

# Satellite Executive BRIEFING

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Industry Trends, News Analysis, Market Intelligence and Opportunities

## Satellite Network Management

by Virgil Labrador, Editor-in-Chief

In the time of COVID-19 pandemic, when most activities are being conducted remotely, the effective and efficient management of satellite networks is more crucial than ever.

Software solutions are the core engine of many businesses. It can even be said the software is the business. The right software solution can make or break a service offering. The satellite industry is one of those industries where software and network management plays a key role. Therefore, the requirements for software and network management solutions for the satellite market are usually very stringent. For example, Very Small Aperture Terminal (VSAT) networks must be flexible, scalable, versatile, easy to implement and operate in various conditions for specific requirements according to established industry standards.



As a business, VSAT networks must also generate revenues, so a network management system should not only function optimally to meet customer requirements, it must also yield profit.

With the growth in enterprise, broadband and other verticals for the satellite industry, VSAT network management systems not only have to be flexible and reliable, they often require complex solutions and innovative approaches. Companies like Intelsat and other

satellite operators typically work with third-party software solutions companies for their satellite networks. In choosing a network management provider, it's important to work with companies that not only have proven track records but also have a culture of providing innovative solutions that meet their customers' re-

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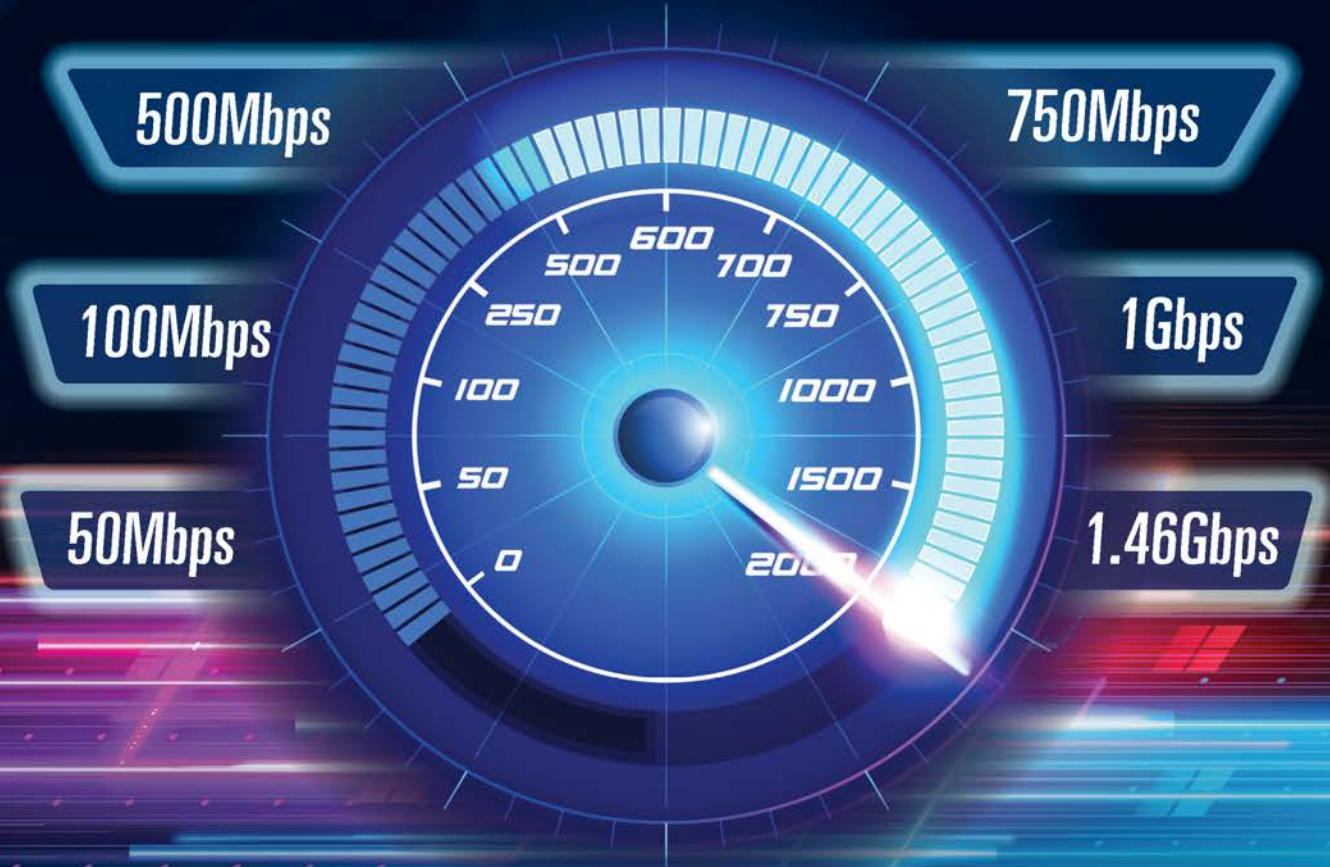
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## Virtual Events



At the mid-point of this turbulent year, most of the key industry events have gone virtual like the recent NAB and the forthcoming International Microwave Symposium in August and IBC and ConnecTech Asia in September. There are also a plethora of webinars and other virtual events organized by industry associations and individual companies. There are some benefits to these virtual events, you can watch some of them at your own time and most are free of charge. But if you are like most people in the industry, many are yearning for the face-to-face contact at live events.

As of this writing, there are still a few industry events in the last quarter of 2020 that are planning to stay live. These include CABSAT in Dubai, the World Satellite Business Week in Paris, APSCC in Manila and Africom in Cape Town. Whether they will continue to go live or not will greatly depend on how the world is able to control the pandemic that has all but halted all international travel for now.

Whether the event be virtual or live, we will have a presence at the key industry events and report the developments and trends. We'll keep you posted.

*Virgil Labrador*

Virgil Labrador  
Editor-in-Chief

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**Satellite Executive BRIEFING**  
Industry Trends, News Analysis, Market Intelligence and Opportunities

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## Network Management

from page 1

quirements.

### Network Management Market Trends

According to Kenneth Research, the global enterprise VSAT market is projected to grow beyond US\$ 10 billion by 2024. And one of the reasons there will be such massive growth is due to declining costs in satellite manufacturing and launches and the advent of new Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) satellite constellations. This has opened the gateway for numerous players to deploy networks for various markets. Opportunities presented by the upcoming technologies like 5G, Internet of Things (IoT) and Machine-to-Machine (M2M), will pave the way for the expansion of satellite networks. And this will result in the demand for sophisticated and highly reliable software solutions for satellite network management. Down the value chain, these business models are going to make satellite broadband/internet services cheaper as well as more reliable with respect to higher bandwidth which, in turn, would lead to greater demand for these services.

One of the more promising markets for satellite technology is the aeronautical field. According to Inmarsat's IFC survey in 2018 it is estimated that the IFC revenues reach approximately US\$ 30 billion by 2035. The maritime market is equally promising. Satellite communications technology is the only way to connect in the world's oceans, which covers 70 percent of the earth's surface.

***"...Even though the current global pandemic has led to a drastic slowdown in the aviation and maritime industries, the long-term prospects in these industries remains solid according to recent research from NSR and other consulting firms..."***

Commercial cargo shipping, cruise lines and oil and gas markets, among others are driving the demand for maritime satellite communications. The global maritime satellite communications market size was valued at US\$ 2.64 billion in 2018, and will



**Thousands of Low Earth Orbit (LEO) satellites are planned for deployment in the next few years to enable global broadband coverage. This provides a unique opportunity for network service providers.** Image: Thales Alenia Space

post a CAGR of 8.9% from 2019 to 2025, according to Grand View Research. Even though the current global pandemic has led to a drastic slowdown in the aviation and maritime industries, the long-term prospects in these industries remains solid according to recent research from NSR and other consulting firms.

As the digital expansion started integrating various industrial verticals, Over-The-Top (OTT) and Internet Protocol Television (IPTV) are becoming more dominant as opposed to the satellite

broadcasting services. This is leading to increasing demand for satellite broadband services. While the network architecture of satellite broadcasting was carried as it is since the early 90s, now the satellite network system needs an upgrade with respect to cloud technology for the video content distribution. One of the critical aspects of the satellite network management systems with respect to the video market will be the bandwidth allocation and subscription management; due to the upcoming wave of OTT and IPTV services. Satellite network management systems will be crucial for providing custom-tailored services to the subscribers as well as tracking the movement of the content consumption on a local and regional scale.

There is also opportunity for satellite technology in the rollout of 5G networks. 5G is a disruptive technology that is set to transform wireless connectivity, enabling ultra-fast broadband speeds, increased efficiency, reduced network costs, and more scalability, among a wide range of other benefits that will open up new markets and drive technology innovation. And 5G comes at the perfect time. The number of connected devices that are in use worldwide now exceeds 17 billion, according to the latest research from IoT analytics and is projected to reach

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over 50 billion in the next few years. With 5G, the industry can better address today's connected world and its growing connectivity requirements.

The demand for both hardware and software solutions is expected to double in the coming decade. Similarly, the satellite network management system is also expected to provide advanced end-to-end solutions to the operators and service provid-

ers. In 2018, with the industry's focus shifting towards managed service networks, satellite operator Intelsat contemplated various options to provide their customers a resourceful, easy-to-use way to manage terminals throughout their lifecycle. Given the nature of managed services networks, the envisioned new platform was intended as a business layer interacting with multiple other existing systems.

tion which covered most of the intended features out-of-the-box and was flexible enough to be customized where necessary. A track record of previous successful integrations proved this to be a viable option for the intended purpose.

Time was tight and a continuously growing list of requirements increased the scope beyond the initial design. Once the decision for the future IntelsatOne



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ers. This involves crucial aspects such as product management, monitoring, analytics, subscriber management, customer service, revenue generation, among others. Reliable and automated satellite network management systems are key to ensuring the satellite industry's continued disproportionate growth.

#### **Customer Requirements**

Satellite operators are demanding end-to-end satellite network solutions as the industry is leveraging several business opportunities in key market verti-

Various requirements has been brought forward, among them reliable and simple terminal lifecycle management, comprehensive permission management, and the need for short development cycles to rapidly address a changing market environment and customer needs. With customers from all over the world and some of their staff preferring their native language, support for multiple languages was essential, as well.

Faced with the choice between an internal project and external vendors, Intelsat identified G&S SatConnect® as a potential solu-

tion. Flex portal was made, a major effort towards reaching the specified feature set commenced for all stakeholders involved.

Software projects of this size and scope usually require months of preparation and often end up being more complex and expensive while delivering less than what was originally promised. With G&S SatConnect®'s modular architecture and many of the required features being available already, in this case the project could be streamlined. As only minor customizations to existing features were required, all effort could be focused on successfully

developing clear differentiators that set Intelsat apart from their competitors. One of the most popular of these features is the comprehensive, yet easy-to-use Fair Access Policy (FAP) feature, which allows not only setting rate limitations for individual terminals but for entire groups or organizations. Defining a collective volume package across terminals has improved the network quality and resulted in better service for all IntelsatOne Flex customers while also providing exciting new revenue opportunities.

With a mere four months time span between project start and delivery, a “white glove service” provided support during customer onboarding from the G&S team. Feedback has been

overwhelmingly positive as the management effort per terminal has seen a significant reduction while at the same time new business cases have been enabled. Furthermore, Intelsat itself has seen a reduction in support requests and benefits from its increased flexibility as new products can be pushed into the market with minimal lead time.

Building on the foundation that has been laid in 2019, new features and business-focused developments will further distinguish IntelsatOne Flex as a managed network in 2020.

**Key Considerations in Selecting a Network Management Provider**

One of the most important



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decisions you'll ever make for your business and your customers is choosing the right network management partner. As we have seen in the previous example with IntelsatOne Flex, it's important to find a company with a proven track record. It is particularly crucial, when you have to come up with innovative solutions within a very tight deadline. A quick turnaround and speed in getting to market are essential in the rapidly developing satellite industry.

Another key consideration is the ability to provide a turnkey service and an end-to-end solution. "Unlike many other software providers, we don't just sell the software itself. We support our customers throughout the entire project, from the initial requirements analysis through the implementation phase. Beyond that, we provide pro-active monitoring and 2nd- and 3rd level 24/7 support as well as customer and end-user training. In our development approach we continuously engage the customer with weekly updates and deployments so that feedback loops are short and can be taken into account right away. We measure a successful project by end-to-end success, committing us to rigorous quality control to ensure our customers are happy with our service," says David Schmitz, G&S SatCom Co-Founder and CEO.

There are many software and network management solutions providers to choose from in the industry. A number of them even have very innovative solutions, but they can be hidden in complex systems from their customers. One key feature of G&S SatCom's software solutions is that they make the complex inno-

vations more accessible to their clients. "We make complex solutions easier for network operators and service providers to fully utilize the potential that the satellite network can offer," says Marc Spinneker, Director of Business Development of G&S SatCom. "We consider ourselves an 'orchestration' software provider, meaning we automate processes and simplify methods to make it easier to use for both service providers and end-users," he adds.

One way to differentiate between software and network management solutions providers is the additional value that they can provide to your service. G&S SatCom, for example, can create new revenue streams for your network, which can have an impact on your bottom line. "With our software's marketplace portal feature, new revenue streams can be integrated in the network management system without any additional effort on the part of the service provider," says Spinneker. "We can also serve any verticals or applications and have the flexibility to integrate with our third-party software," he adds. "Simplifying processes, unlocking new revenue streams and

facilitating customer engagement through tailored workflows and unique value-adds creates value across the industry, and this is what we can do for any vertical," says G&S SatCom's Schmitz.

## Conclusion

By all indicators, the new decade of the twenties will be a very exciting time for the satellite industry. This decade will see new satellite constellations and increasing demand for network services for key applications and verticals. These new services will have complex requirements and their own set of challenges. Choosing the right software and network management provider will be ever more essential to meet the many challenges and complex network requirements of the upcoming satellite systems and of new key applications that will be their driving forces. 🌐



**Virgil Labrador** is the Editor-in-Chief of Los Angeles, California-based Satellite Markets and Research which publishes a web portal on the satellite industry [www.satellitemarkets.com](http://www.satellitemarkets.com), the monthly Satellite Executive Briefing magazine and occasional industry reports called MarketBriefs. Virgil is one of the few trade journalists who has a proven track record working in the commercial satellite industry. He worked as a senior executive for a teleport in Singapore, the Asia

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Research assistance was provided by Omkar Nikam for this report.



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It is Siberia. Where the city of Yakutsk claims to be the coldest in the world, where winter temperatures hover around minus 40 degrees. More than half of Siberians live in cities like this. But leave those cities, and you come face to face with the land. Millions of square miles of plains, mountains, lakes and swamps, frozen hard in winter, coming to green life in the short summers.

Here, people live in small towns and villages scattered across the land. Isolation can be harsher than the winter wind. It cuts people off from family and friends. It robs them of access to services, to work and education. Distance destroys the connections that make a good life. Except for connections by satellite.

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For most of them, it's the first internet connection they have ever had. It brings them public services and online education, work opportunities and connection to distant family and friends. It makes Siberia part of a vibrant online community circling the globe.



**Hughes Helps Expand the Global Community**

And Siberians has a lot to offer the world. They are a strong people who speak their minds, with a rich culture forged in hardship. They work hard and know how to play

hard as well.

Siberians don't let their challenging climate slow them down. Hughes, its Russian partners – and a little bit of satellite – are making sure that distance doesn't either. 🇷🇺



Click here to view a video on how satellite technology keeps Siberia connected:

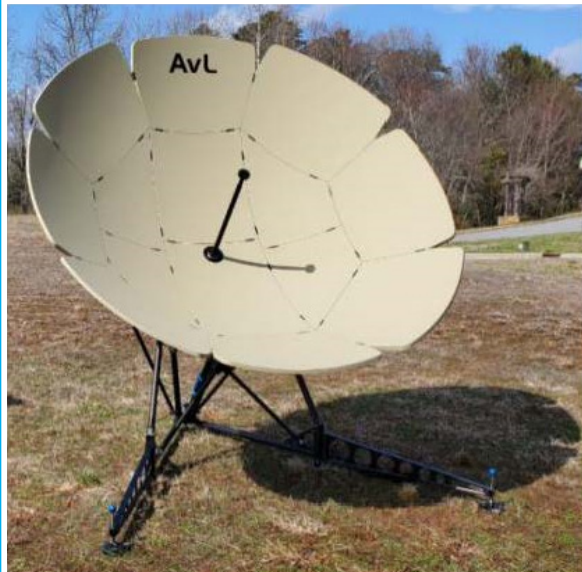
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RF-Design from Lorsch/Germany is developing and manufacturing RF Switch Matrix systems for the Satellite, Broadcast and Broadband communications industry for over two decades now and has achieved profound knowledge and experience in providing high quality switching and routing solutions especially to major Satellite Operators, Teleports and Broadcasters around the globe.

All FlexLink Switch Matrix systems are of superior quality assuring best performance as well as stable and secure operation at all times. The variety of RF-Design's Switch Matrix product range and the capability of their experienced team for developing and manufacturing also cus-tom made Switch Matrix solutions demonstrate that RF-Design is the number one choice for your individual switching requirements.

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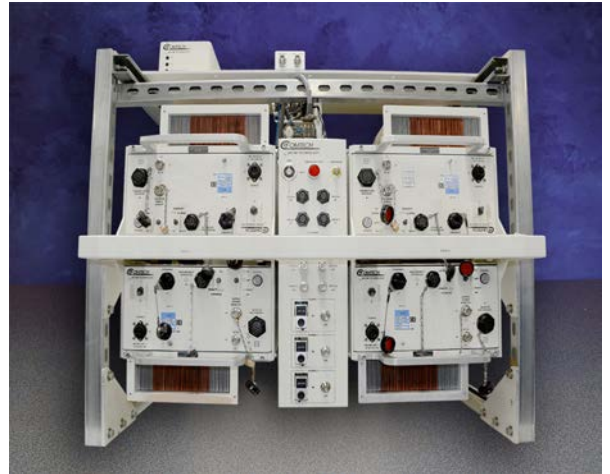
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# Satellites, Public Health and the End of the Non-stick Frying Pan

by Lou Zacharilla

“Haven’t we been using banal reasons to justify space exploration (and by extension satellites) like non-stick frying pans?”

“Yes. Our nation has never had a philosophy of space exploration.”

This conversation seems topical, doesn’t it? But it took place 34 years ago on American national television shortly after the Challenger space shuttle broke apart before our eyes. In those :73 seconds of shock, we entered into a pristinely misinformed debate which again has flared up. It sounds like an echo from the past, “Why go into space when right down here on Earth we have pandemics, poverty and problems that are chronic and debilitating?”

Among those listening to that broadcast in 1986 was Frank White. The author and social scientist listened to the exchange above, which took place between political commentator George F. Will and the author of “The Right Stuff,” Tom Wolfe. As White listened he allowed his intuition to guide him. He thought, “Well, if we have never had a philosophy of space, then I am going to tackle it and become a space philosopher.”

He has successfully done that. Having written three grand books, including the best-selling “The

Overview Effect” and recently “The Cosma Hypothesis,” he is considered our industry’s first and best philosopher. Our Socrates. His method in “The Overview Effect” was not Socratic so much as it was evocative. He interviewed and questioned those who had left the surly bonds of Earth and returned to learn if seeing it from another view had changed them in any way. Their replies were transformative. It is a new age cliché, or the tag line of a Pepsi commercial, to say that we are all “connected”



In 1986, millions of viewers saw the Challenger space shuttle break apart on live television, leading many pundits to question the viability of the space program. (image courtesy of NBC News)

to the Universe. But having had people in our profession, many of them clinical, bullet-head, no-nonsense engineers present near-divine evidence that we really are connected lifts our mission to another level.

It also demands of us a deeper responsibility. That

means to keep the industry going and growing. Second, it means continuously supporting those who tell our story and share the evidence that we really are a transformative industry.

Having a guiding philosophy for going to space and ensuring that satellites do more than enable the invention of “non-stick frying pans” is what Frank White inspired. His approach today could not have come at a better time. White’s practical definition of space philosophy is exacting and lays out clearly the relevance. He reinforces it in his books and in a

recent podcast:

<https://www.sspi.org/articles/better-satellite-world-podcast-mind-the-gap-a-conversation-with-author-and-space-philosopher-frank-white>

He totally reinforces the “Better Satellite World” concept. In a time of a brutal global health crisis the notion of connectedness and the vital role of satellites has emerged. In a new issue of The Orbiter, Maxar’s Walter Scott writes about the role of geospatial data, citing the Democratic Republic of the Congo’s struggle with Ebola as an example of the type of impact the industry is having on global health policy – or rather in lieu of a truly global policy.

<https://andoreamediaigroup.com/sspi/orbiter/satellites-and-public-health/satellites-and-public-health-articles/addressing-a-global-pandemic-with-geospatial-data/>

While we do not have a satellite that can produce a vaccine or lift a shattered social index for those who thrive on personal relationships and physical proximity, the industry is playing a major role in keeping civil society and swaths of the economy intact. As satellites were instrumental in helping to eradicate Polio in India – as Bill Gates readily admits - they are now enabling telemedicine services to help the world stay well and literally “see” their doctors. Nearly 80% of those in rural settings seeing doctors now are seeing them online.

If our industry was indispensable before COVID-19 its ability to provide robust access to communications and information revealed it to be fundamental to the “new abnormal” ahead. If we are digitizing the economy more rapidly as a result of the this virus, then satellites will become even more indispensable. And not just for mapping COVID breakout locations.

As Planet’s Director of Mission Systems, Isil Demir, wrote in The Orbiter, “There are aspects to this pandemic that may prove to be uniquely insightful for the biggest challenge of our lifetime: climate change. With most countries employing some level of lockdown measures, the breakneck speed of human activity on the face of the Earth dramatically slowed down. This small respite in human activity, and the subsequent fall in carbon dioxide emissions

**“...While we do not have a satellite that can produce a vaccine or lift a shattered social index for those who thrive on personal relationships and physical proximity, the industry is playing a major role in keeping civil society and swaths of the economy intact. ...”**

could prove to be a unique window into industrial history, providing scientists a rare glimpse of what Earth may look like when certain pollution factors are absent. This could aid scientists in creating better climate recovery models and help governments and organizations meet their sustainable development goals.”

From her mouth to God’s ears.

The notion that going out “there” is a frivolous endeavor or must give us a better experience when we fry eggs has probably seen its day pass. Having a philosopher with the data indicating that humanity’s emotional and spiritual lives are expanded as result of leaving Earth gives us confidence that while we are being profoundly transformed and socially wobbly for awhile there is, as there always has been, hope from above. 🗺️

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**Note: SSPI is planning a webinar on “Satellites & Public Health” in mid-July. Keep watching your email and visit [www.sspi.org](http://www.sspi.org) for more details on how you can register.**



**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](mailto:LZacharilla@sspi.org)

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# The New Webinar Epoch?

**by Martin Jarrold**

**W**ith the retreat of the glaciers at the end of the last major ice age began the current (official) geological epoch – the Holocene. It is argued across the science community that the Holocene has, in reality, given way to the Anthropocene – the (proposed) new geological epoch dating from the beginnings of significant human impact on Earth’s geology and ecosystems, including, but not limited to, anthropogenic climate change.

The qualitative and quantitative measure of the degree (no pun intended with reference to rises in sea surface temperatures) of this human impact has become increasingly sophisticated and accurate with advances in orbiting Earth observing (EO) technology. This technology which, as well as gathering data for well-established areas of remote sensing research, examples being meteorology and land-use monitoring, has in the time of pandemic

enabled valuable data collection from measurement of reductions in atmospheric concentrations of polluting gas emissions over usually gridlocked cities, and observations on, even highly localized, population movements and social distancing regulations observance. (I wrote more on this in my column here back in May this year.)

While the impact of our species

swine ‘flu, SARS, and MERS before, is ‘zoonotic’, jumping the animal-human interspecies gap), but a myriad of others, from the rare and exotic, to the commonplace and annually recurrent. Some, the self-induced consequence of life-style choices and mistakes. Some, responsive to our clinical treatments and medical technologies, others which spread beyond our capabilities to arrest.

This could be either because developed-world medicine is not yet up to the mark, or because, even with access to the satellite communications technologies underpinning telemedical applications and the sharing of clinical knowledge, the limited medical infrastructures of remote and developing regions are compromised by sheer numbers, scale and magnitude of the malady of any particular time.

Another reminder of our not having total sway over nature is also illustrated by the impact of the earthquakes, tsunamis, cyclones/hurricanes/typhoons,

on the planet does certainly justify the identification of humans’ very own geological epoch, homo sapiens does not have total dominance, as recurrence of disease obviously illustrates. Not only the likes of COVID-19, originating from a “novel” virus (which, like the viral causes of bird ‘flu,

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tornadoes, volcanic eruptions, floods, droughts, famine, etc., to which I referred in my previous column, in June, in connection with the satellite industry's (and GVF's) work in humanitarian assistance and disaster response initiatives.

Pandemic has not only brought the world's magnifying glass to the vital contribution of satellite communication technologies to dealing with such crises, but also to the importance of innovative EO technology and to its applications, some of which have actually been born out of these unprecedented circumstances.

In being required to socially distance, to work from home, and to get used to remote communications through cyberspace on virtual meetings platforms, we are actually, directly, experiencing the imperatives of an intensified reliance on internet connectivity that will depend on a satellite component somewhere in the "network". We also have the opportunity to take a reflective step back, interact and discuss, consider and evaluate, how our communications (and Earth observing) technologies as a whole have mitigated the worst of the effects of the crisis, holding on to as much of "normal" existence as possible. However, during our reflections we might come to call into question our previous certainty that the then "normal" was a good thing. There is no one answer to this, and we will all have our own.

***"...In the context of today's public health circumstances, our communications technologies have been the only resource that we have had at our disposal to enable us to talk about those very communications technologies..."***

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In the context of today's public health circumstances, our communications technologies have been the only resource that we have had at our disposal to enable us to talk about those very communications technologies. We have not had the baseline of in-person meetings, workshops, conferences, exhibitions, etc. We have had to be creative in building a greater digital reality than the one we had before. Once, the webinar was usually just an option, a convenience, borne out of a preference to overcome sometimes significant distances between interlocutors by digital means, rather than by standing in security queues/lines and accruing airmiles. Now, the webinar is borne of a different necessity, of rules and regulations governing the preservation of even very little distances between us.

Obviously, one of the advantages of webinars on platforms such as Zoom and Microsoft Teams is that they can be recorded and their content can therefore be accessed after the actual live event, extending their potential audience to one much greater than the largest of physical meeting venues could ever accommodate, and extending the life-span of the content for as long as the theme of the dialogues have continuing relevance, and the subject

maintains an interested audience.

GVF's own Webinar Series, taking place on Zoom on alternate Thursdays, kicked-off on 21 May with an evaluation of 'The Satellite Industry's Response to the COVID-19 Pandemic'. This was a follow-up to our earlier researches which had already been published on the GVF website at <https://gvf.org/news/satellite-industry-response-to-covid-19/>. This theme was followed on 4 June by 'WRC-23: Spectrum Dialogues in a Post-Pandemic World', and on 18 June by 'Space Segment Disruptive Evolution: GEO, MEO & LEO – Does a Global Crisis Make a Difference?' Readers may review detailed descriptions of these sessions, as well as use links to the recorded discussions at <https://gvf.org/news/category/online-events/>.

At time of writing, and looking ahead to the upcoming schedule of topics, 2 July will see the discussion theme focused not on the pandemic crisis itself, but on that consequence of officially directed disease response strategy that is maintenance of social distancing and remote working, usually from home. In asking the question, 'Will Working from Home Render the Cloud a Different Animal?' the 2 July event will explore the interrelationship of sat-

ellite and the Cloud, examining if the social distancing-related/public health crisis phenomenon of a mass migration to WFH has impacted satellite, has impacted the Cloud, and more precisely has impacted this developing satellite-Cloud interrelationship.


The schedule for GVF's later webinars, as planned at 29 June (subject to change should circumstances dictate), and going through to early December 2020 is intended to cover a broad sweep of topics:

- 5G & Satellite: Driving Forward the 'Network of Networks'
- Ground Segment: Transformational Antennas I – End of the Parabolic Paradigm?

- Ground Segment: Transformational Antennas II – Will terminals realise the promised LEO Connectivity Revolution?
- Serving Underserved Communities
- GEO / MEO / LEO – Satellite in the Finance Markets
- Global Transitions: Digital Economy, Digital Infrastructure, Connected Communities
- The Building of Space 2.0
- The Regional Satellite Operators' Voice
- Humanitarian Assistance & Disaster Response: The Evolving Role of Satellites in Disaster

Response

- Mobile Again! 'Days After the Pandemic'
- Unmanned Aircraft Systems 2027: Integrating 10 million drones into Communications, Navigation & Surveillance

See you in cyberspace during the Webinar Epoch! 



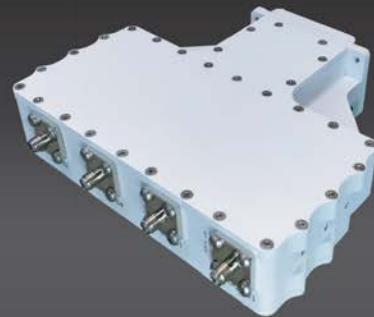
Martin Jarrold is Vice-President of International Program Development of GVF. He can be reached at:

[martin.jarrold@gvf.org](mailto:martin.jarrold@gvf.org)

## OOPArts (out-of-place artifacts)



Antikythera mechanism  
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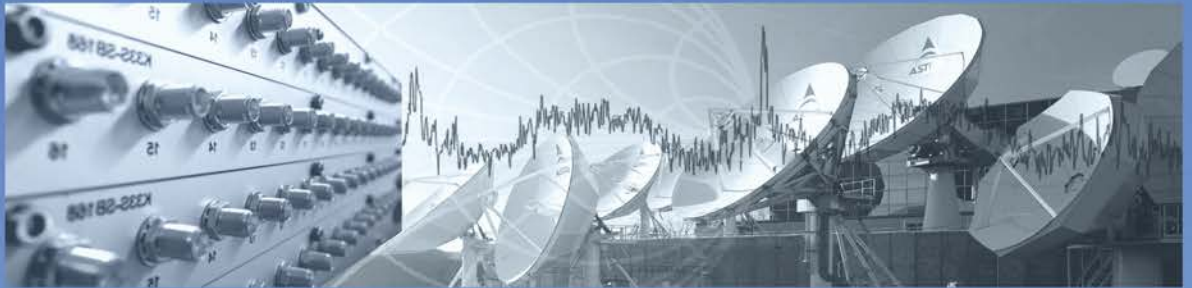


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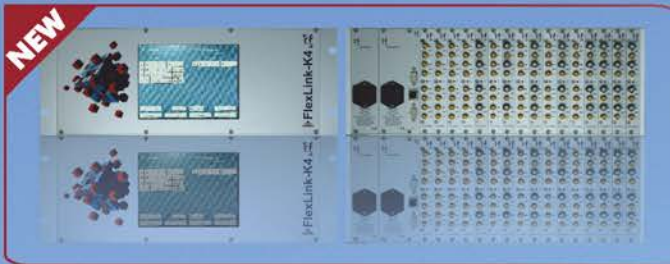
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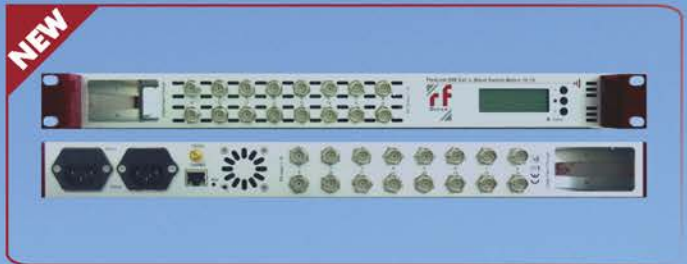


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## Thaicom and CAT Enter Joint-Venture

Nonthaburi, Thailand, June 26, 2020 – Thaicom Public Company Limited and CAT Telecom Public Company Limited announced a satellite business joint venture in order to strengthen Thailand's telecommunications infrastructure and to support the growth of the digital economy and satellite industries. The two companies are partnering to form a joint venture company called 'Nation Space and Technology Company Limited'. The joint venture has a registered capital of Baht 10 million. Thaicom holds a 75 percent stake, whereas CAT holds a 25 percent stake in the joint venture.

Anant Kaewruamvongs, Thaicom Chief Executive Officer, commented: "The announcement of a new joint venture company, Nation Space and Technology Co., Ltd., will enhance the strategic partnership between the two companies. Thaicom has long experience and expertise in the satellite industry. Together with CAT's extensive know-how in

providing digital solutions, the two companies will leverage advanced satellite services and solutions for various applications and the digital industry. We believe this strategic alliance between Thaicom and CAT will lay the foundation for a long-

er, CAT is well prepared to meet the needs of consumers. The establishment of this joint venture company will help to increase the opportunity to develop telecom services via Low Earth Orbit satellite systems in order to meet all kinds of future communications throughout Thailand."

"Thaicom and CAT realize that the COVID-19 pandemic is resulting in drastic changes in people's lifestyles. Both public and private organizations are increasingly adapting to digital technology, which is leading to more and more online transactions. In this environment, the development of technology services via Low Earth Orbit (LEO) satellites will benefit everyone with access to high-speed internet services via 5G technology, IoT (Internet of Things) devices, M2M (Machine to Machine) technology, as well as drone technology and applications in areas that require high levels of accuracy, such as remote surgery. LEO satellite systems are ideal to power these applications due to their low latency," said the company in a statement. 



term partnership and a sustainable growth of the country's telecommunication services."


Colonel Sanpachai Huvanandana, president of CAT Telecom, commented: "In today's world, where satellite communications become increasingly necessary, we must continue to push forward the development of satellite technology. As the country's leading digital and telecommunications service provid-

## Kratos Completes Acquisition of Satellite Antenna Manufacturer ASC Signal from CPI

San Diego, Calif., July 1, 2020--Kratos Defense & Security Solutions, Inc. (Nasdaq: KTOS), announced that it has completed its acquisition of CPI ASC Signal Division Inc. (ASC) from Communications & Power Industries LLC (CPI) following the receipt of regulatory approval from all required government authorities and completion of other closing items.

The acquisition broadens Kratos' space ground systems business with the addition of earth station antennas that are an important part of government strategic and tactical communications, especially for defense and intel-

ligence operations, and are also used widely in the commercial world according to the company. ASC products also include radar antennas for air traffic control and weather applications, as well as High-Frequency (HF) and specialty antennas.

CPI recently completed its acquisition of General Dynamics SATCOM Technologies. As part of the conditions of the regulatory approval of its acquisition of GD SATCOM, CPI had to sell its interest in ASC in order to ensure competition in the satellite antenna sector. 

# Maxar Technologies to Acquire Vricon

Westminster, Colo., June 24, 2020---Maxar Technologies announced its intent to exercise its call option to take full ownership of 3D data and analytics firm Vricon for approximately US\$ 140 million, or approximately US\$ 115 million net of estimated cash at closing.

To fund the transaction, Maxar intends to issue US\$ 150 million in aggregate principal amount of new senior secured notes. Maxar has also agreed to repurchase \$150 million in aggregate principal amount of existing notes using the proceeds of the recent sale of its MDA business.

Vricon is a provider of satellite-derived 3D data for defense and intelligence markets, with software and products that enhance 3D mapping, Earth intelligence data, military simulation and training and precision-guided munitions. The company was formed as a joint venture between Maxar and Saab in 2015 to combine patented Saab IP with Maxar commercial satellite imagery to build highly accurate, immersive 3D products at scale.

Maxar intends to appoint Gilman Louie, Chairman of Vricon's Board of Directors, to the Maxar Board of Directors once the transaction closes. Louie is co-founder and partner of Alsop Louie Partners, an early-stage technology venture capital firm founded in San Francisco in 2006. Louie is the founder and former CEO of In-Q-Tel, a strategic venture fund created to help enhance national security by connecting the Central Intelligence Agency and U.S. intelligence community with venture-backed entrepreneurial companies. He also serves as a commissioner on the U.S. National Security Commission on Artificial Intelligence.

Vricon's products and technology are strongly aligned with Maxar's Earth Intelligence growth strategy and priority mission areas outlined in the U.S. National Defense Strategy. Maxar expects that Vricon will extend the company's lead in existing markets with additional high-value growth products, by increasing Maxar's industry-leading accuracy and augmenting automated feature extraction and change detection capabilities. In

addition, the transaction unlocks new and underpenetrated defense and commercial markets for Maxar, such as autonomous navigation and 5G telecommunications network planning.

"Maxar commercial satellite imagery has long been foundational to U.S. and allied defense and intelligence operations, and this acquisition will enable training, simulation and tactical missions to be conducted in highly immersive and accurate 3D environments," said Dan Jablonsky, Maxar CEO. "Vricon will allow Maxar to accelerate the creation of a living digital model of the Earth—'The Digital Globe'—and become the global geospatial reference standard for existing and next-generation location-based applications."

"The net cash purchase price would represent a valuation of roughly 10x, on a net cash basis, the trailing 12-month adjusted EBITDA that Vricon generated from third-party sales. We expect

this multiple to step down significantly over the next several years given the growth trajectory we see for the business," said Biggs Porter, Maxar CFO. "We would expect the transaction to be additive to the 2020 guidance we issued on our first quarter earnings call on May 11 while having an immaterial effect on the company's leverage ratio this year. Furthermore, we expect the business to be a solid cash generator, which we expect to contribute to a reduction in both Maxar's indebtedness and leverage starting in 2021."

Maxar intends to exercise its call option to take control of Vricon on or about June 25, 2020, and expects the transaction to close in July.

Maxar expects to fully integrate Vricon to improve existing products, develop new capabilities and pursue game-changing business opportunities. When Maxar's next-generation WorldView Legion imaging satellites come online in 2021, higher volumes of more frequently refreshed, high-resolution imagery will further improve the currency and utility of Vricon offerings and should drive subscription sales opportunities.



Vricon 3D visualization of Damascus, Syria (courtesy: Maxar)



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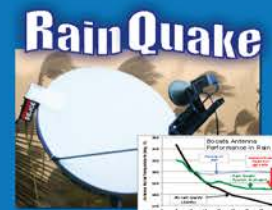
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### Ovadia Steps Down as Gilat CEO, Sfadia Named Interim CEO

Petah Tikva, Israel, July 2, 2020  
— Gilat Satellite Networks Ltd. announced that Yona Ovadia



**Adi Sfadia**

CFO and Chief Integration Officer will assume the position of interim CEO. Ovadia will remain as a consultant of the Company and continue assisting in the integration with Comtech.

Dov Baharav, Chairman of the Board of Directors stated, “On behalf of the entire Board of Directors, we are highly appreciative of Mr. Ovadia’s contribution in leading Gilat over the past four years, during which time he achieved remarkable results and turned the company into a significant profitable player in the satellite communications market, particularly in the Mobility and Cellular Backhaul segments and most recently in the Non GEO Stationary Orbit (NGSO) market”.

Yona Ovadia said, “I would like to thank Gilat’s employees and management team for the tremendous efforts and achievements that have brought us to this point. I have great faith in Gilat and its innovative technology, and more so in the incredible talent, professionalism, and dedication of Gilat’s and Wavestream’s employees worldwide, which I trust will continue

to propel Gilat to even further success. I would also like to use this opportunity to thank Gilat’s chairman of the board, as well as all the board members for their trust and support over the last four years and to wish Gilat under the new capable leadership of Adi Sfadia great success”.

### Yahsat Appoints Cole as CFO

Abu Dhabi, UAE, July 1, 2020—Al Yah Satellite Communications Company (Yahsat), the UAE-based global satellite operator, announced that its Board of Directors has appointed Andrew Cole as Chief Financial Officer (CFO). He will assume the position starting July 1st.

Cole joins Yahsat soon after the company boosted its leadership with four Emirati executive appointments to lead its government, commercial, operational and technical business units. He has 25 years of cross-sector experience in senior finance, operational and advisory roles. From 2015 to 2019, he was the Group Financial Controller at SES, a company with a constellation of Geostationary and Medium Earth Orbit Satellites. His primary functions covered all aspects of Finance including Financial Planning, Governance, Risk (including satellite insurance) and Compliance, Accounting and Global Controlling operations. He has



**Andrew Cole**

also worked for EY and KPMG London as an external auditor and business advisor to many global enterprises. His experience during his years in an external advisory role includes M&A and Financing, Corporate Restructuring, Commercial Planning, Tax, Treasury, Audit & Accounting as well as Risk Management.

Cole is a Fellow of the Institute of Chartered Accountants in England and Wales (ICAEW). He has an Executive MBA degree from Ecole Nationale des Ponts et Chaussées and a Post Graduate certificate in International Business from the University of Edinburgh.

He succeeds the current CFO, Balakrishnan Doraisamy, who will be retiring, having served Yahsat for almost 12 years. Balakrishnan will continue to be part of the company as Strategic Advisor.

### Global Invacom Appoints Burrell as CTO

Canterbury, UK, June 25, 2020--Global Invacom, a provider of satellite communications equipment listed on the Singapore Exchange and the U.K. AIM Market, has appointed Malcolm Burrell as its Chief Technology Officer (CTO) with immediate effect.



**Malcolm Burrell**

Burrell, who is an Executive Director of the Group and Chief Risk Officer, already acts as the Tech-

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**Aarti Holla-Maini**  
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**Christophe Cazes**  
CEO  
Eutelsat Asia



**Terry Bleakley**  
Regional VP, Asia  
Pacific  
Intelsat



**Yew Weng Soo**  
VP Sales & Market  
Development,  
SES Video  
SES

## Key Highlights

- Satellite Trends with the Impact of COVID-19
- Weighing the Bear vs Bull Case for 5G
- Outcomes from WRC-19: View on Asia
- Satellite Financing: What to Watch Out For in 2021
- 2021: A Landmark Year for 4K UHD?

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nical Director responsible for Advanced Research and Development of Global Invacom and has a depth of knowledge covering the satellite industry. His additional role, managing the co-ordination of the Group's R&D teams, along with continued dialogue between the Board of Directors and sales teams, will ensure product development is being tailored to meet requirements and match demand in key markets.

Burrell has over 36 years' experience in radio-frequency design, technical management and corporate management across the consumer electronics, satellite earth station and military communications sectors. A graduate in Electronic Engineering from the University of Southampton, U.K., he is a member of the Institution of Engineering and Technology.

Tony Taylor, Executive Chairman of Global Invacom, said: "We are delighted to appoint Malcolm as CTO of Global Invacom. He has been an Executive Director of the Group since 2010 and his first-class understanding of the technologies behind Sat Comms equipment has been instrumental in our ongoing R&D and will ensure that we continue to launch market-leading products to meet the demands and requirements of our customers."

### **Globecast Appoints Pulis as CTO-Americas**

Los Angeles, Calif., June 24, 2020—Globecast has appointed Chris Pulis as new Chief Technology Officer (CTO) for the Americas, effective immediately. As CTO, Pulis is responsible for

all technical aspects for the Americas including establishing Globecast's vision



**Chris Pulis**

and growth through the use of technical resources.

Pulis has 25 years of experience in business and technology operations. In his new role, his duties involve working closely with sales and media executives to develop technology applications for customers, providing leadership to operations line managers, negotiating with clients, and developing and overseeing the strategy for representation in major industry technology groups. He is based in Los Angeles and reports to Eddie Ferraro, MD Globecast Americas.

Pulis was previously VP, Product Strategy, at digital technology consultancy Diamond in Los Angeles, where he worked on digital transformation initiatives and distribution strategy for content owner clients. Prior to that, he held multiple senior positions at Deluxe Entertainment Services Group. He has also held roles with Ascent Media Group and ReelzChannel Television Network, among others.

### **NXTCOMM Appoints Novello as CTO**

Atlanta, GA, June 24, 2020—NXT Communications Corporation announced the appointment of Carl Novello as its Chief Technology Officer (CTO).

Novello brings two decades of advanced satellite communications, system and RF antenna design and test expertise to his role.


Novello will oversee product engineering, design and development for NXTCOMM's line of advanced electronically steered antennas that will deliver unprecedented broadband connectivity to mobile platforms. Novello will also manage NXTCOMM's work with Georgia Tech Research Institute (GTRI).

Prior to joining NXTCOMM, Novello served as Vice President of Solutions for Kymeta Corp., where he led design of the company's flat panel ESA antennas for the mobile marketplace.



**Carl Novello**

Prior to Kymeta, he served as Vice President of Product and Product Management, Intellian Technologies, where he led development of Intellian's tri-band, multi-orbit maritime VSAT antenna system that won Satellite Technology of the Year Award presented during Satellite 2019.

He also served in key technology roles at Panasonic's Maritime Group and Harris Corporation. Novello began his satellite career at Comsat Corp. in 1999 as it was acquired by Lockheed Martin and the satellite industry began to privatize. 

# Ericsson Mobility Report: COVID-19 Impact Shows Networks' Crucial Role

We are living in unprecedented times. Directly or indirectly, COVID-19 has affected everyone around the world. Social distancing and keeping millions at home has placed significant demands on infrastructure. Systems supporting healthcare, education and businesses of all types are under stress.

Today, connectivity is key and so far, telecom networks have stood up to the task. This massive disruption has highlighted the value of the network, as recognized clearly by the consumers we surveyed for this edition of the Ericsson Mobility Report.

While in some markets 5G subscription growth has slowed as a result of the pandemic, this is outweighed by other markets where it is accelerating, leading us to raise our forecast of global 5G subscriptions at the end of 2020.

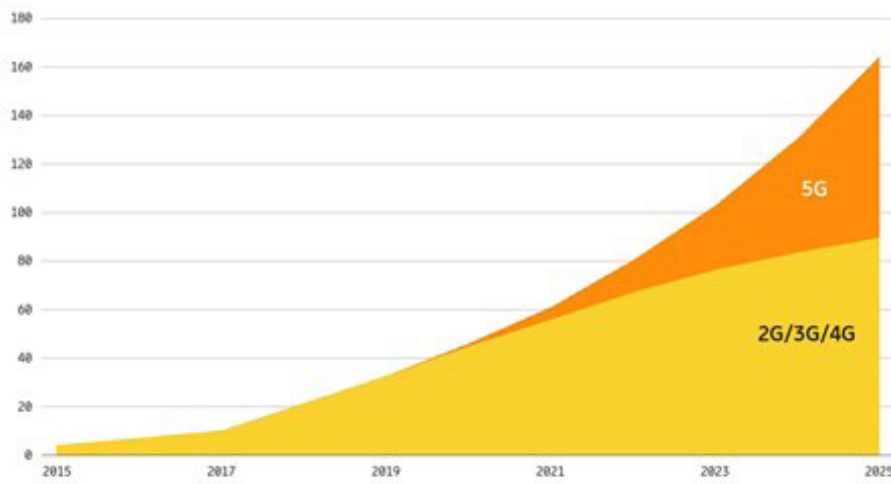
However, the success of 5G cannot be measured in subscriptions alone. The value 5G brings will be determined by the success of new use cases and applications for consumers and businesses. In this report we cover aspects of fixed wireless access, gaming and dedicated networks to give a broad picture of the progress of an industry that – despite the current situation – continues to rapidly evolve.

5G was made for innovation and, as the value of the digital infrastructure has been further evidenced during these recent times, 5G investments can play

a significant role in restarting economies.

Ericsson (NASDAQ: ERIC) expects the global number of 5G subscriptions to top 190 million by the end of 2020 and 2.8 billion by the end of 2025. These forecasts are included in the June 2020 edition of the Ericsson Mobility Report, along with projections for data traffic growth, and regional subscriptions. The report also takes an incisive look at the role of networks and digital infrastructure in keeping societies running, and families connected during the COVID-19 pandemic.

Fredrik Jejdling, Executive Vice President and Head of Networks, Ericsson, says: “The spread of COVID-19 has prompted people all over the world to change their daily lives and, in many cases, work or study from home. This has led to a rapid shift of network traffic



**By 2025, 5G networks will carry nearly half of the world's mobile data traffic.**

from business to residential areas. The latest Ericsson Mobility Report shows that mobile and fixed networks are increasingly playing an even bigger part of critical national infrastructure.”

## Highlights from the June 2020 Mobility Report

While 5G subscription growth in some markets has slowed as a result of the pandemic, this is outweighed by other markets where it is accelerating, prompting Ericsson to raise its year-end 2020 forecast for global 5G subscriptions.

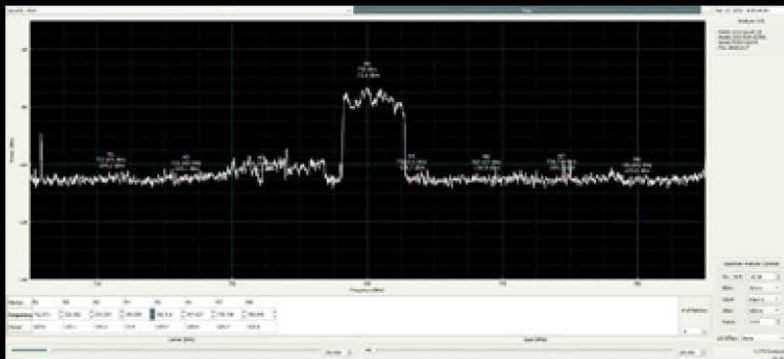
”Beyond measuring the success of 5G in sub-



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scriptions, its impact ultimately will be judged by the benefits it brings to people and enterprises,” Jeydling adds. “5G was made for innovation and this crisis has highlighted the true value of connectivity and the role it can play in restarting economies.”

**Value of Digital Infrastructure**

Changes in behavior due to lockdown restrictions have caused measurable changes in the usage of both fixed and mobile networks. The largest share of the traffic increase has been absorbed by fixed residential networks, which has experienced a 20-100 percent growth. But many service providers also noticed a spike in demand on their mobile network.

In a recent study conducted by Ericsson Consumer Lab, 83 percent of the respondents from 11 countries claim that ICT helped them a lot to cope with the lockdown. The results show an increased adoption and usage of ICT services, such as e-learning and wellness apps, that have helped consumers adapt to new realities, underpinned by connectivity.

Looking ahead, while 57 percent say they will save money for financial security, one-third plan to invest in 5G and an improved broadband at home to be better prepared for a potential second wave of COVID-19.

**FWA takes an expanded role**

Fixed Wireless Access (FWA) connections are forecast to reach nearly 160 million by end of 2025 – totaling about 25 percent of global mobile net-



work data traffic. At the end of 2019, global FWA data traffic was estimated to have been around 15 percent of the global total. It is now projected to grow nearly 8 fold to reach 53 exabytes in 2025, representing 25 percent of the global total mobile network data traffic.

FWA delivered over 4G or 5G is an increasingly cost-efficient alternative for providing broadband and several factors are driving the FWA market: demand from consumers and businesses for digital services along with government-sponsored programs and subsidies.

The report also includes forecasts on data traffic growth, regional subscriptions plus insights into cloud-based gaming as well as in-depth articles on private dedicated networks and Verizon’s millimeter wave strategy for targeted metropolitan areas.



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## The Satellite Markets 20 Index™

Company Name	Symbol	Price			Price Change	
		June 2	52-wk Range		Last Month	Jan. 2
<b>Satellite Operators</b>						
Thaicom Public Company Limited	THCOM.BK	4.84	2.14	6.20	30%	22%
Eutelsat Communications S.A.	ETL.PA	8.16	7.98	18.67	-16%	-44%
APT Satellite Holdings Limited	1045.HK	2.05	1.97	3.94	-16%	-31%
Echostar	SATS	25.87	25.23	45.15	-20%	-40%
SES S.A.	SES.F	5.92	4.88	18.03	-18%	-52%
<b>Satellite Manufacturers</b>						
The Boeing Company	BA	181.15	89.00	391.00	17%	-42%
Maxar Technologies	MAXR	16.69	6.06	21.45	4%	-19%
Lockheed Martin Corporation	LMT	357.05	266.11	442.53	-9%	-16%
OHB SE	OHB.DE	41.7	25.65	48.65	6%	-2%
Honeywell International Inc.	HON	144.82	101.08	184.06	-2%	-20%
<b>Equipment Manufacturers</b>						
C-Com Satellite Systems Inc.	CMLV	2.46	1.44	2.73	22%	37%
Comtech Telecommunications Corp.	CMTL	15.59	11.48	38.00	-15%	-57%
KVH Industries Inc.	KVHI	8.07	6.36	11.64	-11%	-26%
ViaSat Inc.	VSAT	36.73	25.10	84.62	-18%	-49%
Gilat Satellite Networks Ltd.	GILT	6.14	4.70	10.76	-24%	-23%
<b>Service Providers</b>						
DISH Network Corporation	DISH	33.12	17.09	44.66	2%	-10%
Globalstar Inc.	GSAT	0.38	0.23	0.60	15%	-21%
Orbcomm Inc.	ORBC	3.65	1.24	8.21	18%	-10%
Sirius XM Holdings Inc.	SIRI	5.82	4.11	7.40	-3%	-19%
RigNet Inc.	RNET	1.75	0.77	10.97	73%	-71%

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 July 7, 2020	Percentage Change Last Month	Percentage Change Jan. 2, 2020
Satellite Markets 20 Index™	2,267.82	-4%	-21%
S & P 500	3,171.71	3%	-3%

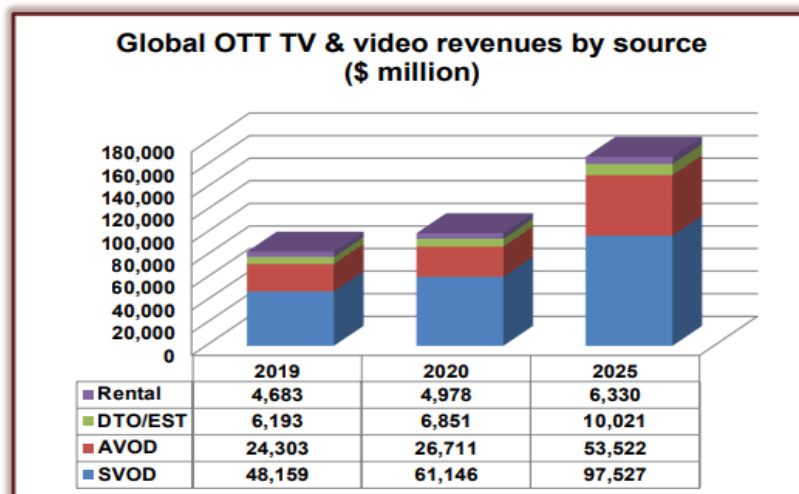
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## VITAL STATS

### Global OTT Revenues o Reach US\$ 167 Bil. by 2025



Source: Digital TV Research

Annual global OTT revenues are on track to reach US\$ 167 billion in 2025, according to new data from Digital TV Research. That's more than double the US\$ 83 million in revenue from 2019.



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- ▲ Type-4 - Two on-line amplifiers phase-combined with dedicated back-up (Single Pol)