

Satellite Executive BRIEFING

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Industry Trends, News Analysis, Market Intelligence and Opportunities

The Broadcast Market for Satellite Services

by Elisabeth Tweedie

History was made at the Oscars last month, and I'm not referring to slap heard around the world. The movie CODA took the Oscar for best picture. This is the first time a movie from a streaming service has been awarded that accolade. Not only was this movie from a streaming service, it was from Apple, a relatively new entrant and one of the smaller streaming platforms with only 19 Million global subscribers. Doubtless this win will help spur subscriber growth.



The previous week Amazon completed its purchase of MGM Studios, giving it ownership of 4,000 movies and 17,000 TV episodes. What is interesting about these two events, is that although Amazon is one of the largest streaming services, with an estimated 170 Million global subscribers, for both Amazon and Apple, streaming and content production are by no means their core business. A

recent article in the New York Times postulated what would happen, if at some point in the future either or both companies, decided that the returns from this "side business" were not sufficient to justify the investment; naturally, consumers would be the losers.

We're a long way from that point yet, but what we are seeing is a change in the both the

structure of the streaming business, and consumer behavior. Initially streaming meant Netflix, later followed by Hulu and Amazon Prime. Now, as well as those, many of the studios have launched their own streaming services, as they watched their traditional cable, satellite and broadcast customers move to competing streaming services.

Worldwide there are now over 200 streaming platforms, and a US con-

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The Broadcast Market for Satellite



In this issue we focus on the broadcast market for satellite services. The NAB in Las Vegas is coming back this month after a two-year hiatus and a lot has changed in the industry since.

Our cover story by Elisabeth Tweedie provides an overview of the growth in streaming services. It's a well-known fact that video distribution has been a declining market for satellite operators for some time now. But all is not lost, as Elisabeth points out in the cover story, even the streaming and Over the Top (OTT) providers will need some satellite to distribute their content globally.

One segment of the satellite industry that the broadcast sector continues to rely on heavily is the satellite ground equipment for mobile applications. With live events coming back, Satellite News Gathering (SNG) and Comms on the Move (COTM) and Comms on the Pause (COTP) applications are indispensable for the industry. To shed light on the latest innovations in this sector, we have feature an executive roundtable discussion from leading antenna manufacturers such as AvL, C-COM Systems, CPI and ThinKom.

We hope see you again at the NAB in Las Vegas from April 24-27. Drop by our booth # 6001 at the new West Hall of the Las Vegas Convention Center. See you there!

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Broadcast market...

from page 1

sumer has about 50 to choose from. Given all this choice, coupled with zero exit barriers, it is hardly surprising that churn is now reaching epic proportions. According to the 2022 Technology and Media report from Deloitte, in the US the overall churn rate for streaming services is 38%, globally it's 30%. A recent article in the Wall Street Journal mentioned, that approximately half of US viewers who signed up within three days of the release of "Hamilton," "Wonder Woman 1984," and "Greyhound" canceled their subscription within six months. Generation Z are the lead churners, but they are also the lead "returners," subscribing to a service to watch a particular show, churning when they have watched all available episodes and returning when a new season becomes available.

Streaming Services to the Fore

When they were first launched the main drivers for the uptake in streaming services were the ability to watch what you wanted, when you wanted, no advertising and price. Streaming on-demand content was, and individual services still are, much cheaper than cable or satellite. However, with the number of streaming services now available, it is common for households to subscribe to multiple services, so moving the monthly spend on streaming, closer to that of cable and satellite. This is particularly true for subscribers to streamed live TV, such as Youtube TV, Philo and Sling. For many viewers this plethora of choice is just too much. A survey conducted by Verizon Media and Publicis in 2021, ("The CTV Growth Opportunity Report"), found that 67% of respondents said it was difficult to know what to watch because



Worldwide there are now over 200 streaming platforms, and a US consumer has about 50 to choose from. Given all this choice, coupled with zero exit barriers, it is hardly surprising that churn is now reaching epic proportions.

there was too much choice and 56% said they were overwhelmed by the number of streaming services available. One reporter went so far as to speculate that this dissatisfaction may harbor a return to cable or satellite. However, this is not borne out by the statistics. A report released by Antenna in February of this this year, showed that in 2021 streaming services added 42.2 million net subscribers in the US, a 57% increase from 2020. This is particularly surprising

...Surprisingly, only a minority of subscribers to streaming services are cord-cutters. In the US 60% of viewers are paying for traditional TV in addition to streaming services...

given that 2020 saw the beginning of the pandemic and lockdowns, which drove significant growth in video consumption. 82% of the growth in 2021 came from four services: Paramount+, Peacock, Discovery+ and Apple TV+ all of which launched in the last few years.

While Traditional TV Continues to Lose Subscribers

Traditional TV (cable, satellite and Over the Air (OTA), continues to lose subscribers, although the pace of this decline varies by country. In the US there are now 72 Million cable households, compared to 100 Million in 2016, and according to Insider Intelligence (formerly known as eMarketer) this is projected to fall to 57 Million by 2026. For satellite direct to home (DTH) in the US, the outlook is equally glum. Dish TV lost 583,000 DTH subscribers in 2021, 57,000 more than in 2020, ending the year with 8.22 Million DTH subscribers. According to Charlie Ergen, Chairman, Echostar (parent company of Dish), a merger between Dish and DirecTV, the competing DTH

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service, is now “inevitable.”

Surprisingly, only a minority of subscribers to streaming services are cord-cutters. In the US 60% of viewers are paying for traditional TV in addition to streaming services. And according to Nielsen, only 28% of US consumers’ viewing minutes are spent on streaming services. This doesn’t mean that streaming subscribers watch less TV, it means that for many streaming services are an addition not a substitution to their viewing habits. To put these figures in perspective: whilst globally revenue from pay TV (excluding online video) fell US\$4.6 billion to US\$228.5 billion last year, it is still over 12x larger than global online video subscription revenue, which generated \$17.9 billion in 2021 according to the Motion Pictures Association Theme Report.

New Business Models

As mentioned above, some streaming providers, are trying new business models. Advertising is one of these: Crackle, Peacock and Roku for example, are now offering low-cost or free services supported by advertising, but, at least for now, significantly less advertising that would be seen on broadcast TV. In total only 5% of all TV advertising appears on streaming services, 95% remains with traditional TV in spite of the continued reduction in subscribers.

Netflix is also trialing a new subscription model. A recent survey from Leichtman Research Group found that 36% of US subscribers to Netflix share the service with someone from another household. Obviously, this has a significant impact on Netflix’s revenue. In the next few weeks it is planning to test new features for subscribers in Peru, Costa Rica and Chile. Subscribers in those countries will be prompted to add

...It must also be borne in mind, that like broadcast, cable and Direct to Home (DTH), the streaming services need to get content to the distribution points. Even in the US, which is heavily fibered, satellite is still the delivery mechanism for many locations...

accounts for up to two people that they don’t live with. These people will have their own login, recommendations and password. In Costa Rica this will cost US\$2.99. Netflix has said it will “work on understanding the utility” of these changes, before trying them anywhere else in the world.

It must also be borne in mind, that like broadcast, cable and Direct to Home (DTH), the streaming services need to get content to the distribution points. Even in the US, which is heavily fibered, satellite is still the delivery mechanism for many locations.

In Europe and the rest of the world, satellite for content delivery is even more relevant. SES CEO, Steve Collar remains bullish regarding video for satellite. In spite of a 4.6% year-on-year decline in video revenue in 2021. In March at Satellite 2022 in Washington DC, he commented: “Actually, we’ve seen a number of DTH platforms grow over this period (2020-21), which is super encouraging.” Eva Berneke, the new CEO of Eutelsat was a little more cautious, adding that the underlying maturity of the DTH market hadn’t changed: “You’re at a crossroads where you still have a video broadcasting business that’s important and will exist

for a lot of years....but it’s not going to see the same growth cycles as we’ve seen when you go back five or ten years.”

SES has recently ordered three new satellites, all of which will carry some video content. SES-26 will replace SES-12 at 57 degrees East. It will be used to expand content delivery and connectivity to broadcasters as well as serving telco operators and government operators, across Europe, Africa, the Middle East and Asia-Pacific.

The other two satellites, Astra 1P and 1Q will be located at 19.2 degrees East and will serve 118 million TV households across Europe. Astra 1P will be a traditional wide-beam satellite delivering content to private and public broadcasters in Germany, France and Spain. Astra 1Q is a digital satellite, customizable on-orbit and will have high throughput spot (HTS) beams as well wide-beams. Like Astra 1P it will also support DTH services, but as a more advanced satellite, it will be more able to adapt to changing customer needs in the future.

“Our prime TV neighborhood at 19.2 degrees East is one of our most valuable assets and has been key to enabling renowned European broad-

casters to grow their TV audiences in the last 30 years. These two satellites will have the resiliency, reliability and redundancy that our video customers need, and will be able to deliver continued premium services well into 2040,” said Steve Collar, CEO of SES. “Additionally, thanks to advanced satellite technology, we will be future-proofing our investment and injecting a high degree of flexibility into ASTRA 1Q to ensure we are meeting the evolving needs of all the markets we serve.”

Conclusion

So, as we’ve all known for many years, the market for traditional TV is

declining and the market for streaming services is growing. In the US broadband speeds are no longer the limiting factor for streaming that they were a few years ago, but there are still unserved rural areas that rely on satellite for both broadband and

video. Elsewhere the situation varies, with some countries being on a par or having superior terrestrial broadband, and others being very far behind. Either way, it’s still too soon to say that video is dead as far as satellite is concerned.



Elisabeth Tweedie has over 20 years experience at the cutting edge of new communications entertainment technologies. She is the founder and President of Definitive Direction (www.definitivedirection.com), a consultancy that focuses on researching and evaluating the long-term potential for new ventures, initiating their development, and identifying and developing appropriate alliances. During her 10 years at Hughes Electronics, she worked on every acquisition and new business that the company considered during her time there. She can be reached at etweedie@definitivedirection.com



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Satellite Mobility Solutions for Broadcast Applications

by **Bernardo Schneiderman**

The broadcast sector has been one of the key markets for satellite mobility solutions for various broadcast applications. Each year the entry of high powered satellites and new antenna technologies are providing more flexibility and a portfolio of innovative options for broadcasters and content distributors. We invited some manufacturers of satellite antennas for the broadcast market in a virtual roundtable on this important topic.

We can consider for the Broadcast SNG applications both vehicular antennas and the Flyaway and back pack antennas. The majority of the manufacturers for vehicular solutions still using parabolic antennas but we have now few manufacturers that are providing flat panel antennas for this market. This segment provides antennas in C-band, Ku and Ka-Band with various diameters (from 60 cm–2.4 meters) that now could be used worldwide.

The other segment are Flyaway antennas which can be hand-carried in small cases or in backpack to a site and assembled on the spot to uplink the news or content from remote locations. The antenna could be manually or automatic pointing to the satellite to establish the link. The antenna cases could be transported in planes or land/maritime vehicles. The antenna on the site is mounted on a tripod with the option of manual or automatic positioning to close the link with the Satellite.

A recent NSR Study on Land Mobile via Satellite includes Satellite News Gathering (SNG) and Flyaway antenna equipment are essential for the broadcast and video markets. According to the report the Land-Mobile Communication market will grow from US\$ 1.8 billion in 2020 to US\$ 16.0 billion in 2030. Despite the moderate impact of COVID-19 during the last two years, in the Communication on the Pause (COTP) segment, NSR forecasts growth from US\$ 1 billion to US\$ 6 billion in the next ten years.

The company executives participating in our virtual roundtable include: **Krystal Dredge**, Marketing Director-**AvL Technologies**; **Bill Awada**, Chief Technology Officer-**C-COM Satellite Systems**; **Tim Shroyer**, Chief Technology Officer-**Communications & Power Industries' (CPI's)** Satcom and Antenna Technologies Division; and **Darin Anderson**, Director of International Business Development-**ThinKom Solutions**.

Satellite Executive Briefing (SEB): versions that assemble and are on-air within minutes.
Please describe your portfolio of flat panel antennas or Satellite News Gathering (SNG) equipment for the broadcast market?

AvL: AvL Technologies provides the most comprehensive range of SNG antenna apertures and the widest range of frequency bands in the industry, ranging from 85cm to 2.4m, and covering all broadcast satellite frequency bands including C, Ku, DBS and Ka. AvL's SNG antennas are mostly vehicle-mount, but some SNG users prefer the case-packed

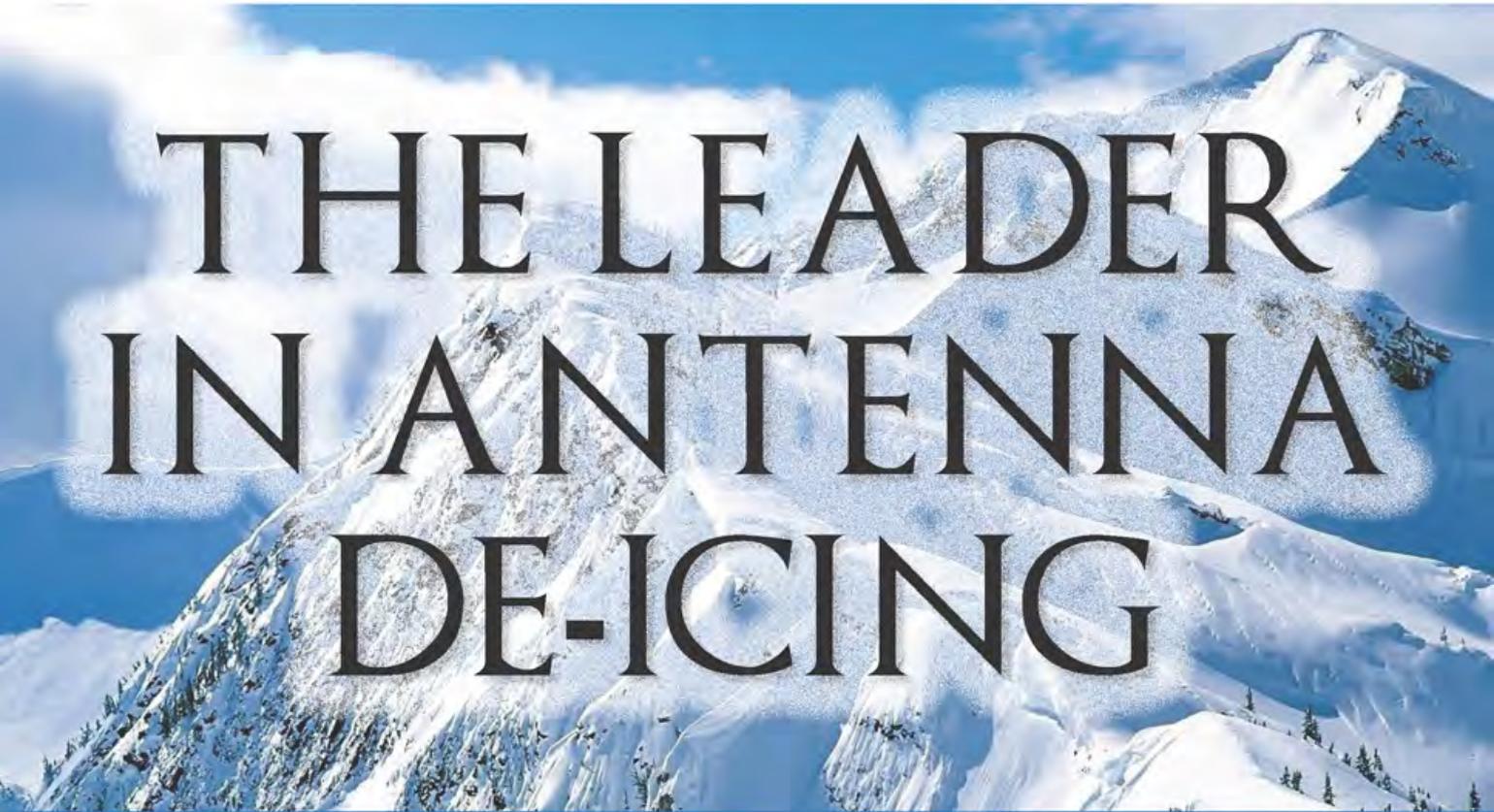
C-COM: C-COM manufactures over 20 different COTP antenna models covering Ka, Ku and C bands. Our products have been deployed worldwide with most satellite service providers. While any of these antennas can be used for SNG markets, the 75cm and 1.2m vehicle mounts along with the 1m Manpack have been most popular. The Electronically-Steered Phased-Array Flat Panel Antenna, which is under development, will operate in Ka-band

over GEO, MEO, and LEO satellite constellations targeting land mobility applications including SNG markets. The same antenna technology can be extended for use into other markets such as maritime and airborne.

CPI: CPI has a broad family of flyway and mobile antennas, amplifiers/BUCs, and other RF products optimized for SNG applications. This full range of products, whether individual components or fully integrated mobile compatible satellite terminals allows CPI's varied customer base to be able to choose the products and/

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or systems that best suit their SNG and other mobile broadcast application needs. iNetVu® FLY-74G Flyaway Antenna

Looking at integrated systems, CPI's Next Generation flyaway terminals include apertures from 60 cm to 2.4m in size, each using lightweight carbon fiber reflectors, packed in minimum volume IATA-compliant cases, for fast installation and fast satellite acquisition. They include antenna feed and RF equipment quickly configured for Ka-band, Ku-band or X-band to support both SNG and military users.

CPI's flyaway terminals feature simple manual or automated satellite acquisition. Our industry-unique optional auto-pointing kit, supplied with most of our flyaway terminals, simply clips onto the antenna and provides an upgrade to fully automatic pointing capabilities. The powerful onboard controller allows for highly intuitive, single-button control or a graphical user interface experience via a Web UI to deskill the operation of locating and acquiring the desired satellite.

Manual pointing minimizes the



CPI C125FA Flyaway Terminal

terminal weight and cost but the optional auto-pointing kit can be included at any time to bring the benefits of fully automatic satellite acquisition.

For those new markets looking to take advantage of the rapidly growing Ka-band market, CPI has recently introduced the GaNLink™ 80W solid state BUC (model SB49KOA). This state-of-the-art Gallium Nitride powered BUC provides all the flexibility and rugged design that CPI is known for in the Ka-band amplifier market, but with a small, lightweight and highly efficient package. Including single or multi-band options, this BUC is designed to be portable, while handling the transmission in the most challenging of environments.

CPI's line of mobile antennas includes apertures from 1.2m to 2.4m in size and support operation in Ka-band, Ku-band, X-band or C-band with interchangeable feeds and RF equipment. Their high-precision aluminum/carbon fiber reflectors with state-of-the-art design provide exceptionally low sidelobe and cross-polarization performance, well within INTELSAT and EUTELSAT requirements. Cable drive mounts ensure minimum stow height on the vehicle while providing precision pointing and alignment. Boom-mounted and saddlebag HPA options are available to cover every EIRP requirement.

CPI continues to offer a number of compact outdoor TWTA's that have served the SNG and mobile broadcast markets for the last 10 to 15 years. These industry workhorses continue to support DSNG vehicles and other flyaway applications all over the world, whether for news, disaster recovery or a myriad of other



C-COM's iNetVu® FLY-74G Flyaway Antenna

applications.

The benefit of these traveling wave tube-based products is their inherent wideband capabilities. Offering the standard Ku-band (14.0-14.5 GHz) along with variations in extended Ku-band (12.75-14.5 GHz, 13.75-14.5), there are now options for specialized ranges, including up to 14.8 GHz.

ThinKom: ThinKom offers a range of phased-array flat-panel vehicular mounted satellite antennas for communications on the move (COTM) in SNG applications. Based on ThinKom's patented VICTS (Variable Inclination Continuous Transverse Stub) technology, the low-profile lightweight antennas provide high-quality voice, data and broadcast-quality video in real-time from moving vehicles operating at highway speeds on and off the road without stopping the vehicle to deploy a fixed satellite dish or waiting for a blockage recovery.

The ThinSat® 300 COTM antenna has been on the market for more than 10 years with hundreds of units deployed around the world, providing continuous connectivity in regions where terrestrial cellular networks are limited or nonexistent. The

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antenna has a bandwidth-efficient 30-inch Tx antenna with a cross-pol isolation of 30dBi, which provides a 'fat data pipe' return link to the satellite (perhaps 1080i or 4K) with the right compression ratios, the user doesn't need to over-purchase larger amounts of MHz from the satellite operator to transmit from a desired location in high resolution.

A good example of the VICTS phased array in a COTM SNG environment was the 2019 Solar Challenge which covered a 3,000-km race course across the Australian Outback. Two of the teams were able to sustain uninterrupted voice and broadband video throughout the race using the ThinKom antennas mounted on chase vehicles, providing live feeds to news media worldwide from the high-speed vehicles despite extreme conditions of heat and dust storms. The Dutch team, for instance, streamed more than 77 hours of live HD video on its YouTube and Facebook challenges.

This year we are introducing a new COTM antenna that will provide SNG customers access to the new



AVL SNG Ka-Band mobile antenna

satcom networks operating in the Ka-band frequency range using satellites in geostationary (GEO), low and medium earth orbits (LEO and MEO) and highly elliptical orbits (HEO).

Do you have any plans to launch any new products or services at the NAB 2022, or if not, what will you be showcasing at the NAB or in the coming months for the Broadcast market?

AvL: AvL is not launching any new products at NAB 2022, but did just introduce a new Comms on the Move (COTM) terminal for vehicle operations, and new XY antennas that operate in GEO and MEO with a roadmap for LEO. The COTM terminal was developed for military applications, operates in GEO and MEO, and is reconfigurable for Ku- and Ka-band, which has commercial SNG applications. The XY antennas also were developed for military applications, but operate with commercial networks

C-COM: We will be showcasing several products at the NAB Show this year including our new Ka 74cm antenna which has just received type approval from Eutelsat over their Ka-band Konnect service. We will also display our 1m Manpack Ku band, Flyaway 74cm, and the 98cm vehicle mount antennas. Attached are pictures of these models.

CPI: CPI has been expanding our SNG products and will be exhibiting some of our innovations at NAB 2022. With our C125FA terminals, we have increased the ruggedness and environmental protection of our drive system. Our optional auto-pointing kit, unique in the industry, able to quickly clip onto the manual drive system, is even easier to use.

CPI also offers a full line of LNAs, LNBs and other RF components that support specialized integrators that build and offer bespoke SNG and vehicle mounted systems for satellite

communications.

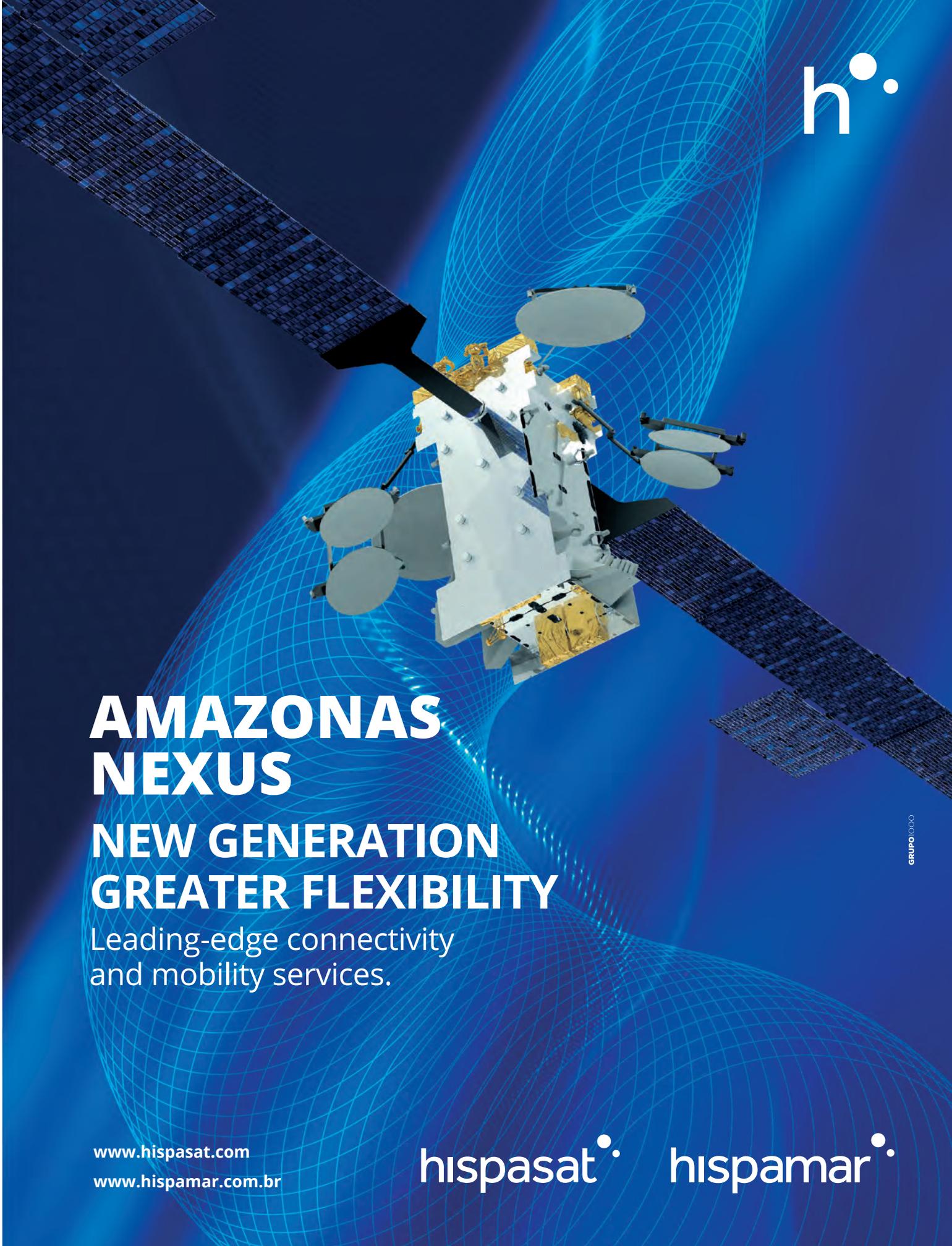
ThinKom: Yes. ThinKom's new ThinSat® Ka500 VICTS phased array offers an unprecedented combination of network flexibility, multi-constellation interoperability and compact low-profile form factor for continuous uninterrupted COTM applications. The low-profile unit measures just 35 x 35 inches and 5 inches high. It weighs only 75 pounds and easily mounts on standard roof racks.

Considering the rapid deployment of satellite constellations in the Non-GEO orbits such as LEO and MEO, how are you addressing in the new environment with Ku and Ka-Band for the broadcast, media and streaming market?

AvL: AvL's SNG antennas operate with high-throughput GEO networks in both Ku- and Ka-bands with the configuration, including band change capability, provided for the SNG operator. Some AvL Ku- and Ka-band SNG GEO antennas and terminals are upgradable to MEO, but we have not seen demand for this capability with SNG customers

C-COM: Our current development of flat panel Phased-Array antenna in Ka band has been designed to work with non-GEO constellations. At the moment we have no plans to develop a Ku band option as we believe that the market potential lies in higher bands.

CPI: CPI's broad portfolio of antenna products includes flyaway and mobile antenna terminals for applications where users need lightweight yet rugged, compact and easy-to-use antennas that are deployable in a variety of environments. These antennas terminals offer a cost-effective solution for some MEO constellations. Coupled with CPI's Ku- and Ka-band amplifiers/BUCs and RF components, we are able to provide these products as standalone or full



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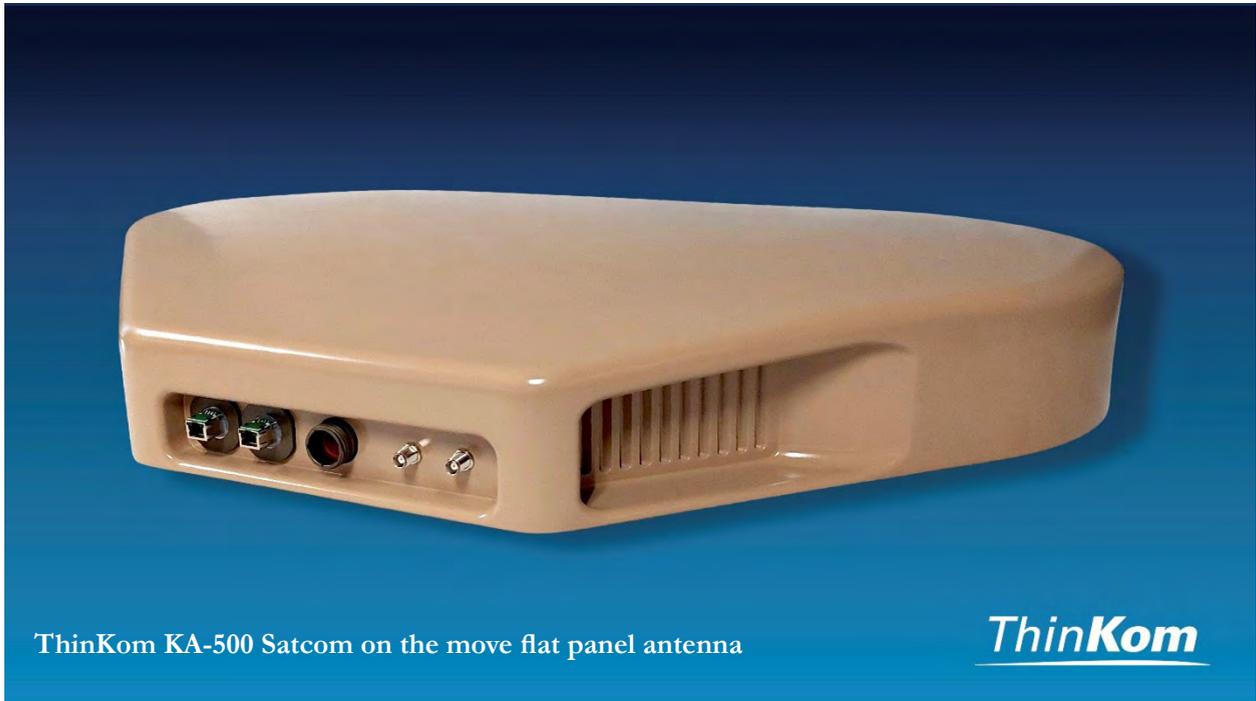
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CPI is the only satcom amplifier manufacturer in the world offering products using solid state, traveling wave tube and klystron technologies, giving our customers the widest selection to provide the solutions that they and their customers determine are best for their applications. Specifically in Ka-band, we continue to expand CPI's offering of power amplifiers/BUCs in all power levels.

ThinKom: ThinKom's Ku- and Ka-band phased arrays are designed to communicate via GEO, MEO, LEO and HEO satellites. When working on fast moving LEO satellites, the antenna switches rapidly and seamlessly without any service interruption as the satellites rise and set. Partnerships are in place with Telesat's new Lightspeed Ka-band network, and we plan to offer COTM customers a choice for operating either on Ku and Ka frequencies as these new lower-orbiting satellite constellations come into service.

What are the key trends that you see in mobility applications for the

broadcast market?

AvL: AvL is seeing a great deal of demand for SATCOM mobility with military customers, but not with broadcast markets. Broadcast users often use 5G cellular services for mobile streaming – it works well and is low cost. SATCOM COTM products, like AvL's COTM terminal, are advancing rapidly and enable significant improvements, including GEO/MEO operations, band and network changes in the field, low power consumption and high throughput. But SATCOM COTM will not be cost competitive with 5G cellular for some time, so the appeal for SNG and commercial streaming is likely several years out.

C-COM: We expect the ongoing development of mega satellite constellations by different companies to fuel the demand for flat panel antenna solutions especially for mobility applications. The transport industry such as vehicles, trucks, trains, buses, ships and airplanes will enjoy a more affordable, more reliable, and higher-speeds "InTransport" broadband

connectivity.

CPI: This is a dynamic area, as the idea of what can be done on a mobile platform continues to expand. Services that were once required to have dedicated fixed infrastructure now can be packed up in transit cases and deployed very quickly to almost anywhere in the world.

With the rollout of 5G mobile network services, we anticipate that some applications may migrate away from satcom. However, the demand for bandwidth to developing markets all around the world, combined with new services being offered to technology-savvy customers and regions, continues to drive demand for satellite-based services. We look forward to seeing the roles that terrestrial versus satcom systems play in it as it develops, as each have their areas of specialty.

ThinKom: There is growing demand for seamless low-latency data transfers between satcom and/or terrestrial networks. Achieving 5G at 1 to 70 msec latency will require terrestrial-based links. Latency rates for



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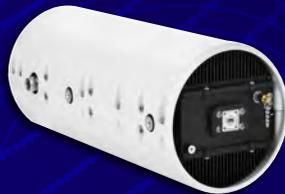
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satcoms will be on the order of 100 msec for LEO and up to 1 sec for MEO and HEO satellites. GEOs will have latencies of 1 sec or greater.

For satellite COTM, latency is only one of the factors to be considered. True mobility in satcom must also address line-of-sight (LOS) blockages and outages. When the LOS is interrupted by going behind a tall building or tree, or going under an overpass or tunnel, the connection to the network must be re-established seamlessly. While the antenna hardware needs to be capable and reliable of minimizing interruptions, the networks and modem capabilities at the remote (vehicle) and hub/teleport side are equally important. The faster the handshake, the faster restored links allow for the data/transmissions to flow effortlessly in both directions, thus maintaining a good quality of service for the application. Blockage and recovery are agnostic to GSO or NGSO satellites, and in some case NGSO recovery will need increased antenna and network smarts.

An additional consideration is the proliferation of terrestrial 5G networks for telco. International regulatory requirements forbid satellite terminals to interfere with these networks. ThinKom's VICTS phased-array technology complies with this WR-19 ESIM requirement, as well as other important regulatory requirements for NGSO operation, such as the ITU Article 22. 



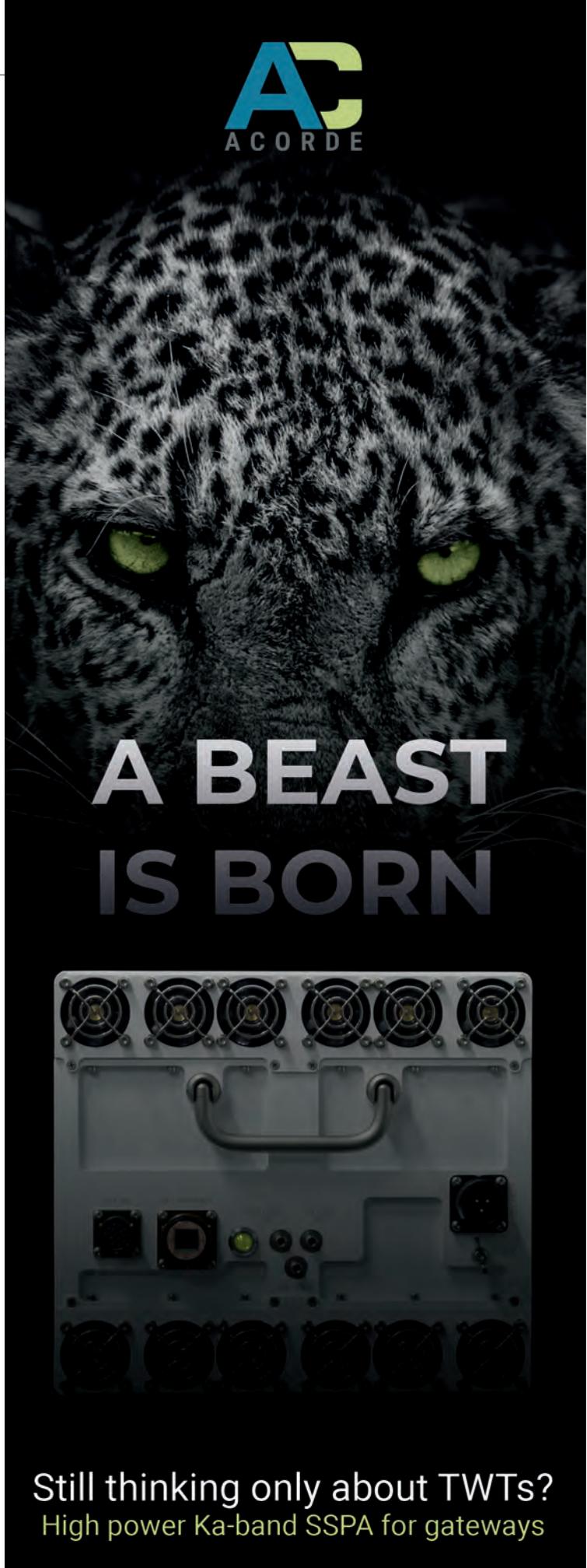
Bernardo Schneiderman is the Principal of Telematics Business Consultants. He can be reached at: info@tbc-telematics.com



For more information on the companies participating in this roundtable, you can visit their booth at the NAB 2022 in Las Vegas:

C-COM Satellite Systems West Hall #4412

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Satellites and St. Michael the Archangel Providing Coverage in Ukraine

By Lou Zacharilla

I am gonna take a wild guess and say that Putin never read Cicero. However, as a trained intelligence officer I am sure that he came across a quote of General Sun Tzu, who stated that “The supreme art of war is to subdue the enemy without fighting.”

The supreme art may have eluded Russia’s political leadership. It has not eluded the satellite community.

The conflicting collision of business and moral life are always most evident in times like this. Last week I did a Podcast with Hall of Fame reporter Peter B. De Selding who, as he has done for nearly three decades, had spent the night poring over earnings reports. He reported, no shock, that the industry was thriving. War is good for the space and satellite industry. It is the nature of the beast. Mercifully, our industry is also good for wars. Its ability to monitor and support humanitarian efforts, keep essential communications and data on migra-

tions and refugee patterns flowing are critical to the success of battered places. In this instance the battered place we are supporting is a fledgling democracy where nearly 10% of its population has been dislocated.

In many ways we perform an angelic function from above, coordinating relief agencies’ efforts, enabling learning by reconnecting schools and all the while ensuring that military leaders can work on some version of Sun Tzu’s “supreme art” and either maintain or restore the peace.

As satellites have become the “indispensable technolo-

gy” as SSPI claims, it gives me pause wondering what else is up above miraculously pushing David to meet Goliath with a sack full of chutzpah, as Ukraine’s one-man slingshot Zelensky is doing.

Luminous Angels Spotted Over Kyiv

As the skies lit-up from Russian cruise missile attacks and the plumed flaring of Javelin missiles, Kyiv’s Archbishop Sviatoslav Shevchuk reported that people were reporting and posting to Twitter sightings of “luminous angels” above the city!

(<https://tinyurl.com/ynssewf4>)

In our industry we call these “launch plumes,” but that is not what the Archbishop said people were experiencing or seeing.

Communities of faith are at a disadvantage to explain just how a miracle gets to be that. Evidence of the involvement of The Ineffable might well be influencing the battle in non-linear ways. Whatever it is, the surprising retreat of a mighty army from the battlefield or the conquest of one’s own medical chart and prognosis

proves that there simply are things that we are ignorant of but which for sure we experience.

Satellites, like symbols, icons and images of ancient cultures are powerful totems for hope. In the bloodied but unbowed communities of virtue in Ukraine they have been helping to reinforce resilience. Whatever it is they are seeing, people see images of their own valor and this is broadcast worldwide by satellites and amplified in flocks of social media. This has triggered behavior which has throughout time, as Sebastian Junger wrote in last month’s Vanity Fair, uprooted and pushed unbeatable enemies



The Kyiv city flag features the image of St. Michael the Archangel.

from the doorstep. <https://www.vanityfair.com/contributor/sebastian-junger>

But “luminous angels?”

Let’s connect some dots.

St. Michael is the patron saint of Kyiv. The city flag has its image adorning it. A beautiful gold statue of the “archangel” stands guard over the city. The Ukrainians adopted this biblical icon as the patron of hunting and as the protector of the City. I know a little about this. I happen to have been baptized beneath a statue of St. Michael and survived 9/11 and major brain surgery in 2002 thanks, the old Italian women in my hometown assured me, thanks to their prayers to St. Michael. Before my surgery they sent me a medallion with the same image as the one in Kyiv. So far, so good.

Trust me, the patron of the city is helpful to the deserving but no “angel” to the wicked. He is a ferocious character who comes with a sword and, I presume nowadays, a machine gun or two. He may also be armed with transponders and Starlink phased array dishes. Who am I to say?

I can say that the battling people in Kyiv, Kharkiv and Kherson have become a testament to Winston Churchill’s insistence that courage “is the first of human qualities because it is the quality that guarantees all the others.”

Luminous or geostationary, something has emerged in the skies and on the ground. A type of Springtime for free people and those with core inner substance everywhere. <https://youtu.be/M-x-ujjB-oE>

Satellites are there with them. It is a mark of industry pride that satellite operators and service companies like Ultisat, Iridium, Hawkeye 360 and Maxar are protectors.

Perhaps future Ukrainians will see satellites as that luminous intervention that made the difference and will make them worthy of lore. I do not doubt it. I am not smart or clever enough to doubt that what we have seen in these past 35 days has been a miracle!

I am smart enough to know this industry’s capabilities. I know about St. Michael. I read Cicero.

And I hope for a good outcome. 

...Satellites, like symbols, icons and images of ancient cultures are powerful totems for hope. In the bloodied but unbowed communities of virtue in Ukraine they have been helping to reinforce resilience...

The Business of Space

As the industry continues to expand what we have found is that the need to attract and retain talent is essential if companies like Planet, Hawkeye 360 and Maxar are to stay on mission in peace or war. I was proud to have helped initiate a new online learning tool, with the collaboration of GVF and SatProf called “Space Business Qualified” (SBQ). This amazing program is designed to teach executives and employees what they need to know about the business of space. It will teach those who want to glean information for a range of purposes and also certify employees as space business qualified. SBQ follows along GVF’s technical training programs and combines it with SSPI’s comprehensive knowledge of the industry, and how it ensures a better “satellite” world. The business of space is not an area that people are trained to understand, yet it is essential to understand.

For more information visit: www.SpaceIQ.org and check out the new video at: <https://youtu.be/PmNTc3ubjcw>



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

State of the Art Teleport Equipment For Sale



The full complement of equipment from a state-of-the-art, fully-functioning teleport in Akron, Ohio, USA is for sale. These include all the antennas, uplink, downlink, monitoring, power and other auxiliary equipment. The equipment is for sale on an as is, where is basis.

The teleport was fully-functioning just few months ago, when it had to cease operations at the end of 2021 due to circumstances beyond the owners' control with regards to site of the teleport. There were no operational issues with any of the equipment or the business itself. It was in fact a very successful venture providing VSAT services for various verticals like enterprises, oil and gas, among others, for critical and essential connectivity applications.

Most of the equipment are relatively new or refurbished, or recently upgraded. The engineering staff maintained the equipment using best-in-class industry standards and have had no major issues in its over 15 years of operation. The teleport used SED's Mon-A-Co monitoring and control system, which closely monitors every critical parameter and provides alerts and identifies problems with every device in the teleport's network, enabling the staff to respond to issues in real-time.

Most teleports for sale are a result of failed businesses or operational issues.



This is a great opportunity to obtain a complement of well-maintained, pre-owned equipment with a track record of operational effectiveness for a fraction of the cost of new equipment that have yet to be tested in actual working conditions.

For more information on this unique opportunity, contact: Marcus Bowen at e-mail: mbowen@skycasters.com

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New products for 2022 — Ka-Band, X-Band, C-Band and Miniature 8W Ku

Ernest Kasparov, Founder and CEO Amkom Design Group, Inc.

What made you decide to start a company in a very competitive sector of the ground segment market which is saturated by established players?

Before I started the company, I worked for 13 years with an equipment distributor which made me familiar with most of the RF products in the market. Knowing that we are going into a very competitive segment of the industry, I decided to test every single BUC that we could find out there--from the lowest cost one to the most expensive. We found some flaws in the design of these products and the claims that they make, so we took it upon ourselves to engineer what we call a “perfect BUC”—with no flaws. We started with a lower power 16W BUC and from there after years of rigorous Research and Development and testing, we now have a whole line of products and grew the business so we can do both low volume high mix and high volume manufacturing.

The challenge we faced in the beginning was to come up with a ‘manufacturable’ product which surpasses all industry standards. By this I mean a product that can be consistently made in high volumes and perform consistently and reliably in extreme conditions while exceeding customer’s expectations. With nearly 5,000 units out there to date, I think we have achieved this at a very high level with virtually no returns.

What differentiates your company from your competitors?

Our coming in later in the market doesn’t mean we’re behind. We actually benefit from having a wider perspective from all the lessons of the past, knowing what competition is there and also being newer in the game, we use the latest and best components which should give us an edge in the next few years. We then put ourselves on top and don’t stop there as we continue to be in competition with our selves to improving our products, growing the company and outperforming the competition.

We think of ourselves as a boutique manufacturer. We do the kind of work that not many others are willing to take. Some customers have even called us “A hidden Gem”. We consider every order very important. We will take on custom orders for as low as one unit. We provide every opportunity for potential customers to try our products first before realizing why they haven’t switched over to our products already. Because somebody with either little or extensive experience who is looking at the specs and testing that product against those specs will not take too long



to realize and see that our product is the superior choice. It doesn’t matter how big or small the company—we treat them all the same.

Everything we do is built from scratch. Our engineers designed every little thing down to custom made screws. We didn’t just pick stuff off the shelf and put them together—that’s why it took so long to develop and then test our products before we launched them into this competitive market. We ensure that every synthesizer and amplifier boards are tested separately and have worked efficiently and reliably without causing any issues in operation, at any temperature whether it’s on a moving vehicle, at sea, or on an airplane. We put emphasis on using extreme internal filtering in our development, so that our customers don’t have any issues on their receive band end, so they can confidently deploy our products immediately.

We always strive to exceed our customers’ expectations. We are never afraid of a challenge and are willing go the extra mile for them. We are not your standard 8-5 shop. We are available 24/7 as we understand that our products are used in critical emergency situations, so we respond very quickly to any inquiries.

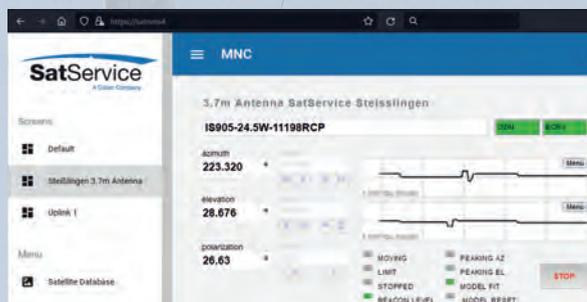
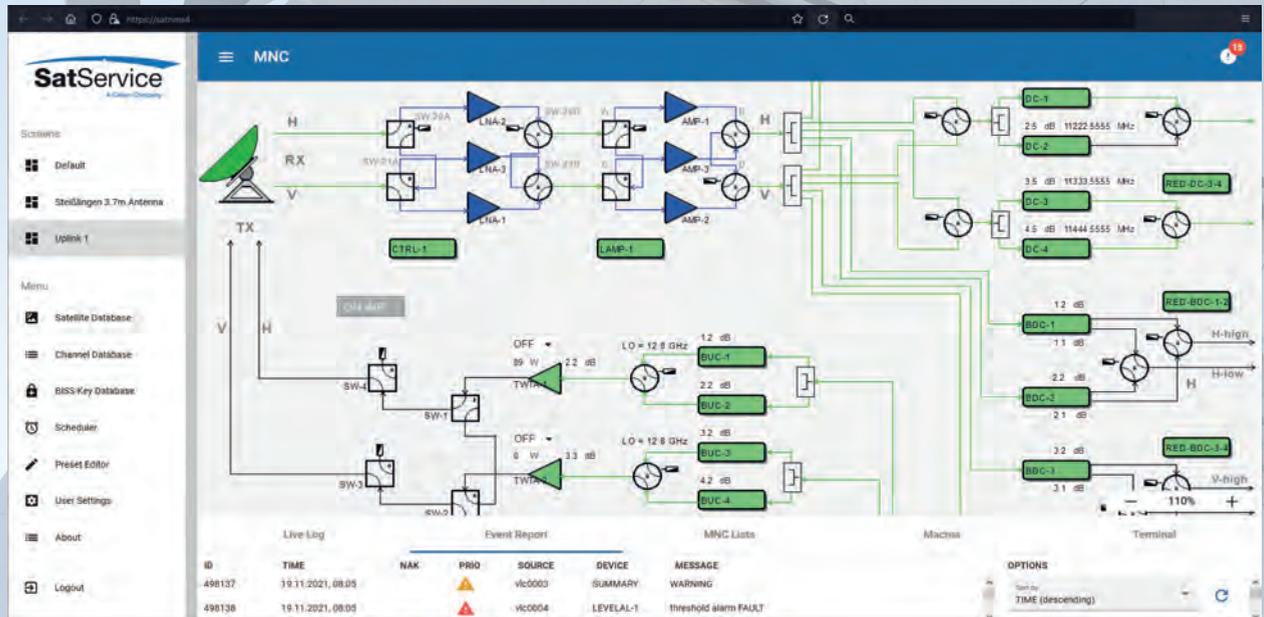
To what do you attribute the success of your company in a relatively short time?

In today’s post Covid and situation around the world, we are very fortunate to have such great people working within our company, and partners who worked with us through the pandemic to meet on time deliveries. Our engineering and design teams are top notch. We also develop excellent relations with our various partners and suppliers, which help us meet the stringent requirements of our clients. Overall, our company’s culture is dedicated to continuous improvement and providing world changing products and incomparable customer service experience.

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From Satellite 2022 to CABSAT 2022

by Martin Jarrold

In my previous column I introduced the new online educational program jointly developed by GVF, SatProf, Inc., and SSPI – the SBQ – achievement of which will confer the status of being Space Business Qualified. At SATELLITE 2022 the SBQ initiative was officially announced and formally launched.

GVF, through its training division – i.e., SatProf – has for 21 years been engaged in the provision of satellite earth station/terminal installer training and certification. In this year, GVF's 25th, the addition of SBQ to our portfolio of training/education resources extends the association's offering to include the satellite industry's first comprehensive non-technical program and curriculum based on individual courses, full modules, and a dedicated certification path.

GVF, SatProf, and SSPI have an aggregate 80-years of experience in space industry education. In launching this new online learning program the three organizations will together satisfy the need of new and established businesses and employees in the commercial space industry to learn about all aspects of the business, enabling industry professionals to become space business qualified.

The space and satellite industry has grown far beyond the dreams of its commercial pioneers and the governments that started it, and is now a mature, fast-expand-

ing, and complex business with an estimated value of well over US\$1 trillion. It reaches deeply into dozens of vertical markets and other industry sectors, is essential in the provisioning of communications, data and the digital transformation of much of the global economy and has become an invis-



ible but indispensable part of everyday economic activity. Its current accelerated growth is fueled by the financial community's involvement, manifest in massive numbers of start-ups and new business models forming within it. Until SBQ there has been no industry course offering a comprehensive learning experience to explore this. SBQ's non-technical education is designed to improve the knowledge and performance of existing employees, increase the marketability of those seeking a job in

the industry, and provide employers with an inexpensive way to both increase productivity and enhance employee retention in a hyper-competitive labour market.

A Free "Welcome to the Business of Space" course is offered as an incentive for individuals and companies to examine the courses being offered, and a full description of SBQ courses can be found at www.SpaceBQ.org. Alternatively, email info@SpaceBQ.org for information, and stay informed by joining the growing community on LinkedIn and Twitter and following #SpaceBQ.





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After more than two years grounded from international travel I will shortly be resuming my travels to satellite industry events. First on my agenda is an event which, although it takes place in Dubai in the UAE, additionally addresses the markets of northern Africa and south Asia. At CABSAT 2022 GVF, an event Supporting Association, will be present three Summit panel discussion sessions over 17 & 18 May:

•‘Stakes and Solutions in Responsibly Managing Space’

Sustainability is a global priority across all industries and organizations, and should extend beyond our planet too. This panel will address multiple facets of sustainability with discussion points covering why we should care about our impact on space, whose responsibility it is to keep space clean, the risks of not responsibly managing our impact, and the tracking of orbital objects, including other solutions and best practices, to help us responsibly manage our use of space.

•‘Disruptive Evolution in the Satellite Ground Segment’

Satellite’s ground segment, antennas in particular, is undergoing game-changing innovation. With the rapid growth of satellite networks in non-geostationary satellite orbits (NGSOs), and applications including machine-to-machine and people communications this part of the satellite industry is evolving to deliver, this panel will address developments in the use of metamaterials, in power efficiency and in interference prevention, examine how satellite will reach full potential in delivering services across business, government, and consumer, together with discussing the benefits and challenges to adoption of flat panel alternatives to traditional parabolic antennas.

•‘Driving a New Space Innovation Paradigm with Artificial Intelligence and Machine Learning’

AI and ML are being increasingly applied to foster innovation in the satellite and wider space industries. Impacting multiple areas of space operations, this panel will explore how the satellite industry is leveraging AI and ML to revolutionize business. This panel will touch upon areas including optimization in satellite autonomous control, in-orbit servicing/refueling, and spacecraft decommissioning, data-gathering, analytics and management, and advances in software-defined networks and the design of new satellite terminals.

GVF’s webinar series – in partnership with Connectivity Business News (CBN) – continues. Just concluded at time of writing is the webinar entitled ‘Satellites and Mobile Communications’, featuring a panel comprising Will Mudge, VP Engineering Operations, Speedcast;

Henning Pottharst, Head, Smart Solutions, Tracking & Innovation, Hellmann Worldwide Logistics; Marco Camporeale, Head of Maritime Digital, Inmarsat; and Dr Shay Har-Noy, General Manager, Aviation, Spire. Moderated by Alex Goldman, Editor of Connectivity Business News, the focus was on the imperatives of establishing, maintaining, and expanding communications connectivity with all the modes of transportation which move our raw materials and manufactured goods around the world. Communications on the Move is a “have to have” in the business of global logistics.

Discussion covered the importance of data in helping customers achieve their goals and addressed such questions as to how COVID-19 has changed the business of the data/logistics interface, and the accelerating pace of digitalisation, violations of data norms, analysing the nature of the “logistics void”, and the challenges of tracking cargoes, as opposed to tracking vehicles. The webinar recording is available at <https://gvf.org/webinar/satellites-and-mobile-communications/>.

Thursday, 28 April brings the next in the series, ‘New Technologies, New Services’. Innovations in the space segment, such as High Throughput Satellites, Very High Throughput Satellites, High Altitude Platform Systems, software defined satellites and satellites utilizing inter-satellite links, have been receiving a lot of attention as billions are invested in satellites with these new technologies. In order to receive the return on investment in these new technologies, customers in government, enterprise and consumer segments must see corresponding benefits in the services derived from these technologies. The panel will explore the new services enabled by the innovations in the space segment and how they will increase the value proposition of satellite communications.

Register for this event at:

<https://gvf.org/webinar/new-technologies-new-services/>.



Martin Jarold is Vice-President of International Program Development of GVF. He can be reached at: martin.jarold@gvf.org



HISPASAT to Acquire AXESS Networks

Madrid, Spain, March 21, 2022--HISPASAT, the Spanish operator and satellite solutions and services provider owned by the Red Eléctrica Group, has reached an agreement to acquire the company AXESS Networks, a teleport operator and satellite services provider with a presence in Latin America, Europe, the Middle East and Africa.

The acquisition of AXESS Networks is part of the actions defined in HISPASAT's 2020-25 Strategic Plan, which aims to transform the company into a satellite solutions and services provider in its target markets. The operation implies the greater involvement of HISPASAT in the managed services value chain, thus increasing its proximity to customers and being able to adapt and quickly develop its solutions in a sector that is currently experiencing a major technological boom according to the company.

This operation will allow HISPASAT to optimize its offering in areas such as the extension of cellular networks via satellite, connectivity networks for corporate clients, or the digitalization of remote areas in countries with large technological gaps. Furthermore, it will enhance the development of solutions for emerging markets, such as the Internet of Things (IoT) or satellite 5G networks. The advantages of this merger will be especially notable in Latin America, a region where both companies maintain a very significant portion of their business.

AXESS Networks, recognized by the World Teleport Association as Independent Teleport of the Year 2021, has an infrastructure made up of teleports located mainly in Germany, Mexico and Colombia, as well as other installations in Peru, Chile

and Saudi Arabia. Likewise, it has a broad customer base in industrial and corporate sectors related to telecommunications, oil and energy, and mining, among others; with critical operations in remote areas where service resilience and quality are extremely important. This acquisition will not affect the activi-



ties carried out by AXESS Networks, since it will maintain its operations, management, work teams and relations with customers and suppliers after this agreement.

Miguel Ángel Panduro, HISPASAT CEO, stated that “we are very pleased with the agreement reached with AXESS Networks, an action that responds to the increasingly essential collaboration among industry players with the aim of meeting society's demands for connectivity. In recent years, several operations of this type have occurred in the sector and our partnership with AXESS Networks will provide us with optimum strategic positioning in two areas that have huge potential for growth in satellite communications: Latin America and the B2B solu-

tions market.”

Mauricio Segovia, AXESS Networks CEO, added that “the merger of AXESS Networks with HISPASAT represents a major leap for the company, since it demonstrates great support from one of the industry's most relevant players and it allows us to integrate and strengthen the joint value proposition towards our markets. With this operation, we begin to form part of a leader that creates trends in the market and whose projects have a clear social background.”

HISPASAT was advised by BBVA in this operation which, pending the required regulatory authorizations and other conditions precedent, values 100% of the capital of AXESS Networks at 96 million US dollars.

HISPASAT, Red Eléctrica Group's satellite services operator and provider, offers satellite broadband and connectivity solutions including Internet access, mobility and the expansion of cellular networks, as well as other added-value proposals, to governments, corporations and telecommunications operators in the Americas, Europe and North Africa. It is also a leader in distributing Spanish and Portuguese audio-visual content and broadcasting important digital platforms such as Direct To Home (DTH) television and High Definition Television (HDTV), in addition to managing transportation and audio-visual signals from HISPASAT Peru's teleport in Lurín.

View a video interview with Hispasat CEO Miguel Ángel Panduro at the Satellite show in Washington, D.C. at: www.satellitemarkets.com/panduro-2022



Leonardo Sells its Satcom Business to SES

Reston, Va., March 21, 2022—Leonardo DRS Inc. has signed a definitive agreement to sell its Global Enterprise Solutions (GES) business to SES for \$450 million. The transaction has been approved by the boards of directors of Leonardo DRS and of SES. Finalization of the deal is targeted for the second half of 2022 subject to regulatory approvals.

“The DRS GES business is well-respected by its customers and within the satellite communications (SATCOM) provider services market, and we are very pleased with the agreement reached with SES,” said Bill Lynn, CEO of Leonardo DRS. “While the DRS GES business has flourished, Leonardo DRS has shifted its portfolio focus, and selling it now makes the most business sense,” he said.

The DRS GES business is a leading provider of commercial satellite communications to the US Government, and delivers world-class, mission-critical satellite communications and security solutions to customers anywhere in the world.

SES plans to organize the DRS GES business unit under SES Government Solutions (SES GS), a wholly-owned subsidiary of SES. For over 40 years, SES GS has supported the mission essential operations of Combatant Command (COCOM), Military Services, and other US Government customers. SES GS delivers satellite communication solutions leveraging SES’s 70 satellites at geostationary and medium earth orbits and supporting ground infrastructure.

“SES GS is the only satellite operator with operational experience delivering multi-orbit, multi-band man-

aged SATCOM services to the Department of Defense (DoD) and its warfighters,” said Pete Hoene, President and CEO of SES Government Solutions. “With SES GS and DRS GES’ deep and trusted relationships with US Government agencies, we look forward to continuing to provide critical elements to meet the DoD’s connectivity requirements and deliver assured communications.”

Leonardo DRS regularly assesses its portfolio to ensure strong alignment with our customers’ needs and priorities. As the company continues to focus on transforming to meet the DoD’s important priorities, this divestiture will allow the company to consider larger potential acquisitions that would strengthen its core capabilities and open new market opportunities.

“As we enter a new and exciting phase at Leonardo DRS, we are investing in our strengths to improve our core capabilities,” Lynn said. “We are looking beyond incremental technology ad-

vances and moving towards a larger role in producing ground-breaking, market-disruptive technologies for our customer needs today, and well into the future,” he said.

“The combination of SES GS and DRS GES businesses unites the leader in multi-orbit satellite networking with unparalleled US Government satellite communications integration,” Hoene said. “Both SES GS and DRS GES have a trusted reputation for delivering the best network solutions to meet unique and demanding US Government requirements,” he added.



Leonardo DRS’ Global Enterprise Solutions (GES) business is a leading provider of commercial satellite communications to the US Government. (image courtesy of Leonardo DRS).

Michael Abad-Santos to Succeed BridgeComm CEO Barry Matsumori

Denver, Colo., March 16, 2022--**BridgeComm**, a leader in optical wireless communications (OWC) solutions and services, announced it has named **Michael Abad-Santos** Chief Executive Officer as Barry A. Matsumori steps down from the position he has held since 2017.

Joining BridgeComm in 2019 as senior vice president of business development and strategy, Abad-Santos is a 20-plus year telecommunications and satellite industry veteran. His appointment is effective immediately.



Michael Abad-Santos

“One of the things in life that is constant is change, and it’s time for some change at BridgeComm,” says Matsumori. “We have achieved so much, and as we enter a new phase, I have great confidence in Michael’s ability to take the helm. The future is bright for BridgeComm, as we have developed capabilities and products like no other,” he added.

Over the course of Abad-Santos’s career, he has held a range of executive roles including chief commercial officer at Trustcomm and senior vice president, Americas, at LeoSat Enterprises, where he led commercial activities, strategy development and execution in the Americas region, as well as government activities worldwide. At LeoSat, he helped secure pre-series A investments of US\$ 20 million, two strategic investment partners and more than US\$2 Billion in pre-launch contracts for commercial services. Abad-Santos also spent a decade at Inmarsat, serving as se-

nior vice president of its global government division, as well as director of Department of Defense (DoD) solutions.

“I am honored to be named CEO. It has been a pleasure working under Barry’s leadership. We have achieved significant milestones, with many more ahead. On behalf of BridgeComm, I wish him the best in his next endeavor. The suite of OWC technology that we have developed at BridgeComm is groundbreaking and extremely consequential, on the battlefield and in our everyday lives. We are at the precipice of something great and I couldn’t have asked for a better team to take the challenge with,” says Abad-Santos.

David Wajsgras Named New Intelsat CEO

McLean, Va., March 7, 2022—**Intelsat** has tapped **David Wajsgras**, as its next chief executive officer (CEO). Effective April 4, Wajsgras succeeds Stephen Spengler, who announced his planned retirement in October 2021.

Wajsgras has two decades of experience at the senior executive management level, providing operational, strategic and financial leadership in both the commercial and defense industries. He most recently served as president of the global, \$7.5-billion, advanced technology Intelligence, Information and Services (IIS) business at the former Raytheon Company,



David Wajsgras

now part of Raytheon Technologies (NYSE: Before joining Raytheon as chief financial officer, Wajsgras was

executive vice president and chief financial officer at Lear Corporation (NYSE: and held other key operations and leadership roles.

“Dave Wajsgras is a results-oriented leader with a great track record of performance throughout his career,” said Lisa Hammitt, chairperson of the Intelsat Board of Directors. “He develops talent and builds teams, thinks and acts strategically, and engages positively with customers and other stakeholders to the benefit of the business. Dave is just the right person to lead Intelsat at this important time,” he added.

Intelsat CEO Stephen Spengler Inducted into Space and Satellite Hall of Fame

McLean, Va. March 15, 2022—**Intelsat** CEO, **Steve Spengler**, was announced today as the latest inductee in the Space & Satellite Professionals International’s (SSPI) Space & Satellite Hall of Fame. With this induction, Spengler joins the ranks of pioneers and visionaries in communications, aerospace, scientific research, and the development and delivery of space and satellite applications.

“I am honored to be recognized for my contributions to the satellite industry and the mission that we all serve,” said Steve Spengler CEO of Intelsat. “I feel extremely fortunate to have worked with the talented team at Intelsat, and great people across the industry who have shared the goal of ubiquitous global communications. It is humbling to be named among such a prestigious lineup of industry leaders who have discovered the unknowns of space, and transformed its potential into technological developments to improve people’s lives as we know it through satellite technology,” he added.

Slated to retire in 2022, this accolade shows how invaluable Spengler's contributions to the industry have proven to be and marks a successful journey as a space and satellite visionary.



Steve Spengler

Selected by SSPI's board of directors, Spengler and five other 2022 honorees were inducted during the 2022 online Hall of Fame Ceremony on March 15 and honored in-person at the live 2022 Hall of Fame Celebration March 22 during the Satellite show in Washington, D.C.

Comtech Appoints Maria Hedden COO

Melville, NY, March 30, 2022--Comtech Telecommunications Corp. (NASDAQ: CMTL), a leading global provider of next-generation 911 emergency systems and secure wireless communications technologies, today announced that it has hired defense and communications industry veteran **Maria Hedden** as its new Chief Operating Officer (COO).

Hedden's expertise is built on a storied career that includes over 20 years of executive P&L management experience focusing on improving business performance, and she has worked with some of the largest names in defense and mission-critical communications, including BAE Systems and L3Harris. In her most recent position, she served as Senior Vice President of Operational Transformation for Leidos, where she was responsible for establishing manufacturing excellence for a multi-billion product portfolio.

In her new role, Hedden will be responsible for leading and implementing operational excellence across Comtech, such as improving production capabilities and on-time delivery schedules, through retaining and scaling engineering and operations teams to improve margins and to keep pace with expected business growth. As COO, Hedden will ultimately drive continued customer satisfaction with her proven ability to efficiently deliver the solutions all of Comtech's customers have come to rely on.



Maria Hedden

"My career has largely been in pursuit of making great companies better, and putting them on the path to meet their potential. Particularly for organizations in the most crucial of disciplines – such as providing critical satellite, space and public safety communication solutions – improved operations can have a significant trickle-down effect on their customers," said Hedden.

Hedden began her career in manufacturing with FMC, narrowing her focus on defense when FMC sold that division of their business to BAE Systems. It was there that she introduced Lean Manufacturing to BAE's European business unit and rationalized the Land and Armament business. It was a following move to L3Harris that inspired her interest in general management, where she led an operational turnaround that culminated in her appointment to President in 2015, and ultimately operated as the head of L3Harris' Security and Detection division when the company was sold, before joining Leidos.

Inmarsat CEO elected as new Chair of GSOA

Washington, D.C., March 22, 2022 – The **Global Satellite Operators Association (GSOA)** elected **Inmarsat CEO Rajeev Suri** as its new Chair and **Roger Tong**, CEO of **AsiaSat**, and **Neil Masterson**, CEO of **OneWeb** as Vice Chairs at its Board meeting, which took place on the evening of 22nd March, 2022.

The global satellite operator community gathered to vote on the new leadership of GSOA during the week of the Satellite 2022 conference in Washington, D.C.

The Global Satellite Operators Association counts among its members: Airbus CIS, Amazon, Amos Spacecom, APT Satellite, Arabsat, Arsat, AsiaSat, Avanti Communications, Azercosmos, Echostar-Hughes, HellasSat, Hispasat, Inmarsat, Intelsat, Intersputnik, Nigcomsat, NileSat, Omnispace, OneWeb, Rascomstar, SES, SSI-Monacosat, Star One, Telenor, Telesat, Telespazio, Thuraya, Turksat, Viasat and Yahsat as well as representatives of the broader space industry including Airbus Defence and Space, Arianespace, Astroscale, Lockheed Martin, Mansat, ST Engineering iDirect and Thales Alenia Space.

GSOA is the only CEO-driven satellite industry association, structured to drive industry leadership to support the delivery of all types of connectivity to meet insatiable demand on Earth and sustainability in space. By providing a unified voice and a platform for collaboration for satellite operators globally, GSOA aims to ensure their continued success and the broadening of opportunities for policymakers and industry players to leverage satellite services to fulfil their objectives.

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China Pay-TV Services Market to Remain Stagnant through 2026

London, UK, March 2, 2022--The Pay-TV services revenue in China is expected to grow at a sluggish compound annual growth rate (CAGR) of 0.6% from US\$35.1bn in 2021 to US\$36.2bn in 2026, due to a steady decline in cable TV subscriptions and drop in overall pay-TV average revenue per subscription (ARPS), according to analytics firm GlobalData.

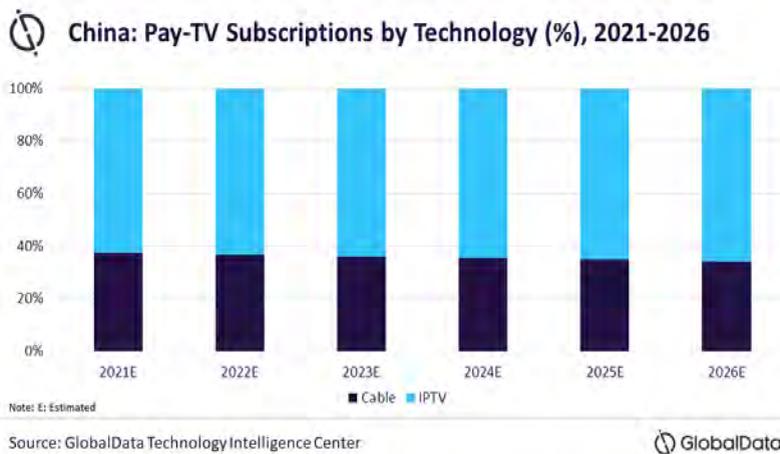
An analysis of GlobalData's China Pay-TV Forecast indicates that cable TV subscriptions are expected to decline at a CAGR of 0.9% between 2021 and 2026 while the average monthly spend per pay-TV account will drop from \$5.43 to \$5.20 over the same period.

Hrushikesh Mahananda, Telecom Analyst at GlobalData, says: "A steady rise in the adoption of OTT-based video services by consumers seeking new content is affecting the overall pay-TV ARPS and revenue growth in China."

Mahananda adds: "IPTV will be the leading pay-TV service platform in China in terms of subscriptions throughout the 2021-2026 period. This growth will be primarily driven by solid demand for multi-play bundled packages with integrated IPTV services and increasing fixed broadband penetration in the country that supports delivery of IPTV services."

China Broadcasting Network (CBN) will lead the overall pay-TV services market throughout 2021-2026, driven by its monopoly in the cable TV segment.

Mahananda concludes: "Within the IPTV segment, China Mobile will lead given its robust focus on enhancing its content by strengthening the combined operation of big and small screen content and making a household data service portal consisting of digital cinema, broadband television and vertical content."



Asia Pacific OTT revenues to climb by US\$ 20 Billion

London, March 23, 2022--OTT TV episodes and movies revenues for 22 Asia Pacific countries will reach US\$ 52 billion in 2027; up by 62% from the US\$ 32 billion recorded in 2021. From the US\$ 20 billion additional revenues, China will add US\$ 3 billion, India US\$ 3 billion, South Korea US\$ 3 billion and Japan US\$ 5 billion. Indian revenues will more than double according to new research by Digital TV research.

Much of the growth will go ahead outside China. The Chinese government's clampdown on fan-based culture hit reality productions hard, resulting in SVOD subscriber growth deceleration.

Market leader Tencent Video yesterday reported only a 1% increase in SVOD subscriptions for 2021. The situation was worse for second-placed iQiyi, which lost 6 million subscribers in 2021 to

take its total to 96.4 million.

Simon Murray, Principal Analyst at Digital TV Research, said: "Can one country make that much difference? China was responsible for 37% of Asia Pacific's OTT revenues in 2021. Luckily, there is plenty of growth elsewhere."

Asia Pacific SVOD revenues will reach US\$ 28 billion by 2027, up from \$18 billion in 2021. AVOD will grow by \$8 billion to \$19 billion by 2027.



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The Satellite Markets 20 Index™

Company Name	Symbol	Price April 1			Price Change	
			52-wk Range		Last Month	From Jan 3
Satellite Operators						
Thaicom Public Company Limited	THCOM.BK	8.70	7.90	14.10	-19%	-5%
Eutelsat Communications S.A.	ETL.PA	9.29	8.93	13.42	-17%	-1%
APT Satellite Holdings Limited	1045.HK	2.19	1.70	2.95	-6%	4%
Echostar	SATS	24.01	20.65	30.90	-7%	-2%
SES S.A.	SES.F	7.34	6.12	7.91	2%	-3%
Satellite Manufacturers						
The Boeing Company	BA	179.25	185.26	278.57	-15%	-16%
Maxar Technologies	MAXR	33.48	25.07	58.75	14%	-33%
Lockheed Martin Corporation	LMT	443.5	319.81	396.99	23%	25%
OHB SE	OHB.DE	35.3	33.50	49.85	-1%	-20%
Honeywell International Inc.	HON	184.25	194.55	236.86	-13%	-11%
Equipment Manufacturers						
C-Com Satellite Systems Inc.	CMI.V	2.02	1.96	4.48	-16%	-25%
Comtech Telecommunications Corp.	CMTL	16.08	20.64	30.40	-33%	-28%
KVH Industries Inc.	KVHI	9.38	8.67	15.29	1%	-23%
ViaSat Inc.	VSAT	50.97	33.13	68.76	10%	40%
Gilat Satellite Networks Ltd.	GILT	8.00	6.58	22.69	-2%	9%
Service Providers						
DISH Network Corporation	DISH	30.43	28.53	47.05	-8%	-7%
Globalstar Inc.	GSAT	1.13	0.38	2.98	2%	27%
Telesat Corporation	TSAT	20.20	22.37	56.54	-31%	-24%
Sirius XM Holdings Inc.	SIRI	6.21	5.75	8.14	0%	6%
Trimble Inc.	TRMB	66.58	65.37	96.49	-19%	-4%

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 Index Value April 4, 2022	Percentage Change last month
Satellite Markets 20 Index™	2,867.60	3%
S & P 500	4,582.64	8%

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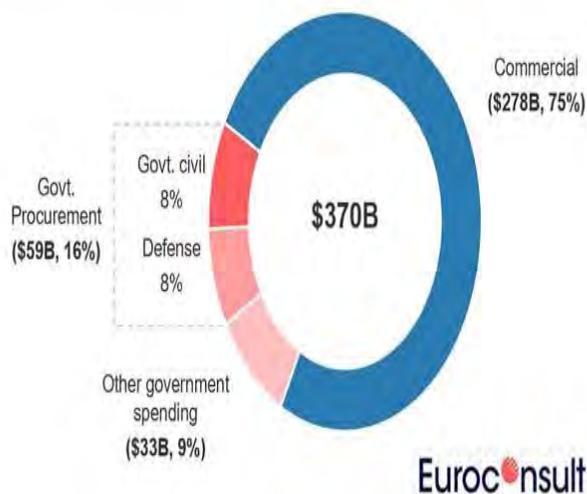
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