchange and the beginning of a refinancing process, marking significant progress in its efforts to complete a comprehensive refinancing. Under the exchange agreement (the "Agreement"), GTCR, a leading private equity firm, will convert all of its \$105.7 million principal amount of Gogo's 6.0% Convertible Senior Notes due 2022 (the "Notes") into shares of Gogo's common stock. In addition, on March 30, 2021, Gogo appointed Mark Anderson, Managing Director at GTCR, to the Company's Board of Directors. Pursuant to the Agreement, GTCR will receive 19.1 million shares of Gogo common stock, based on a conversion premium of 4% plus remaining unpaid interest payments on the Notes through maturity, bringing its total ownership to 28.6% of Gogo's shares outstanding. GTCR will also receive customary registration rights. Upon completion of the equitization, which is expected to occur by mid-April, Gogo will have 111.1 million shares of common stock outstanding and total debt of approximately \$1.078 billion, a reduction of \$135 million from total debt at December 31, 2020 as a result of the Agreement with GTCR and prior convertible note exchanges that Gogo executed in 2021. Gogo had approximately \$455 million of cash-on-hand as of March 31, 2021. Gogo also announced

today it has begun a process to refinance and replace its \$975 million outstanding 2024 Senior Secured Notes and \$30 million undrawn asset-based facility.

BROADCAST

bmt Extends HD Capacity Agreement with SES on ASTRA 19.2 Degrees East

April 27, 2021 - Bayerische Medien Technik (bmt) has extended its partnership with SES in a multi-year agreement to continue using SES's satellites at its prime TV neighbourhood at ASTRA 19.2 degrees East to broadcast Bavarian local TV channels in HD. bmt is a subsidiary of the Bayerische Landeszentrale für neue Medien (BLM), the regulatory authority for new media in Bavaria, and of the Bayerischer Rundfunk (BR), the Bavarian broadcasting association. bmt will continue to receive funding from the Free State of Bavaria, enabling the broadcasting of 14 free-to-air channels, including local TV stations from Munich and Nuremberg, to audiences across Bavaria.

ATEME Solidifies Presence in MENA Region with Nilesat Tender Wins

April 15, 2021 - ATEME, the leader in video delivery solutions for broadcast, cable TV, DTH, IPTV and OTT, today announced that Nilesat, one of the leading satellite service providers delivering digital television, radio, and data services across the Middle East and Africa, has chosen to implement its TITAN Live platform for two projects, increasing ATEME's presence in the MENA region. In the first of two tender wins, ATEME TITAN Live will enable contribution over IP via a new fiber link between Nilesat and Egyptian Media Production City (EMPC), an information and media complex with studios and outdoor shooting areas for production companies. This architecture enables EMPC to transfer content much faster than with the previous traditional SDI networks. ATEME's TITAN Live video headend has also been selected to enable Nilesat to expand its current video processing infrastructure for the Egyptian (ENMA) channels. This allows ENMA to increase its footprint internationally. A pure software-based encoding solution, TITAN Live delivers the highest video quality at minimum bitrates with accelerated parallel processing. The implemented solution will empower Nilesat to take full control of its new platform, providing the opportunity to offer new satellite services. In addition to what has been described Nilesat benefits from a unique, flexible and transparent business and licensing model, in which licenses are inclusive of all codecs and types of output. This means NileSat gains all software capabilities, without additional costs.

Rohde & Schwarz Introduces Scalable Distributed Multiviewer Functionality for R&S®PRISMON

April 14, 2021 - Rohde & Schwarz, a global leader in broadcast media technologies has announced the introduction of strategic new IP-related multiviewer functionalities within its R&S®PRISMON broadcast channel monitoring and multiviewer system. Claimed by the company to be a world's first in IP workflow multiviewing, the new Scalable Distributed Multiviewer feature offers unprecedented configuration flexibility for users through its 'any to any' function. This unique feature, which can be added to existing PRISMON installations, enables any input to any output connectivity through IP proxy networks for up to 36 remote devices. This scalability option enables users to display a mosaic view on a particular PRISMON system with input services decoded on any other PRISMON system within the same proxy IP network. So, for example, users can render a view with multiple UHD inputs – beyond the decoding capacity of a single system. In addition, it helps overcome the fact that only a limited number of physical ASI and SDI interfaces are available on a single system. With its Scalable Distributed Multiviewer functionality, Rohde & Schwarz is targeting a large market of studio galleries and master control rooms that are looking to migrate to IP-based workflows. At the same time, the multiviewer functionality can be used to adapt the specific production resources needed to support new ultra high definition production formats.

Three More Georgian TV Channels Start Broadcast over Azerspace-1

April 1, 2021 - Azercosmos has signed a partnership agreement with Georgian Media Holding company. As stated in the agreement, the Georgian television channels: Rustavi-2, Comedy TV, and Marao TV which functions under the Media Holding, have commenced broadcasting over Azerspace-1 commercially. Having a broad audience, these channels transmit public, economic, analytical, and cultural programs in the Georgian language. Thanks to the cooperation with Media Holding, 99% of Georgian viewers will be able to watch television channels broadcasted via the Azerspace-1 satellite. The frequency of Rustavi-2, Comedy, and Marao TV channels that airing through the European beam of Azerspace-1 is 11095/H/30000.

18th Vega Mission Marks Arianespace's Second Successful Launch in 72 Hours

April 29, 2021 - On Wednesday, April 28, 2021 at 10:50 pm local time (01:50 UTC on Thursday, April 29), a Vega launch vehicle operated by Arianespace lifted off successfully from the Guiana Space Center, Europe's Spaceport in French Guiana (South America). This mission marked Vega's return to flight, and was also the second successful launch by Arianespace's teams in less than 72 hours. The mission's primary purpose was orbiting Pleiades Neo 3, the first of four satellites in an advanced Earth observation constellation. Pleiades Neo 3 was wholly funded and manufactured by its operator, Airbus. Arianespace's 18th Vega mission also deployed several small satellites using its innovative rideshare service SSMS (Small Spacecraft Mission Service). These auxiliary payloads included an observation microsatellite for the Norwegian space agency, Norsat-3, and four cubesats, for the operators Eutelsat, NanoAvionics/Aurora Insight and Spire. The SSMS rideshare service, developed with the support of the European space industry, was first deployed by Arianespace in September 2020. Funded by the European Space Agency (ESA), Arianespace's SSMS service will soon be joined by the Multiple Launch Service (MLS), a similar offering that uses the Ariane 6 launch vehicle. With these two services, Arianespace can offer a wide range of affordable launch opportunities for small satellites and constellations.

ESA to Build Second Deep Space Dish in Australia

April 29, 2021 - On 29 April, ESA and the Australian Space Agency announced the construction of a second 35-metre, deep space antenna at ESA's New Norcia station, located 140 kilometres north of Perth in Western Australia. The 620-tonne antenna will be a new model complementing the existing deep space antenna on the site, with novel functionality and support for additional communication frequencies. It will feature the latest in deep space communication technology, including a super-cool 'antenna feed' that will be cryogenically cooled to around -263 C and increase data return by up to 40%. The antenna will be so sensitive it can detect signals far weaker than the signal from a mobile phone - if there were one - on the surface of Mars. ESA has budgeted €45 million for the new antenna, covering antenna procurement and construction as well as upgrades to station buildings and services. While the prime contractor will come from an ESA Member State, a significant portion of the budget will be spent in Australia with the involvement of a number of Australian companies. ESA's ground station and antennas at New Norcia, Western Australia are locally operated by CSIRO, Australia's national science agency. CSIRO similarly operates NASA's deep space communication complex located at Tidbinbilla near Canberra.

EU Space Regulation Ready to Take Off

April 28, 2021 - The Commission welcomes the adoption of Space Regulation by the co-legislators, confirming the political agreement on the Space Regulation reached in December 2020. The Space Programme, with the largest budget ever for Space, €14.88 billion, encompasses all EU space activities in one single Space Programme Regulation. The Space Programme will ensure the continuity and evolution of the three existing flagship programmes Galileo, Copernicus and EGNOS. It will also support new initiatives on space surveillance (SSA), including Space Surveillance and Tracking (SST), Space Weather and Near Earth Object (NEO), and satellite communications (GOVSATCOM). The Space Programme will contribute to the green and digital transformations of Union's economy, as well as to its resilience. The EU Space Programme Regulation will enable the modernisation of EU flagship programmes – Galileo, EGNOS and Copernicus –, ensure EU autonomous access to space and accelerate the development of New Space in Europe. It will provide the backbone for supporting the space industry and will foster Europe's space technological leadership and resilience, in order to be able to compete in the global race. Moreover, it will finance programmes that will make a stronger and more prosperous Europe in the years and decades to come for the EU citizens and businesses. With this new Regulation, the EU will promote the downstream applications/technologies, users and market uptake and the exploitation of the huge potential of space data and services to develop value-adding applications and services.

DEWC Systems, Gilmour Space Collaborate to Launch the Next-gen MOESS System

April 28, 2021 - Electronic Warfare company DEWC Systems and Australian launch services company Gilmour Space Technologies have signed a memorandum of understanding to launch the next generation MOESS system as a sovereign space-based Electronic Warfare system. In a bid to increase Australia's Intelligence, Surveillance, Reconnaissance and Electronic Warfare (ISREW) capability, DEWC Systems and Gilmour Space have signed a five-year sovereign collaboration to advance the sensor capability, deployment, and uptake of ISREW satellites in Low Earth Orbit (LEO). The companies also envisage co-development projects based on the current 3U platform including assets in the 80kg to 100kg class that

will lead to a small satellite prototype. A joint research activity will be conducted to understand the requirements of manufacturing a prototype satellite utilising commercially available components. DEWC Systems role in the partnership is to further develop its Miniaturised Orbital Electronic Warfare Sensor Systems (MOESS) – a dynamically reprogrammable, multi-purpose Electromagnetic sensor system integrated and deployed on micro satellites to provide a unique and enhanced space-based EW capability for Australia.

Virgin Orbit Selected to Bring Launch Capability to Brazil

April 28, 2021 - The Brazilian Space Agency and Brazilian Air Force announced that Virgin Orbit has been selected to bring orbital launch capability to Brazil, a country which has never successfully completed a domestic launch to orbit. Thanks to the unique mobility and small footprint of Virgin Orbit's air-launched system architecture, launches to a wide range of orbital inclinations could quickly become possible without the need for new permanent infrastructure, nor the expansion of existing facilities. Launches would occur from the Alcântara Launch Center (Centro de Lançamento de Alcântara, CLA) on Brazil's northern coast, located just two degrees south of the equator. Virgin Orbit's LauncherOne system, which uses a customized 747 aircraft as its flying launch pad and fully reusable first stage, could conduct launches from the existing airbase at the site, flying hundreds of miles before releasing the rocket directly above the equator or at other locations optimized for each individual mission. The approach enables Alcântara to become one of the only continental spaceports in the world capable of reaching any orbital inclination.

United Launch Alliance Successfully Launches NROL-82 Mission to Support National Security

April 26, 2021 - A United Launch Alliance (ULA) Delta IV Heavy launch vehicle carrying the NROL-82 mission for the National Reconnaissance Office (NRO) lifted off from Space Launch Complex-6 on April 26 at 1:47 p.m. PDT. To date ULA has launched 143 times with 100 percent mission success. The Delta IV Heavy is recognized for delivering high-priority missions for the U.S. Space Force, NRO and NASA. The vehicle also launched NASA's Orion capsule on its first orbital test flight and sent the Parker Solar Probe on its journey to unlock the mysteries of the sun. This was the 42nd launch of the Delta IV rocket, the 13th in the Heavy configuration and ULA's 31st launch with the NRO. This Delta IV Heavy was comprised of three common core boosters each powered by an Aerojet Rocketdyne (AR) RS-68A liquid hydrogen/liquid oxygen engine, producing a combined total of more than 2.1 million pounds of thrust. The second stage was powered by an AR RL10B-2 liquid hydrogen/liquid oxygen engine. ULA's next launch is the Space Based Infrared System (SBIRS) GEO Flight 5 mission for the U.S. Space Force, scheduled for May 17, 2021, from Cape Canaveral Space Force Station, Florida.

Arianespace Successfully Deploys OneWeb Constellation Satellites

April 26, 2021 - Performed on Monday, April 26 at precisely 07:14 a.m. local time at Russia's Vostochny Cosmodrome (22:14 a.m. on April 25, UTC), Soyuz Flight ST31 orbited 36 new OneWeb satellites – bringing the size of the fleet in orbit to 182. Flight ST31 was the 56th Soyuz mission carried out by Arianespace and its Starsem affiliate. Arianespace has launched 182 OneWeb satellites through six Soyuz launches to date. Pursuant to an amended launch contract with OneWeb, Arianespace will perform 13 more Soyuz launches through 2021 and 2022. These launches will enable OneWeb to complete the deployment of its full global constellation of low Earth orbit satellites by the end of 2022. OneWeb's mission is to bring internet everywhere to everyone, by creating a global connectivity platform through a next-generation satellite constellation in low Earth orbit. The OneWeb constellation will deliver high-speed, low-latency connectivity to a wide range of customer sectors, including aviation, maritime, backhaul services, and for governments, emergency response services and more. Central to its purpose, OneWeb seeks to bring connectivity to every place where fiber cannot reach, and thereby bridge the digital divide. The satellite prime contractor is OneWeb Satellites, a joint venture of OneWeb and Airbus Defence and Space. The satellites were produced in Florida, USA in its leading-edge satellite manufacturing facilities that can build up to two satellites per day on a series production line dedicated to spacecraft assembly, integration, and testing.

NASA's SpaceX Crew-2 Astronauts Headed to International Space Station

April 23, 2021 - NASA's SpaceX Crew-2 astronauts are in orbit following their early morning launch bound for the International Space Station for the second commercial crew rotation mission aboard the microgravity laboratory. The international crew of astronauts lifted off at 5:49 a.m. EDT Friday from Launch Complex 39A at NASA's Kennedy Space Center in Florida. The SpaceX Falcon 9 rocket propelled the Crew Dragon spacecraft with NASA astronauts Shane Kimbrough and Megan McArthur, along with JAXA

(Japan Aerospace Exploration Agency) astronaut Akihiko Hoshide and ESA (European Space Agency) astronaut Thomas Pesquet, into orbit to begin a six-month science mission on the space station. During Crew Dragon's flight, SpaceX will command the spacecraft from its mission control center in Hawthorne, California, and NASA teams will monitor space station operations throughout the flight from Mission Control Center at the agency's Johnson Space Center in Houston.

Rocket Lab to Develop Mission Operations Control Center for MethaneSAT Satellite

April 22, 2021 - Rocket Lab will play a critical role in an international climate change mission by developing a Mission Operations Control Center (MOCC) for MethaneSAT, a unique satellite mission created to foster and accelerate reductions in the emissions of methane, a potent greenhouse gas responsible for at least a quarter of today's planetary warming. Led by the non-profit Environmental Defense Fund, the 350 kg class MethaneSAT will locate and measure methane from the oil, gas, and agriculture industries around the globe, enabling regulators, businesses, and researchers to track and reduce emissions faster. With a highly sensitive spectrometer capable of detecting methane concentrations as low as two parts per billion, MethaneSAT will quantify and report emissions in near real-time from sources large and small, providing regular monitoring of regions accounting for more than 80% of global oil and gas production. MethaneSAT will publish data free of charge so that stakeholders and the public can compare progress by both companies and countries.

OneSat Final Design Review Successfully Achieved

April 21, 2021 - Airbus has passed an important milestone for the OneSat flexible satellite product line, with the Final Design Review successfully achieved with customers and space agencies. The fully reconfigurable OneSat product line features major innovations and disruptive technologies including the latest digital processing and active antennas enabling several thousand beams. In addition, to meet the demanding schedule for OneSat development, Airbus is applying agile new ways of working with its industrial partners, customers and space agencies. Airbus is currently manufacturing seven OneSats for its customers as well as eight state-of-the-art Eurostar Neo telecommunications satellites. Development of both programmes is supported by ESA, as well as the French Space Agency (CNES), and the UK Space Agency.

Virgin Orbit to Launch Hyperspectral Constellation for QinetiQ, HyperSat

April 21, 2021 - Virgin Orbit today announced it has been selected by defense and security company QinetiQ and geospatial analytics company HyperSat to launch a series of six hyperspectral satellites to Low Earth Orbit (LEO). To develop the satellites, HyperSat has awarded a design-phase contract to QinetiQ to lead a team of engineering and technology organizations which includes Redwire, Millennium Engineering and Integration, and Brandywine Photonics. Virgin Orbit will provide launch services for each satellite via its LauncherOne system. This constellation is built around a hyperspectral imaging capability, the ability to capture and process an image at wavelengths across the whole reflective spectrum from visible light to longwave infrared, pixel by pixel. This enables the identification of items in an image with superb precision. The first satellite will launch no earlier than 2023, and will be able to image 500 spectral bands from the visible to shortwave infrared regions, with a ground sample distance of 6m. Subsequent satellites will offer longwave infrared images and more capability in the shortwave infrared region. The high spatial and spectrum pixel resolution available from its sensor payload will allow the satellites to be used not only in defense and security applications, but also for other commercial sectors, such as agriculture and insurance, where highly accurate Earth observation images can inform critical decisions.

Findus Venture and Spire Global Sign 2nd Partnership Enhancing Space Debris Monitoring & Sensing

April 20, 2021 - Findus Venture GMBH, an Austrian investor in new space technology, and Spire Global, Inc., a leading provider of space-based data, analytics and space services, have today announced their collaboration to launch the ADLER-2 satellite in Q4 2022, in a bid to tackle the growing problem of space debris. This new satellite aims to further enhance orbital debris monitoring in low earth orbit, and expand novel atmospheric sensing capabilities to study clouds and aerosols in the atmosphere. ADLER-2 will be a multi-payload satellite that uses Spire's LEMUR 6U platform and will carry three customer payloads. This is the second satellite collaboration between Spire and Findus Venture, following the ADLER-1 mission, which is set to launch into space in December 2021. ADLER-2 is expected to help increase the debris detection rate thanks to use of a debris detection radar with a larger antenna and increased detection range, and also to double the number of observations logged. Spire will build, launch and operate the satellite, leveraging its radio frequency CubeSat design and manufacturing capability with its satellite

tasking, collection, processing, data dissemination, and command and control infrastructure. Spire will also provide the orbital debris radar to Findus, integrate the other sensors, and enable access to all of them via an easy-to-use application programming interface (API). This agreement between Findus Venture and Spire is based on a flexible subscription model with a monthly payment plan.

Arianespace to Serve OneWeb's Ambitions with 36 More Satellites to be Launched

April 19, 2021 - The next Arianespace mission is planned from Vostochny Cosmodrome with Soyuz on April 26, to deliver 36 satellites into orbit. By operating this fifth flight on behalf of OneWeb, Arianespace will bring the total fleet to 182 satellites in Low Earth Orbit. Arianespace is proud to share in the fulfilment of its customer's ultimate ambition: providing internet access for everyone, everywhere. Flight ST31, the third commercial mission performed by Arianespace and its Starsem affiliate from the Vostochny Cosmodrome, will put 36 of OneWeb's satellites into a near-polar orbit at an altitude of 450 kilometers. The mission will have a total duration of three hours and 51 minutes and will include nine separations of four satellites, that will raise themselves to their operational orbit. This sixth launch to the benefit of OneWeb will bring up to speed Arianespace's operations this year, and will raise from 146 to 182 the number of satellites deployed for the global telecommunications operator.

Amazon Secures United Launch Alliance's Atlas V Rocket for Nine Project Kuiper Launches

April 19, 2021 - United Launch Alliance (ULA) announced today that Amazon has secured Atlas V for nine launches supporting deployment of its ambitious Project Kuiper initiative. Project Kuiper is an initiative that will increase global broadband access through a constellation of 3,236 advanced satellites in low earth orbit. The Atlas V missions will launch from Space Launch Complex 41 at Cape Canaveral Space Force Station in Florida. Amazon has committed more than \$10 billion to deliver on its mission for Project Kuiper, which aims to make high-speed, low-latency broadband more affordable and accessible for unserved and underserved communities around the world. The project will serve individual households, as well as schools, hospitals, businesses, government agencies, and other organizations operating in places without reliable broadband. With more than a century of combined heritage, ULA is the nation's most experienced and reliable launch service provider. ULA has successfully delivered more than 140 missions to orbit that aid meteorologists in tracking severe weather, unlock the mysteries of our solar system, provide critical capabilities for troops in the field, deliver cutting-edge commercial services and enable GPS navigation.

BlackSky Increases Capacity as Latest Satellite Enters Commercial Operations

April 19, 2021 - BlackSky has announced that its BlackSky 7 satellite completed the commissioning process and entered full commercial operations within two weeks of launch. This latest satellite was launched at 22:30 UTC on March 22, 2021, delivered first insights and began limited commercial operations less than 24 hours later. Further, the company today revealed two additional BlackSky satellites have been shipped to a launch facility in New Zealand for its next planned launch mission with Rocket Lab named "Running out of Toes" scheduled for May 2021. BlackSky's enhanced commissioning capabilities showcase advanced levels of automation and asynchronous system evaluations that allow rapid integration of new satellites into its constellation. These features streamline the company's ability to rapidly grow the space sensor network and extend capacity to deliver real-time intelligence with average one-hour, dawn-to-dusk imaging revisit rates and average 90-minute delivery times.

SpaceLink and Gilmour Space Execute Memorandum of Understanding

April 16, 2021 - SpaceLink, a company that is building an information superhighway for the space economy, and Gilmour Space, a venture-backed Australian launch services provider and spacecraft manufacturer, have executed a memorandum of understanding (MOU) to explore opportunities to incorporate the SpaceLink relay network for communications on Gilmour's next generation small satellite platform and integrate Gilmour-built satellites into the SpaceLink network. The SpaceLink relay service provides secure, continuous, high-capacity communications between low Earth orbit (LEO) spacecraft and the ground. Based on today's technology advances it provides unprecedented capacity for tasking, data download, and a variety of other communications requirements, and helps close the business case for operators of small satellites, Earth observation companies, commercial space stations, and satellite servicers and tugs. Gilmour Space is developing new launch vehicles powered by lower-cost and safer hybrid propulsion technologies and is introducing a specialized 'G-class' satellite bus for next-generation space systems. Its Eris orbital rocket is making it easier for smallsat operators to find affordable and reliable launches into LEO beginning in 2022. The MOU provides for the companies to ensure the compatibility of SpaceLink communications terminals with the Gilmour space platform and to share

technical and business information to support Gilmour's implementation of SpaceLink's communications services and extend the communications capabilities to Gilmour's customers. The goal of the agreement is to negotiate a definitive contract, and explore further contracts for launch services later this year.

Thales Alenia Space Selected as a Key Contract in the Development of Galileo Second Generation

April 15, 2021 - Thales Alenia Space, as prime contractor for Galileo First Generation's Ground Mission Segment, has been selected by the European Space Agency (ESA), on behalf of the European Commission in the Horizon 2020 Satellite Navigation Program (HSNAV), to develop the Advanced Orbit Determination and Time Synchronisation (ODTS) Algorithms Test Platform (A-OATP). This new contract will support the implementation and experimentation of the navigation algorithms that will be used for Galileo Second Generation. This contract follows Thales Alenia Space's selections few months ago for Galileo Second Generation constellation for which the company will provide 6 satellites and initiate the B2 phase regarding the development and implementation of its ground segment. Using its long-standing legacy regarding navigation algorithms in addition to an innovative approach, Thales Alenia Space will develop and test a new Advanced ODTS solution. These new orbitography algorithms will allow a significant improvement in positioning performance and real-time operability of the Galileo system, by exploiting the accuracy of GNSS orbit and clock estimation, with a solution optimized for the realtime generation of Galileo navigation messages, and taking fully advantage of the evolutions of satellites and ground stations considered in the 2nd Generation of Galileo. With this new contract, Thales Alenia Space applies on a deep experience concerning orbitography algorithms as well as a good knowledge of the Galileo system, to strengthen its position as a major actor for the development of the new generation of this satellite system.

Blue Origin Conducts Astronaut Rehearsal for Future Customer Flights

April 15, 2021 - Blue Origin successfully completed its 15th consecutive mission to space and back today and conducted a series of simulations to rehearse astronaut movements and operations for future flights with customers on board. This mission marked a verification step prior to flying astronauts. For the first time, Blue Origin personnel standing in as astronauts entered the capsule prior to launch. These astronauts conducted a series of tests from within the capsule, including a comms check with the Capsule Communicator (CAPCOM), procedures for entering and exiting the capsule, and pre-launch preparations within the capsule. Following the crew capsule landing, the astronauts rehearsed post-flight procedures, hatch opening, and exiting the capsule. Also onboard today was Mannequin Skywalker and more than 25,000 postcards from Club for the Future, the nonprofit founded by Blue Origin.

NASA Adds Vulcan Centaur Launch Services to Launch Services Contract

April 15, 2021 - NASA has awarded a contract modification to United Launch Services to add Vulcan Centaur launch services to the company's NASA Launch Services II (NLS II) contract, in accordance with the contract's on-ramp provision. The Vulcan Centaur launch service will be available to NASA's Launch Services Program to use for future missions in accordance with the on-ramp provision of NLS II. The NLS II contracts are multiple award, indefinite delivery/indefinite quantity contracts with an ordering period through June 2025 and an overall period of performance through December 2027. The NLS II on-ramp provision provides an opportunity annually for new launch service providers to compete for future missions and allows existing launch service providers to introduce launch vehicles not currently on their NLS II contracts. NLS II contractors must have the ability to successfully launch and deliver a payload to orbit using a domestic launch service capable of placing, at minimum, a 250-kilogram payload into a 200-kilometer circular orbit at an inclination of 28.5 degrees. The NLS II contracts support the goals and objectives of the agency's Science Mission Directorate, Human Exploration and Operations Mission Directorate, and the Space Technology Mission Directorate. Under the contract, NASA can also provide launch services to other government agencies, such as the National Oceanic and Atmospheric Administration.

Arianespace Offers a Ticket into Space to a Startup or Lab

April 13, 2021 - Arianespace, the European launch services company, is organizing a contest in conjunction with the VivaTech international innovation show. First prize will be a spot on a rideshare mission operated by Arianespace, to orbit the winning cubesat-sized satellite. Participating teams will try to convince the members of the Arianespace jury by presenting the potential applications of their entry. Projects will be judged on their ability to improve life on Earth or advance human knowledge. Other selection criteria include the satellite design, which has to be compatible with a rideshare mission (deployment platform, one standard unit, UA, in size and weight, etc.), and eco-responsibility. Participants (startups, labs, universities) have until May 14 to submit their projects. Arianespace will choose five

finalists, with the winner to be announced at the award ceremony on June 16, 2021 during the opening day of VivaTech.

Astrobotic Selects SpaceX Falcon Heavy Rocket for Griffin-VIPER Moon Mission

April 13, 2021 - Astrobotic announced today its selection of SpaceX's Falcon Heavy rocket in a competitive commercial procurement to launch its Griffin lunar lander to the Moon in late 2023. Griffin will be carrying NASA's water-hunting Volatiles Investigating Polar Exploration Rover (VIPER). Astrobotic was awarded a task order in 2020 from NASA to deliver VIPER to the south pole of the Moon as part of the agency's Commercial Lunar Payload Services (CLPS) initiative. After Falcon Heavy launches Griffin on a trajectory to the Moon, Griffin will land on the surface and VIPER will disembark from Griffin's ramps to survey the surface and subsurface for water ice. These surveys could be the first step toward utilizing resources in the space environment – rather than carting them all from Earth – to enable more affordable and sustainable space exploration. Griffin's delivery of VIPER will be Astrobotic's second CLPS delivery, following the company's Peregrine lander delivery later this year. Griffin Mission One is targeted to launch in 2023 from SpaceX's facilities at Launch Complex 39A at Kennedy Space Center in Florida – the same launch site employed for the NASA Space Shuttle program, Commercial Crew Program, and Apollo missions. Work on the Griffin lunar lander is ongoing with qualification testing planned to be completed towards the end of this year.

ArianeGroup to Supply New-generation SPRINT Antenna Reflectors for Airbus

April 13, 2021 - Airbus has selected ArianeGroup as the supplier of the satellite antenna reflectors for OneSat, its new satellite product which is fully reconfigurable in orbit to enable operators to adapt the satellite's initial mission to best meet changing market needs. OneSat will be fitted with the latest generation of ultra-light SPRINT antenna reflectors, developed by ArianeGroup in just two years, to provide an innovative, competitive response to changes in the telecommunications satellite market. The new flexible satellites demand faster industrial production rates: ArianeGroup can assemble a SPRINT reflector in only 11 weeks, compared with 24 weeks for its current ULR (Ultra-Light Reflector) technology. SPRINT offers diameters from 1.5 to 3.0 meters and is composed of a thin thermosetting resin shell and a rear structure. The innovation lies in its architecture, made up of fully standardized components. The production line is located at ArianeGroup's Les Mureaux site, near Paris. ArianeGroup boasts a strong heritage in the field of satellite antenna reflectors, with over 150 in orbit to date. Its ambition is to promote its satellite antenna reflector products on North American and Asian markets in addition to Europe.

Northrop Grumman and Intelsat Make History with Docking of Second Mission Extension Vehicle to Extend Life of Satellite

April 12, 2021 - Northrop Grumman and the company's wholly-owned subsidiary, SpaceLogistics, have successfully completed the docking of the Mission Extension Vehicle-2 (MEV-2) to the Intelsat 10-02 (IS-10-02) commercial communications satellite to deliver life-extension services. Northrop Grumman is the only provider of flight-proven life extension services for satellites, and this is the second time the company has docked two commercial spacecraft in orbit. The company's MEV-1 made history when it successfully docked to the Intelsat 901 (IS-901) satellite in February 2020. Unlike MEV-1, which docked above the GEO orbit before moving IS-901 back into service, MEV-2 docked with IS-10-02 directly in its operational GEO orbital location. Under the terms of Intelsat's satellite life-extension servicing contract, MEV-2 will provide five years of service to IS-10-02 before undocking and moving on to provide services for a new mission.

Telenor Satellite Announces On-orbit Life-extension Service of its THOR 10-02 Satellite

April 12, 2021 - Telenor Satellite announced the successful docking of Northrop Grumman's MEV-2 (Mission Extension Vehicle) with its THOR 10-02 satellite. This represents the start of a new era for satellite communications, paving the way for a different approach to satellite servicing and life-extension possibilities. The THOR 10-02 satellite, jointly owned with Intelsat (Intelsat IS-10-02), was first launched in 2004 and remains in excellent health, continuing to carry thousands of vital communication links to vessels navigating across busy shipping lanes and operating in remote offshore fields, as well as delivering connectivity for broadcasting and land-based services in remote locations. The prospect of preserving the operation of these links made it an obvious choice for this pioneering technology, and the companies are the first commercial satellite operators to perform on-orbit servicing of an active satellite in geosynchronous orbit. Space Logistics (a subsidiary of Northrop Grumman) was contracted by our partner at 1° West, Intelsat, to deploy its Mission Extension Vehicle MEV-2 to prolong the operational life of THOR 10-02/ IS-10-02 as its on-board propellant was due to run out towards the end of 2021. The countdown

started on August 15, 2020, when MEV-2 was launched from Kourou, French Guiana on board an Ariane 5 rocket. Eight months after the launch, the docking procedure took place on 12 April, making history for satellite operations. The MEV-2 satellite docked directly onto the communications satellite, effectively providing the space equivalent of a jetpack and so extending the operational life of THOR 10-02/IS-10-02. The MEV-2 has now taken over control of both the orbit and pointing of the satellite and will continue to do so until the satellite is eventually retired in approximately five years' time.

Media Company 'Space Hero' Signs a Space Act Agreement with NASA

April 12, 2021 - Space Hero Partnerships LLC has signed a Space Act Agreement with NASA for a feasibility study of a proposed Space Hero mission to the International Space Station. The Space Hero mission, targeted for 2023, will be provided by Axiom Space and may include a 24/7 immersive and interactive livestream. The SAA is signed at a significant date in human history, as April 12, 2021 marks the 60th anniversary of the first human in space, Yuri Gagarin. Since then, more than 500 professionals have risked their lives to create a path into space that is now reliable for humanity to explore. Over the past 12 months, Space Hero has established strong relationships with 20 space agencies, among them NASA, the Japanese space agency JAXA, the Canadian space agency CSA, and the Nigerian and the Brazilian space agencies. Space Hero would be the world's first global competition to send a civilian into space on a \$55 million, 10-day trip to the ISS. The competition for this once-in-a-lifetime journey will begin at the end of 2021. The call will be open to anyone who is over 18 and has a fluency in English. The flight is targeted for 2023. Space Hero is planning 15 seasons over the next 30 years, eventually flying beyond the ISS to the Moon and Mars. Space Hero is currently talking to potential campaign partners, such as social networks, to aid with the global roll out.

ILS and Russian Partners Express Ongoing Commitment to Space Activities

April 12, 2021 - Twenty-five years ago, on April 9, 1996, a combined Russian, American and European team made space history with the first launch of a Western satellite onboard a Russian rocket. The Proton launch vehicle carried the ASTRA 1F satellite for SES of Luxembourg, to geosynchronous transfer orbit with an early morning liftoff from Baikonur Cosmodrome in the Republic of Kazakhstan. The launch services for this milestone mission were conducted by International Launch Services (ILS), a U.S. company, headquartered in Reston, Virginia and established in 1995. The Proton launch vehicle, a U.S. Department of State licensed launch system, is manufactured by Khrunichev State Research and Production Space Center, of Moscow. Today, Proton has conducted 97 commercial missions for over 50 companies representing 25 countries across the globe, forging ongoing partnerships in international cooperation in space.

Thales Alenia Space and Microsoft's Cloud Powered Innovation Enables High-speed Artificial Intelligence and Machine Learning for Space Satellite Images

April 6, 2021 - Thales Alenia Space and Microsoft today announced that they are innovating together on cloud technologies in space by adding the DeeperVision automated image processing solution developed by Thales Alenia Space to Microsoft's Azure Orbital platform. With DeeperVision, all images downlinked by Earth observation satellites can be immediately and systematically analyzed as soon as they are produced. DeeperVision is a digital image analyst that uses artificial intelligence to process and analyze huge volumes of Earth observation imagery, automatically detect how features evolve over time and monitor areas of interest, such as changes, anomalies and similarities. Information is automatically and continuously extracted from the images as they are produced. The results are then stored as metadata in the catalogue, enriching it. This innovative solution lets users focus on the relevant content of imagery, where human expertise is vital. DeeperVision is a key digital service for quickly and systematically mass processing Earth observation imagery. Following a successful demonstration at the Microsoft Ignite event from March 2 - 4, 2021, Thales Alenia Space and Microsoft are now rolling out this revolutionary solution operationally.

Spiral Blue Partners with SatRevolution for Upcoming Virgin Orbit Launch

April 6, 2021 - Spiral Blue has announced today it will partner with Polish satellite manufacturer SatRevolution to host Spiral Blue's Space Edge Zero (SEZ) computers onboard 2 satellites - STORK-4 and STORK-5. SEZ hardware has arrived in Poland and is currently undergoing final integration with these satellites, ahead of a launch no earlier than June 2021 onboard Virgin Orbit's LauncherOne rocket. Spiral Blue's SEZ, is a prototype computer designed to allow in-space processing of satellite images. This upcoming mission will see end to end testing and space qualification of the SEZ. Each of SatRevolution's Earth observation STORK satellites, will carry an optical payload that can capture multispectral images at

5 metre resolution. This imagery will then be passed onto an onboard SEZ unit, allowing the prototype computer to take in and process earth observation imagery in real time. The Virgin Orbit mission will launch the STORK satellites and SEZ in a sun-synchronous orbit with an altitude of 400km-500km. Following in-orbit qualification, the SEZ will be tested in Q4 2021 and throughout 2022.

Lockheed Martin Expands Quick, Affordable Launch Capability with ABL Block Buy

April 5, 2021 - ABL Space Systems will provide Lockheed Martin with routine launches of RS1 rockets to accelerate payload technologies into orbit. Lockheed Martin will purchase up to 26 vehicles through 2025 and then up to 32 additional launches through 2029. Launches could use a network of U.S. and international launch sites, including Vandenberg Space Force Base, Cape Canaveral Space Force Station and in the United Kingdom. Lockheed Martin benefits from ABL's lower-cost launch vehicle by accelerating risk reduction with demonstration missions, which lay the groundwork for future large efforts. As a new entrant, ABL gets the benefit of a long term partnership and stable launch manifest for its future growth. ABL provides launch services with the RS1 launch vehicle and GS0 deployable launch system, which are both under development with funding from the U.S. Space Force. RS1 is capable of delivering up to 2,976 lbs (1,350 kg) to low Earth orbit. GS0 is a containerized system operable by a small team to rapidly launch RS1 from new sites in the U.S. and around the world. Lockheed Martin is developing payload technologies to support a variety of mission areas, such as earth observation, global ubiquitous communications, climate monitoring and beyond.

Thales Alenia Space Opens New FabLab at Charleroi Plant

April 2, 2021 - Thales Alenia Space announced today that it has set up a new FabLab (fabrication laboratory) at its plant in Charleroi, Belgium. This approach reflects the company's ongoing digital transformation to anticipate disruptive advances in the space industry. Following the company's first FabLabs in Toulouse, Cannes and Rome, this latest addition is tasked with stimulating innovation and supporting the Charleroi plant's push to spur sustainable growth in Belgium. Open to all Thales Alenia Space employees, the FabLab is an idea incubator that fosters creativity by providing access to rapid prototyping tools, both hardware and software. Above all, it's a forum that facilitates discussions and the sharing of ideas to complement the current industrial organization. Charleroi's FabLab is organized in different zones: brainstorming, mechanical and electronic fabrication, 3D printing and digital design. All of these activities, whether professional or even personal (provided the participant complies with sharing and transparency requirements), involve taking ideas through the prototyping, experimental, test, simulation and fabrication phases.

EXECUTIVE MOVES

Maxar Appoints Chris Johnson to Lead Space Programs

April 29, 2021 - Maxar Technologies today announced that Chris Johnson will join the company as Senior Vice President of Space Programs Delivery (SPD), effective May 24. Johnson most recently served as president of Boeing Satellite Systems International, Inc., where he was responsible for strategy, capture, development and manufacturing of Boeing's commercial satellite business. In that role he led a successful business transformation that reduced balance sheet risk, improved profitability, refined product strategy and modernized manufacturing approaches. Prior to that, Johnson was vice president of Boeing's commercial satellite services division and held a number defense and intelligence-related engineering management and business development roles at the company. He has a Master of Business Administration and a Master of Science in systems architecting and engineering from the University of Southern California and a Bachelor of Science in Mechanical Engineering from the University of Kansas. In his new role leading the SPD organization at Maxar, Johnson will oversee design, manufacturing, integration, test and delivery for the company's portfolio of space platforms and space-based robotics systems. He will lead a team of 1,900 employees at the company's Palo Alto, San Jose and Pasadena facilities. Johnson succeeds Paul Estey, who has led SPD on an interim basis since January 29, 2021.

Globecast Promotes Denis Genevois to Marketing and Communications VP and Valéry Bonneau to Internal and External Communications Director

April 29, 2021 - Globecast has announced that Denis Genevois has been promoted to Marketing and Communications VP with Valéry Bonneau promoted to Internal and External Communications Director. Genevois also sits on the Executive Committee and reports directly to Globecast CEO Philippe Bernard. Bonneau reports to Genevois in his new role. Previous Communications Group VP, Olivier Zankel, has left to take up another position within Orange Group. As Marketing and Communications VP, Genevois is

responsible for defining both internal and external communication strategies, setting clear strategic directives in close cooperation with key members of staff and their teams around the world. He is tasked with maximising the visibility and clarity of messaging. He will continue to define how services work as well as reporting sales performance. He has been with the company for 20 years. He will be supported by Bonneau, who has been with the company for more than ten years, most recently as Digital Marketing Manager, a role that now forms part of his new position.

SpaceLink Adds Top Space Industry Execs to Drive Forward the Information Superhighway

April 19, 2021 - SpaceLink today announced that it added three top space industry executives to its team. They bring deep expertise in finance, program management, and the U.S. government intelligence community, to drive forward the relay service that provides secure, continuous, high-capacity communications between LEO spacecraft and the ground. The company named Alan Khalili as Chief Financial Officer. Mr. Khalili brings experience from mobile satellite services provider Iridium and he helped found Aireon, a company that leveraged hosted payloads to provide a global air traffic surveillance system. Jim Schwenke joined the team as Vice President, Intelligence Community, bringing experience from BAE Systems, Leidos, Northrop Grumman and the U.S. Air Force. Erik Levine is now Vice President, Space Segment Program Management. He spent much of his previous career at satellite manufacturer Space Systems Loral and more recently he was a senior program manager for robotic-assisted surgery company, Intuitive.

Philippe Baptiste Appointed CNES President

April 14, 2021 - At its cabinet meeting on Wednesday 14 April, the French government appointed Philippe Baptiste as President of the French space agency CNES. A scientist from the digital sphere, Philippe Baptiste is a specialist in algorithms, combinatorial optimization, operational research and artificial intelligence. During the course of his academic career he has been a researcher at the French national scientific research centre CNRS (1999) and IBM's Watson Research Center (2000-2001), and a lecturer at France's prestigious Ecole Polytechnique engineering school (2002-2012). He is the author of several books and some 150 scientific publications and communications. He headed the Ecole Polytechnique's information technology laboratory and created the Institute of Information Sciences and Interactions before being appointed Associate Director General in 2014 of CNRS, a key CNES partner. He is a member of the Scientific High Council of the French national aerospace research centre ONERA and also previously sat on the board of INRIA, the French national institute for research in computer science and control.

REPORTS



The advertisement features the Euroconsult logo at the top left. The background is a collage of various data charts and graphs. A central dark blue box contains the text 'EXCLUSIVE APSCC Members Discount 10%' and 'CODE: APSCC10'. A white box on the left contains the text 'Take your business to the next level with Euroconsult's satellite market intelligence & data'. At the bottom right, there is a red link: 'digital-platform.euroconsult-ec.com'.

Since its incorporation, Euroconsult has been collecting, updating and assessing detailed market, industry, policy, program and financial information to produce a range of high-quality market intelligence products. Relying on three decades of information, millions of data points and highly refined models, Euroconsult's market intelligence has become a reference tool for public and private space and satellite markets stakeholders. **Take advantage of the exclusive APSCC members offer and bring your company to the next level with our interactive bespoke analytics platform!"** <https://digital-platform.euroconsult-ec.com/>

Impact of Global Pandemic on Maritime Connectivity Market Reflects Stark Contrast between Sectors

April 27, 2021 - In its latest report titled "Prospects for Maritime Satellite Communications", Euroconsult,

the world's leading authority on space and satellite-based applications markets, quantifies the heavy impact of the Covid-19 pandemic on satellite services for the maritime market. With in depth detail on maritime communications market dynamics today and over the next ten years, the research highlights coming opportunities for consolidation and how non-geostationary orbit (NGSO) satellite constellations will change the playing field.

NSR's Newest Report: Moon Missions to Generate \$42.3B over the Next Decade

April 21, 2021 - NSR's *Moon Markets Analysis report*, launched today, forecasts 140 Moon Missions launching over the next decade to generate \$42.3B. As budget announcements with approved appropriations roll out and the ARTEMIS program commits to the first woman, and next man, on the moon by 2024, the major growth areas include orbital and surface infrastructure building. With renewed interest in the lunar market, the approach for getting to the Moon has changed from the "quick as one can" rapid approach to a sustainable presence, via infrastructure, and long-term missions for human presence on surface. Crewed and infrastructure missions overshadow all other verticals. NSR sees 68% of the total market revenues to be generated by 2030 and dominated by Lunar surface missions. NSR's MMA report also forecasts the future revenue opportunity for lunar transportation, communications, remote sensing to equal \$3.5B between 2020-2030.

New Inmarsat Report Captures Role of Singapore Start-Ups in Maritime's Digital Transformation

April 21, 2021 - A new study sponsored by Inmarsat, the world leader in global, mobile satellite communications, offers the most comprehensive overview ever of Singapore's vibrant maritime start-up sector. The Trade 2.0 Singapore Maritime Start-up and Innovation Ecosystem Report, published through the Inmarsat Research Programme, is the second country-specific study of start-ups and their impact on maritime digitalisation. It builds on a global Trade 2.0 report launched in 2019 and the Japan Trade 2.0 report published in April 2020. Once more, the report is authored by Leonardo Zangrando, Founder of Startup Wharf, and Nick Chubb, Managing Director of maritime innovation consultancy Thetius. With one-quarter of the world's goods passing through the Singapore Strait each year, the report identifies the island city-state as 'The Startup magnet'. Singapore's maritime IT market alone is forecast to generate US\$2.4billion in 2021 and reach US\$4.8billion by 2030.

WTA Report, "Coming Out of COVID-19," Explores the How the Teleport Sector Managed and Learned from the Pandemic

April 15, 2021 - The World Teleport Association (WTA) today released *Coming Out of COVID-19*, a new research report that explores the widespread impact that COVID-19 had on satellite and teleport operators around the globe. The report examines the similar and disparate ways technology companies addressed the pandemic with new policies for both internal operations and relations with new and existing customers. It also explores how these companies see the light at the end of the tunnel: what comes after COVID, and how is the industry preparing for it? *Coming Out of COVID-19* was sponsored by Telstra.

NSR Report: Satellite Backhaul Primed to Generate \$25 Billion Annually by 2030

April 12, 2021 - NSR's *Wireless Backhaul via Satellite, 15th Edition* report, released today, forecasts \$25 billion in annual revenue in 2030 for satellite backhaul, propelled by explosive connectivity demand worldwide and post-COVID-19 recovery in the near term. As it is a core target of virtually every current and new satellite capacity provider, NSR expects Satellite Backhaul to represent one of the largest revenue opportunities for satcom over the next decade. Digitization is climbing in governmental agendas, pushing for ubiquitous Broadband and creating skyrocketing levels of bandwidth demand. Satellite is finally regarded as an alternative tool for rural deployments, thus creating a massive opportunity for Cellular Backhaul. Trunking is returning to growth with new price points triggering elasticities. Hybrid IP Content Distribution continues on a test phase with little traction during 2020, but the long-term potential continues to look promising.

NSR: In-Orbit Servicing & Space Situational Awareness Markets

April 9, 2021 - NSR's *In-Orbit Servicing & Space Situational Awareness Markets, 4th Edition (IoSM4)* report takes a deep dive into the GEO and Non-GEO markets examining developing trends and opportunities in Life Extension, De-Orbiting, Salvaging, Re-Location, and Space Situational Awareness (SSA) over the coming decade. IoSM4 provides a comprehensive overview of the rapidly developing Active Debris Removal (ADR) addressable market. The use of IoS and SSA technologies are discussed, such as the repair of existing satellites, in creating new capabilities globally. With the recent market successes, opportunities to enter the IoS Market are now on the rise.

COVID-19 Impact on Smallsat Market Mitigated by Funding Availability, Government Support

April 8, 2021 - The latest update of "Prospects for the Small Satellite Market" was released this week by Euroconsult, forecasting further growth in the global supply and demand of government, commercial and academic satellites weighing up to 500 kg. The market intelligence report, now in its 7th edition, builds upon Euroconsult's previous iteration that accurately predicted more than 1,000 satellites would be launched during 2020, a record year despite COVID-19. The new release further reinforces the sentiment that the 2020s will be the decade of small satellites, anticipating the launch of close to 14,000 smallsats before 2030.

UPCOMING EVENTS

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

Satellite 2021: EMEA + Asia Digital Forum, May 18-20, <https://www.satshow.com/>

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

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

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

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

Satellite 2021: Future Space Digital Forum, July 26-29, <https://www.satshow.com/>

Satellite 2021, September 7-10, National Harbor, MD., USA, <https://www.satshow.com/>

CABSAT 2021, October 26-28, Dubai, UAE, <https://www.cabsat.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@apcc.or.kr Website: www.apcc.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.apcc.or.kr.