

Satellite Executive BRIEFING

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Industry Trends, News Analysis, Market Intelligence and Opportunities

New Space Trends

by Omkar Nikam

The past year saw major traction in the global space sector from both the government and private sectors. As many governments have taken the initiative to use space as an essential asset for the national economy, satellite applications are making inroads in the space market.

Two major conferences held in Europe recently highlighted trends in new space. NewSpace Europe in Luxembourg and Space Tech Expo in Bremen, Germany, showcased some of the latest technological trends in the space and satellite market. It also brought together the space industry experts from different walks of life to discuss and expand Europe's reach in the global commercial space market. Some of the key takeaways from these conferences are as follows:



New Space Applications

The New Space sector has kept the commercial ball rolling towards achieving a milestone for economically viable and affordable space solutions. But the most amount of companies entering the New Space sector are burning the midnight oil for the funding resources. This scenario is also suggesting that there is a need for equilibrium in some of the New Space applications such as communications, Internet of Things (IoT), Geospatial solutions, etc. In the satellite IoT segment alone, there have been numerous companies registered in the past few years. OQ Technology, Kineis, Astrocast, Hiber, etc. are some of the new companies in the satellite IoT upstream market. While

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New Space



Our cover story this month is on New Space. As we enter a new decade the impact of New Space players will be more and more pronounced. Companies like SpaceX, Amazon Google, Facebook and Virgin, among others have significantly transformed the industry as we know it. I think by the end of the decade, there would be no distinction between old space and new space. There will just be the space industry.

So it's altogether fitting that this year's Satellite conference in Washington, D.C., arguably the industry's most important show the year will be keynoted by Elon Musk of SpaceX. I remember when he started in industry around the same time we started Satellite Markets and Research 13 years ago, he was not taken very seriously by the "old space" guys even though he successfully started Paypal and sold it to eBay for a premium. His first three launches were unsuccessful, but rather than quit he just continued on and look where he's at today. I like to believe that there are many more Elon Musks in the industry today and I look forward to seeing the fruits of their labor and their impact they will have on the industry in this decade and beyond.

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New Space from page 1

traditional players like Iridium, Inmarsat and Globalstar have already deployed IoT services in the market. On the same lines, Eutelsat is also planning a nanosatellite IoT constellation, set launch in between 2021 and 2022.

According to Quilty Research, currently, there are more than ten companies that are entering the satellite IoT market. And the increasing number of New Space companies is definitely going to make this market more competitive as well as tough to navigate for diverse opportunities. Though satellite IoT will be one of the game-changers for the satellite communications industry, the satellite players should also keep a close on the demand graph. Oversupply may even lead the exploration of new markets, but a thorough look at the need for the demand of the downstream market will create a sustainable sphere for the satellite IoT companies.

LEO vs. GEO vs. Small GEO

The satellite constellation race officially kick-started in 2019 with numerous launches of Starlink and OneWeb satellites. This has also made the low earth orbit (LEO) satellite business spinning its wheels to capture the satellite broadband customers. But meanwhile, as the traditional GEO satellites were thought to lose its grip on the communications market, the Small GEO satellite companies began to attract the investors in 2019. Astranis, Ovation, and GapSat are some of the new Small GEO satellite operators with a launch plan in be-

“...The European space sector is on a progressive path with a stronger and diverse focus on the satellite market...”

tween 2021 and 2023. Although Hispasat launched its first Small GEO Hispasat 36W-1 satellite in January 2017, the satellite's total weighed close to 2000 kgs. On the other hand, Astranis is launching a satellite that will weigh approximately 300 kgs. This drop in the overall weight of satellite is also going to reduce the launch cost as well as it will make satellite leasing prices more affordable than the traditional GEO satellites.

According to Euroconsult's forecast, 8588 small satellites weighing approximately 1195 Kgs will be launched in 2028, of which 42% of the market will be driven by the communication satellites. Therefore, the future for Small GEO looks promising as the operators have to thrive on the existing infrastructure. But on the LEO side, the ground segment infrastructure will be crucial which will in-turn increase the overall investment of the company. Though LEO satellites have already left the ground, the LEO business is still yet to take off. Therefore, a reverse gear on GEO applied by the satellite operators by reincarnating the traditional GEO market with the Small GEO market might be one of the best solutions for the current market with respect to cost and flexibility.

Science and Technology

The European Space Agency's (ESA) budget of EUR 14.4 billion for the next five years was announced on 28 Nov 2019.

Though the news came after the wrap of both the conferences, the space community and various institutions around the European region gave a warm welcome for the increase in ESA's five-year budget. One of the critical areas where the European space market can amplify its space technology innovation track is the research and development (R&D) activities.

The total budget allocated for Science and Technology is approximately EUR 1.6 billion. As the commercial satellite market is moving towards the small satellites, the R&D activities will be requiring substantial work to miniaturize the satellite components. For example, the traditional GEO satellite weighs more than 3000 Kgs, whereas the small GEO satellites will be developed between 100 Kg to 2000 Kgs. Therefore, to develop an innovative arch in space technology for satellite components, the R&D investment in science and technology by ESA might accelerate the upstream market growth.

Conclusion

The European space sector is on a progressive path with a stronger and diverse focus on the satellite market. This does give a positive vibe that though the future of LEO and Small GEO looks uncertain at the moment, consistent government support for space technology can help connect the dots for the commercial players. The increasing involve-



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ment of government and private institutions in Europe has already showcased some of the innovative programs such as Advanced Research in Telecommunications Systems (ARTES) program. The communications market is evolving, and data relay systems, as well as optical communications, are setting a new bar for the European satellite market.

From a regulatory aspect, the mega constellation satellite companies need to align with the new ITU regulations. In the recent World Radiocommunication Conference (WRC-19), the International Telecommunications Union (ITU) member states adopted a new regulatory proce-

cedure for the non-geostationary satellite (NGSO) systems. According to ITU, "These systems will have to deploy 10% of their constellation within two years after the end of the current regulatory period for bringing into use, 50% within five years and

complete the deployment within seven years". Therefore, the huge number of companies planning to launch LEO satellite constellation should also be aligned with new ITU regulation and accordingly design their business models. 📡

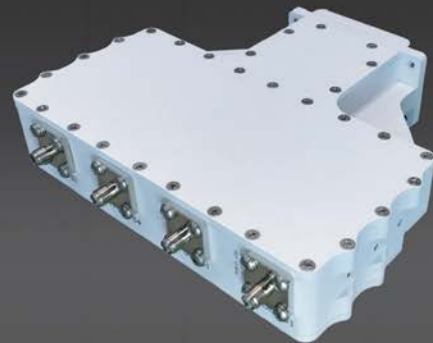
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AXESS Networks: A Merger with a Lot of Synergy

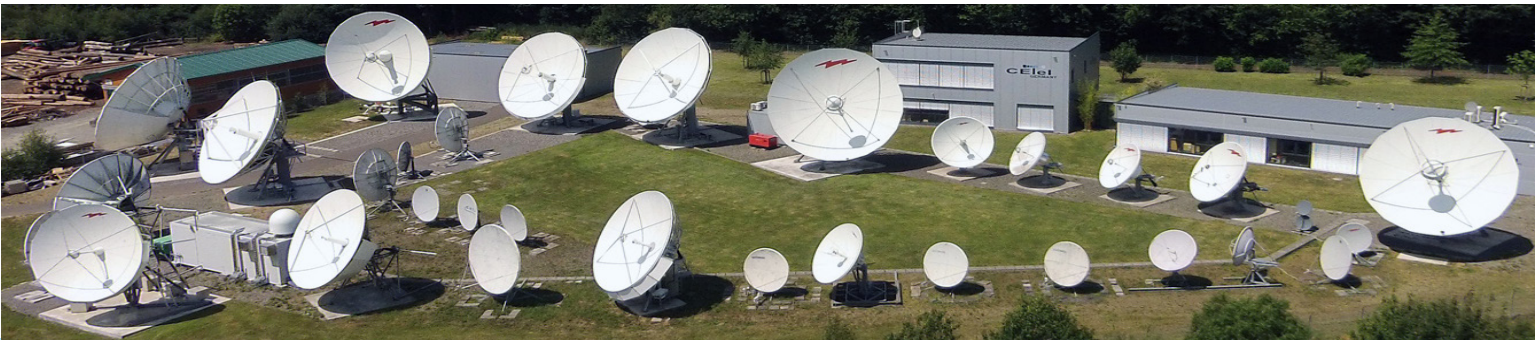
by **Virgil Labrador, Editor-in-Chief**

In September 2019, Latin America-based Axesat and Germany-based CETel, two leading companies in the provision of satellite communications solutions, announced a merger to form AXESS Networks. Supported by Aksiom Group Limited, a specialist in the development of high growth technical services companies, the new company has a substantial presence in the Americas, Europe, Middle East and Africa. The combination of the two companies brings a lot of synergy, with each company contributing unique strengths and attributes that makes AXESS Networks the new leading global player in the enterprise satellite communication services market.

The new company has a unique global infrastructure, recognized by the World Teleport Association (WTA). AXESS operates three main teleports located

in the Latin American market with CETel's experience in providing German-engineered, customer-specific solutions to the EMEA market has been the key driver for the merger. "Axesat had a very strong organic growth in the last few years. They also have a strong presence in the Latin American market as well as global contracts with oil and gas, mining, telecommunications and other verticals. CETel, on the other hand has accumulated experience in teleport operations and strategic acquisitions. The merger of Axesat and CETel is a significant milestone in our global growth and diversification strategy," said Guido Neumann, Co-Founder and CEO of CETel, and now the Chief Development Officer and President EMEA of AXESS Networks.

Neumann has a very interesting background which served him well and CETel, the company he



The AXESS Networks teleport in Ruppichteroth, Germany.

ed in Germany, Mexico and Colombia, and alternative teleports in Dubai, UAE and Peru. The company provides global coverage to a diverse base of industrial, energy, oil and gas, telecom, infrastructure, mining, maritime and government/NGO customers, all who have critical operations in difficult to serve regions where reliability and security of service is of paramount importance. Current operations cover more than 50 countries on four continents.

Combining the highly successful commercial strategy of Axesat and its leading presence in the

co-founded with a partner in 2004. After serving in the German Armed Forces and NATO as an officer in Command, Control, Communications and Information Systems, he moved to a then IT consulting firm, IABG in 1997. At IABG, he started a new Teleport division in 1999 to serve the newly launched LMI-1 satellite.

After accumulating valuable experience with customers around the world as Chief Commercial Officer for IABG's teleport business, he saw an opportunity to provide more flexibility and value-added services. Neumann and his colleague, Martin Terlunen decided to start their own business and found-



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FEATURE

ed CETel in 2004. He helped build CETel from a two-person company operating from their home to a global player with extensive infrastructure and market presence that it is today.

The merger with AXESS Networks is a culmination of a series of strategic acquisitions by CETel over the years. These acquisitions include companies such as Plenexis Services, ND Satcom's Managed Services business, Geolink (formerly SeaMobile Europe), Onlime Managed Satellite Services and Cobbett Hill Earth Station.

For his efforts, Guido Neumann was named "Teleport Executive of the Year" by the WTA in 2019. This year, the WTA has announced that

AXESS Networks' CEO Mauricio Segovia, the former CEO of Axesat will be awarded the same honor as his predecessor, Neumann as Teleport Executive of the Year--the first time that two executives from the same company have won the award two years in a row.

With the merged companies' focus on growth, we might not see the last of mergers and acquisitions activities from AXESS Networks. Segovia said that "we have relatively aggressive growth targets in the next three to five years and will continue to leverage each companies' relationships with key customers to grow them in other regions." 

CASE STUDY


Custom Solutions for a Mining Company

AXESS' customer operates in different African countries and is supplied with a one-stop fully seamless communications solution that caters exactly their demand. AXESS delivers an advanced solution for a mining company that includes:

- Managed end-to-end communications over Internet and network connectivity to overcome the geographical challenges presented by the landlocked region of Africa.
- Satellite- and fiber-based connectivity that improves productivity by encompassing all applications used by miners, including administrative, operational and welfare applications.
- Tailored approach that integrates with multiple locations, including European corporate network and exploration sites.



The multi-orbit solution comprising of low-latency O3b Medium Earth Orbit (MEO) constellation, Geostationary (GEO) wide-beam and GEO HTS (High Throughput Satellites), allows AXESS' customers expanded access with tailored, managed data services capable of transcending remote locations. This means they can bring together data across the entire mining value chain in order to improve planning, control, and decision-making, as well as increase safety in even their most hard-to-reach operations. The O3b solution allows end users to benefit from top cloud services like IBM, Google, Microsoft Azure and AWS. The solutions were tailored to the customers' unique requirements. This meant adding five large trunks to their operational areas, based on the geostationary capacity. The capacity of the fully managed service, based on 'carrier-in-carrier' technology with compression appliances, leads to a 250Mbps-integrated connection to their European headquarters. In addition to the GEO-based solutions, they added a MEO solution to several mining operations in Africa. Each site is capable of transmitting and receiving of up to 100Mbps. The deployed SD-WAN chooses the available and adequate transmission channel, dependent on what the application requires. This was an ideal utilization of GEO, MEO, and fiber.

AXESS deployed a true hybrid network that serves their client's mining operations efficiently and effectively, increasing their productivity and ability to grow: a seamless, fully-managed connectivity service! And even more important, AXESS demonstrated that it could convince their customer to utilize satellite where initially fiber should have been applied. 

Guido Neumann, Chief Development Officer & President EMEA, AXESS Networks

With the merger with Axesat, how do you see your company's position the markets that you serve?

The merger with Axesat was a major step for CETel and the newly formed company AXESS Networks to achieve the next level of service provision. Due to the consolidation in the market over the last few years we now have only a handful of very big global service providers, let's call them the "upper tier." In addition we still have a lot--probably more than 300--of small and mostly local operators in the "lower tier." The "upper tier" still have the advantage of providing services to global blue chip clients from different verticals. On the other hand these companies are having more and more problems in maintaining their flexibility and focus on the customer, which is fundamental for critical communications services. Some of the "upper tier" providers are distracted by their focus on shareholder value, high overheads and other concerns not related to their customers' requirements.

For the lower tier and the small players it's the other way around. They are flexible and customer focused but they don't have the ability, assets and manpower to provide global services, coverage and support--which is more and more essential, especially for customers with global operations.

Due to the consolidation in our industry the "medium tier" is currently underserved. At AXESS Networks we perceive the medium tier as THE key segment for providing reliable and competitive global services. Staying flexible and customer-focused, while providing excellent communications services through our global presence and coverage. Therefore, our main strategic target is to position ourselves in this "medium tier"!

What can we expect from the merged company AXESS Networks in the coming year and beyond?


AXESS Networks will get recognized as a global service provider in the upcoming years. We are sure that we will significantly expand our customer base in all major verticals like Oil and Gas, Telco, Mining, Government, NGO, Maritime and others.

On the teleport business in general, what changes do you see affecting it and how are you coping or taking advantage of the opportunities as a company?

Our teleports are becoming global fundamental assets, mandatory to implement global networks and capable to serve upcoming requirements for global NMS, worldwide roaming, flexible capacity allocation, multiple beam usage, hybrid networks and others.

Where do you see your business in the next few years?

Apart from our strong organic growth strategy we still might consider further mergers and acquisition (M&A) activities, if they fit to our business and overall strategy. In addition, for any M&A activity, it's crucial not to underestimate the complexity of the migration of assets, people, cultures, services and customers. M&A activities should bring real value to further enhance the provision of our services to our principal indicators: value, the customer and their needs.

In summary and as mentioned earlier, AXESS Networks aims to become the major player in the "medium tier" of service providers, serving global and local customers by providing professional services with highest quality of service by keeping its customer focus, flexibility and commercial competitiveness. 



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Antennas for Comms On the Move

by **Bernardo Schneiderman**

An NSR report on Flat Panel Satellite Antennas (4th edition) forecasts cumulative Flat Panel Antennas (FPA) equipment sales to reach approximately US\$ 11 billion by 2028. The report finds aeronautical equipment will drive revenue growth for manufacturers, while fixed broadband applications on Non-GEO satellites will be the main volume market. The report mentioned with Non-GEO satellite constellations from Amazon, OneWeb, SES, SpaceX, Telesat, and others, expected to come online after 2020, the industry has begun taking a strong interest in FPAs. According to the NSR report, currently twenty-three antenna manufacturers are in various stages of development and deployment of FPA solutions.

“Demand for connectivity in commercial aviation continues to grow, and the operating environment requires a low-profile design. This has been a key market driver for development of phased array technology for satellite connectivity,” states NSR Senior Analyst, and report author, Dallas Kasaboski. NSR forecasting 94% of all revenues to come from mobile applications. Leading the way will be the increasingly-competitive aeronautical market, well-established government land-mobile vertical, and the fast-growing, high-potential, commercial land-mobile sector.

Satellite Executive Briefing invited executives from the main manufacturers of satellite antennas to participate in a virtual roundtable and we received responses from the following companies: Tony Wilkey, Senior Vice President-AvL Technologies; Drew Klein, Vice President-C-COM Systems; Roni Stoleru, VP Antenna Products-Gilat Satellite Networks; Brian Billman, VP Product Management-Isotropic Systems; Dave Helfgott, CEO-PHASOR and Bill Milroy, Chief Technology Officer-ThinKom Solutions, Inc. Follows are excerpts of the exchange:

What is the current satcom antenna portfolio of products that you are offering in the market for commercial and defense segments?

AVL: AvL Technologies provides a broad portfolio of antennas and antenna systems ranging in size from 60cm to 5.0m. AvL specializes in high-performance, rugged-duty antennas that are lightweight, easy to use and transportable via vehicle (driveaway) or case-packable flyaways for military and homeland security, mobile broadband, disaster relief, streaming news, and oil and gas data backhaul customers throughout the world. AvL antennas are extraordinarily sturdy, efficient and reliable, and current AvL products operate with satellites in MEO and GEO orbits.

C-COM Satellite Systems: C-COM Satellite Systems Inc. is a pioneer and world leader in the design, development, and manufacture of mobile satellite-based antenna systems. The company has developed

proprietary, auto-acquisition controller technology for rapid antenna pointing to satellite with just the press of a button, enabling Broadband Internet via Satellite where terrestrial markets have failed, are overloaded or don't exist.

C-COM has sold more than 8,500 antenna systems, in over 100 countries, through a dedicated dealer network that provides service to a wide range of vertical markets such as Oil & Gas Exploration, Military Communications, Disaster Management, SNG, Emergency Communications, Cellular Backhaul, Telemedicine, Mobile Education, Government Services, Mobile Banking, and others. The product line includes vehicle mount (driveaway), transportable (flyaway), backpack (manpack) and fixed motorized (FMA) antennas. The Company's iNetVu® brand is synonymous with high quality, reliability and cost-effectiveness.

C-COM is in late stage develop-

ment of a potentially revolutionary Ka-band, electronically steerable, modular, conformal, flat panel phased array antenna technology. The Company is engaged in joint cooperation with the University of Waterloo to design this unique antenna such that it can provide low cost, high-throughput mobility applications over satellite for land, airborne and maritime verticals. iNetVu® is a registered trademark of C-COM Satellite Systems Inc.

GILAT: The current product portfolio includes Ku/Ka-band antennas that are either flat panel or parabolic dish-based. The antennas support high-end satellite communications on a variety of platform types, ranging from large trains, commercial aircrafts and maritime down to very small unmanned aerial vehicles (UAVs).

ISOTROPIC: Isotropic is at an advanced stage of development that utilizes our patented optical beam-

forming technology to develop the next generation of satcom terminals purposely designed to match the incredible performance levels of emerging next generation satellite systems but in a really clever way that allows end-users to arbitrage that capacity into one fully integrated terminal – a first for the industry. That heralds a true next generation of ground capabilities pioneered by Isotropic, given that current flat panel technology does not meet the needs of the market as it requires an enormous amount of active components, producing only single connections, huge amounts of power, poor scan performance, limited spectral efficiency and therefore low throughput. We have solved all of those challenges, adding full performance multi-beam to our standard product, and have demonstrated it with both Ku and Ka prototypes in the test chamber, and Ka with full bi-directional over the air testing, to really back up our claims.

Most recently we demonstrated bi-directional high-speed connectivity over the air with Avanti's Hylas 4 satellite, proving our optical beam-forming technology is capable of all electronic scanning and tracking well beyond the conventional performance of flat panel antennas and conventional phased array technology, measured in scanning range, scan performance and corresponding throughput.



**C-COM's iNetVu® 1202
Driveaway Antenna**

We are now shifting from a technology phase to a product phase with a focus on delivering our first products in time for the next generation satellite launches. This is an incredibly exciting time for Isotropic.

PHASOR: Phasor offers a common modular technology core across all of its products for mobile broadband connectivity in aviation, maritime and land-mobility use cases. This “core module” allows for a wide range of product configurations, which will become available commercially later this year, rolling out from 2020 through 2022;

Maritime and Land Mobility: 40 cm ACT; 70 cm M6 and 100cm M13. **Aeronautical/Inflight Communications Mobility:** 90 cm Aero M10

While Phasor is a commercial/enterprise markets technology and products company, it plans to offer these products for the same use-cases to select government and defense communications markets in the future, as “commercial-off-the-shelf” (COTS) products, via partners and distributors

Phasor has a 7-year technology roadmap that will enhance and expand the core capabilities of our technology and products, offering even greater “software-defined antenna” functionality, and expanding into additional frequency bands to broaden our offerings.

THINKOM: Our satcom antennas are based on our patented VICTS (Variable Inclination Continuous Transfer Stub) phased-array technology, which combines the technical benefits of mechanically steered and electronically scanned arrays with none of their drawbacks. VICTS provides gap-free pole-to-pole coverage with higher beam agility, low prime power demand and spectral efficiency 2x to 8x better than other phased



Thinkom Ka2517 Antenna with Radome

arrays.

In the aero market, we are the supplier of Ku-band phased-array antennas for Gogo's 2Ku IFC systems. At the end of 2019, our Ku3030 antennas were flying on over 1,300 aircraft with 4,400 daily flights and over 13 million hours of accrued flight time – with a mean-time between failure of 100,000 hours – 3x-4x better than competing antenna solutions. Major commercial airline customers include Delta Airlines, American Airlines, Air Canada, Alaska Airlines, British Airways, Air France, KLM, Japan Airlines, Qatar and Virgin Atlantic.

In 2019, we commenced commercial production of our Ka-band ThinAir Ka2517 IFC antenna system. The Ka2517 systems have been deployed on a U.S. military fleet of aircraft and are nearing introduction on several commercial fleets. Multiple STCs are underway and will be completed in 2020.

We see a significant growth market opportunity for satellite connectivity on regional jets. Adding satellite IFC to regional fleets will make it possible for airlines to enhance customer loyalty by providing a common experience across their large and small jets. For these aircraft it's imperative that drag and weight be minimized to make it economically viable. To that end, we recently commissioned a third-party industry expert to conduct aerodynamic analysis of the Ka2517 on six major regional jet airframes under representative cruise conditions. In all cases, the drag increase attributed to the an-

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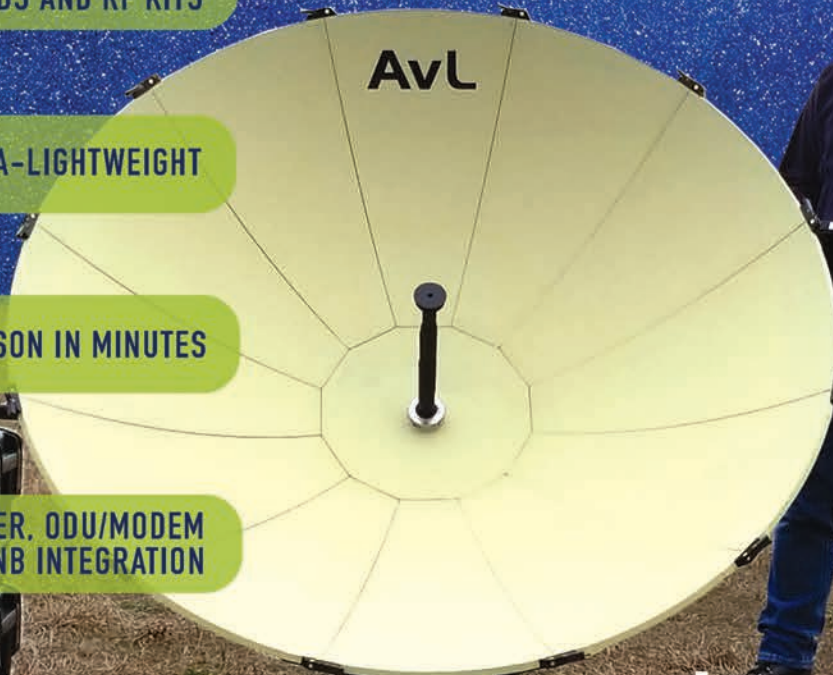
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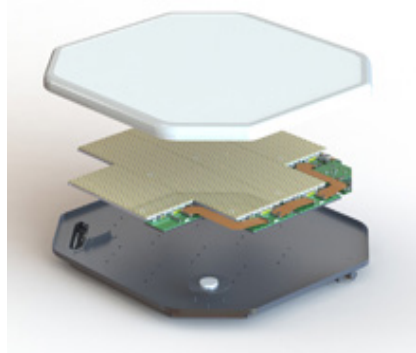
EXECUTIVE ROUNDTABLE

tenna was found to be less than 0.4 percent of the aircraft's cruise drag.

In addition to the aero IFC market, we currently supply a range of X-, Ku-, Ka- and Q-band phased-array antennas for vehicle-mounted, man-portable and fixed solutions for government and commercial customers through partnerships with third-party integrators and prime contractors. For example, our Thin-Sat 300 antennas are being used for communications on the move (COTM) by the Indonesian Federal Police on their command center vehicles. We also provided satellite COTM for support vehicles in the 2019 Bridgestone World Solar Challenge in Australia, providing uninterrupted video streaming at highway speeds throughout the 3,000-km race across the Outback.

Do you have any plans to launch new products and/or services in the next two years such as flat panel antennas or any other new or innovative technologies?

AVL: AvL continually updates products with innovations and new technologies. The company has several products launching in 2020 with new reflector designs, new feed designs, new case pack-up configurations and with new ARSTRAT certifications. AvL dedicates significant resources to stay ahead of new GEO constellation technologies, including global coverage with HTS satellites, the vertical integration of products



PHASOR M6 antenna

(modems, RFE, etc.), certifications from operators, and changes in global market distribution routes and methods.

AvL is under contract with the U.S. government to develop a family of next-generation, electronically-steerable flat panel antennas that support operability with existing and emerging LEO, MEO and GEO constellations.

C-COM: Yes, C-COM continues to innovate our existing COTP line of products, as well as work towards an electronically steered flat panel for use with all GEO and non-GEO markets.

GILAT: Gilat has completed the development of its flat panel, dual band, KuKa aero antenna, AeroEdge 6000 for commercial aviation, as well as its innovative Ka-band RFIC chipset - which is the core building block of our electronically steered antennas. The dual band AeroEdge 6000 aero antenna is DO-160 qualified and we expect to see it flying commercially within 2020. On the ESA front, Gilat has just demonstrated its new electronically steered Ka-band aero antenna technology in a first-ever commercial aircraft flight setup. This exciting solution meets the communication needs of the aero market including both commercial and smaller jets that until now could not be served efficiently by existing solutions and opens up a great opportunity for Gilat both over GEO satellites and Non-GEO constellations.

ISOTROPIC: Isotropic's first product launch will be a range of wideband, multi-beam, all-electronic Ka-band terminals for Land and Maritime Mobility applications both commercial and defense. Plug-and-play functionality along with low skill install is offered as the terminal integrates the BUC, LNB, antenna



Isotropic 70 cm antenna

controller, power supply, and in and includes two integrated modem bays (external modems are also supported). For defense applications, the terminal offers rapid deployment, multiple layers of resiliency in contested environments, and interoperability between LEO/MEO/GEO and commercial and defense frequency bands. In addition to that, we plan to make some major announcements this year on a new set of capabilities for the defense markets, more of that to follow!

PHASOR: The term "flat panel antenna" is a bit too general and includes a very broad range of technologies, products, frequency bands, and capabilities. Phasor is a broadband (wideband) active-scanning phased array technology, employing a unique ASIC-based beamforming technology in concert with an industry-leading modular system design. This results in a dynamic, enterprise-grade electronically steered antenna (ESA), capable of providing highly reliable connectivity at very high bandwidths across multiple use-cases, (sea, air and land mobility)

THINKOM: Late in 2019, we unveiled a totally new concept for multi-beam reconfigurable gateways that will provide a superior alternative to the current "antenna farms" of large parabolic dish antennas. We have proposed a totally new paradigm, which we describe as an "array of arrays," consisting of multiple, tightly arranged phased-array antennas, which are coherently combined. The multi-antenna ar-

ray is constructed in a fixed convex shape to provide maximum low-elevation coverage and minimize signal blockage. It is less than two meters in height with a total footprint of seven square meters. The reconfigurable antenna units work together to track multiple LEO, MEO and GEO satellites simultaneously with look angles between 5 and 90 degrees in elevation and 360 degrees in azimuth. The software-defined solution is capable of supporting multiple links, modifying the number of beams and radiation properties dynamically to meet the link budget and throughput demands of the ever-changing number of satellites in view. Importantly, the power consumption required for the array of arrays gateway is much lower than that needed for electronically steered arrays – a critical benefit for locations with power constraints.

Additionally, we have made significant investments in developing and proving antenna designs for the consumer user terminal market. We have worked with a Tier 1 contract manufacturer to incorporate proven high-volume manufacturing processes into the unique and differentiated RF design of the antenna to minimize costs without sacrificing performance. The initial prototype is a Ku-band pilot that combines a CTS flat-panel antenna with a two-axis gimbal that has been optimized to work with the new LEO constellations.

Any other market segments or applications that you are currently or planning to serve in the next few years?

AVL - AvL's serves many markets and enables many applications, but AvL's largest market segment is, by far, military communications. AvL is well known for providing adept customization to meet specific needs and requirements, and the AvL team works collaboratively with customers to innovate, add features and/or capabilities, and enable new appli-

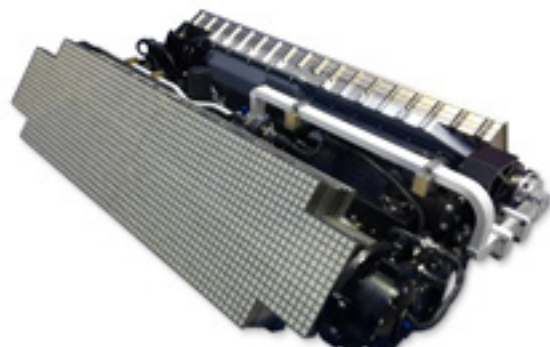
cations for our products to meet customer needs. AvL's rugged and MIL-qualified Ka-band and X-band antennas and systems operate with global MIL satellites, including U.S. DoD WGS, Luxembourg GovSat, U.K. MoD Skynet and others.

C-COM: Agriculture, connected vehicles, 5G, eS-ports, automotive radar – all are very interesting to use with our new and existing products. Our focus will continue to be on commercial grade antennas for oil & gas, military, government, emergency response, broadcast, and many other markets.

GILAT: Satellite communications for mobility and cellular backhaul have been and will continue to be in our strategy for growth. New advanced modem waveforms as well as our customizable and flexible electronically steered antenna technology open many opportunities in the changing satellite constellations environment, for both our existing growth engines as well as new potential ones.

ISOTROPIC: The Lens Modules designed for our first product will be the core building block to launch a series of products across multiple market segments very rapidly. Aero platforms in particular will benefit greatly from the low power consumption as well as extreme scan performance which is far better than existing flat panel technology. We have already proven our Ku optics in the test chamber and plan on launching a similar Ku product line as well.


We will also be releasing a suite of value-added-services, unlocked by the capabilities of our digital beamformers, fully software and firmware defined that create incredible opportunities for our customers who look to Isotropic for help to differentiate their services even further and most importantly match their investments



Gilat's Ku/Ka Aero Edge 6000 antenna

in space infrastructure with new demand from various end-user segments in commercial and defense applications.

PHASOR: Phasor is focused on the enterprise mobility markets today – aeronautical, maritime and land-mobile – which is served by GEO and GEO-HTS constellations and networks. Phasor is also prepared to serve these markets (as noted above) when non-Geosynchronous satellite networks (MEO and LEO) are fully online and operational, and to work interoperable between and among this various network.

THINKOM: Building on the prototyping work we have done on the consumer user terminal, we will continue to evaluate bringing to market low-cost enterprise and consumer user terminals. Target markets could include business/enterprise, government communications, consumer broadband, cellular backhaul, remote cable and DSL networks, and Wi-Fi hotspots. The small lightweight antennas, to be available in Ka- and Ku-band versions, will deliver higher throughput rates and lower bandwidth costs with 60 percent lower power consumption than traditional parabolic dish antennas. They will be 60 percent smaller in height and 75 percent lighter in weight. They will be fully compatible with GEO, MEO and LEO satellite networks. These consumer and enterprise terminals will have options and upgrade paths to be ruggedized for all types of mobility applications. 

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WORK Microwave: A Diversified Portfolio for Changing Market Demands

Headquartered in Holzkirchen (near Munich), Germany, and comprised of four operating divisions—Satellite Communication, Navigation Simulators, Defense Electronics, and Sensors and Measurement—WORK Microwave leverages over 30 years of experience to anticipate market needs and apply an innovative and creative approach to the development of frequency converters, DVB-S2/S2X equipment, and other digital signal processing technologies while maintaining the highest standards for quality, reliability, and performance.

The company has been enjoying double digit growth in the last few years, achieving one of its best years in 2019 where it reached 25% growth in turnover.

Among the highlights of 2019 for the company was the successful delivery of V-Band converters for the first commercial V-Band project worldwide. The company also saw demand for its wideband modems pick up last year.

Major contracts have also been signed including the supply of new compact dual Ka-Band converters for SES' O3B mPower MEO constellation. Delivery will take place in the second quarter of this year. The very compact design of the dual Ka-Band converters is especially suited for the small antenna hubs of the new Non-GEO satcom constellations operating in the 27.5 to 30 GHz range. The very compact converter module will be displayed during the Satellite show at Washington, D.C. this month at the WORK Microwave booth (#2009).


Dr. Thomas Fröhlich, CEO of WORK Microwave, who has led the company through four years of continued growth sees some headwinds this year in sustaining the same level of growth in the years prior. "As with many other companies, we observe a rather calm satcom market overall in the beginning of 2020. However, we are optimistic for the future and we see WORK Microwave well prepared for sustained presence in the traditional GEO satcom market as well as for the new non-GEO (LEO and MEO) constellation business." said Fröhlich.



Thomas Fröhlich, CEO-WORK Microwave

The company has adopted a strategy of preparing for the future by developing cutting edge products which can be used for various applications and vertical markets and new technologies such as virtualization, "RFoIP", cloud processing, Artificial Intelligence, among others. "We try to support our customers in their technological orientation process by jointly identifying and developing optimized system solutions," said Fröhlich.

WORK Microwave is also investing in R&D efforts in optical technology for Satcom or Earth observation business such as optical base band or intermediate frequency connectivity in ground installations, and modem development for optical earth stations (laser space to ground communication).

Fröhlich is very bullish in their other business segments such as Defense Electronics which is growing. They see increasing demand and growth in military radar systems, to give an example. 2020 will also see the launch of WORK Microwave's Navigation system simulator product. So, even with the uncertainties facing the satellite communications segment, WORK Microwave is confident that it can fall back on its other business segments should the satellite market face more challenges. 

The Next Decade in Space Innovation

This month, Satellite Executive Briefing invited the Chairperson of the Satellite Industry Association (SIA) Stuart Daughtridge to share his views on trends in the industry. Daughtridge is also the Vice President of Advanced Technology for Kratos. He takes a closer look at the revolution taking place in the satellite industry, up in space – and on the ground. Follows are his insights:

The Ground Segment

In the mid-1990s I started working at a start-up satellite operator that had just gotten funding for their satellite. My first job was to write the specifications for the ground system and lead the procurement effort. The night before we were to release the RFP for the ground system, I was



Daughtridge

called into the president of the company's office where I was told that when they raised the funding they received money for the satellite, the launch vehicle, and the insurance, but had forgotten the ground system, so we needed to get vendor financing. The ground system has always been the Rodney Dangerfield of the space industry (for you younger readers, he "got no respect"). That is changing and I believe that 2020 will become the decade of the ground system, where it will get the attention it deserves.

Innovation and Growth in Space

The satellite launch and manufacturing sectors have experienced tremendous growth and innovation over the years. New players in the launch industry such as SpaceX, Blue Origin and Rocket Labs have made their impact felt based on their pricing and performance models. There are also more than one hundred start-up companies all working to develop new and disruptive launch capabilities.

The satellite manufacturing sector has also seen massive innovation

with smallsat applications, High Throughput Satellites (HTS), software defined payloads and LEO and MEO constellations that include volume manufacturing assembly lines.

A Growing Revolution on the Ground

One area that has lagged in this innovation in space has been the satellite ground segment, whose architecture and operation has not changed much in decades. These legacy analog architectures were designed for bent-pipe, fixed satellite delivery models with relatively static payloads and not the newer satellite architectures with reconfigurable and dynamic payloads and service models. But that is changing.

Just as the terrestrial world moved from static to more dynamic, programmable and scalable networks to address networking and 3G/4G wireless challenges, satellite ground systems will start leveraging the same digital technologies including Software Defined Networking (SDN), virtualization, the cloud, and in some cases Electronically Steerable Antennas (ESAs) to become more dynamic to unlock the value of these newer and more innovative satellite architectures. This digital transformation will enable ground systems to virtualize and orchestrate operations to support a highly dynamic and automated service environment, provide massive low cost scalability and enable distributed architectures.

Kicking-off to the Decade of the Ground


The move towards a digital and dynamic ground architecture is real and happening. It started in the "NewSpace" market, where the launch of thousands of smallsats

created the need for lower cost and scalable ground systems. With no legacy infrastructure in place, smallsat operators adopted the latest advancements to build fully digital ground infrastructures using cloud and virtualization technologies to scale cost-effectively.

The smallsat and Earth Observation (EO) markets have deployed and used virtual infrastructure successfully for hundreds of missions. They are using cloud enabled software-based modems, front-end processors, and digital IF capabilities to process signals more efficiently and dynamically.

As the wider satellite industry moves towards digital and more dynamic ground architectures, there is the promise of a revolution on the ground that will enable the monetization and optimization of all of the innovation that has been created with the newer satellite payloads and their associated LEO, MEO and GEO constellations.

A Look Ahead...Interconnecting with Terrestrial and 5G

While the benefits of synchronizing satellites in space with the ground are clear, there is also great value in better integrating the satellite networks with terrestrial networks. Once migrated to a digital infrastructure, ground systems can operate more like today's modern IP networks to seamlessly interconnect with telecom, wireless, and expanding 5G networks. This holds huge potential for the satellite industry to grow its share of the market by better integrating into the global communications grid and providing additional value, especially where terrestrial networks reach their limit. 

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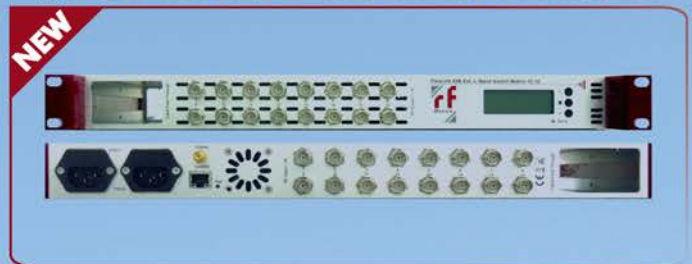
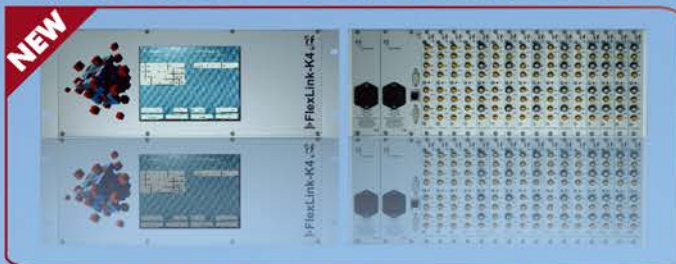
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Amphinicy Technologies: Building on its Strengths and Engineering Expertise

by **Virgil Labrador, Editor-in-Chief**

Zagreb, Croatia-based Amphinicy Technologies, a provider of innovative software solutions for the satellite and space industries, reached a major milestone last year as it celebrated 20 years in the business. As it enters its 21st year of service to the industry in 2020, it continues to organically grow as a company with a renewed focus on providing engineering expertise and support in delivering first-class software to the satellite industry. Amphinicy has successfully delivered over 100 projects to international space and humanitarian agencies, leading satellite operators and global satellite service providers, teleports and space mission operation centers, and satellite equipment manufacturers.

“What always stood, and remains, a center pillar of our business is to continuously expand our expertise and ride the crest of technology wave in order to deliver modern, longstanding software solutions that power the satellite industry. Our engineering teams continue to deliver added value to our partners in the form of operation-critical solutions, for example VOIP, mobility management, beam roaming, satellite ranging and in-orbit testing soft-

ware, various types of simulators, government security communication, antenna installation and terminal certification mobile tools, M&C/MOC/NOC solutions, just to name a few,” said Toni Jelavic, CEO of Amphinicy.

Key Products

“This year we will shift more focus on our innovations and products: Blink, Monica and



Among others, the innovative solutions from Amphinicy include Monica, a state-of-the-art ground segment monitor and control solution, that can handle even the largest and most complex terminal networks.

SatScout, while continuing with the same highest level of excellence of our engineering services. In parallel, we will strive to partner in consortiums of ESA /EU flagship projects – especially in the domain of secure communication. So naturally, we’re expanding both offices in Zagreb and

Luxembourg with new talents,” Jelavic added.

“One of our biggest strengths is in the fact that we are engineers to the core, in love with space and our work. I believe the shorter term would be ‘passionate nerds.’ We are focused on the satellite industry and we don’t stop until we find the solution up to the highest standards. More importantly, we form partner relationship with our clients, helping them from start to finish in achieving most challenging and audacious goals.” said Frane Milos, CEO of Amphinicy’s Luxembourg office.

Innovative Solutions

“One of the innovations we’ve been working on more extensively in the last year is a high-data-rate wideband modem done in software (Blink) – a first of its kind and a project that was recognized by EU’s largest innovation funding program where it got its support among top 5% of innovative projects! We are very excited and happy with the project’s progress and expect to break some great news very soon,” said Jelavic.

The other major innovation challenge that Amphinicy tackled is an integrated data acquisition and storage system specially designed for very large, distributed satellite networks (in terms of hundreds of thousands of terminals), that they call Monica+.

FEATURED COMPANY

The system can safely collect and store millions of KPIs in second while being completely and automatically scalable as the network and number of terminals grow. Current state-of-art cannot handle such load without very large efforts and costs. With this elegant design, Monica enables large savings in hardware and software infrastructure, up to 60% in comparison to current solutions. This innovation naturally expands Monica to handle even the largest and most complex terminal networks.


To illustrate Amphinity's commitment to providing innovative solutions for its clients, the company recently delivered to one of its partners a VOIP solution over satellite network that includes

"...One of our biggest strengths is in the fact that we are engineers to the core, in love with space and our work..." -Frane Milos

operators and customer portal for accessing VOIP services, support for special-rate calls (e.g. for employees), complete billing, and system monitoring and control of network devices. The partner was very happy with the team support, speed and the quality of the delivery, supporting their fast time to market constraints.

Amphinity's Luxembourg office is also involved within two international consortiums where they are developing key Governmental Secure Communication subsystems - Mission Operations Center and Quantum-Key Distribution subsystem.

Another example is Amphinity's ultra-fast Front End Processor of Earth Observation (EO) satellite payload (part of its Blink product) which supports both real-time, AIV and offline operations. A swiss-knife type of tool that allows the user to cut to the root issue in a simple and quick manner. The response from one of the users speaks for itself:

"... Starting Blink gave us the opportunity to do things our way... The reports really look great... I would say the graphic reporting just rocks! The way the list of generated files is implemented is simply brilliant... Congratulations! :-)" 



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The Importance of Link Budgets

by **Alvaro Sanchez**

Link budgets are living a new era specially with new technologies such as Flat Panel Antennas, ACM, and the launches of LEO and MEO. Complexity have grown exponentially; much more complex than ever before.

The first step in designing a satellite network is to perform a satellite link budget analysis in any Satellite network and constellation. The calculation of the received power is a set of complicated processes that no everyone could find the right answer, therefore, a specialist is called to manage this complex task involving a complex excel sheet.

Integrasy has been working on a new product that simplifies satellite connectivity, whether is a traditional GEO, HTS, MEO or latest LEOs. Now, everybody in the satellite industry can calculate the link budget margin with just using Beam Budget.

Not only capacity engineers are capable to make this calculation for the quotes. This way of calculating all the gains and losses between transmitters and receivers in satellite communications have significantly changed.

Then, you would ask, what is Beam Budget? It is a web-based, easy to use; the simplest for quick and accurate link budget calculations. This software solves thousands of link budget calculations in a few seconds.

In terms of user experience, this tool has a user-friendly interface with the ability to generate incredible graphics and charts along with the most relevant conclusions. This data is easy to understand for the entire network, including all profits

and losses. In this way, sales representatives have the possibility to provide a correct offer in a very short period time, doing the link budget themselves.

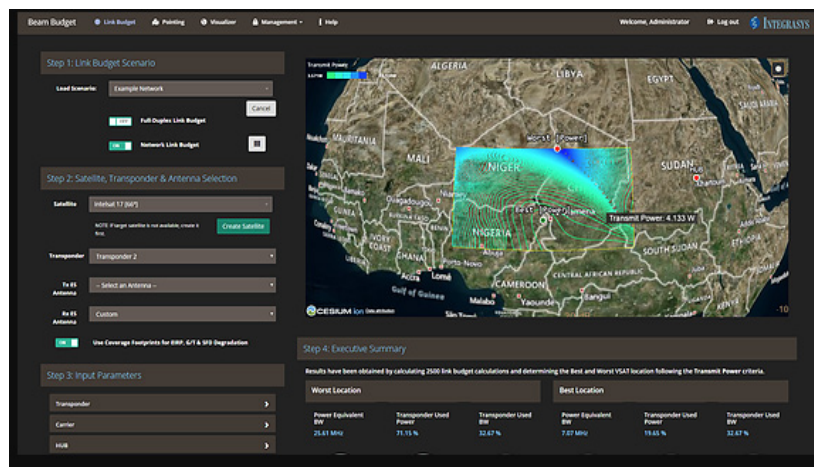
One of the biggest issues with a link budget calculation is the volume of parameters that need to be input in order to obtain an accurate calculation. With the link budget tool, the only requirement is to fill a few inputs, after that, you select the service area and BeamBudget does 1000s of link budgets in few seconds over the selected area and provides you with a very complete result with the most important outputs in a simple executive summary. Optimizing time ensuring accurate calculations is relevant to everybody.

On the one hand, signal degradation is not allowed in this industry, no selecting the wrong satellite or transponder. On the other hand, completing link budgets correctly and accurately with the correct tool maximizes

revenue and available user capacity. As a result, customer experience will increase exponentially and service reliability will increase much more, allowing a major number of businesses.

Beam Budget provides users with charts and maps that help them quickly and easily visualize the relevant results of the link transmission speed and margins, as well as bandwidth and power to use for the desired availability.

In most cases, this work requires at least 70 parameters that include: Uplink power amplifier gain and noise factors; Transmit and receive antenna gain; slant angles and corresponding atmospheric loss over distance; climactic attenuation factors; satellite transponder noise levels and power gains; re-





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ceive antenna and amplifier gains and noise factors; cable losses; adjacent satellite interference levels; and intermodulation interferences. However, Beam Budget requires less than half of them for the same accuracy.

The goal of Integrasys was to ensure that all possible frequency bands and types of satellites were covered in a single tool, rather than having to further complicate matters using multiple tools, and it does with great results when the functionalities of different tools can be brought together in a single web-based app.

Each input needs its own elaboration separately, for both the uplink and downlink frequencies. With the tool, the company wanted to introduce a tool that could provide highly accurate results with fewer inputs. This tool can provide more than 2500 link budget calculations with 200 results from just 45 inputs. Moreover, Integrasys has developed a new full-duplex function in which performs calculations from the HUB to the VSAT and the VSAT to the HUB, and the latest option to a regional network link budget.

The software is available for every frequency band and enables users to upload different types of satellite data. Every modulation is also supported. The result is the most accurate link budget calculation product possible for perpetual use.

For a commercial visit to any customer, the link budget is really important for the purchase and sale satellite capacity. These calculations allow satellite operators to confidently establish new satellite networks to ensure the best performance for a client network. Established networks use link budgets to calculate and demonstrate the capabilities of potential customers, as well as satellite users need these tools to ensure the service, selecting is the right choice.

If link budgets cannot be completed quickly enough, this could result in lost opportunities and costly expenses. Similarly, if a customer comes on board without an accurate calculation, they may quickly take their business elsewhere if the result does not match the expectations.

Quick and accurate link budget calculations are essential, making this tool accessible to anyone

“...completing link budgets correctly and accurately with the correct tool maximizes revenue and available user capacity. As a result, customer experience will increase exponentially and service reliability will increase much more..”

within an organization, as well as facilitating stakeholder understanding with the executive summary report.

As a conclusion, Integrasys delivers disruptive technologies to simplify the satcom industry, bringing the satellite to the people, facilitating operations, increasing revenues, saving up operational expenses and ensuring the maximum performance of the networks. Beam Budget is the finest solution for calculating link budgets easily, accurately and obtaining a considerable return on investment. Now, link budgets are more accurate and easier than ever. 📶



Alvaro Sanchez is Integrasys CEO and Marquess of Antella (Noble Title from 17th century in Spain). Alvaro is a Software and Industrial engineer by European University and holds a Master Degree in Management, Sales & Marketing by ESIC Business School. Alvaro during the last 10 years has worked at Integrasys as Management,

Sales Director and Executive roles were he was very successful growing the sales, revenue, profit and responsibilities within the company; and previous to that he was working at CERN European Organization for Nuclear Research as a RF Engineer measuring timing in a Nanosecond Synchronization for measuring the Neutrino Speed. The Noble Title that he hosts, is coming in his heritage from 1649 from his ancestor Nicolo Palavicino, given by Phillip IV in Sicily for the Antella region near Florence. He can be reached at: alvaro.sanchez@integrasys-sa.com



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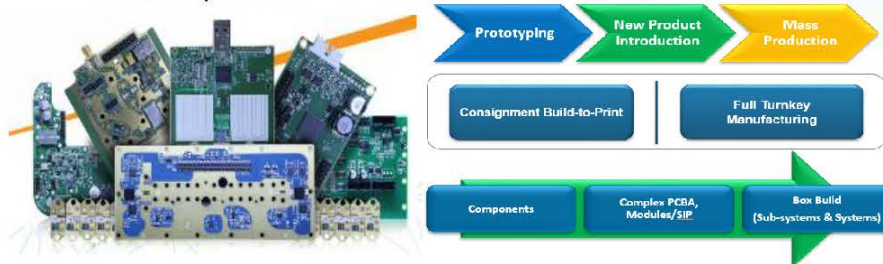


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in the business Amphinicy has delivered over 100 projects to international space and humanitarian agencies, leading satellite operators and global satellite service providers, teleports and space mission operation centres, and satellite equipment manufacturers. Our solutions are usually based around our products:

- **BLINK** – a fully software-based, ultra-fast satellite telemetry acquisition system for Earth observation. It is modular, flexible and scalable, and can support missions from AIV to operations, with post-processing and reporting capabilities
- **Monica** – a state-of-the-art ground segment monitor and control solution, built primarily for the satellite industry. It is robust, secure and reliable, demonstrates high performances and can scale from a single ground station to a network of hundreds of thousands VSATs
- **SatScout** – a powerful mobile application framework for commissioning and certification of VSAT terminals and antennas

ARABSAT

@ CABSAT Hall 8 Booth # C8-10

www.arabsat.com



Founded in 1976 by the 21 member-states of the Arab League, **Arabsat** has been serving the growing needs of the Arab world for over 40 years, operating from its headquarters in Riyadh-KSA and two Satellite control stations in Riyadh and Tunis. Now one of the world's top satellite

operators and by far the leading satellite services provider in the Arab world, it carries over 500 TV channels, 200 radio stations, pay-tv networks and wide variety of HD channels reaching tens of millions of homes in more than 80 countries across the Middle East, Africa and Europe—including an audience of over 170 million viewers in the Middle East and North Africa (MENA) region alone tuned into Arabsat's video "hotspot" at 26°E.

ATCI

@Satellite booth # 831

www.atci.com

With over 30 years experience in the satellite communica-



tions industry, ATCI's mission is to enhance the customer's opportunity for profit by providing quality, reliable and cost effective satellite and fiber linked communications components and systems to commercial entities in the US and abroad.

AVCOM of Virginia
@Satellite booth # 734
www.avcomofva.com



AVCOM of Virginia is a vertically integrated technology company with 30 years of experience in the design and

manufacture of commercial high quality, spectrum analyzers and signal monitoring products, in the USA. At Satellite come see live demonstrations of our products featuring the EVO Series 6-GHz spectrum analyzer.

The New EVO Series is built on Avcom's completely new technology platform designed for higher performance, agility and growth in a world of ever-changing requirements.

Avcom has designed an SDR-style technology analyzer with a wide bandwidth receiver, employing FPGA, DSP, and high performance processors. The analyzer is based on a hybrid swept-FFT technology which provides extended frequency range and higher resolution.

"Following the Signal", and listening to our customers, this series is perfectly suited to provide functionality in earth stations, teleports, and RF signal monitoring environments. The EVO Series of analyzers is an excellent addition to the Avcom family of products for demanding applications which require the extended performance characteristics, while still providing Low cost-of-ownership and a highly cost-effective and reliable professional product.

AvL Technologies
@Satellite booth # 1311
www.avltech.com

AvL Technologies will bring many new products to market in 2020



which will be on display in our booth, including:

- 2.4m ultra-lightweight flyaway with a two-case pack-up
- 1.3m X/Y LEO-MEO tracking antenna
- Upgraded Family of Integrated Terminals (FITs) – 0.75m & 1.35m
- 1.3m rugged FIT antenna

We will also have some of our terminals displayed in customer booths – 1.2m SNG vehicle mount, 70cm Rapid Retrace MEO tracking and 1.2m MVSAT Ku-Band motorized trans-

portable antenna.

AvL antennas are the industry benchmark of excellence for MEO and GEO ground systems, oil and gas data backhaul, disaster relief, mobile broadband Internet access, defense and homeland security, and Satellite News Gathering solutions.



AvL 1.35m Integrated terminal

AXESS Networks
@ CABSAT Hall 8 Booth # 803
www.axessnet.com



AXESS Networks is a global leader of satellite-based communications solutions. It provides turn-

key solutions tailored to the individual requirements of its clients. AXESS Networks has been founded in 2019 out of two well-established companies in Europe (CETel) and Latin America (Axesat). It operates three Teleports in Colombia, Mexico and Germany. AXESS Networks delivers exceptional service quality to its customers wherever and whenever they are in need. Today, AXESS has a proud team of more than 200 employees, that operates around 15,000 sites in more than 50 countries on four continents.

Comtech EF Data Corp.
@Satellite booth # 801 @CABSAT Hall 7 Booth #701
www.comtechefdata.com

When you select **Comtech** for your VSAT platform, you can have confidence that we'll provide the pieces to



solve the puzzle. We start with the industry's most advanced hardware and software solutions, enabling the highest user throughput and availability, optimal resource utilization and premier quality of experience. Then, we provide technical training followed by professional installation and service commissioning wherever our systems are sold, and 24/7 x 365 engineering support in 5 time zones. Let us show you how the efficiencies and flexibility of our platforms can help address the complexities of your global VSAT network

COMTECH Xicom Technologies
@Satellite booth # 801 @CABSAT Hall 7 Booth #701
www.xicomtech.com

Comtech Xicom Technology provides a broad product line of KPAs, TWTAs, SSPAs and BUCs for worldwide satellite up-



link covering C-, X-, Ku-, DBS-, Ka-, Q-band, Tri- and Multi-band with power levels from 8 to 3,550 watts and available in rack-mount and antenna-mount

ODU packages.

At Satellite, Comtech Xicom will introduce three new lines of SSPAs and BUCs:

Bobcat DC BUCs – Designed for compact terminals needing high power from very small packages. Bobcats enable users to shrink their footprint while speeding their link. BUCs are available in X, Ku and Ka-band at powers up to 64 Watts

PUMA SSPAs/BUCs – Designed for fixed and transportable terminals, Pumas are flexible, high-performance AC-powered outdoor SSPAs. Amplifiers and BUCs are available at X, Ku and Ka-band with power levels from 80 to 500 Watts supporting a wide range of power levels and redundancy options.

Falcon Airborne SSPAs/BUCs - Designed for airborne satcom systems needing high power density with high efficiency, Falcons are high-performance, in-cabin and cabin-exterior SSPAs/BUCs designed for and certified to DO-160 and MIL-STD-810 requirements. Amplifiers are available in Ku and Ka-band, including multi-band switchable BUCs built into the Ka-band units.



GaN SSPAs and BUCs for Airborne Global Connectivity

G&S SatCom

@Satellite Booth # 1209

www.gs-satcom.com

G&S SatCom is committed to making the increasingly rapid technological development in the satellite industry easily available. We empower our partner to enter, define, or even create new markets with our revolutionary solutions, giving them a persistent edge over their competitors.



Gazprom Space Systems

@CABSAT Hall 8 Booth # E8-30

www.gazprom-spacesystems.ru

Gazprom Space Systems (GSS) is a Russian non-governmental satellite operator providing high quality Yamal capacity all over the world. Yamal satellite fleet consists of four satellites



positioned between 49E° and 183E°.

Yamal-202 (49°E) has a wide coverage over the Eurasian continent, in particular over Middle East and North Africa. Soon it will be replaced by Yamal-601.

Yamal-402 (55°E) satellite provides Ku-band coverage over Russia, CIS countries, Europe, Middle East and Sub-Saharan Africa.

Yamal-401 (90°E) is dedicated mainly for the Russian market. The satellite is equipped with C- and Ku-band payloads.

Yamal-300K (183°E) has a wide contour fixed Ku-band beam covering the Far East, Pacific Ocean waterways and western coast of North America. The satellite is popular for aeronautic and maritime connectivity.

Hispasat/Hisparmar

@Satellite Booth # 743

www.hispasat.com

The **HISPASAT Group** is composed of companies with a foothold in Spain as well as in Latin America, where its Brazilian affiliate HISPAMAR, sells its services. The Group is a leading Spanish- and Portuguese-language content broadcaster and distributor, including over important direct-to-home television (DTH) and high-definition television (HDTV) digital platforms.



Integrasy S.A.

@Satellite Booth # 2001 @CABSAT Hall 8 Booth B8-22

www.integrasy-space.com



Integrasy is a privately owned company specialized on engineering and manufacturing Satellite Spectrum Monitoring systems and VSAT tools in the telecommunication and broadcasting markets. Integrasy was founded in 1990 by a group of Hewlett-Packard engineers experts on Automated RF & Microwaves Test Systems and Software. Since then Integrasy has evolved towards today's company, offering a wide range of signal monitoring products for different telecom services.

At Integrasy our mission is to provide the industry the best quality and fastest technology available in carrier monitoring systems, with the customer service and care that our customer's deserve. We want to add value to our customers in quality of service, technology, speed and cost efficiency, by innovating; therefore satellite industry recognizes Integrasy as the leader for innovation in satellite signal carrier monitoring systems and VSAT tools.

Mission Microwave Technologies

@Satellite Booth # 1524

www.missionmicrowave.com

Mission Microwave Technologies was founded in 2014 to create the next generation of Solid-State Power Amplifiers

(SSPAs) and Block Upconverters (BUCs). We use advanced GaN transistors, unique power combining technology, and novel full-system designs to create the industry's most efficient, lightweight, and compact high-reliability SSPAs for mobile communications applications.



ND SatCom
@Satellite Booth # 2325 @CABSAT Hall 7 Booth A7-10
www.ndsatcom.com

At Satellite 2020, **ND SatCom** will be highlighting its **SKYWAN 5G** product. The SKYWAN 5G satellite router is a reliable, flexible and versatile satellite communication platform for customer centric networks. It is a bi-directional MF-TDMA plus DVB-S2X system that supports voice, video and data applications in the most bandwidth efficient manner combined with unrivalled real-time performance.



SKYWAN 5G unlocks new business opportunities for service providers e.g. in enterprise networks. Total cost of ownership is significantly reduced thanks to the fact that only one type of device is needed for all roles in the network. Each SKYWAN 5G has the full functionality on board and specific features are unlocked by a license key. One small hardware for all network roles simplifies logistics and unprecedented scalability enables the growth of your network in a very cost efficient manner. This saves costs in terms of logistics, certifications, network configuration and maintenance. Measuring in at only 1 RU the SKYWAN 5G is the smallest hub device on the market.

SKYWAN 5G enables star, mesh, multi-star and hybrid topologies. Each unit can act either as a hub or master station, therefore adding agility in terms of its network role. Geographical redundancy of the master station is already built-in and a DVB-S2X outbound can be added easily at every station. Network virtualization allows seamless integration into all IT infrastructures. The device is so flexible: the customer can change the topology anytime, or cascade units to increase traffic volume per site according to business growth.



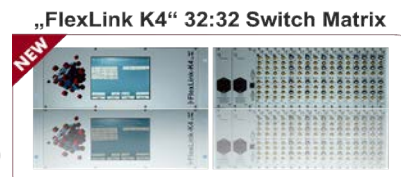
RF Design
@Satellite Booth # 334
www.rf-design-online.de



RF-Design specializes in developing, manufacturing and marketing high quality RF equipment, RF distribution and RF-over-Fiber solutions for the international Satellite-, Broadcast- and Broadband communications market.

Our product portfolio includes a wide range of Switch Matrix systems, RF-over-Fiber solutions, Splitters/Combiners, Switches/Redundancy Switches, Line Amplifiers, RF Signal Quality Analyzers...perfectly suited for applications in Teleports, Satellite Earth-Station as well as for Broadcast- and Broadband RF distribution infrastructures. We also have strong capabilities to design and to manufacture custom-made products and solutions for your individual needs. All our products are developed, manufactured, tested and approved in our own facilities in Lorsch/Germany and characterized by high quality, reliability and superior RF performance.

At SATELLITE 2020 we will demonstrate our new "FlexLink K4" and "FlexLink S9E" Switch Matrix systems along with our Quad RF-over-Fiber system "QLink" and our innovative "HQ amplifier series".



RSCC
@CABSAT Hall 8 Booth G8-30
www.rsc.ru



Russian Satellite Communication Company (RSCC) is the Russian GEO satellite operator with global coverage. RSCC provides a full range of communications and broadcasting services via its own terrestrial telecom facilities and satellite constellation; e.g. video distribution and contribution, DTH, DSNG, broadband Internet access, IP trunking and cellular backhaul, maritime mobility, SCADA, enterprise networks connectivity and other. The company operates various regional satellite TV distribution networks and corporate VSAT networks for fixed and mobile customers.

SatService GmbH
@Satellite at the SED Calian Booth # 1924
www.satservicegmbh.de

SatService as a part of the Calian-SED Systems group offers a broad range of services and turn-key solutions in the field of



satellite-based communication technologies. Additionally, SatService develops the sat-nms product family like Beacon Receiver, Antenna Control Unit, Monitoring & Control Systems and optical links which we'll show at the Satellite in Washington. One of our highlights is our sat-nms ACU19V2 as a plug-and play replacement of the well-known GD ACU 7200, in a package together with our beacon receiver sat-nms LBRX19. Further kits to upgrade existing stations are available.

Spacebridge

@Satellite Booth # 1424 @CABSAT Hall 8 Booth F8-20
www.spacebridge.com



SpaceBridge Inc. is an established supplier and global market leader in broadband satellite communications technology. The company develops and provides

satellite network equipment and services, VSAT HUBs, Terminals for Point-to-Point, Point-to-Multi-Point, and Mesh typologies, as well as SCPC broadcast modems for GEO & NGSO satellite constellations and Cloud-Based managed services.

Terrasat Communications

@Satellite Booth # 425 @CABSAT Hall 7 Booth #704
www.terrasatinc.com



At Satellite and CABSAT, **Terrasat Communications** presents the latest state-of-the-art IBUC for Fly-Aways & COTMs; the IBUC 3. The latest in Terrasat tech is now

ultra-lightweight, super compact, available up to 40W & comes with a 3-year warranty. All IBUCs allow the operator to customize configurations & manage alarms & sensors for real-time network management and control. IBUC reliability is baked into the IBUC 3 design and verified through intensive individual unit testing.



Terrasat's IBUC3

UHP Networks

@Satellite Booth # 301
www.uhp.net



UHP Networks is a leading global manufacturer of advanced VSAT networks and systems. Headquartered in Canada, the company has over 380 networks and over 45,000 remote terminals installed in over

50 countries. Among its customers are Fortune 500 corporations, major broadcast networks, top-tier US Mobile Network Operators and government agencies. UHP has the industry's first software-defined VSAT router, offering unparalleled processing capability (packets per second, Mbps, TCP sessions) per W of consumed power and superior bandwidth efficiency owing to the industry's most sophisticated TDMA protocol and DVB-S2X signalling. The company won the 2018 VSAT Stellar Award for Best Ground Segment Technology.

Walton Enterprises

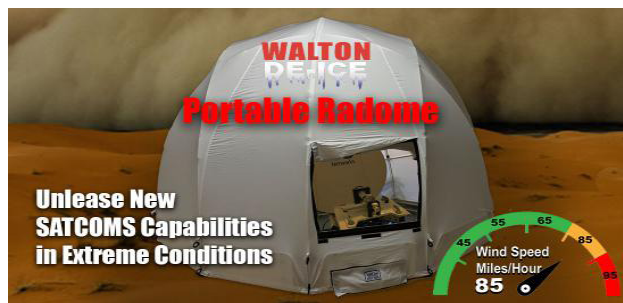
@Satellite Booth # 531
www.de-ice.com



Protect your signal from loss and degradation with industry-leading weather protection systems from **WALTON DE-ICE**.

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Patented SNOW SHIELD antenna cover offers active Heating options. ICE QUAKE covers shed off snow before ice forms, saving up to 100X energy.

Work Microwave
@Satellite Booth # 209
www.work-microwave.com



WORK Microwave's Satellite Technologies division develops and manufactures high-performance, advanced satellite communications equipment for telecommunications companies, broadcasters, integrators, and government organizations that are operating satellite earth stations, satellite news gathering vehicles, fly-aways, and other mobile or portable satellite communication solutions.

At its booth at Satellite, WORK Microwave will be showcasing its new compact dual Ka-Band converter. The very compact design of the dual Ka-Band converters is especially suited for the small antenna hubs of the new Non-GEO satcom constellations operating in the 27.5 to 30 GHz range.

Xiplink
@Satellite Booth # 318
www.xiplink.com

Xiplink is the technology leader in wireless link optimization

tion (WLO) using industry standard SCPS TCP acceleration, UDP enhancements, data/header compression, link bonding and Internet



optimizations to deliver a better wireless experience over stressed communication links. Our award-winning XipOS software dramatically improves web experience and optimizes other Internet traffic in markets such as maritime, cellular backhaul, ISP backhaul, military and aviation broadband. The XipLink solution is packaged into appliances or virtual images and sold through OEM, Integration and Service Provider partners around the world. XipLink is a private, employee owned company with headquarters in Montreal, Quebec Canada and field personnel worldwide.

At its booth in Satellite, XipLink will provide information on SD-WAN Optimization, Link Bonding/Balancing, Traffic Steering, Firewall and Security.



@CABSAT visit Satellite Markets and Research's booth at the media area.

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 **SATELLITE 2020**

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Before There Was Nomophobia* There Were Teleport Awards

by **Lou Zacharilla**

Admit it: You do not remember being at the very first Teleport Awards for Excellence Luncheon 25 years ago. And maybe that's not a bad thing, since there were only a handful of folks there. What I remember is one guy in the front row of the cafeteria in the old Convention Center who either had snuck into the show or crawled in on all fours. He proceeded to fall asleep during my opening remarks. My remarks!

What I also remember is that he had a can of Coca-Cola in his hand and his sleep was so deep and dedicated to whatever dream he was having that he lost all muscle control. The Coca-Cola company may have been OK with his way of "tasting the feeling," but the janitorial staff at the Convention Center was not. While dozing, the soda poured out all over his lap and onto the floor at the same time that a remarkably relaxed executive from Tokyo Teleport Town, the "Developing Teleport of the Year" (yes, that was a category back in 1995) simply smiled, bowed and took his trophy.

It got better.

In fact, the ceremony became a Luncheon and the Awards grew with the industry. Tokyo Teleport Town is no longer but WTA's Teleport Awards for Excellence are. And they represent the history of the industry.

* **Nomophobia** - The fear of being without one's mobile phone or network coverage.

1995-2000 was a period of growth in the commercial teleport industry and we began to see its expansion worldwide. Teleport technology, still in its infancy really, also began to bud. While no one paid much attention to a young company from North Carolina which, a few months before the Coca-Cola incident had sold its first product, a 1.5-meter vehicle-mounted antenna for satellite newsgathering to BAF Communications, in 2006 AvL – which everyone knew - would receive a WTA Award for technical excellence. The age of the entrepreneur was fully underway.



Lou Zacharilla, on left, with Guido Neumann, last year's Teleport Executive of the Year awardee.

The next 10 years were generally a period of increased penetration of market niches, such as Internet trunking, maritime services, energy industry communications, and government and military comms, as the world waged a new kind of war and attempted to keep peace in the midst of it.

With entrepreneurship unleashed and financing flowing tech around the industry grew significantly. In 2001 WTA introduced its Technology of the Year award. While Newtec, Comtech and other iconic marquee names have won the award multiple times since – and deservedly – in 2001 a little startup in Buford, Georgia (USA), Crystal Computer took home the prize for its innovative Crystal Vision product. That same year Laura Kenny, president of Williams Vyvx Services (remember them?) became the first woman to win a teleport industry award.

The last 10 years have been a period of consolidation. Entrepreneurship has not slowed down. The industry has matured into a tech industry where smaller companies are born, grow and become integrated into larger companies. In 2013 Bill Tillson,

OPINION

CEO of Encompass Digital Media, became the only executive in the history of the Awards to be named Executive of the Year two years in a row. Some said that the financial people were turning once unruly teleport operators into adults.

As we arrive in Washington this year with CPI Antenna Systems Division as our host, there continues a transition away from standalone solutions, as opportunities expand for teleports and satellite networks to become fully integrated into global telecom, the Cloud, mobility and networks that are tightly integrated and delivering data in volumes unimagined on the afternoon when the Coca-Cola stuck to our shoes!

As for the Awards Luncheon, upgrading it has been fun and we could not have done it without a long line of solid sponsors, media support like that provided by this publisher and of course the fierce determination of independent operators from Argentina to Spain to Singapore.

When you get into the room on March 10th you will notice that Coke has been replaced by Champagne and iced tea. The jokes are just as bad, but

the event has evolved into the industry's "Oscars." We knew this when in 2004 CEO Christian Steffen of Germany's Stellar DBS Teleport held the trophy over his head and declared, in pure James Cameron style, "I am the king of the teleport world!"

We will salute moments like this and use our nomophobic habits – which were not in evidence in 1995 – to let the world know who the Independent Teleport Operator of the Year is and salute those who managed to stay awake.

The Teleport Awards for Excellence will take place in room 151-A-B of the Washington Convention Center starting at Noon. To register go to: <https://www.worldteleport.org/page/TeleportAwards> or contact WTA at rbarney@worldteleport.org



Lou Zacharilla is the Director of Innovation and Development of the Space and Satellite Professionals International (SSPI). He can be reached at: LZacharilla@sspi.org

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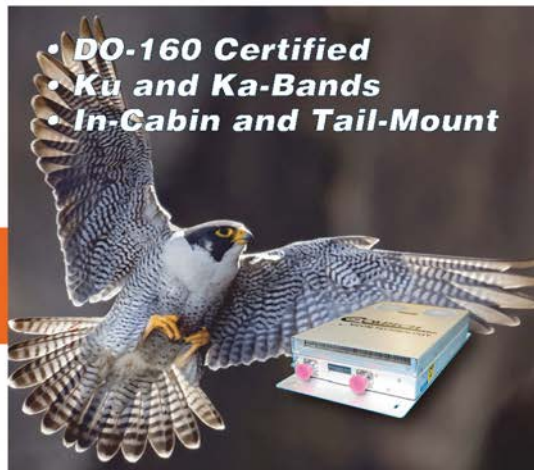
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#CABSAT2020

CABSAT: From 5G to Satellite Innovation

CABSAT—the leading specialist event for the broadcast, satellite, digital media and filmed entertainment industries for the Middle East, Africa and South Asia (MEASA) – is entering its 26th edition with a newly evolved format that will bring the entire content, satellite, broadcast, digital media and entertainment ecosystem under one roof.

Taking place at the Dubai World Trade Centre (DWTC), 31st March – 2nd April, CABSAT 2020 will unite the media industry's creative experts and most sought-after technology suppliers to unpack and unveil the latest in consumption habits, digitisation efforts and next-gen revenue opportunities being shaped by modern audiences.

CABSAT's Content Creation pillar will be the meeting point for the industry's brightest minds. The Content Congress will engage a unique cross-section of senior industry stakeholders with up-and-coming influencers to share forward-looking insights into how to adapt traditional broadcast models, the benefits of disruptive thinking and the future of broadcasting not only for the region, but worldwide.


For the first time, CABSAT 2020 will be hosting its 5G Focus Day, a one-day seminar to explore 5G advances in the MENA region that are reshaping the media conversation. The Middle East and Africa region is set to be at the centre of the 5G revolution, with 30 million 5G mobile subscriptions expected in the region by 2024 and all six GCC countries are expected to launch 5G mobile services in the next two years, with the UAE aiming to deploy 5G in 2020. As 5G networks become a reality, new products, services, business models and entire industries will be born. Under the theme of '5G and Beyond', the seminar at CABSAT 2020 will give visitors a glimpse of how 5G will drive productivity, task au-

tomation and digital connectivity. Featuring a series of technical and strategic keynote addresses, panel discussions and workshops, the seminar will address the needs of broadcasters and content providers to transition smoothly into the 5G era. al transformation and growth guru for digital media and telco brands.

Making its debut this year is the all-new GVF SATEXPO Summit, formerly known as the GVF Satellite Summit, which will focus on industries including aviation, military, maritime, humanitarian assistance and disaster response. The Summit will extend over two-and-a-half days during CABSAT, featuring keynote addresses, a series of themed interactive sessions, and special focus sessions, covering key topics on the satellite industry agenda.

While CABSAT's Digital Hub will continue to focus on the digital and over the top (OTT) technologies this year that facilitate the delivery of video or digital content via internet protocol and purpose built platforms for 'anytime, anywhere' consumption, this year will also see the photography and videography sectors evolving further at the show, through Imagescape. The show will continue to support the entire

imaging sector and feature the latest in video and photography. Held in collaboration with Advanced Media Trading, the visitors will get access to free workshops, educational seminars and interactive learning sessions presented by leading professional photographers.

The CABSAT Global Meetings Program will also provide unprecedented opportunities to exhibitors, visitors and delegates to network and have pre-arranged meetings set up before they even arrive at the venue with key players. Last year, 1,178 meetings were booked as part of the programme, engaging with 5,000 users and deals worth up to US\$ 3.75 million signed during the program 



Satellite Operators' Minimum Antenna Performance

by **Martin Jarrold**

A long-term core feature of GVF's multi-faceted agenda has been development of a consensus-based framework to improve efficiency in satellite operators' terminals type-approval procedures. Using this framework, once a type approval is provided to a manufacturer by any one of the participating satellite operators, other operators may recognize the results of the tests conducted during the first operator's type-approval process, avoiding test repetition.

To achieve this, the GVF's Mutual Recognition Arrangement Working Group (MRA-WG) created procedure GVF-101, which defines the standard tests that an antenna/Earth station manufacturer should perform to apply for type approval from any satellite operator. This not only improves the quality and completeness of test data but helps reduce the time and cost required to bring new ground-segment technology to market.

Ground terminal equipment serving the satellite service industry has to meet high performance standards to avoid causing interference. Minimum performance recommendations are de-

finied by the ITU and operators are required to adhere to these but often increase the specification requirements to enhance the quality and reliability of the service provided to their customers. Compliance with ITU or satellite operator specifications can only be demonstrated by conducting thorough product testing.



Industry has seen advances in the technology regarding the design and manufacture of satellite ground terminal equipment, advances calling for the development of new test methods to characterize terminal performance to support the growing volume of satellite terminals. Unprecedented growth in use of satellite communications solutions is reflected in continuing concerns about antenna performance as a key factor in the prevention of adjacent satellite interference. Closely spaced satellites in the GEO orbital arc – and now the potential for additional interference issues related to the LEO mega-constellation

paradigm – means that maximizing antenna performance remains a high priority. As a result, it has become ever more desirable for satellite operators to work with antenna manufacturers to improve the antenna terminal qualification process.

The latest initiative driving this process has been a joint enterprise between the MRA-WG and a group of satellite operators (AsiaSat, Eutelsat, Inmarsat, Intelsat and SES) which have collaborated to develop updated guidance to antenna manufacturers regarding operators' expectations for new antenna products, and on demonstrating compliance with the specification requirements of SOMAP – the Satellite Operator's Minimum Antenna Performance requirements.

Working within the overall framework of the MRA-WG, the SOMAP initiative was started, and related requirements codified, to improve Quality of Service (QoS) worldwide for the industry and to minimize interference. The availability of quality products demonstrating compliance with operator specifications provides manufacturers with a valuable sales tool to differentiate their products. the SOMAP satel-



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March 9-12

Meeting Room #206, Level 2

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MARKET INTELLIGENCE

lite operator group has the final authority for resolving questions regarding product compliance.

The SOMAP framework is primarily intended to address the qualification of new antenna products being introduced to the market, but whilst the SOMAP group has the final authority for resolving questions regarding product compliance, SOMAP does not introduce another standard, replacing those from ITU, FCC or ETSI, for example. Those will remain in place, as well as the antenna performance requirements which every satellite operator defines themselves. The intention is to set a minimum of performance criteria, which have to be fulfilled in situations when an antenna does not meet the standards currently in place,

but in theory could work well in a given environment, as long as contractual constraints with adjacent satellite operators are met. Regular operation still requires compliance with existing standards, which future antennas should be designed for.

The SOMAP framework consists of: Minimum Antenna Testing Requirements; Minimum Antenna Performance Requirements; and, Performance Data on Manufacturer Product Datasheets, and has the objective of offering consistency for customers and antenna manufacturers. It does not

replace the formal type approval procedures for each of the operators but establishes minimum performance that each of the operators expect when deploying equipment which has not been formally type approved. SOMAP is an important tool for achieving the QoS which satellite users expect and for the prevention of satellite interference. You can find out more about the MRA and about SOMAP – and associated documentation – at <https://gvf.org/working-groups/> 



Martin Jarrold is Vice-President of International Program Development of GVF. He can be reached at:

martin.jarrold@gvf.org

PRODUCT SPOTLIGHT

RF-Design Supplies RF Over Fiber Systems for Nilesat

RF-Design, a leading manufacturer of RF distribution and RF-over-Fiber solutions for the global satellite communications industry, together with their local partner Wahsh Engineering and the German system integrator HILTRON has supplied their FiberLinkplus RF-over-Fiber system for a new TVRO downlink operation at the satellite ground station facilities of Nilesat in Giza/EGYPT.

Nilesat's new downlink operates 9 TVRO Ku-Band antennas with all their signals being transmitted to their Master Control Room (MCR) by RF-Design's FiberLinkplus RF-over-Fiber system in a N+1 redundant configuration.

Nilesat's high requirements for a stable and secure optical transmission for this TVRO application have been fully met with RF-Design's RF-over-Fiber system. The supplied RF-over-Fiber solution for Nilesat is offering high resilience by N+1 redundant optical transmission along with hot-swappable optical TX and RX modules and 1:1 redundant dual power supplies. Best quality RF performance and features such as variable gain-control, RF-power monitoring and switchable LNB-supply along with local and remote configuration capabilities give Nilesat the opportunity to transmit their signals with accurate RF power and highest stability.

Professional teamwork of all involved companies combined with the custom designed turnkey system design, material provision and system integration especially designed to meet Nilesat's requirements have

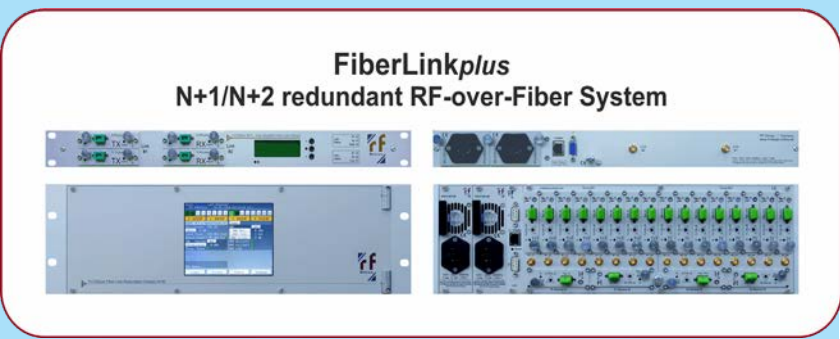


PRODUCT SPOTLIGHT

been the deciding factors in choosing to cooperate with RF-Design, Wahsh Engineering and HILTRON, said Mr. Hamdy Mounir, CTO of Nilesat.

“We at RF-Design together with our partners Wahsh Engineering and HILTRON are very grateful that Nilesat and their CTO, Hamdy Mounir and his team have showed their trust in us” said Ralf Mayr Managing Director and Oliver Vogel Director Sales and Marketing at RF-Design.

“Such an achievement not only demonstrates that the products and services provided by RF-Design, Wahsh Engineering and HILTRON are perfectly suiting the requirements of the global satellite ground station market but also shows that a cooperation based on teamwork and constant focus on customer requirements results in a win-win for all involved parties”.



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EXEC MOVES

WTA Names Mauricio Segovia Teleport Executive of the Year

New York, NY, February 21, 2020 –The World Teleport Association (WTA) announced that it will present the 2020 Teleport Executive of the Year Award to Mauricio Segovia, CEO of AXESS Networks at the 25th annual Teleport Awards for Excellence Ceremony and Luncheon on March 10 during the SATELLITE conference in Washington, DC.

At the same luncheon the WTA also present two major awards for Independent Teleport of the Year and Teleport Technology of the Year.



Mauricio Segovia

The finalists for these awards are as follows:

2020 Finalists for Independent Teleport of the Year: COM-SAT(USA); Santander Teleport (Spain); and Talia (Germany).

2020 Finalists for Teleport Technology of the Year: Beam Budget by Integrasys; Newtec Dialog by ST Engineering iDirect and Cloud-based Service Delivery Platform (C-SDP) by SatADSL.

WTA selects its finalists from nominations submitted to the association by both members and non-members. Recipients are selected by a vote of the WTA Membership.

“Once again, in the 25th year of these Awards program, we see independent teleport operators and technologies from around the world continue to operate at a high standard. They are each ad-

justing to the new demands from customers and the growth and launch of fleets that are changing the way business is done everywhere,” said Lou Zacharilla, who will emcee the luncheon.

PJ Beylier Resigns as CEO of Speedcast

London, UK, Feb 3, 2020-The Board of Speedcast International Limited), a provider of remote communication and IT solutions, has accepted the resignation of PJ Beylier as CEO, effective from February 1, 2020.

While the preliminary view of the FY19 result is a little greater than 10% below the Company’s previous guidance, that result includes a number of items (such as procurement savings and sale of minor surplus assets) that do not directly contribute to ongoing earnings. In light of the disappointing preliminary FY19 result, the Board accepted PJ Beylier’s resignation from his role. He remains available to support the management team and the interim leadership over the next three months.

Commenting on his resignation, PJ Beylier said “2019 was a challenging year for Speedcast. The quality of the financial result is not in line with the Board and management’s expectations, which I take responsibility for and have therefore decided to resign. I want to thank all our employees for their amazing passion and hard work over the past 20 years that has made it possible to build together the global service leader that Speedcast has become.”

A global search for Speedcast’s new CEO has commenced with Russell Reynolds, with a particu-

lar focus on Europe and the US for candidates. In the interim, existing Board Directors Peter Shaper and Joe Spytek have agreed to act as co-CEOs of the company. Shaper and Spytek will also continue as Directors.



P.J. Beylier

Calian SED Appoints new Director, Satellite Ground Antenna Systems

Ontario, Canada, January 24, 2020-- Calian SED (formerly SED Systems) has appointed Rob Vance as its new Director, Satellite Ground Antenna Systems.

The new position was created to lead the sales activities for the company’s new line of high performance composite carbon fiber antennas, designed to meet the demanding operational requirements of Ka/Q/V-band frequencies and beyond.

Reporting to Calian SED’s VP, Communication Ground Systems, Darren Schlageter, Vance will assume his role immediately and will be based in San Jose, California.

Vance brings with him an extensive background in the technology sector along with specific expertise in satellite ground system sales and engineering.

“Rob’s unique experience in the satellite ground systems market, combined with his extensive set of relationships with key industry players, will be very beneficial to Calian SED,” said Patrick Thera, President, Calian SED.



Mitja Lovsin, General Manager, STN

The teleport business is a dynamic part of the satellite industry. *Satellite Executive Briefing* spoke with Mitja Lovsin, General Manager of STN, a full service teleport located in Slovenia in Central Europe, who gave us an update on his company and his views on trends in this vital segment of the industry.

Can you give us an update on the developments in your company and your position in the industry at this point?

Dynamic, fast changing and challenging, are just a few words to describe our industry in the last years. However looking beyond the present, it appears this decade will see accelerated advancement in LEO /MEO satellite constellations that it will open a complete new gateway of connectivity and data speed. This will potentially influence the course of business for all sectors of our industry including end users.

What will you be focusing in 2020 as far as services and your goals for the company?

For STN as the teleport and ground service section of our industry, it is necessary that we adapt strategically and continue to develop an alternative approach to maintain our success.


What key trends do you see in the teleport industry and how are you as company positioned in these areas?

Trends in this fast paced industry dictate that the teleport must now look to the future not only technically as it has done in the past but also physically. With the anticipated increase in satellite launches there is the potential for new opportunities which may include larger scale antenna co-location and data centre service requirements. The remarkable increase in demand for broadband data usage is unprecedented and the speed, security and reliability of the internet supply is crucial. The volume of changes for our industry in the foreseeable future cannot be underestimated. STN has continued to remain robust and competitive in what I would consider to be an industry endurance test for the teleports. What has been key for us to date is the ability and agility of STN as a company. The advantageous geographical position of our European based facility gives us to reach to all major



satellites allowing us to offer global satellite services and virtually unlimited fibre and internet supply. We continue to invest in new technology to provide a broader more modern range of services.

Any other things you would like to add?

This new decade 2020 will see STN advance its position on projects outside the traditional teleport sector, while strengthening its position within the broadcasting satellite services. We embrace the advancement in our industry and move forward with renewed inspiration, excitement and confidence for the continued success of STN. 

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Global Distribution Services

Comtech Acquires Gilat Satellite Networks

Melville, NY, January 29, 2020--Comtech Telecommunications Corp. and Gilat Satellite Networks Ltd. announced that Comtech has agreed to acquire Gilat in a cash and stock transaction for US\$ 10.25 per Gilat ordinary share of which 70% will be paid in cash and 30% in Comtech common stock, resulting in an enterprise value of approximately US\$ 532.5 million.

Founded in 1987 with its headquarters in Israel, Gilat is a leader in satellite networking technology, solutions and services with market leading positions in the satellite ground station and in-flight connectivity solutions markets and expertise in operating large network infrastructures.

Based on Comtech's fiscal year 2019 actual results and Gilat's trailing twelve-month results through June 30, 2019, on a pro-forma basis, Comtech would have reported approximately US\$ 926.1 million of revenue with Adjusted EBITDA of approximately US\$ 130.2 million (see definition and reconciliation to GAAP financial measures in the table below). The combined companies would employ approximately 3,000 people and offer satellite technology, public safety and location technology and secure wireless solutions to commercial and government customers around the world.

Gilat announced on November 19, 2019 that it expects to achieve sales of between US\$ 260.0 million and US\$ 270.0 million with Adjusted EBITDA ranging from US\$ 38.0 million to US\$ 42.0 million for its fiscal year ended December 31, 2019. Comtech announced on December 4, 2019 that it expects to achieve sales of between US\$ 712.0 mil-



lion and US\$ 732.0 million with Adjusted EBITDA ranging from US\$ 99.0 million to US\$ 103.0 million for its fiscal year ending July 31, 2020. Neither Comtech nor Gilat is revising their previously announced respective fiscal year financial outlook.

Fred Kornberg, Comtech's Chairman of the Board and CEO will continue in his role as CEO of the combined company. Michael Porcelain, Comtech's Chief Operating Officer, who was promoted and named President of Comtech earlier today, will work hand-in-hand with both Comtech and Gilat employees to maximize the potential of the combined company. Michael Bondi will continue in his role as Chief Financial Officer of the combined


company. Comtech will continue to maintain its headquarters in Melville, New York.

Post-closing of the transaction, Gilat will become a wholly owned subsidiary of Comtech and will maintain its brand. Gilat will continue to maintain its corporate headquarters and research and development facility in Petah Tikva, Israel under the leadership of Yona Ovadia, Gilat's CEO and Adi Sfadia, Gilat's CFO. Sfadia will also be assuming the role of Gilat's Chief Integration Officer, helping to plan a smooth acquisition and to maximize shareholder value.

No Comtech or Gilat facility locations are expected to be closed as a result of the transaction and each key business area is expected to continue to be led by its respective existing leadership teams after the transaction closes.

Under the terms of the agreement, unanimously approved by both companies' Board of Directors, Gilat shareholders will receive total consideration of US\$ 10.25 per share, comprised of \$7.18 per share in cash and 0.08425 of a share of Comtech common stock for each share of Gilat held.

The total consideration of US\$ 10.25 represents a premium of approximately 14.52% to Gilat's 90-day volume-weighted average trading price.

Upon completion of the transaction, Gilat's shareholders will own approximately 16.1% of the combined company. 

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Connected Cars Evolving to a US\$ 12.7 Billion Market

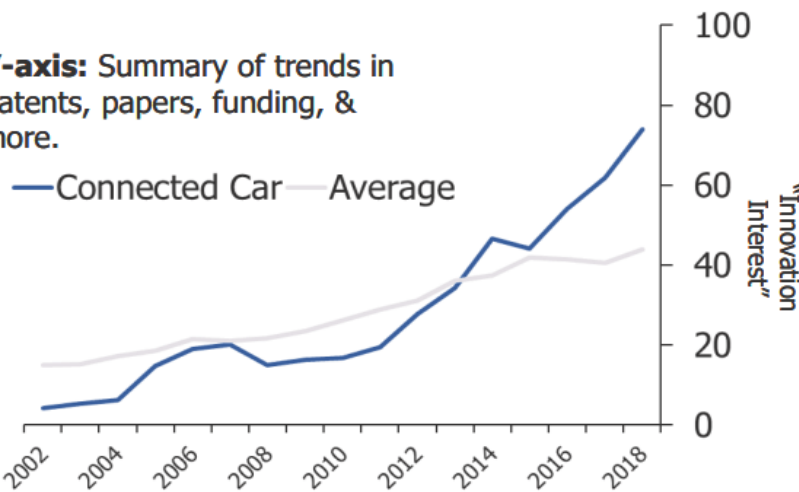
As recently as the mid-2000s, the concept of a connected car was limited to maps and music. Now, as we begin a new decade, the market for hardware and software systems inside these connected vehicles is expected to reach \$12.7 billion by 2030, according to a new report from Lux Research.

The report, “Key Players and Business Models in the Connected Car,” examines the complex ecosystem of connected car players and helps clients navigate the opportunities and challenges on the road ahead.

“The connected car marketplace – and the opportunities surrounding it – has changed significantly since its hyper consumer- and leisure-focused infancy,” said Josh Kern, Analyst at Lux Research and the report’s lead author. “Cellular connectivity, cloud management, data access, and data analytics make up the key pillars of the next frontier. Just as smartphone app developers learned to use advertisements to supplement revenue from app users, connected car services need to find revenue sources other than drivers themselves.”



Y-axis: Summary of trends in patents, papers, funding, & more.



While Lux anticipates the global market for connective technologies inside of cars to reach almost US\$ 13 billion by 2030, it is likely that the market cap will grow even higher due to increased investment in outside-the-car technologies, such as cloud computing and connected infrastructure.

In advance of this growth in market share, the commercialization of connected car technologies has already begun in earnest. The Lux Tech Signal indicates that innovation interest in connected cars is more than double the average of the 2,500 technologies that Lux tracks.

The influx of activity surrounds 5G capability, vehicle-to-everything communication (V2X), and driverless cars.

Read the latest news, analysis, market trends, executive moves and many more at

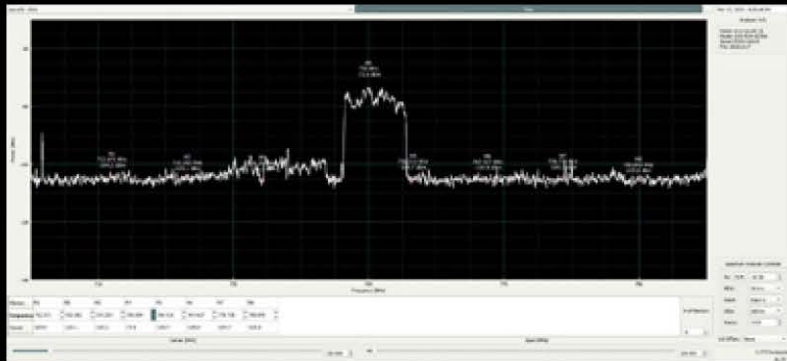
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Company Name	Symbol	Price		
		March 4	52-wk Range	
Satellite Operators				
Thaicom Public Company Limited	THCOM.BK	3.08	2.64	7.70
Eutelsat Communications S.A.	ETL.PA	11.49	11.33	18.67
APT Satellite Holdings Limited	1045.HK	3.73	2.65	3.94
Inmarsat Plc	ISAT.L	544.40	381.20	617.20
SES S.A.	SES.F	7.78	7.45	18.03
Satellite Manufacturers				
The Boeing Company	BA	280.62	269.60	434.35
Maxar Technologies	MAXR	15.41	3.83	21.45
Lockheed Martin Corporation	LMT	377.4	292.53	442.53
OHB SE	OHB.DE	36.1	30.55	48.65
Honeywell International Inc.	HON	161.89	150.38	184.06
Equipment Manufacturers				
C-Com Satellite Systems Inc.	CML.V	2.10	1.25	2.18
Comtech Telecommunications Corp.	CMTL	27.73	20.95	38.00
Cobham Plc	CBHMY	4.49	2.39	4.52
ViaSat Inc.	VSAT	59.03	52.98	97.31
Gilat Satellite Networks Ltd.	GILT	9.37	7.32	10.76
Service Providers				
DISH Network Corporation	DISH	32.82	30.45	44.66
Globalstar Inc.	GSAT	0.43	0.34	0.69
Orbcomm Inc.	ORBC	3.16	3.06	8.44
Sirius XM Holdings Inc.	SIRI	6.48	5.23	7.40
Speedcast International	SDA.AX	0.79	0.68	4.15

The Satellite Markets 20 Index™ is a composite of 20 publicly-traded satellite companies worldwide with five companies representing each major market segment of the industry: satellite operators; satellite manufacturers; equipment manufacturers; and service providers. The base data for the Satellite Markets Index is January 2, 2008 - the first day of operation for Satellite Markets and Research. The Index equals 1,000. The Satellite Markets Index™ provides an investment benchmark to gauge the overall health of the satellite industry.

INDEX	Index Value 4-Mar-20
Satellite Markets 20 Index™	2,853.22
S & P 500	3,003.37

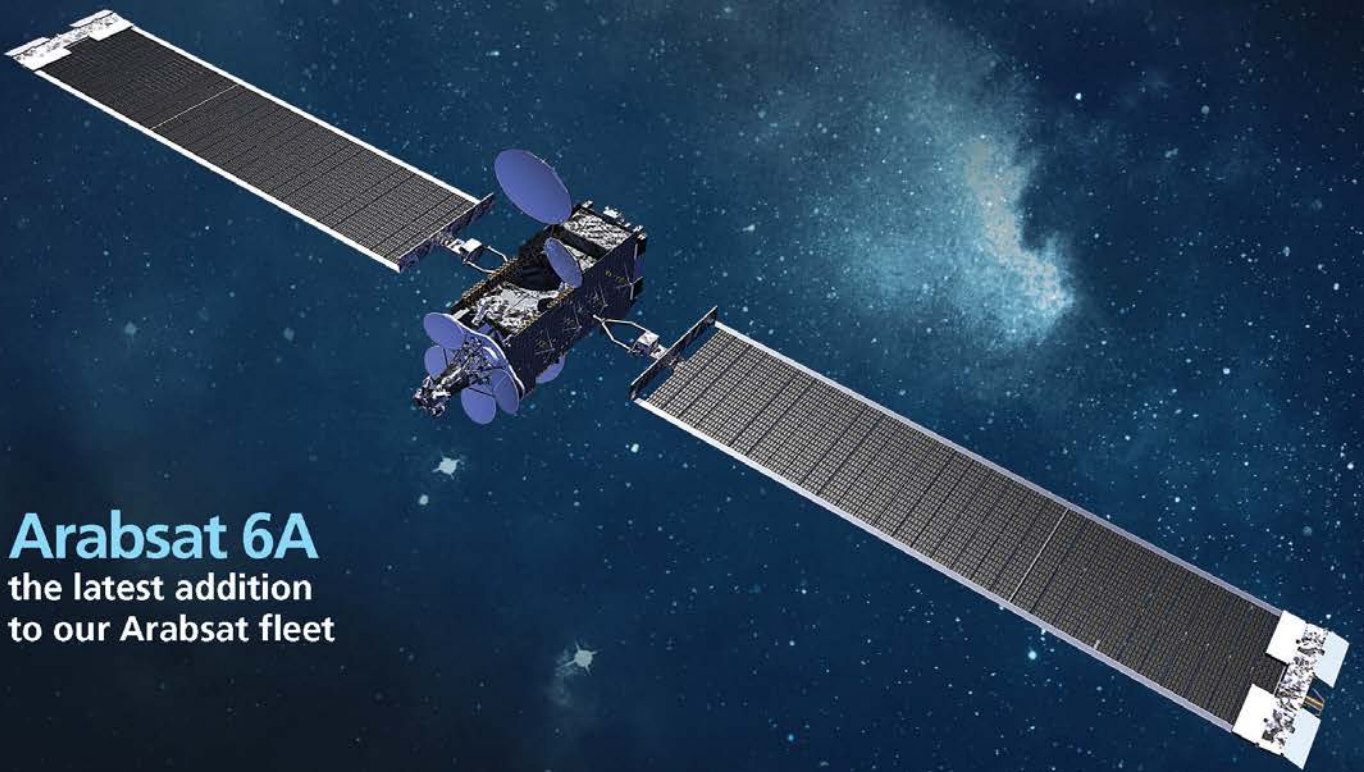
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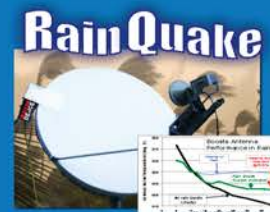
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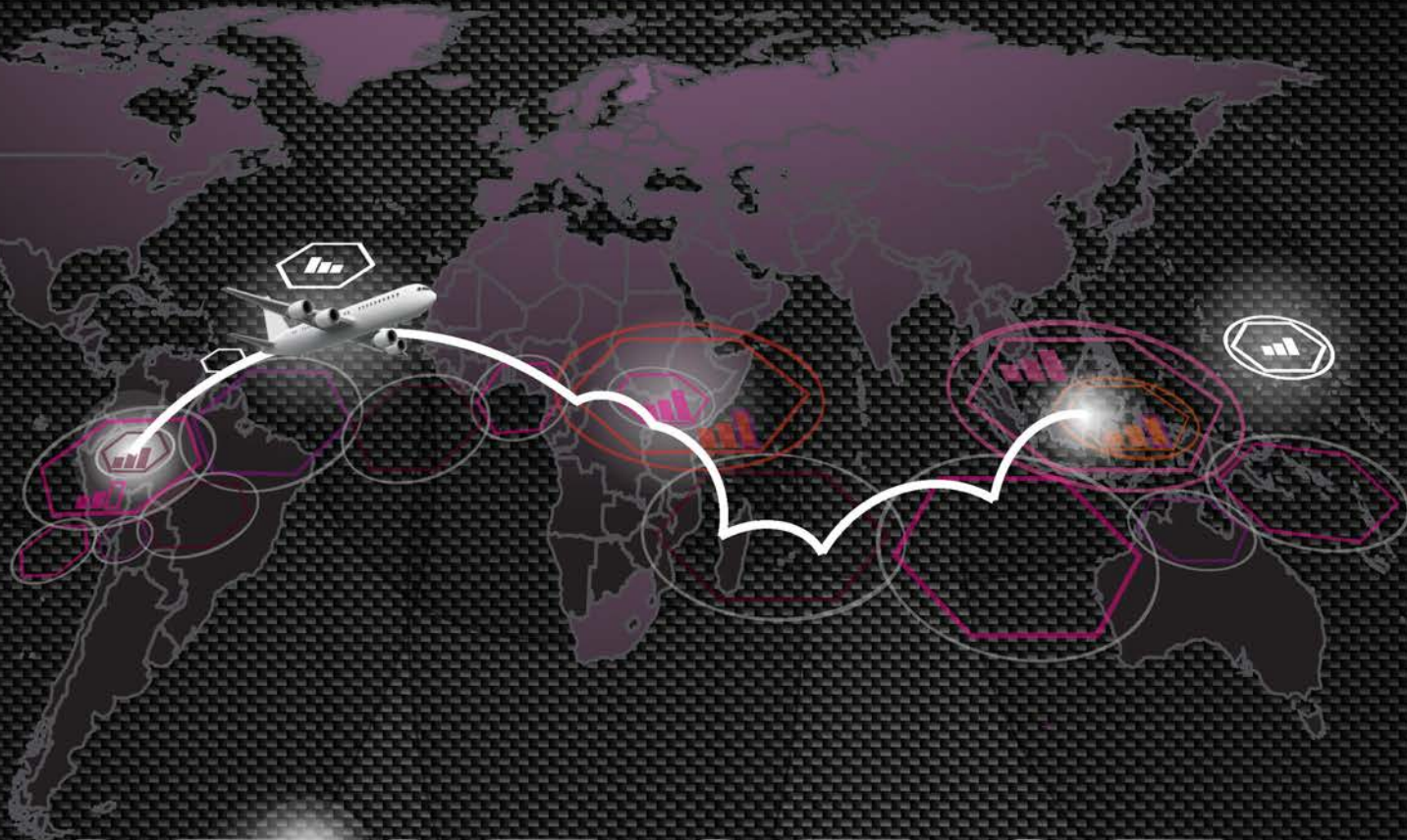
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