

Satellite Executive BRIEFING

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Industry Trends, News Analysis, Market Intelligence and Opportunities

The Role of Satellites in Delivering OTT Content

By Elisabeth Tweedie

After a hiatus of three years, IBC is back as an in-person event at its usual venue, the RAI in Amsterdam. The show runs September 9th – 12th. The main IBC conference takes place on the first two days only, and is centered around the theme: “What’s next? Designing the Future together,” but every day throughout the show there are multiple free sessions taking place. The latter are grouped into three themes: Innovation, Content Everywhere and Changemakers. In addition, the Showcase Theatre features a variety of presentations from exhibitors including a full day from Amazon Web Services (AWS).



This year the British Broadcasting Corporation (BBC) celebrates its first centenary. The IBC is marking this occasion by awarding the BBC the International Honour for Excellence. “Our industry, of course, has been driven forward by innovators and creators from all around the world,” said Michael Crimp, CEO of IBC. “But all of us trace the source back to those cramped rooms in Savoy Hill in London in 1922. We are pleased to present the accolade to BBC 100, but in a very real sense this award is for all of us that care about the creativity, technology and business that surrounds every practitioner in the world of media.”

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Industry Resilience



After going through a devastating global pandemic for the last two years, there are very encouraging signs that the satellite industry is heading for a recovery. There are, however, also indicators that may point towards a recession. Whether that recession will be global or just affect certain regions or countries remains to be seen.

One thing that is certain is that the resiliency of the global satellite industry lie in the diverse vertical markets and regions that it is active in. In the past, when some verticals like the aeronautical market is down, other verticals step up like the broadband market. In this issue, we take an in-depth look at the satellite broadcast market--a long-time staple of the industry under-

going major changes. Our cover story delves into this important market with a view toward the IBC which is coming back after a long hiatus this month. We also have a very insightful article from Thomas Wrede one of the foremost consultants in the satellite broadcast sector.

Enjoy this issue.

Virgil Labrador

Virgil Labrador
Editor-in-Chief



View videos of interviews with key satellite industry executives from Satellite Asia in Singapore and other trade shows this year at:

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Satellites and OTT*...from page 1*

In addition, an IBC Special award is being presented to a group of over 400 media and broadcast companies and individuals, who at the instigation of Sonya Chakarova (Playbox), Nero and Daniella Weigner (Cinegy) and Phillip Covell (consultant), came together to provide resources, solutions and hardware to Ukrainian TV channels and media outlets to ensure they can stay on the air during the conflict. The same group also supports refugees in finding media roles across Europe.

These two awards and others will be showcased in a live-streamed ceremony on September 5th at 16.00 BST.

Content Everywhere

“Content Everywhere” is a particular relevant theme for the satellite industry. No other technology can deliver content

to all the locations that satellite can reach. However, in this particular instance “everywhere” is more a reference to over-the-top (OTT) content delivery, a segment that was initially regarded as competition, but is now being embraced, as new satellite technologies have been developed that facilitate satellite’s place in the value chain for this.

Before delving into some detail about this, it might be useful to sort out a few acronyms for OTT stream-

“...“Content Everywhere” is a particular relevant theme for the satellite industry. No other technology can deliver content to all the locations that satellite can reach...”

ing services, as new ones seem to be constantly emerging. SVoD, AVoD and TVoD, namely, subscription, advertising supported and transactional (e.g. a one-time purchase or rental of a movie) Video-on-Demand have been around for a while and are fairly self-explanatory.

Two new acronyms are now also

Netflix and Hulu.

FAST refers to Free Advertising-Supported TV. This can be purely linear live-streamed channels, or more likely a combination of live-streamed and AVoD. FAST services usually include multiple channels, Pluto TV for example offers 251 channels. To complicate matters even further BVoD can also be FAST. Peacock for example, depending on where in the world you are located, offers a FAST service, an upgraded service that still includes advertising, but makes more content, including live sports available, and a premium service, SVoD service with no advertising.

Viewing Habits

In terms of viewing habits, two things are starting to stand out. Firstly, in many parts of the world, streaming is now overtaking traditional pay-TV, and secondly, viewers are starting to show a preference for advertising supported services, whether these be AVoD or FAST. In fact a recent report from Ofcom in the UK, indicated that 59% of viewers used FAST to live stream a program as it was being broadcast OTA.



being used: BVoD and FAST. BVoD refers to Broadcaster VoD, meaning a streaming service provided by a broadcaster, iPlayer from the BBC or Peacock from NBC for example. BVoD can be a free service or a subscription service. It can also be on-demand or live streaming. These services have been developed by broadcasters in order to keep their viewers and to monetize their content, in the face of increased competition from independent streaming services, such as

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Among the key themes of this year's IBC include Innovation, Content Everywhere and Change-makers. In addition, the Showcase Theatre features a variety of presentations from exhibitors including a full day from Amazon Web Services (AWS).

Research conducted at the end of last year by National Research Group for Roku in the UK, US and Canada showed that in all three countries, there are more viewers of streaming services than viewers of traditional (cable and satellite) pay TV. The Brits are in the lead, with 90% of viewers watching streamed services vs 70% traditional services. For the US and Canada the figures are 80% vs.63% and 90% vs 75% respectively. Streaming is no longer the prerogative of younger viewers. In the UK 77% of 57-70 year-olds are using streaming services and 31% of those added more services in the previous year. In the US and Canada 71% and 68% of boomers use streaming services and over 40% added more services in the previous year. The UK is leading the way with streaming of sports with 51% of users

viewing sports on streaming services. In the US and Canada the figures are 42% and 33% respectively.

It is important to note that this data refers to traditional pay-TV. It does not include over-the-air (OTA) free TV, something which is generally more popular in the UK and Europe than in the US. However, the report from Ofcom, shows that in the UK, OTA viewing is very much the prerogative of the older generation, with those aged 65 and over watching, on average 5 hours and 50 minutes of OTA TV a day. In complete contrast those aged 16-24 on average spend just 53 minutes a day in front of broadcast TV. This is not to say that older people are not using streaming services. Ofcom's data, whilst slightly lower than Roku's, generally concurs, indicating that 83% of the population use at least

one streaming service.

Viewers in all three countries are in favor of advertising supported streaming services, particularly if that means a lower monthly cost. In the UK 50% of stream ad-supported channels. Interestingly, in this respect, there is a significant discrepancy between the US and Canada, with 70% and 42% respectively, watching ad-supported streaming services. In the UK, viewers are clearly starting to become increasingly price sensitive. For the first time there has been a decline in the numbers of subscribers to at least one streaming service, with 350,000 dropping SVoD so far this year. It's hard to imagine that viewers' love affair with VoD will end, so this is not quite a movement to return to free broadcast television, as we all knew it before the advent of cable

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and satellite, but an interesting step nevertheless.

However, the high rates of inflation that many countries are experiencing at the moment, have to be taken into account when looking at consumer behavior. In the UK for example the latest data from the Office of National Statistics, put the Consumer Prices Index Including Owner Occupiers' Housing Costs (CPIH) at 13.6% in July of this year, and a report from Citibank, indicates that this will continue to rise, peaking at 18.6% in January 2023. In Germany, the overall CPI was 7.5% in July, but some sectors such as food and non-alcoholic beverages and fuel were much higher: 14% and 35.5% respectively.

Impact on the Satellite Industry

So how does this preference for streaming video as opposed broadcast, cable and satellite services impact the satellite industry? Both SES and Eutelsat derive a significant portion of their income from video, both direct to home (DTH) and delivery to headend. SES for example delivers 8,028 TV channels to 366 Million TV homes, and revenue from this segment fell 7% in the first half of this year. 61% of Eutelsat's revenue is derived from video, and this fell by 6.8% year-on-year in Q3. So, on the face of it, not good news. However, two other factors come into play. Firstly, as has been said many times before, there are still parts of the world where broadband to the home, cannot yet support bandwidth hungry streaming services. Secondly, whilst viewers in the more developed economies enjoy, high definition (HD) and ultra-high

"...Satellite also has a key role to play in content creation. Not all content is shot in the studio. News and sports are obvious examples of video captured on location, but in addition many movies and TV programs incorporate scenes shot outside of the studio..."

definition (UHD), (also referred to as 4K,) TV, that isn't the case in everywhere. According to Euroconsult the number of HD TV channels broadcast via satellite is expected to grow by 75% by 2029, and the number of UHD TV channels is projected to grow from 166 in 2020 to over 1,100 in 2029. This translates to increased demand for satellite bandwidth.

Satellite's role in video, however, is by no means confined to DTH or delivery to cable headends. Its role in cellular backhaul is well known, but somewhat less well known is satellite's ability to deliver content to the edge.

As video continues to dominate both fixed and mobile traffic, the need for content delivered to the edge is growing. According to Ericsson, video will account for 76% of mobile traffic by 2025. Much of this growth is being fueled by 5G, which in addition to cellular is also being used to provide fixed wireless access (FWA), i.e. broadband to the home.

Unlike linear TV delivered by cable or satellite, streamed VoD services, mean that every time a user requests a movie or TV show an individual stream must be generated and delivered. This puts major pressure on the internet backbone. Pressure which will continue to grow as users

demand more HD and UHD content. That however, may be just the beginning. Interest in more immersive experiences is growing, particularly amongst younger people. Multi-view, 360 degree view and augmented reality for example, are all possible, and all consume significantly more bandwidth than that required for UHD. Delivery of popular content to the edge, alleviates this pressure. Satellite, with its inherent "one to many" delivery capabilities is the ideal medium for this delivery.

Unsurprisingly, given the size of the opportunity, many satellite companies are developing products and solutions to facilitate delivery of video to the edge. For example, one of the many products to be showcased at IBC is SKYFlow. This has already been demonstrated by the Digital Video Broadcasting Project (DVB), and is the result of collaboration between key industry players: ST Engineering iDirect, Broadpeak, Easy Broadcast and Quadriple. SKYFlow is a flexible system that can be used to pre-position popular content at the edge for VoD, as well as to deliver live video, directly to a TV set or a set top box. Content is delivered in native IP, using generic stream encapsulation (GSE). SKYFlow can be utilized as a transmit-only



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Satellite also has a key role to play in content creation. Not all content is shot in the studio. News and sports are obvious examples of video captured on location, but in addition many movies and TV programs incorporate scenes shot outside of the studio. Historically, large outside broadcast vans equipped with Ku-Band antennas were used for this, but their sheer size limited the locations that could be used. With the advent of 3 and 4G cellular, cellular bonding became an alternative method favored for many events. This however, has limitations. Firstly, for a major event involving hundreds of spectators, pressure on the cellular networks may be extreme, rendering the service unreliable; and secondly, cellular isn't available everywhere. The solution is a smart network combining cellular and satellite and seamlessly switching between them to provide a constant, reliable pathway for transmitting video, back to the studio or to a public or private cloud. This was recently demonstrated by Dejero, utilizing a Newtec Dialog Hub for a video shoot in the Canadian Rockies.

Cloud Connectivity

Cloud connectivity is becoming increasingly important, in part spurred by Covid as working from home became the norm. Nowhere is cloud connectivity more important than in content creation. Loading video being shot on location into the cloud, means that the sound and video editors can

work together wherever they happen to be physically located. Satellite companies and Cloud providers alike were not slow to grasp this opportunity and form alliances. SES, for example, expanded its existing alliance with Microsoft Azure to include O3b mPOWER its second generation MEO constellation. Speedcast is an AWS partner, SpaceX has a deal with Google Cloud for Starlink, its LEO constellation and Telesat is working with CloudOps to develop a hybrid cloud platform for its LEO constellation.

Conclusion

Once upon a time, satellite was used for long-distance telephony, then for video content delivery for OTA



Satellite Technology for OTT Applications

For more information, read our latest
TECHBrief on "Satellite Technology for
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television, then to cable headends, then direct-to-home. The evolution continues, as satellite takes its place in the streaming revolution. 



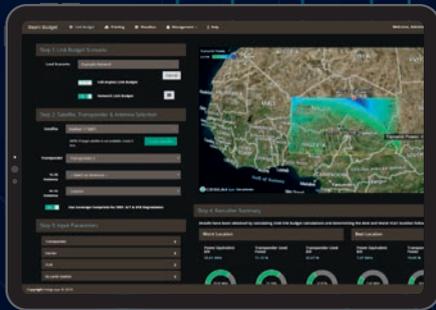
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Trends in Satellite Video Broadcasting

by **Thomas Wrede**

In many countries satellite video broadcasting is a major means of linear TV and radio delivery. But consumers today expect the convenience of watching linear and on-demand content on portable devices such as tablets, notebooks and mobile phones. Consequently, most video content providers now have dual-platform operations: a legacy (satellite) broadcast head-end, using MPEG Transport Stream delivery that serves integrated digital TVs or set-top boxes connected to consumers' main room TV screens, and in addition an OTT streaming platform supporting live and on-demand content distribution, using unicast adaptive bit rate (ABR) streaming to mobile devices.



Analyzing the recent financial results published by leading satellite operators shows that satellite video broadcasting is in a slow decline as consumers seem to shift towards OTT content delivery. What does this mean for satellite video broadcasting? On the one hand it needs a new broadcasting technology that allows video content to be delivered via satellite in a native IP format to all kinds of consumer IP device. Furthermore, there must be a new signaling mechanism that enables viewers to seamlessly find and watch television content, whether delivered over satellite or by any kind of broadband network including fiber and 5G.

A Native IP Broadcasting Standard

In February 2022 the Digital Video Broadcasting (DVB)

group has published in its BlueBook A180 an end-to-end Native IP broadcast system referred to as DVB-NIP that facilitates broadcasting in IP format using existing industry standards such as mABR, DASH and CMAF. It relies as much as possible on existing DVB specifications and complements those where necessary.

With the best of DVB broadcast (i.e., low latency, QoS, scalability and bandwidth resource optimization) and OTT streaming (enabling multiscreen and easy personalization) converging into a new Native IP broadcasting standard, there is the potential to create a future-proof, next generation broadcast solution. This solution could also work for terrestrial broadcast, potentially closing the existing “IP gap” in the DVB-T2 standard, a gap that the ATSC has already closed with its ATSC 3.0 standard several years ago.

The vision of Native IP is that in future all linear video broadcast is delivered as file-based IP video reaching multiple viewing devices from a single broadcast platform.

The DVB-NIP broadcast system works in both connected and unconnected scenarios and supports a plethora of professional and consumer use cases. Its core features comprise the following:

The DVB-NIP broadcast system works in both connected and unconnected scenarios and supports a plethora of professional and consumer use cases. Its core features comprise the following:

DVB NIP

- Carriage of real-time live linear television and radio services,
- Real-time delivery of assets purely via broadcast,
- Real-time delivery of assets in a fully hybrid manner



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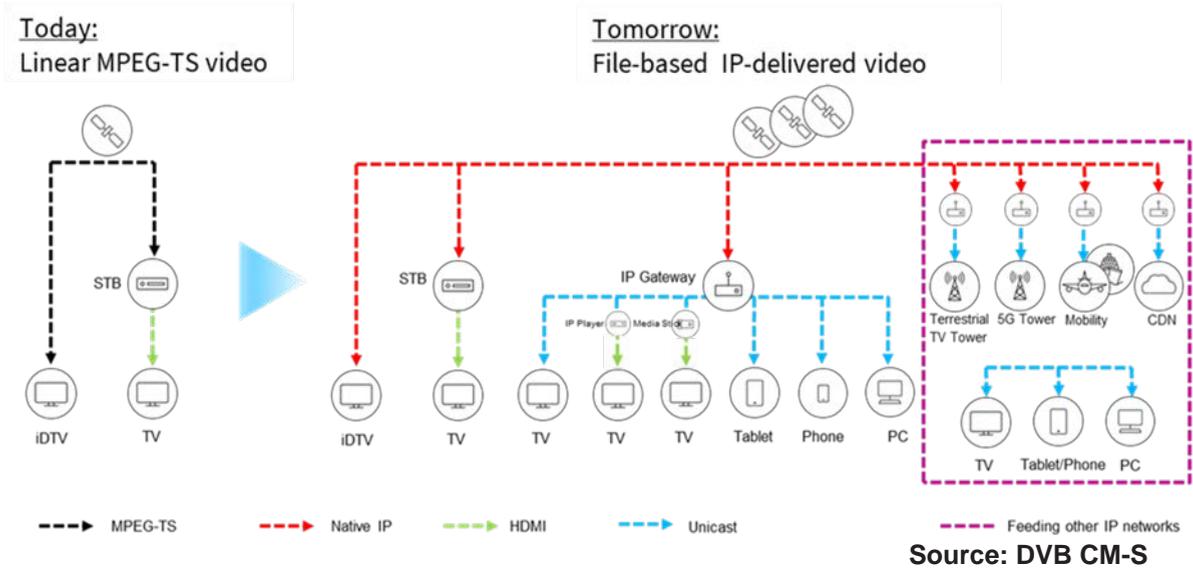
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Source: DVB CM-S

- (some via broadcast and some via broadband),
- Direct content delivery from the same head-end to consumer homes or indirectly to CDN Edge Caches which make the content available via intermediate LAN or WAN fixed or mobile networks,
 - In professional environments, the possibility to store received content, i.e. "Live to VoD" service,
 - Support of an extended content guide (see DVB-I),
 - Multiscreen support: Addresses Native IP devices with or without built-in broadcast tuner,
 - Support of content protection with the same DRM solutions that are used on broadband networks (fully connected scenario),
 - Support of proprietary DRM solutions for unconnected client scenarios.

The DVB-I Standard

The DVB-I standard was published in November 2019 in DVB’s BlueBook A177. The specification defines the signaling of linear TV or radio services and content that are delivered over broadband and accessing these services in a way that is fully consistent with their access when delivered by RF-based DVB technologies. Furthermore DVB-I defines the metadata and mechanisms to present electronic program guides (EPG). DVB-I allows for a single coherent offering of cable, satellite, terrestrial and broadband delivered



content that consumers can access through a single user interface. It can also be a method for national TV regulators, operators and trademark licensors to offer a list of trusted and authorized DVB-I services.

Most importantly, DVB-I works with all delivery platforms enabling viewers to seamlessly find and watch television content, whether delivered via terrestrial, satellite or cable broadcast or any type of broadband network delivery. Using DVB-I, a broadcaster or operator can target smartphones, laptops, tablets, mobile phones, set-top-boxes, streaming sticks and TV sets with the same content offer.

It should be emphasized that DVB-I is also a central component of the DVB-NIP standard. This underlies the fact that the DVB group has an integrated strategy in developing a family of broadcast standards.

With DVB-I, consumers can have a single, consistent user interface on various types of devices. Terrestrial, cable and satellite operators can use DVB-I to leverage the strengths of hybrid content delivery within a single service offering.

Summary

With the Native IP standard DVB has laid the foundation for introducing a next generation of television broadcasting services. It would allow operators to save platform costs and at the same time reach all modern IP devices in consumers’ homes. In emerging markets operators can

MARKET INTELLIGENCE

reach mobile users via hotspot gateways (basically a small satellite dish connected to a Native IP gateway plus WiFi) in public spaces. As Native IP is a new technology using DVB-S2 (with Multi-Protocol-Encapsulation MPE) or preferably DVB-S2X (with Generic Stream Encapsulation GSE (Lite)), its successful market introduction will require operators to commit to an additional transmission (e.g, a new dedicated satellite transponder). Furthermore, manufacturers will need to develop the required reception equipment such as home gateways with a satellite tuner that interfaces to the WiFi router in the home.

The good news is that all this is on its way and at the DVB stand at the IBC this year, visitors will be able to experience a live demonstration of DVB-NIP, DVB-I and other DVB technology. 

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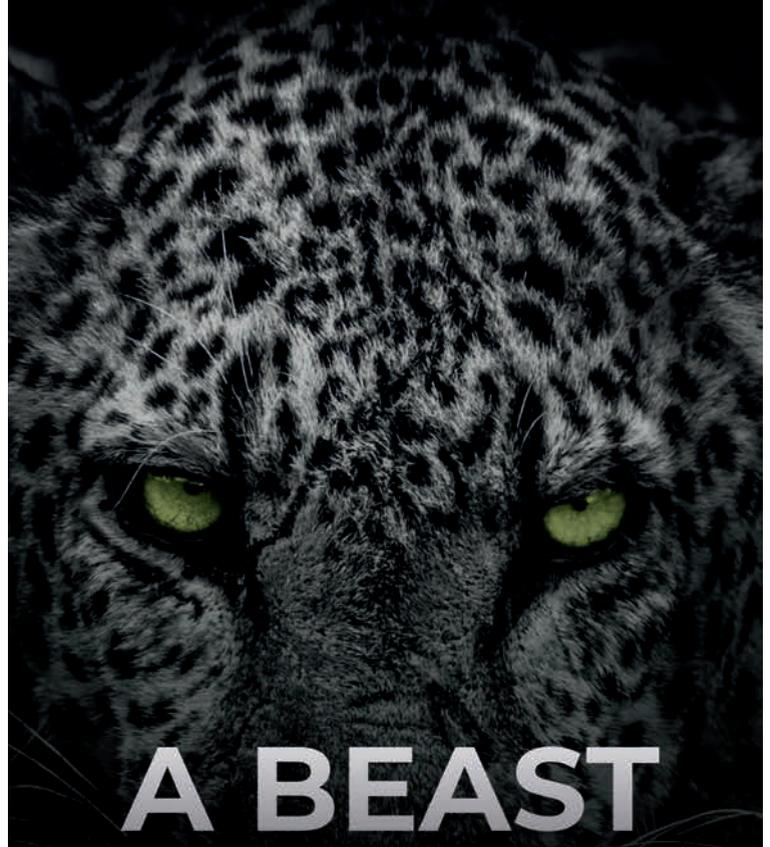
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Thomas Wrede is the founder and managing director of Technology Vision Consulting, a company specialized in project studies, standardization and prototype developments in the fields of satellite communications and wireless technologies.



Thomas has over 35 years of professional experience in the communications industry. In his 28 years at satellite operator SES in Luxembourg he has been deeply involved in the development of digital satellite television, in-home signal distribution concepts, digital satellite radio, satellite return channel technology, Internet via satellite and High Definition as well as Ultra High Definition (4K/8K) television. Thomas currently represents SES in the DVB Commercial Module (www.dvb.org) as chair of the CM-S subgroup. In his leisure time Thomas is an active amateur radio operator experimenting with software defined radio platforms and antenna designs. He can be reached at: thomas.wrede@me.com



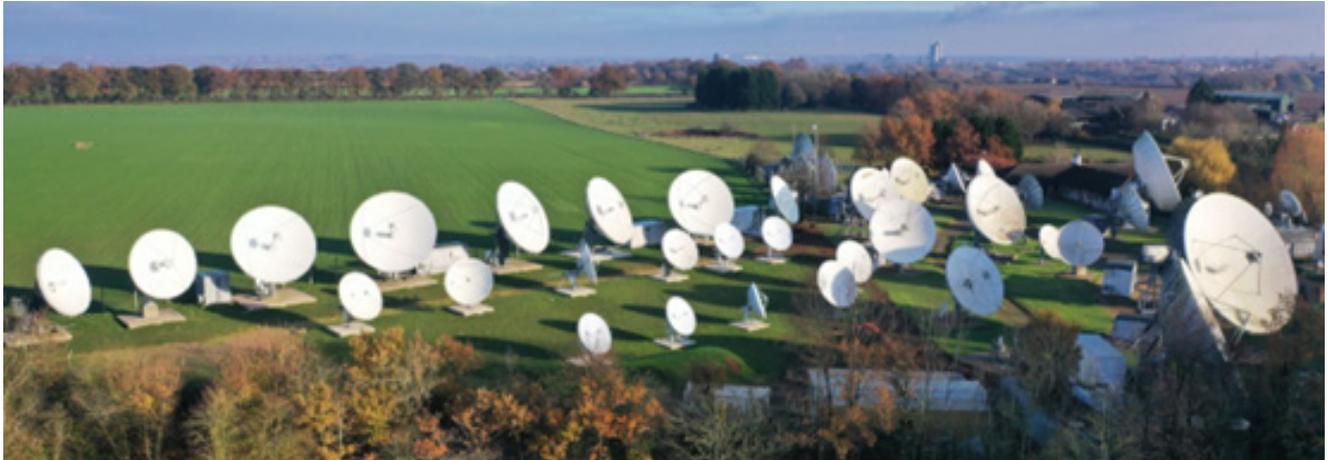
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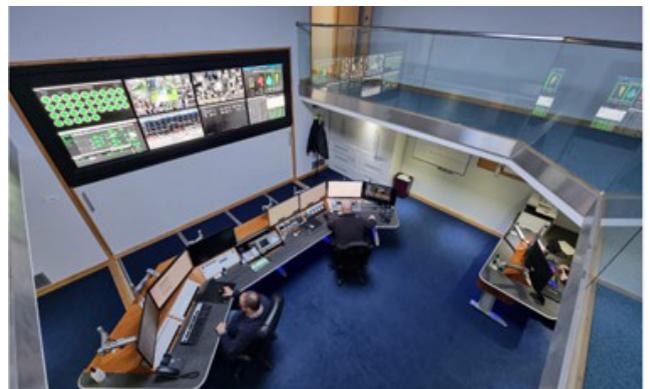
The SMS Teleport ground segment operation is strategically positioned in clean RF environment in Rugby, United Kingdom, from where it connects over dedicated multi-gigabit terrestrial fibre in 2 m/s to diverse global peering points in the telecom capital London.

The teleport benefits from a clear line-of-sight to over 100 communication satellites between 60°E to 60°W and hosts over 80 antennas in a range of sizes in C- Ku- and Ka-band.

The SMS teleport provides hosting and gateway services to a number of leading global players. Over the past few years, SMS has steadily expanded the number of antenna systems at its Rugby site which it uses to provide ground segment services to customers in broadcast and network business. A number of these are maintained in ready-for-service state for use by existing and by new customers.

Over the past 2-years SMS has invested in the expansion of its infrastructure for giving service to the proliferating number of next-generation NGSO satellites and constellations. Their transformative technologies have resulted in the introduction of a ubiquitous low-latency, high-speed telecom layer into satellite operations in general. As a result, satellite services have gained an increasingly prominent role in our increasingly software driven IT and data telecom ecosystem, one that draws on the next-generation qualities for online applications that knit together commercial enterprise with surveillance and intelligence uses.

Against this background of a combined GEO reach and LEO speed with strengthened security, SMS is now expanding



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its ground segment service operation.

In its first (and current) phase of expansion, SMS is introducing monitoring, tracking and control services and uplink services for specialist Internet of Things (IoT) and Earth Observation (EO) LEO operators.

Work on this new phase of site expansion has already begun. It involves the introduction of 2 large pedestals for full motion tracking designed to carry 13-m antennas as well as 2 additional pedestals for 5-m high-precision stations, each with a choice of interchangeable CP feed systems for services in L – S – X and Ku bands.

The future SMS is preparing for is one in which next-generation satellites and satcom services will be capable of integrating their advantages with GEO operations derived from multi-orbit interoperability opportunities as well as with terrestrial networks, thereby opening new perspectives for future ground segment operations. 

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Happiness is a Warm Rocket

By Lou Zacharilla

“Happiness is a warm gun,” the Beatles sang back in the 1960’s on their iconic White Album. Let’s update that for 2022, the Age of the Better Satellite World, and claim with scientific evidence that “happiness is building a warm rocket TOGETHER.”

Zoom zoom, zoom zoom!

“Happy? Who’s happy?” Cosmo, the padrone in the warm-hearted American film “Moonstruck” complains, suggesting that no one is or ever can be.

Wrong, says the science.

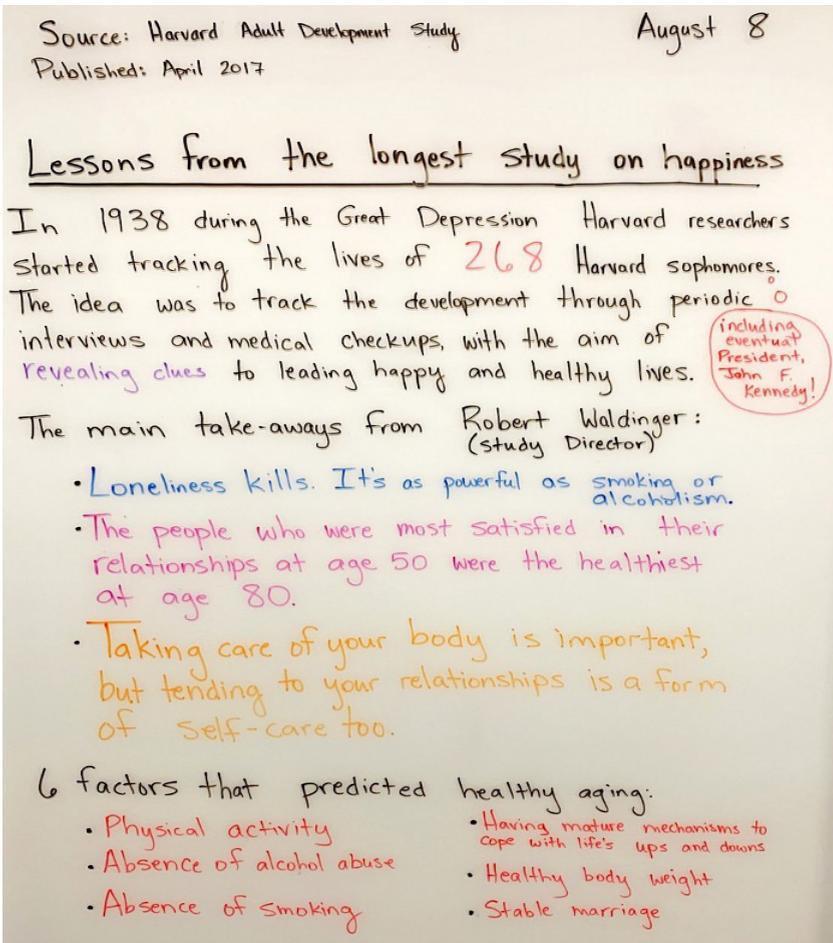
But what produces happiness anyway? Hint: it may be related to what you do at IBC.

Let’s break it down to its essence and ask: is happiness having the most prestigious or most high-paying job?

No.

Is it when work doesn’t feel like work? Kind of.

I never liked to work. Never liked the idea of having a regular “job” and never cared about building a “career.” They could pay me NBA point guard money and I would never do something I did not want to do, or that didn’t define me or simply feel intuitively right. There is no way I would ever pull myself out of bed in the morning to face what Cardinal Timothy Dolan refers to as each day’s “heroic first five minutes” for bread alone.



But tell me there is a chance I will have a great conversation that day with a colleague or even a personal friend, or do a Podcast with an industry celebrity like Alex Fielding or Frank White and I will jump out of bed and brush my teeth with the flair of an orchestra conductor to get the music started!

Why the 'Great Resignation' Did Not Hit the Satellite Industry

When the Great Resignation

came along during COVID millions of people stopped working because they didn’t want to go to places where they felt unfulfilled and unhappy. Yet thousands of people in the space and satellite industry kept doing what they are doing. I do not know of one person in the industry who was part of the Great Resignation, which was a response in most cases to lame jobs that led to unhappiness.

Happy Lives Matter. Why?

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Turns out that there is a secret to happiness. But for you it may not be a big secret.

Harvard University has been conducting a very deep and thorough study on human happiness since 1938. Yes. Since the Great Depression. The project today follows the lives of 724 people, including today spouses and family members from an original cohort of which 6% are still with us, to determine the source and substance of their happiness or lack of it.

Robert Waldinger, the current Director of the Harvard Study of Adult Development, which is the most comprehensive longitudinal study in the history of the human species, concluded in one of his many TED Talks, each of which get more views than there are people in most large Chinese cities <https://www.youtube.com/watch?v=8KkKuTCFvzI> something that the Beatles concluded in another of their songs. “Money can’t buy me love.”

Waldinger summarizes it this way, “It turns out that the best things in life are not THINGS.”

For those who are genuinely happy it’s not the rocket so much as the community and the relationships that we call the space and satellite industry. It is what we do to get that rocket made and to get it aloft and operational together and in relationship that is the real turn-on.

The Harvard study goes so far back that one of its initial subjects was USA President John F. Kennedy, a Harvard graduate. President Kennedy’s life was tragically short, and his murder flooded the world with unhappiness. But he left a legacy that has created happiness of the kind the

study from Harvard University says is everlasting and real.

He helped inspire and kickstart the industry we love and the work we do.

What we really love and what gives us happiness unique to most industries is the environment, stressful as it seems, in which our work is done. According to the data from the study, “good relationships are predictors of who lived longer and who would grow old in a healthier way.”

Society’s trends, unfortunately, are heading another way:

- 25% of people in the USA reported that they are “less connected than they want to be.
- In 1983, 12% of the population said they lacked a friend, buddy or “a confidant” with whom they could share heavy issues. 10 years later the number rose to nearly 25%. It keeps rising.
- According to researcher Robert Putnam, the decline in the creation of “social capital” has also been declining since the 1950’s, parallel to factors like the demise of the family dinner and the rise of TV. As for social media, it is like inviting loneliness into your soul.

Those who are happiest, it turns out, feel supported socially and by colleagues. They have meaningful work

that (probably) doesn’t feel like work. They also know they are working for a cause greater than themselves.

Heck, this industry is so happy, according to Hall of Fame inductee, Kathy Lueders, NASA’s Associate Administrator for Human Exploration and Operations Mission Directorate, that it is making lettuce taste like chocolate for the trip we will someday make to Mars. Imagine that! Who does that if they aren’t happy and don’t like lettuce?

And we do it together. Always. As astronaut and author Nicole Stott says in her new book *Back to Earth*, the virtue of being an astronaut is that the crew is everything. It looks out for one another. It defies the odds, solves problems and feels a collective accomplishment. Nicole says, “Let’s treat our lives here as though we were crew members.” <https://www.sspi.org/articles/better-satellite-world-podcast-this-planets-on-fire-episode-5-code-blue>

For those of you attending IBC, you should know that Amsterdam is NOT among the world’s top 20 Happiest Places this year, according to the 10th annual report on global happiness. So let’s be sure that the happiness-creating engine called the space and satellite industry lifts the spirits and happiness quotient of our host city and nation! 



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Comtech Satellite Network Technologies

@IBC visit Comtech at Hall 1 booth # 1.B82



Comtech is a leading provider of innovative products, systems and services for advanced communications solutions. With more than 50 years of proud history in technology innovation and product quality, our cutting edge satellite communications solutions are deployed globally to support governments and commercial users on mission critical applications. The high-performance and flexibility of our satellite networking and network optimization systems, meet the unique demands of service providers, satellite operators, mobile backhaul, mobility and enterprise customers.

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Es'hailSat Qatar Satellite Company

@IBC visit Es'hailSat at Hall 1 booth # 1.F68



Es'hailSat, the Qatar Satellite Company, is a communications satellite operator headquartered in Doha, Qatar. Established in 2010, Es'hailSat delivers services to broadcasters, enterprises and governments in the MENA (Middle East and North Africa) region and beyond. With the goal to become a world class satellite operator and the foremost satellite services provider in the MENA region, Having both Ku-band and Ka-band payload on satellites co-located at 25.5°E / 26°E broadcast hotspot enables Es'hailSat to provide the region with the most advanced and sophisticated services including broadcast, telecommunications and broadband.

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For more information, please visit www.jonsa.com.tw or email saccount@jonsa.com.tw



SKYWAN – The New Dimension in Airborne Satellite Communication ND SATCOM In The Air: Powering Rotary Aircraft Communication

@IBC visit ND Satcom at Hall 1 booth # 1.D30

Diverse rotary aircraft have far-ranging operational missions, from military to border security, search and rescue to medical transport. Real-time communication, live video feeds, and other data transmissions are critical to informed decision-making and rapid response. Unlike fixed-wing aircraft, the longstanding engineering challenge with helicopters had been the impact of rotor blade action on satcom signals, interrupting communication receipt and transfer.

With its superior engineering expertise and commitment to R&D investment, **ND SATCOM** has successfully developed a rotary "beyond the line of sight" satcom solution its clients have sought with the utmost reliability clients expect. This new Airborne SatCom system will be the European market's it-product for rotary aircraft in 2022. ND SATCOM's exacting standards include partnering with European helicopter manufacturers and their avionics platforms for a series of performance tests and field results.

The Airborne SatCom's three-part system consists of a Ka- and Ku-band antenna, antenna control unit (ACU) and SKYWAN modem, an ITAR-free airborne solution that offers a point-to-point configuration from helicopter to ground providing broadband transmission (e.g. videos, data, voice). SKYWAN modems use a robust TDMA burst waveform to transmit and receive through the rotor. This optimised new waveform confers several advantages. One is the high flexibility given to helicopter manufacturers as to where to place the antenna. Another is this waveform automatically adapts to a specific helicopter model and its rotor speed. The SKYWAN-integrated one-box unit for this rotary Airborne SatCom system is certified for avionic use according to RCTA DO-160 criteria.

The future possibilities are exciting. In addition to fully integrating the rotary aircraft terminals into existing SKYWAN networks, ND SATCOM envisions remotely piloted or autonomous rotary aircraft as benefitting from this new solution. ND SATCOM's launch of Airborne SatCom system is the next-gen innovation setting the rotary-wing world **alight in 2022**.



For more information, go to: www.ndsatcom.com

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@IBC visit RF Design Hall 1 at booth # 1.F45

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Live on display at IBC 2022 you will see our latest Switch Matrix, RF-over-Fiber, Line Amplifier and RF Monitoring solutions. Our team looks forward to welcoming you at our booth and to talking about your individual requirements.

For more information, go to: <https://rf-design-online.de> or email contact@rf-design-online.de



Satservice GmbH

@IBC visit Sateservice at Hall 1 booth 1.F47

SatService GmbH, a designer, manufacturer and reseller in the field of satellite communications, specializing in ground station and teleport equipment. We are pleased to present the latest technologies and our very own sat-nms products, at this year's Cabsat show. Designed & manufactured in Germany, SatService provides competitive and customer dedicated products as well as system solutions with high quality and quick reaction time. Our strength is the combination of system engineering and integration know-how with highly sophisticated products.



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SatService is your reliable and innovative Partner in the field of satellite communications.

For more information, go to: www.satservice.gmbh.de

Terrasat Communications

@IBC visit Terrasat at Hall 1 booth # 1.A21



With more than 18 years of experience in manufacturing high quality power amplifiers,- **Terrasat Communications** will be showcasing its new IBUCs with GaN technology and Cyber Hardened dedicated features that give you endless and powerful support to your system. Get wht you pay for, more than just an IBUC!

For more information go to: www.terrasatInc.com

WORK Microwave

@IBC visit WORK Microwave at booth # 1.A59



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Walton Enterprises

@IBC visit Walton Enterprises Hall 1 at booth # 1.A40



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IP Cores for Satellite Applications

by Elisabeth Tweedie

IP Cores are a rarely talked about, essential part of modern communications infrastructure. IP in this case has nothing to do with internet protocol and everything to do with Intellectual Property. In simple terms, an IP Core is a predesigned sub-circuit that will be integrated into the complete product.

It is, however, a very complex block of electronic circuits. For most companies it is more efficient to purchase this from a third party for integration into its own integrated circuits (IC) than to design it themselves. This is because an IP core will do some of the basic functions that are common to all systems. In the case of satellite communications, for example, every modem, regardless of the manufacturer or model, provides the communication link between ground equipment and the satellite. It is therefore both cost and time efficient, to either use something that is totally or largely off-

the-shelf (OTS) to do this. Or, if something really specialized is needed, to use the expertise of a company that specializes in this part of system to provide a customized core.

IP cores can be totally off-the-shelf (OTS) standardized products that are common to many products, GPS chips in mobile phones for example, or customized to the needs of one customer. Acquiring the IP core from a third party, not only shortens the design cycle, it also improves the success rate of a new design, as all, or large parts of the design have already been tried and tested.

IP cores will be incorporated into a field programmable gate array (FPGA) or into an application specific integrated circuit (ASIC) for the product. As the name implies FPGAs can be modified, making them very suitable for demonstration systems. ASICs on the other hand are customized for a particular application and are better suited for large volume production runs, as the initial cost is higher than that of

a FPGA. ASICs are also generally more efficient than FPGAs.

IP Core Categories

IP cores can be classified into three categories: hard, firm or soft. Hard cores, are, as the name suggests, a physical product into which a fixed IP design is incorporated. Firm (or semi-hard) cores are also a physical product, but these can be tailored or configured to suit multiple applications. Soft cores exist as code which is licensed to the buyer and may also be customized. Companies that only supply soft cores are known as Fabless companies.

Creonic is one such Fabless company. Based in Kaiserslautern in Germany, the company is only ten years old and already boasts a very impressive list of clients in the satellite industry. These include among others: NASA, Airbus Defence & Space, iDirect Government, Satixfy and WORK Microwave, as well as major launch providers, and other

satellite manufacturers. Its IP cores can be found everywhere from large geostationary satellites (GEOs) to cubesats, as well as on the ground. Its IP cores are also used in deep space missions.

The company was founded by Timo Lehnigk-Emden, PhD and Matthias Alles, PhD, in the basement of the Technical University of Kaiserslautern. It now has a staff of 20 and is in its third location. Creonic is experiencing a period of rapid growth, with revenue more than doubling in the last two years.

For the satellite industry Creonic's focus is on IP cores for communication systems. These may be used in base stations, hubs and modems for backhaul and backbone, IP (internet protocol) trunking and VSAT modems, or, as already mentioned, may be incorporated into onboard payloads for satellites and probes.

Creonic licenses both off-the-shelf (OTS), i.e. standard IP cores, as well as customized cores modified to accommodate client requirements. Modifications may include adapting existing cores to meet individual requirements with regard to error correction, performance, throughput and flexibility. Similarly, the interfaces could be modified for simpler integration into a client's system. And in some cases the core may be redesigned and/or extra features added, proprietary to a client. The company prides itself on "never saying no" to a client request.

Creonic, however is far more than simply a licensor of IP cores. It offers a complete communication design service for both ASIC and FPGA integration. Its engineers specialize in signal processing and therefore have the expertise to adapt standard components to meet every need so as to ensure that every system is both powerful and efficient.

"...Every customer is unique and has different needs and priorities, nevertheless there are some things that every customer wants from its IP Core supplier. These include: a great track record, blue chip customers, commitment to security, technical expertise, ability to develop customized solutions, choice of licenses and of course, great customer service..."

Creonic still maintains very close ties with The Technical University at Kaiserslautern, a leading research institute in the field of communications, it is therefore in a position to also offer a consulting design service based on the very latest advances in communications and technology. It offers advice on digital signal processing (DSP) algorithms for both standards based systems (e.g. DVB) or proprietary systems. Similarly, advice is available on setting up demo systems using FPGAs and porting algorithms into FPGAs to reduce simulation times.

DVB-S2X

Creonic have a range of IP cores compliant with DVB-S2 and DVB-S2X. These include a DVB-S2X Modulator, a DVB-S2X Demodulator and a DVB-S2X low-density parity check/Bose-Chaudhuri-Hocquenghem (LDPC/BCH) Decoder.

The modulator, which is available for both ASIC and FPGAs (from Xilinx, Intel and Microchip) performs all the tasks of an inner transmitter. It expects basic block (BB) frames after mode adaption as input. It performs stream adaption, forward error correction (FEC) encoding, mapping, programming language (PL) framing and modulation. It supports:

- access control mechanism (ACM), constant control mecha-

nism (CCM) and variable control mechanism (VCM) modes.

- Short and normal frames (16,200 bits and 64,800 bits)
- Quadra-phase shift keying (QPSK) to 256-APSK (amplitude and phase shift keying)
- Very low signal-to-noise (VLSNR) modes, (optional)

There are two versions, the M100 which offers a symbol rate of up to 200 mega-symbols for all modes, and the M400 which offers a symbol rate of up to 400 mega-symbols for all modes.

The demodulator, which is also available for both ASIC and FPGAs (from Xilinx and Intel) performs all the tasks of an inner receiver. It expects quantized complex baseband samples from an analog-digital converter (ADC) and it recovers timing, frequency and phase of the complex mapped symbols. In addition it handles physical layer (PL) frame recovery and de-framing. Its output fits the Creonic DVB-S2X FEC IP core that implements LDPC and BCH code. It supports:

- ACM, CCM and VCM modes.
- Short and long blocks (16,200 bits and 64,000 bits).
- QPSK and 256-APSK.
- VLSNR

The output is a complex FEC-frame (XFECFRAME) for further processing by the Creonic FEC de-

coder

The decoder – also available for ASIC and FPGAs (Xilinx and Intel) is a silicon-proven, scalable solution allowing for symbol rates of up to 100 mega-symbols on FPGAs. It has been validated against 3rd party DVB-S2X modulators. It supports:

- Decoding of BB frames.
- ACM, CCM and VCM modes
- SNR from -9.6 to 19.8dB
- Short, medium and normal frames (16,200, 32,400 and 64,800 bits).
- Binary phase shift keying (BPSK), QPSK, 8-PSK, 16-APSK, 32-APSK, 64-APSK, 128-APSK AND 256-APSK.

Kevin Christoffers, Creonic's Sales Manager attributes the company's rapid growth and success to its attention to detail, phenomenal customer service and high levels of transparency and flexibility, as well as having a well-educated staff with close ties to major research institutes. All of this is appreciated by Creonic's customers as can be seen

from these accolades: "We really appreciate Creonic's high quality of code and documentation and your excellent support. We are looking forward to working with you on future projects!" And "On behalf of the Semihalf team, I would like to thank you for your successful cooperation. Our mutual customer is very satisfied by the end result, they are now able to run their BLER simulation in minutes instead of weeks in Matlab."

Every customer is unique and has different needs and priorities, nevertheless there are some things that every customer wants from its IP Core supplier. These include: a great track record, blue chip customers, commitment to security, technical expertise, ability to develop customized solutions, choice of licenses and of course great customer service.

With NASA, Airbus Defence and Space and iDirect Government amongst its customers, Creonic clearly demonstrates that it meets the first three criteria. Its close association with leading technical universities and highly qualified

staff are the key to its unique technical expertise and ability to tailor the solution to meet the client's requirements. Customers can choose from several different license types, including a source code license, which permits the customer to ask Creonic to modify and customize the firmware. All of the licenses are for the duration of the product life.

The final demonstration of customer satisfaction comes from the Senior Procurement Administrator for a California based aerospace company: "Kevin, you are a kind and wonderful person...anyone that was good enough to put up with all the (as we say) "BS"...that we added to make this happen is the absolute BEST!!!"

When shopping for an IP core provider, you need to look out for key parameters such as technical expertise, commitment to security, proven track record, customer service, etc. Creonic checks all the necessary boxes. 

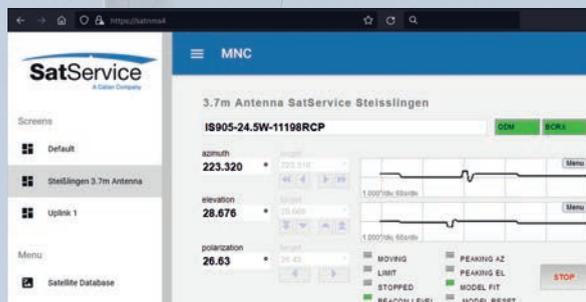
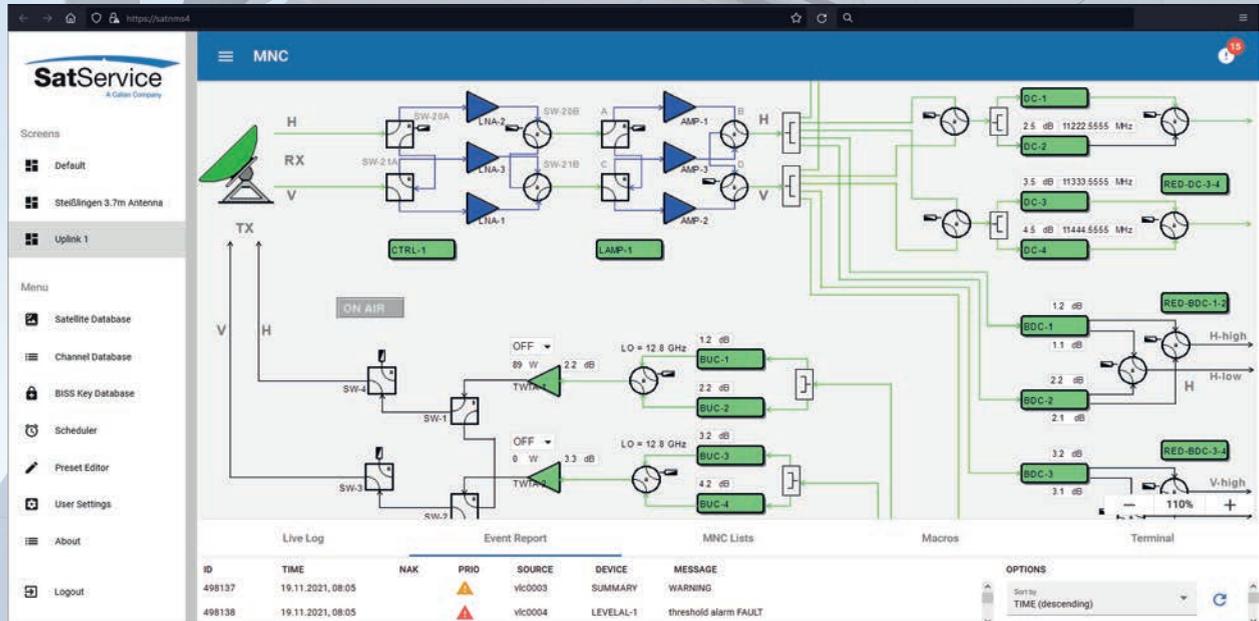
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Creonic GmbH, is a worldwide leader in Satellite Communications IP cores. Creonic is an ISO 9001:2015 certified provider of ready-for-use IP cores for several algorithms of communications such as forward error correction (LDPC, Turbo, Polar), modulation, and synchronization. The company offers the richest product portfolio in this field, covering standards like 5G, 4G, DVB-S2X, DVB-RCS2, DOCSIS 3.1, WiFi, WiGig, and UWB.

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Women in Space Engagement

By Elisabeth Tweedie

You don't need to be a rocket scientist to recognize that the space and satellite industries are predominantly a male enclave. According to data from the United Nations, "the number of women employed in the international space industry represents just 20-22% of the workforce, roughly the same proportion as 30 years ago." The difference is, that now women are becoming more visible. 30 years ago, when I joined Hughes, industry conference rooms were a sea of dark suits, alleviated by the odd splash of color, from the few women in the industry that were senior or important enough to attend conferences. Things have changed. Women may still be very much the minority, but we are becoming a much more visible minority, as many women now occupy senior leadership roles. Not only are there more splashes of color in the conference rooms, some of those can now be seen on stage, as well as in the audience, something totally unheard of, 30 years ago.

It is against this backdrop that SSPI-WISE (Women in Space Engagement) was founded in December 2020. Some may argue that it was long overdue, but in many ways, it was the perfect time to create such an organization. The pandemic confined most people to working from home, and suddenly video meetings became the norm. This made it possible to create a global platform, where, time zones permitting, ladies from across the globe could meet each other on a regular basis. In the words of Nicole Robinson, President, Ursa-Space Systems, Inc., and the Founding Chair of the organization. "When we founded SSPI-WISE, nearly two years ago, it was with the spirit of empowering engagement by women from across the space and satellite industry, so that not only their true potential, but also the reality of the impact that women are having in the industry and in the communities in which space serves, would be revealed.

Coming out of a pandemic that has disproportionately impacted women in the workforce, it is increasingly important for their influence and impact to be heard and felt. The fire that has been ignited by these dynamic women is nothing short of amazing. What an honor it is to see this



initiative continue to propel forward."

New connections and friendships were forged as women came together, not only to help and support each other, but also to recognize each others' achievements, and to increase their exposure to and knowledge of different segments of the industry. At the same time, efforts were instigated to reach outside, in order to encourage more young women to join the industry.

Five, very active, working groups have been formed to further these goals. One of the goals is to get more women on stage in conferences. So, the Elevating Women Group is working with conference and webinar organizers to try and do just that. The group has compiled a file, of the women in the industry who have both the knowledge and experience to take a more active role in industry events, either as presenters, panelists or moderators, and would like to do so. There are currently 48 highly competent ladies available who can cover topics ranging from space financing and investing, policy and legislative affairs to prototyping and experimentation.

The Mentoring Group, has done a wonderful job of connecting women from all over the world who want to be mentored, with women who are willing to share their experience and be a mentor. In the first round, which started last July, 14 pairs were created and have worked together for over a year now. Applications for the second round closed at the end of August and a further 20 pairs are being created. Feedback from the first group of mentees speak to the success of the program. "My mentor has been great about connecting me with people in her network whose work aligns with my interests. She has also had good advice about how to take advantage of my time in grad school and suggestions on how to tailor some of my research/projects to my overall career goals." And "As someone who is new to the space industry, I couldn't imagine having better direction, education and leadership than I am receiving

FEATURE

first hand through the mentoring process. Many thanks to SSPI-WISE for making this possible.” Just two of the many comments that were received.

Now that life in the industry is returning to normal, the Networking Group has forged ahead with organizing social get togethers at conferences. The inaugural in-person meeting was held at Satellite last year. That event was repeated, but on a much larger scale, this year. Coming up, is a breakfast at World Satellite Business Week in Paris this month, and drinks party hosted by ST Engineering iDirect at IBC. Registration is required, and invitations for both of these will be posted shortly. Social events, in common with bi-monthly virtual events, are open to everyone who supports the goals of SSPI-WISE, regardless of gender.

With such a global presence, social media is key to promoting and connecting members, and of course to get the news out about upcoming events. SSPI-WISE has a LinkedIn group and a Twitter (@SspiWise) account and will shortly be using Instagram as well. One of the ongoing campaigns, is to post “WISE” words) from ladies in the industry. These are short pieces either describing what they enjoy most about working in the space and satellite industry or what prompted them to join the industry.

Given that the group is comprised of women at all stages of their careers, from senior CEOs to new entrants, it is no surprise, that there is also a focus on events and topics that interest and impact everyone regardless of gender or job position. The social media group publishes blogs from time to time. The last two covered the impact of the war in Ukraine on the supply chain for the launch and satellite industries; and, how satellites help in the ongoing battle against climate change. There will be one out shortly on orbital debris.

Bi-monthly virtual meetings, are open to everyone, and feature distinguished speakers from both inside and outside of the industry. The next open meeting is at 14.00 eastern time, on September 22nd and features Lori Garver, former Deputy Administrator, NASA, and author of “Escaping Gravity: My Quest to Transform NASA and Launch a New Space Age.” Ms. Garver will be talking about the challenges she encountered whilst succeeding in that quest. Previous speakers have included, Mary Frost, CEO Power to Change and former CEO Globecast, Erin Bown-Anderson, PhD, Director of Community Innovation, Geeks without Frontiers, Julie Kramer, Executive Search Consultant and Claudia



SSPI-WISE hosts networking events at various trade shows among other activities.

Vacarrone, former Director of Global Market Research and Customer Experience at Eutelsat, to name but a few.

The STEM Outreach group, having created a database of educational and space organizations, is now establishing relationships, and connecting with educational institutions at all levels; from primary through tertiary education. It is also actively searching for groups, companies or organizations that will sponsor scholarships for students to attend industry conferences. The first scholarship resulting from this effort, came courtesy of the Mid-Atlantic chapter of SSPI, which sponsored a student from George Mason University, to attend Satellite 2022.

Recently, a sixth group, Sustainment and Infrastructure has been formed, with the aim of putting in place measures to ensure that SSPI-WISE continues on its successful trajectory.

Membership is open to all women in the industry and there is no fee to attend any of the meetings. As an added incentive, anyone who volunteers to become an active member of a working group, is given a year’s free membership of SSPI, courtesy of Hughes.

The last words about SSPI-WISE belong to Debra Facktor, SSPI-WISE Chair and Head of U.S. Space Systems, Airbus U.S. Space & Defense, Inc.: “Last year we set a goal of building sustainability into the dynamic grassroots energy that launched SSPI-WISE, I look forward to collaborating with the incredible SSPI-WISE leadership team to build on our efforts and create a connected community of women across our space and satellite industry.”



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Amphinicy's Blink Wideband Satellite Software Modem Now Available at AWS Marketplace

Amphinicy Technologies, a satellite software company from Zagreb, Croatia and Luxembourg, recently released a cloud-native distribution of Blink, an ultra-fast satellite modem for Earth observation and space science. Blink is a software product for modern satellite ground stations. It is a real-time, high data rate, software-based satellite modem designed to run on standard servers. It moves digital signal processing from high-maintenance hardware to software. It can run on bare metal such as standard servers or laptops, as well as virtual and cloud environments.

Blink can bring previously impossible missions to life and make missions generally easier to manage, more productive and cheaper to set up and evolve.

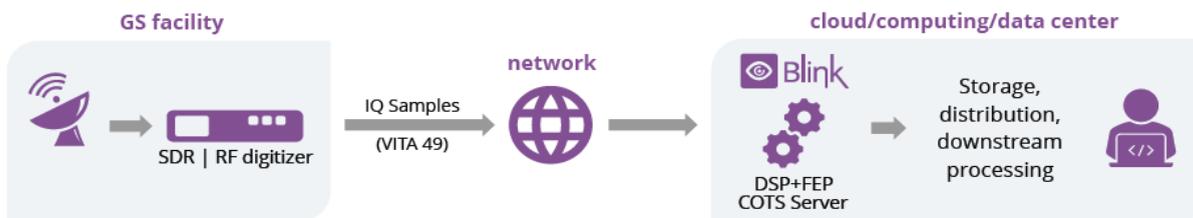
Amphinicy has developed Blink Modem to enable anyone interested in Earth observation and space science to receive satellite payload data in real-time - reliably, efficiently and conveniently. Blink (Amazon Machine Image) AMI is a distribution of Blink Modem which allows operators to use their own orchestration systems. They can start and stop modem instances and other related infrastructure, minimizing cost and maximising scalability.

Blink is a real-time, high data rate, software-based satellite modem designed to run on standard servers. It moves digital signal processing from high-maintenance hardware to software. It can run on bare-metal (e.g., a standard server or laptop) or virtual and cloud environments. Blink can bring previously impossible missions to life and make missions generally easier to manage, more productive and cheaper to set up and evolve.

“We have started developing the core of Blink seven years ago while we were working on a project for a client. Our main goal was to speed-up one small piece of the sat-

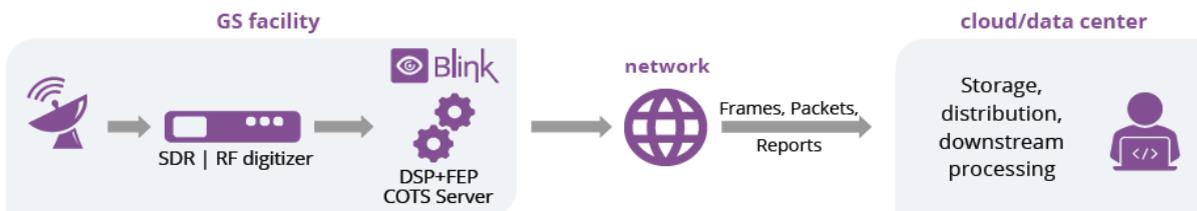
Deployment to cloud

It is really easy to deploy Blink to a public cloud. Machines are active only during a satellite pass, minimizing cost. Blink receives a digitized signal and processes it in real time, sending output directly to downstream processors or to storage.



Deployment to typical ground stations

Blink works at existing ground stations. A server equipped with a digitizer and running Blink software is deployed to the ground station instead of a conventional modem. Users get the benefit of an extremely flexible solution: **short lead times, quick and easy updates, rapid evolution and competitive costs.**





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ellite data acquisition chain.” says Tomislav Nakić-Alfirević, Solutions Manager at Amphinicy Technologies. “Today, Blink is a full-featured software-based modem. It fits perfectly in the new software-based ground station paradigm.”

Blink AMI is an ideal choice for satellite operators who prefer to integrate a software modem with their existing cloud orchestration systems to receive, process and store satellite data in a reliable, efficient, and convenient way. They can start using Blink in just a few clicks on the AWS console through the product listing.

Ground station services existed before, but nothing even close to an on-demand, pay-per-minute service such as that provided by a cloud-native ground station network with antennas all around the world.” says Tomislav Nakić-Alfirević, Solutions Architect at Amphinicy Technologies. “When AWS announced AWS Ground Station in 2018, we were already developing Blink, a wideband signal processing solution built in software, which fits perfectly in the new ground station paradigm.”

“With Blink, the need for custom hardware in Earth Observation (EO) payload acquisition is reduced

to the bare minimum. A commercial-off-the-shelf RF digitizer/SDR and a server with Blink software is sufficient. The freedom in hardware upgrades and replacements and the overall evolution ease and speed of such a software-based system is incomparable to what the industry was used to by now.” said Irena Kos, Product Manager at Amphinicy Technologies.

Blink is all about high-performance computing: work on improving processing speed and scaling never stops. The engineering team has been busy making use of multiple graphics cards in the same server to process wideband signals and our working prototype now reaches over 2,7 Gb/s, up from the previous record of 1.2 Gb/s. The processed signal was a DVB-S2 32APSK signal with 9/10 coding, or in other words, the modem is now capable of processing channels over 700 MHz wide! This kind of capability is an absolute prerequisite for advanced, demanding EO missions to be able to use pure-software modems and in doing so, be able to enjoy all the benefits that come with that: unprecedented agility, lead times, cloud deployment, hardware vendor

independence, advanced ground segment architectures, licensing flexibility, including per-minute billing and many, many more. As amazing as 2.7 Gb/s throughput is, it is a step along the way: stay tuned for updates over the next few months!

“We are dedicated to offer the best support to our clients. With Blink at AWS Marketplace, our solution will be available to even more engineers and communities. We are here to support them.” says Toni Jelavić, CEO at Amphinicy Technologies.

For more information on Blink Wideband Software Modem go to: <https://blink.amphinicy.com>



At the International Astronautical Congress (IAC) in Paris from September 18-22, Visit Amphinicy Technologies at Booth # C23 and view a demo of Blink and other solutions.

Mastering the Business of Space: Being 'Space Business Qualified' Matters

by Martin Jarrold

On 29 August the long-anticipated launch of the Artemis-1 SLS launch vehicle was postponed at countdown T-40 minutes due to an engine coolant problem. This must have been disappointing not only for NASA and ESA (which developed the Artemis program Orion spacecraft Service Module) but to the millions who were looking forward to the spectacle of the most powerful launcher ever blasting-off, signaling the beginnings of the human return to space beyond the low Earth orbit of the ISS, and in preparation for a new generation of Moon landings... and more. At the time of writing the lofting of the SLS has been re-scheduled to Saturday 3 September... Fingers crossed all goes well!

Why is this important for the satellite communications and wider space industry? Let's examine the situation, including how it relates to what the industry must do to recruit, "onboard", and retain human talent.

Space Ages

The first Space Age – Space 1.0 – was met with awe, enthusiasm and wonder, with the world witness to the superpowers' space race, human footprints on the Moon, the Space Shuttle program, and the construction of the ISS. The question is, "Will the sight of a launcher more powerful than the iconic Saturn V ascending to space re-ignite a general fascination with, and understanding of, the realms of space and satellite?"

Of course, the James Webb Space Telescope (JWST) has recently contributed to making the subject of space widely topical again. Publication of the first images from the JWST – more profoundly revealing than those of the ageing Hubble Telescope, and showing detail of the Universe to almost within the first 100-250 million years following the Big Bang, which is almost as far back as the Universe before the formation of stars, and comprising only a sub-atomic particle soup – has impacted the public consciousness.

However, against this background, what is important is understanding that whether we are extending the boundaries of our cosmological understanding, or realizing what humans can achieve and discover in orbital micro-gravity, or are preparing for a return to the Moon and, one day, continuing to Mars, these examples offer the general populace only the smallest of clues about what space means to the human race.

To understand what space does mean to humanity we don't need to look back in time to the extremes of the Universe's beginning. We can look much closer to home; between the Karmen line and the geostationary orbital arc. This is Earth's useful orbital space. Levels of general awareness of its significance to everyday life is limited.

Now, the first Space Age has yielded to the second Space Age, or Space 2.0, but midway we have been through what I like to consider as Space 1.5.

Of course, the Artemis program is but one facet of Space 2.0, and much has been written about the wide entirety of NewSpace – radically altering both space segment and ground segment – but whilst we in the space and satellite industries continue to be excited about this new era, also described as the "industrialization of space", wider appreciation by the broader populace is limited.

The Value of Space

A recent report commissioned by Inmarsat is illuminating here. The research – published as 'What on Earth is the Value of Space?' – is based on the most in-depth research ever carried out on global perceptions of space: 20,000 respondents; 11 countries; and a demographic featuring different cultures, different age cohorts, and differences between business leaders and the general



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public. The Report offers ample illustration that people generally do not appear to understand the role space is now playing in their everyday lives.

My own question to a similar demographic would be, “What Does Space Mean to You?” If the response was akin to that highlighted by the Inmarsat-commissioned research, there is much reason for our industry to be concerned that perceptions of space are rather more shaped by popular entertainment genres – being associated with ‘Star Wars’ by 10 per cent of Inmarsat’s respondents, associated with ‘communications & connectivity’ by only 8 per cent, and associated with ‘broadcasting & television’ by just 3 per cent – with the real-world technologies and services provided by space and satellite being seemingly invisible to most.

Whilst the older demographic not only had direct experience of Space 1.0, they tend to appreciate the technology off-shoots of that period which have contributed to improving life on Earth. The younger demographic takes such improvements for granted, and when it comes to their understanding of Space 2.0, they are more likely to reel-off the names of certain famous billionaires sending cars and tourists to space rather than anything rather more related to the lives of ordinary people.

This suggests that the era that, as noted above, I think of as Space 1.5 – the age of the birth and growth of geostationary satellites delivering broadcast video and data, and of millions of VSATs around the world delivering myriad services for commerce, consumers, enterprise, and government – has grown more or less under-appreciated by the majority. The widely anticipated launch of the SLS would be seen in quite a different light if the public knew, for example, about the number of commercial communication satellites launched year-on-year over recent decades – using launch vehicles from multiple manufacturers, using launch sites in multiple countries – and this before the advent of re-usable launch vehicles and satellite multiple launch dispensers for NGSO.

Aside from any other considerations about the desirability of having greater visibility for the commercial satellite industry, there is the question of the industry’s “human factor” – its human resource base, its pool of available human experience and knowledge. Beyond the technology, behind the services, there must be the skills of trained human beings, people who have to be attracted to careers in space (without actually going to space).

Skills and Certification

The Space Skills Alliance, with which GVF has previously collaborated on issues pertaining to space skills, is a UK-based organization with roles as a ‘think tank’ (helping policy-making process by publishing reports), a consultancy (providing expert advice to organizations looking to improve their skills pipelines), and a backbone organization (enabling collaboration and improving the way organizations in the space sector work together to address common skills challenges). Aside from other functions, the Alliance produces a Space Training Catalogue, a free directory of training opportunities for the UK and European space sectors from astrobiology to additive manufacturing, remote sensing to rocket launching, and space medicine to spacecraft operations. The Catalogue has long-featured courses comprising the portfolio of GVF’s technical training, but now also features the non-technical training of the SBQ.

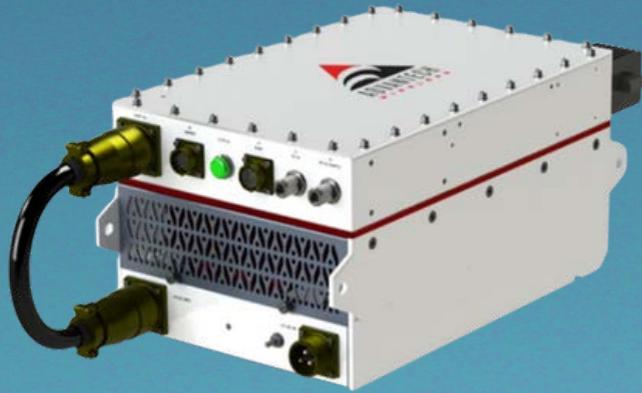
As previously described in this column, GVF – and its partners, SatProf and the SSPI – have developed a series of Space Business Qualified (SBQ) Fundamentals courses as the first part of a comprehensive solution to the recruitment, “onboarding”, and retention needs of the space and satellite industry. The SBQ program provides a comprehensive understanding of the business of space today and tomorrow through a set of online courses and certification ideal for people new to the space and satellite industry or for those already on the “inside” of the industry wanting to deepen their knowledge.

Recently made available for immediate enrollment is SBQ405: Space Business – Finance, Legal & Regulatory, the fifth and final course in the Fundamentals series following SBQ401: Fundamentals of Orbits and Getting into Space; SBQ402: Spacecraft Fundamentals; SBQ403: Space Communications Fundamentals; and SBQ404: Space Business – Markets. Each course can be separately purchased, or the discounted Fundamentals Certification Bundle, which includes SBQ401 through to SBQ405, can be purchased. (See... for more details.)

Additional courses are already being developed. Following on from the Fundamentals courses will be more specialized courses in satellite communications, earth observation and spacecraft and launch. 

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





Introducing **GENESIS** - the new series of Ku-band SSPAs and BUCs from Advantech Wireless Technologies.

GENESIS epitomizes the latest in hardware and software technologies, making it the most feature-rich satcom SSPA in the industry. Initially available in 100W, 125W, 150W, 200W, and 250W variants, **GENESIS** delivers a host of high-end, including some that are unique to the **GENESIS** family:

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- Embedded logic to manage a multi-amplifier redundant and phase-combined systems, negating the need for any external controllers.

Additional frequency bands and higher power-levels based on the **GENESIS** platform will become available in the coming months.

Eutelsat to Merge with OneWeb

Paris, France, July 25, 2022--Eutelsat and key OneWeb shareholders sign a Memorandum of Understanding with a view to combining Eutelsat and OneWeb in an all-share transaction. Eutelsat shareholders and OneWeb shareholders would each hold 50% of the Eutelsat shares. Eutelsat will combine its 36-strong fleet of GEO satellites with OneWeb's constellation of 648 low Earth orbit satellites, of which 428 are currently in orbit.

Eutelsat describes the deal as a "transformational" transaction, built on the foundations established in April 2021 with Eutelsat's initial investment in OneWeb. The transaction would be structured as an exchange of OneWeb shares by its shareholders (other than Eutelsat) with new shares issued by Eutelsat, such that, at closing, Eutelsat would own 100% of OneWeb (excluding the 'Special Share' of the UK Government). OneWeb shareholders would receive 230 million newly issued Eutelsat shares representing 50% of the enlarged share capital.

The potential transaction builds on the deepening collaboration between Eutelsat and OneWeb, begun with the equity stake acquired by Eutelsat in OneWeb in April 2021, the global distribution agreement between Eutelsat and OneWeb announced in March 2022, and the new exclusive commercial partnership, addressing mainly the European and global cruise markets, signed today.

Commenting on the combination, Dominique D'Hinnin, Eutelsat's Chairman said "I am delighted to announce this new and significant step

in the collaboration between Eutelsat and OneWeb. Bringing together our two businesses will deliver a global first, combining LEO constellations and GEO assets to seize the significant growth opportunity in connectivity, and deliver to our customers solutions to their needs across an even wider range of applications. This combination will accelerate the commercialisation of OneWeb's fleet, while enhancing the attractiveness of Eutelsat's growth profile. In addition, the combination carries significant value creation potential, anchored on a balanced mix of revenue, cost and capex synergies. The strong support of strategic shareholders of both parties is a testament to the huge opportunity that this combination offers and the value that will be created for all its stakeholders. This is truly a game changer for our industry."

Sunil Bharti Mittal, OneWeb's Executive Chairman said "Having played a pioneering role in providing connectivity in the emerging world, I am excited about the possibilities of connecting the unconnected. The combination of Eutelsat and OneWeb represents a significant development in that direction as well as a unique GEO/LEO combination. The positive early results of our service together with our strong pipeline represent a very exciting opportunity in the fast-growing satellite connectivity segment, especially for customers requiring a high speed, low latency experience. Our customers are actively seeking a combined GEO/LEO offering leading us towards this important

step. Bharti, as the lead shareholder of OneWeb, along with other key shareholders, is looking forward to playing a meaningful role in providing expanded connectivity through the combination of OneWeb and Eutelsat."

SES and Intelsat Merger Talks?

Luxembourg City, August 4, 2022--The number 1 and number 2 leading global satellite operators, SES and Intelsat are reportedly engaging in possible merger talks according to various media reports. The story was first released by the Financial Times. The merger, if borne into fruition will create the largest satellite company in the world with over 100 Geostationary satellites generating over US\$ 4 Billion in annual revenues.

The satellite industry has seen a number of major mergers among satellite operators, most recently the merger of Paris-based Eutelsat and Low Earth Orbit (LEO) operator OneWeb. Last year, US-based Viasat acquired UK satellite operator Inmarsat. According to the Financial Times article, the SES-Intelsat merger may be the result of the growing LEO sector led by Billionaire Elon Musk's Starlink system. Against a backdrop of accelerating integration of terrestrial and satellite networks, as well as the rapid expansion of space activities.. 

MetaBroadcast appoints Mackinlay as New CEO



Jamie Mackinlay

London, UK, August 4, 2022

– MetaBroadcast, the UK's leading meta-data specialist, announced the appointment of Jamie Mackinlay as CEO.

Mackinlay is a proven media tech business leader, with significant experience in creating, mentoring and managing high-performing teams.

Mackinlay has had several executive roles in leading media technology companies, including Amino, ADB Global and Singula Decisions. Jamie started his career at a Silicon Valley start-up and has had experience of achieving success for small and large teams and companies.

Karthik Dasari, shareholder and Director of MetaBroadcast said: "I am delighted to welcome Jamie Mackinlay to the team. He combines 25 years in the media industry with world-class capabilities in go-to-market strategy, sales effectiveness, and brand awareness making Jamie the ideal person to drive MetaBroadcast forward with our 3-5 year growth strategy."

MetaBroadcast is a specialist data company that offers automated and enriched metadata that powers content discovery and insights. We have a reputation for ensuring reliable data integrity, helping to earn long-term

customer loyalty as a trusted provider to leading broadcasters, streaming service providers and a diverse range of media organisations. Founded in 2007, MetaBroadcast is headquartered in London, UK; the company has ingested metadata from over 50 different sources; serves 70+ broadcasters and 310+ channels, and manages over 65 million content records and billions of transactions.

neXat Appoints Alexander Oudendijk as President

Brussels, Belgium, July 19, 2022--

Former SES ASTRA CCO **Alexander Oudendijk** has been named the new President of **neXat**, the world's first satellite capacity aggregation platform. Oudendijk brings more than 30 years' experience in the satellite industry, including more than eight years as Chief Commercial Officer at SES ASTRA. Prior to that Oudendijk was Managing Director at Hughes Network Systems Europe.

"neXat is a unique, exciting and forward-thinking company that is carving out its space in the satellite industry", said Oudendijk. "I'm very



Alexander Oudendijk

excited to be closely working with this team of talented and dedicated professionals at such an innovative time for the company. By offering its disruptive model and making the industry take notice, neXat has the potential to change the satellite landscape," he added.

Oudendijk will replace Serge Van Herck who has served as president of the board for three years.

"We are incredibly pleased to announce the joining of Alexander and can't wait to integrate his ideas, experience and expertise into the business", said neXat CEO Thierry Eltges. "As one titan of the satellite industry joins, we say thank you and good luck to another with the departure of Serge. Serge has been instrumental to the significant progress and developments that the neXat brand has achieved and experienced over the past few years."

Since joining neXat in August 2019, Serge helped steer the company from its primary identity as an IP connectivity provider to a disruptive, booking.com-style capacity aggregator helping the 'Network of satellite networks'.

"My time as President of the Board at neXat has been a real privilege for me, and I'm proud to have contributed to some significant changes and progressive milestones as the company solidified its position in the market" said Van Herck. "I wish the company all the best as it continues to develop in its trademark innovative manner, and give my best wishes to Alexander as he steps into the role."

Terran Orbital Appoints Jonathan Siegmann as SVP Of Corporate Dev.

Boca Raton, Fla., July 11, 2022--

Terran Orbital Corporation (NYSE: LLAP), announced the appointment of **Jonathan Siegmann** as Senior Vice President of Corporate Development. Mr. Siegmann will lead Terran Orbital's investor relations, M&A, and venture efforts among other development



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initiatives.

Marc Bell, Terran Orbital's Co-Founder, Chairman, and Chief Executive Officer commented, "I am pleased to welcome Jon to the Terran Orbital team. He brings significant investor expertise from his distinguished career at

Fidelity leading the Aerospace and Defense sector coverage. Jon will play a critical role as we execute our investing



Jonathan Siegmann

and capital market strategy. We are excited to have Jon join the team and are looking forward to his contributions as Terran Orbital continues to grow."

Most recently, MSiegmann served as Research Analyst and Portfolio Manager for Fidelity Management and Research Company. Coverage responsibilities included all North American aerospace, defense, and new space companies both public and private. Prior to Fidelity, Jonathan held various positions of increasing responsibility at BASF Corporation from 1998-2007. Mr. Siegmann received a BS from Rensselaer Polytechnic Institute and an MBA from New York University's Stern School of Business and is a Chartered Financial Analyst® holder from the CFA Institute.

Siegmann will report to Terran Orbital Co-Founder, Chairman, and Chief Executive Officer Marc Bell.

SSPI-WISE Welcomes 6 New and 13 Returning Officers in 2022

New York City, August 3, 2022--SSPI-WISE (SSPI Women in Space Engagement) announced the results of its election, which took place over the final week of June. The membership of SSPI-WISE has appointed the following six new women to officer positions:

Silvia Borges, Program Manager, SpaceBridge Inc., SSPI-WISE Mentoring Working Group Co-Chair;

Andrea Maleter, retired, SSPI-WISE Mentoring Working Group Co-Chair;

Melissa Orlick, Sales & Business Development Manager, Intellian Technologies, SSPI-WISE Sustainment & Infrastructure Working Group Co-Chair;

Toni Lee Rudnicki, Founder, TLR Consulting LLC, SSPI-WISE Networking Working Group Co-Chair

Saharnaz Safari, COO and Founder, SpaceRyde, SSPI-WISE Networking Working Group Co-Chair

Manal Tadros, Boeing Satellite Systems Insurance Office Manager, The Boeing Company SSPI-WISE Networking Working Group Co-Chair

Elisabeth Tweedie, Owner, Definitive Direction, SSPI-WISE Social Media Working Group Co-Chair.

Continuing to serve as SSPI-WISE officers for a second year are:

Debra Facktor, Head of U.S. Space Systems, AIRBUS U.S. Space and Defense, Inc., SSPI-WISE Chair

Jomya Lei, Satellite Designer, ViaSat, SSPI-WISE Vice-Chair;

Alix (Hornig) Wright, SVP-Marketing Communications, Speedcast,

SSPI-WISE Secretary;**Negar Feher**, Vice President of Business Development, MOMENTUS Space, SSPI-WISE Elevating Women Working Group Co-Chair

Kaitlyn O'Hara, Vice President & Associate General Counsel, EchoStar, SSPI-WISE Elevating Women Working Group Co-Chair;

Susan Saadat, Senior Vice President, Americas, EtL Systems, SSPI-WISE Elevating Women Working Group Co-Chair;

Wendy (Lewis) Newman, Vice President, Marketing & Communications, SpaceLink, SSPI-WISE Mentoring Working Group Co-Chair;

Kerstin Roost, Global Account Director, ST Engineering iDirect, SSPI-WISE Networking Working Group Chair Emeritus;

Vinitha Lalvani, Marketing Coordinator, AvL Technologies, SSPI-WISE Social Media Working Group Co-Chair;

Rosario Toxqui, Director Marketing, Comtech Satellite Network Technologies., SSPI-WISE Social Media Working Group Co-Chair;

Justyna Kosianka, Senior Scientist/Analytics Team Manager, Ursa Space Systems, SSPI-WISE STEM Outreach Working Group Co-Chair;

Natalia Larrea Brito, Principal Advisor, Euroconsult, SSPI-WISE STEM Outreach Working Group Co-Chair;

Audrey Puderbaugh, Principal Engineer, Space and Ground Systems, Iridium, SSPI-WISE STEM Outreach Working Group Co-Chair;

Jennifer Hoil, Director of Product Marketing, ST Engineering iDirect, SSPI-WISE Sustainment & Infrastructure Working Group Co-Chair. 

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- ▶ Line Amplifiers (Single, Dual, Quad, 1+1 & N+1 Redundant)
- ▶ Innovative & Unique RF Monitoring Solutions
- ▶ Single & Quad Redundancy Switches
- ▶ Active Splitters & Combiners
- ▶ Custom Made Products and Solutions
- ▶ Perfectly Suited for Satellite Earth Stations, Teleports, VSAT ...

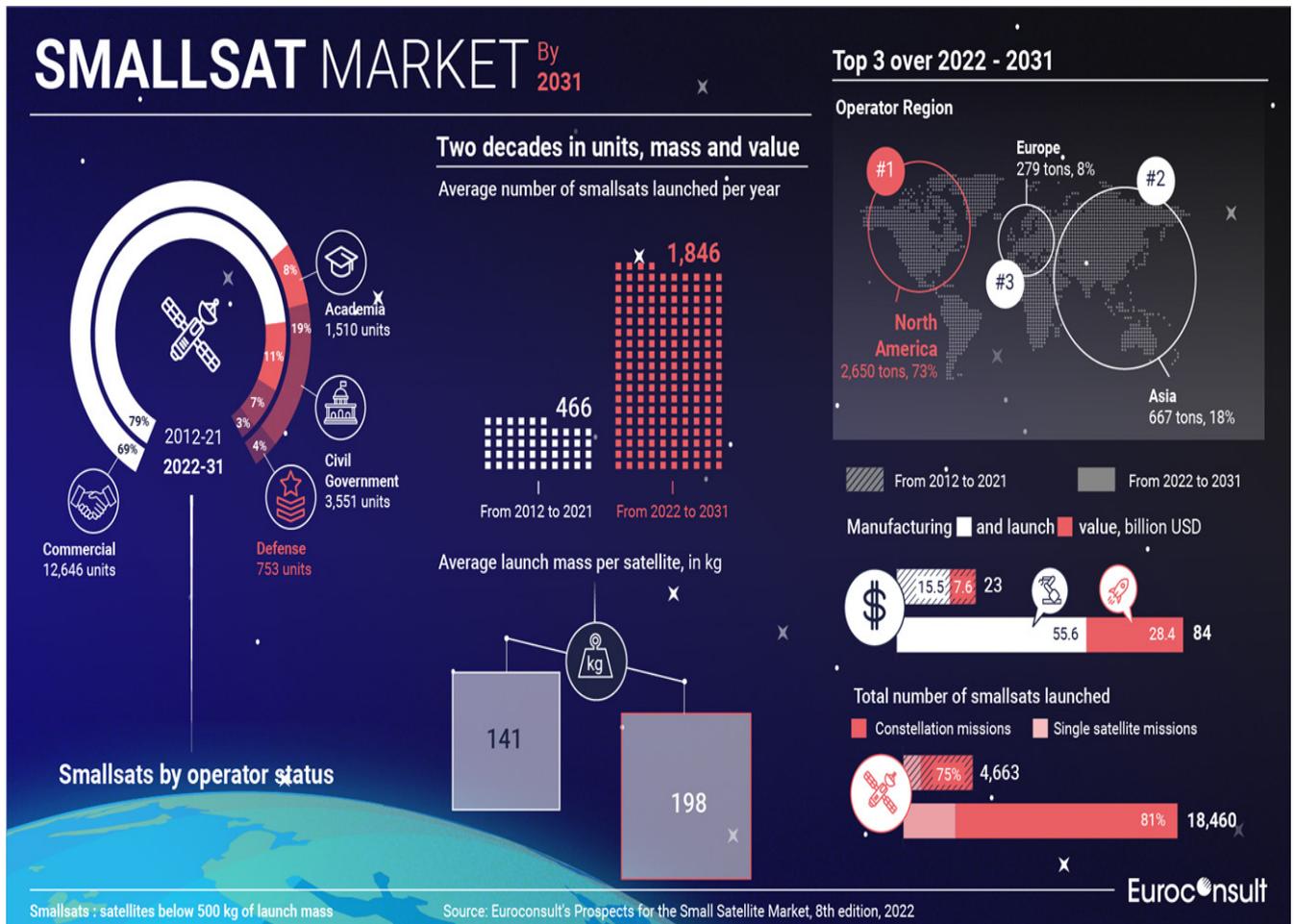
Euroconsult Predicts One Ton of Smallsats to be Launched per day on Average Over the Next Decade

Paris, France, July 14, 2022--The latest update of "Prospects for the Small Satellite Market" was released by Euroconsult, forecasting further growth in the global supply and demand of government, commercial and academic satellites weighing up to 500 kg. The market intelligence report, now in its 8th edition, anticipates that about 18,500 smallsats will be launched over 2022-2031, representing about 365 tons per year, i.e., one ton per day to be launched on average over the next ten years. However, the smallsat market presents a growing number of challenges such as high inflation, limited market addressability, difficult profitability, oversupply risk and concentration of the market by a handful of

established players.

The main driver for continued growth at times of macro-economic uncertainty due to the war in Ukraine, the COVID pandemic, disrupted supply chains, high inflation and central bank monetary policy changes remains NGSO constellations, driven by LEO broadband and Earth observation and the continuous necessity for replenishment launches. Of all smallsats to be launched over 2022-2031, 81% are expected to be part of constellations.

Alexandre Najjar, Senior Consultant at Euroconsult



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stated, “While the war has had severe consequences on players that have part of their supply chains in Russia or Ukraine, it has demonstrated the value of smallsat applications, enabling commercial operators to showcase their capabilities and the merits of their constellations. Consequently, a growing number of government agencies are considering investing in their own smallsat systems or dedicating a budget to the procurement of commercial third-party smallsat-based services, supporting growth of the sector.”



The smallsat manufacturing and launch market value will quadruple over the next decade, to \$56 billion and \$29 billion respectively, driven by the multiplication of constellation projects from both commercial and government stakeholders. Euroconsult has released its updated findings at a time of smallsat mega-factory multiplication in various nations across the world, initiated in the U.S. and China.

Flagship examples of low earth orbit (LEO) broadband constellations, such as SpaceX’s Starlink and China’s GuoWang, account for over half (53%) of the projected demand over 2022-2031 in units. Readers are therefore advised to go beyond raw numbers as vertical integration keeps growing with numerous players seeking to manufacture, operate and launch their own smallsats. Significant future market shares are now captive of a region, country or of an integrator and/or launch provider, challenging both commercial satellite integrators and launch providers which see more of their target customers not only leaving their addressable market, but also competing with their own services.

The updated report comes with an option to access premium features, including Euroconsult’s Smallsat Constellation Database and its new Launcher Database – exclusive access to Euroconsult’s databases for the first time in its history.

Najjar added, “However, growth in numbers, mass and value will not prevent high inflation and supply chain disruptions from impacting constellation materialization probability by inflating the capex and lead times of smallsat projects. We anticipate that stakeholders that have yet to raise significant amounts of capital will likely face a difficult situation, leading to smaller

constellations, cancelled projects and scope reductions, as well as consolidation between players. Nonetheless, smallsats still represent a significant capability building opportunity for new entrants in the space sector, and the war in Ukraine has put the spotlight on the value proposition enabled by commercial satcom and Earth observation smallsat constellations, showcasing their merits around the world. A growing number of governments and commercial ventures alike ramp up their investments in small satellite systems and services, as well as manufacturing and launch capacities.”

Other valuable updates to Prospects for the Small Satellite Market include a reviewed and refined pricing model for manufacturing and launch prices, most notably with regards to inflation-driven cost and price increases already witnessed in the manufacturing and launch industries and anticipated in coming years. The Euroconsult report incorporates new content to help give decision makers key knowledge in this area, as well as a reviewed and up-to-date forecast accounting for the economic situation and the ongoing impact of COVID-19.

You can discover more about the report and the table of contents by downloading the free extract of the report at: <https://mailchi.mp/euroconsult-ec.com/smallsats>



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The story of the video industry continues to evolve in complex and unexpected ways. As always, the Asia Video Summit will relay the narrative of what has been and will be happening in Asia, told from the perspective of the business leaders in Asia that are calling the shots. As we look towards 2023, increasingly it seems that companies have worked out their strategies and no longer is it a case of being things to all people. There is more subtlety, more nuance and there is greater clarity about where everyone sits within the ecosystem.

Clarity does not mean simplicity, however, and as consolidations continue and stock markets stutter in their enthusiasm for streaming, there are big questions around content investment, advertising and sustainability, to name just three topical issues. The Asia Video Summit will be addressing these and many more.

Visit our website for more details on sessions and speakers.

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