

1ST QUARTER 2021

JOURNAL

116

REPRESENTING THE BROADCAST AND MEDIA TECHNOLOGY INDUSTRY WORLDWIDE

Has the pandemic changed our industry forever?

Special Report, featuring thirty four IABM member companies, looking into the future

Also Featured

Focus on Sports

Is your company ready to bounce back?

Focus on Audio

Focus on News

IABM Bronze Members



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IABM
PLATINUM
MEMBERS



Changed. Innovated. Adapted? We certainly have!



Peter White
CEO, IABM

Welcome to the first edition of the Journal in 2021. In my introduction to the first edition of 2020 just one year ago, I began with a reminder that the 'Change. Innovate. Adapt' slogan from our 2019 Annual Conference would really have to come into play as the global pandemic began to unfold. Nobody could have predicted just how the following year would pan out, but the whole industry has clearly changed, innovated and adapted in spectacular fashion – as has IABM itself – in response to the enormous challenges we all faced.

With the prospect of being able to escape from the worst limitations caused by the pandemic coming into distant view on the horizon now, thanks to the miraculously rapid development of vaccines, it is clear that our industry will certainly not be returning to anywhere near what we might have considered 'normal' pre-Covid. That's because – as clearly demonstrated by comments from many member companies in our 'Create, Produce, Consume' special feature on page 34 – the pandemic has massively accelerated many of the already-in-progress key trends in our industry – some report an acceleration of 5-7 years in the space of just one. Virtualization, cloudification, IP, automation and remote operations have all made massive, inexorable strides forward as the industry rapidly embraced trends that, pre-pandemic, were mostly regarded as either risky, unproven or simply 'not yet'. But not any more – they have become the dominant drivers in the industry: an industry which will emerge from the pandemic fitter, leaner and more agile as a result.

One of the changes we have made at IABM in response to the pandemic that will continue even after freedom of movement returns is BaM Live!™. While virtual events will never replace in-person shows and conferences, they have nonetheless proved to have real value; the future looks hybrid. That's

why, following the success of the first event in December, we scheduled four further BaM Live!™ events for 2021, each edition built around a set of core themes for the industry. As I write this, we have just delivered the first event, concentrating on Crafting Content, Experiences and Workflows. For the June edition, the theme is Virtual Media Supply Chains; for September, it's Data Driven Supply Chains; and for December, Evolving Media Economics.

These themes are not only the focus of BaM Live!™ – they are also informing our activities in the run up to each event, including our business intelligence and the IABM Journal. That's why this edition of the Journal concentrates on activities around our Q1 BaM Live!™ theme of Crafting Content, Experiences and Workflows. In addition to the special feature mentioned above, we have a number of in-depth articles grouped around Audio, Sports and News.

Our Bronze members offer services across the full gamut of specialist activities to support our Start-Up, Silver, Gold and Platinum members – the technology vendors. Bronze members have an in-depth knowledge of the broadcast, media and entertainment technology ecosystem and we asked them to share a summary of their services for a highlight feature in this edition. Whether you are looking for PR expertise, video services, event support,

intellectual property protection, research, strategy or decision making support, our Bronze members are well-placed to help.

There are plenty of other interesting articles in this edition too, and I would like especially to point you towards Simon Tillyer's excellent write up on page 68 of the challenges KitPlus met and overcame in helping us make BaM Live!™ such a resounding success.

The Journal is always open for contributions from all our members. As part of her membership engagement role, Lisa Collins is in regular contact with all members making them aware of this and other opportunities to promote themselves; feel free to call or email her to discuss how you can get more involved.

I hope you enjoy reading this edition of the Journal and find some useful insights to help you to change, innovate and adapt as our industry continues to transform at breakneck speed. I am always keen to hear from members with any new ideas and suggestions as to how your association can support you – don't hold back!

Peter White
CEO, IABM

Verizon Media: Protecting your OTT streaming service from cyberattacks

The global video streaming industry is a multi-billion-dollar market that's enabled streaming services of every size to succeed. Yet, with great success comes new risks and responsibilities. The rapid growth of streaming services means that they are now not only home to high-value content but, in some cases, data from millions of customers.

Cybercriminals now see streaming services as a treasure trove and are eager to mine premium content and users' data including customer payment details, email addresses, physical addresses, and names. Inevitably, the more successful a streaming service is, the more personal data it has, which makes it an increasingly attractive proposition to cybercriminals because they have a greater surface area to attack. Growing pains in these organizations can lead to an increase in cyberattacks that take advantage of the vulnerabilities specific to OTT platforms and technologies.

Nobody understands the extent of cyberattacks better than Hollywood. During the recent launch of a popular streaming service, hundreds of thousands of users complained that they had lost control of their accounts. It appeared that a credential stuffing attack on authentication servers had put many customer accounts into the hands of hackers who attempted to resell access to the streaming service. This example illustrates that no service,

large or small, is invulnerable to hackers' increasingly sophisticated attacks. To shine a light on this pertinent issue, Verizon Media commissioned a survey in 2020, surveying security professionals at streaming and OTT service companies. Participants included broadcasters, publishers, studios, content owners, D2C platforms, aggregators, and sports leagues. The findings informed Verizon Media's report entitled Protecting your OTT streaming service from cyberattacks, which examines the perspectives of technology executives responsible for securing over-the-top (OTT) streaming services. The report provides readers with a deeper understanding of the risks, the techniques cybercriminals use to exploit vulnerabilities, and the latest security solutions – and the emerging technologies confronting a new set of cyberspace challenges.

Every single streaming service has the potential to attract unwanted cyberattacks from cybercriminals.

The most common cyberattacks include:

- **Application attacks:** cybercriminals exploit vulnerabilities in the application architecture and software code that may or may not be publicly known.
- **Distributed denial-of-service (DDoS) attacks:** these types of attacks use artificial traffic to disrupt a site or service, making it inaccessible or slow to respond to legitimate users.
- **Credential stuffing:** hackers exploit the fact that people tend to use the same username and password combination across multiple accounts. In such an attack, the hackers can buy huge lists of stolen credentials from the dark web and use automation to try each one to gain access to the target service.

Although these attack types differ, they are often used in a coordinated fashion. Our survey found that most streaming services have probably already suffered from one of these security breaches:





- **80%** of our survey participants said they are not prepared for DDoS and Application Attacks
- **50%** said security breaches had degraded their service's user experience
- **30%** of respondents said a security breach had caused a service outage
- **14%** of respondents said their content had been misappropriated

It is not surprising that few respondents felt fully prepared for a security breach. Cybercriminals are rapidly evolving their approaches and tactics in their pursuit of premium content and customers' data. Consequently, cyberattacks are increasing in severity and frequency and the survey reflects the market's vulnerability. Even those streaming services with a robust defensive solution in place must continue improving and evolving their defensive stance because cyber attackers will

continue to look for vulnerabilities relentlessly.

Companies can keep pace with the increased sophistication of cyberattacks by adopting more cloud-based solutions. Our survey found that 30% of participants are planning to move to cloud-based security solutions in the future to help minimise security breaches. Moving more solutions into the cloud and CDNs provides streaming services with greater scalability and reliability and lower operational costs than on-prem solutions.

Advancements in technology mean that cybersecurity has become a high-tech game where criminals innovate their attacks faster than most IT organizations can adapt their defences. The days of implementing solutions using a whack-a-mole approach and focusing on one cyber defence while ignoring others are over. Hackers use multiple attack

approaches, and there is little point in closing one security hole if another is left open. Streaming services need to work with security experts to identify gaps between their security priorities and their preparedness, evaluate new security approaches, and then leverage a coordinated set of cloud-based solutions that work together to bar all entry points.

Download this report to benchmark your streaming service's security preparedness compared to your peers' and use the data to examine risks and actions you can take to protect your content, user data, and reputation. Cybercriminals are always looking for new ways to undermine your business, and the best line of defence is to take a comprehensive and coordinated approach to cybersecurity solutions. The report can be downloaded at

<https://www.verizondigitalmedia.com/report/ott-security-report-2021>

Switch on the audience

How Never.no's cloud-based platform Bee-On powered the conversation for ITV's The Martin Lewis Money Show Live.



A lot has happened over the last 12 months, particularly with how broadcasters have had to adapt to changing viewer habits, as content providers fight for viewer ratings, while the audience consumes content on up to three screens at a time. One mainstay on our TV in the UK is ITV's Martin Lewis Money Show Live, the go-to money advice-show that's helped the nation understand complex financial changes during the pandemic. Producers have harnessed the power of the audience on social media and created a format that puts viewers at the centre of the show, while they sit at home watching intently on their TVs and follow the conversation on their phones. When the pandemic hit and the audience and production teams had to stay indoors, ITV decided to broadcast a special Covid-19 episode to talk about financial management during the pandemic.

In a rapid change to scheduled programming, producers had just 48 hours to create a format that worked without a studio audience, who were usually the centrepiece to the show's narrative.

Working with pre-made native broadcast graphics, the platform pushes the content, in real-time, to a large screen in the studio, where Martin Lewis and co-host Angellica Bell follow the conversation.

Part of ITV studios, production company MultiStory Media looked to bridge the gap between the viewers and host, Martin Lewis, to engage conversation and respond to viewers' current financial issues. Following the previous success of using Never.no's audience engagement platform, Bee-On, for ITV's Peston, the cloud-based

content management platform was integrated into the virtual production workflow and setup to power the conversation of the one-off live programme. Jump forward to present day and the one-time Corona Virus special turned into multiple and a 20-episode series was commissioned in September 2020.

Using #MartinLewis to create the conversation on Twitter, viewers tweet questions and opinions in the hope to get covered over the 30-minute broadcast. Producers gather the best of the viewers' tweets and line it up on the Bee-On timeline. Working with pre-made native broadcast graphics, the platform pushes the content, in real-time, to a large screen in the studio, where Martin Lewis and co-host Angellica Bell follow the conversation.

Anthony Chuck, the MultiStory Media production manager on the specials said "The team at Never.no were so supportive in the fast



turnaround nature of our production. Offering remote training sessions for our production teams and support throughout the whole process. The system worked without a glitch and the software assisted us in being able to successfully execute a central part of the programme” Based in London, Cardiff and Manchester, MultiStory Media have delivered multi-award-winning current affairs, entertainment and documentaries, including Come Dine with Me, Paul O’Grady: For the Love of Dogs, 63UP and Death Row: Countdown to Execution.

Managed through a web browser, Bee-On’s full access to the Twitter API enables the production manager to simply moderate all conversation directed at the show. Picking out the best content and most relevant questions, the team can moderate content to ensure rude or insulting content doesn’t slip through on air – an important requirement for a pre-watershed live show. In the latest series, producers were keen to gather the opinions of the audience through weekly polls across the show’s social platforms, Bee-On was set up to aggregate results

and broadcast graphics were added to package the results on the large screen.

“The specials were very well received, so we were excited that a tenth series was commissioned. It’s been a really tough time for all of us, Martin Lewis has strived to help everyone understand complicated financial policies, so we wanted to make sure that viewers were at the centre of show, as it’s all about them. We reach over one million followers on twitter, so featuring weekly polls gauges a highly represented opinion of the country and enables us to produce credible content. It’s so simple curating audience generated content and publishing into a live broadcast with Bee-On alongside our graphics engine by Kenziko,” said the show’s current production manager, Sarah Bishop Fenn.

It’s no mean feat to create a trending topic on Twitter, but the show does this weekly! Following the Corona Virus special, #MartinLewis began trending on Twitter and became the third highest most talked about topic in the UK during the show. With conversation heating up,

#MartinLewis continued in the top-five rank for the next five hours as the host jumped on Twitter and continued answering questions. Big issues such as ‘work,’ ‘holiday’ and ‘mortgage holiday’ were significant in the conversation, which also included ‘NHSWorkers’, ‘credit’ and ‘refund’.

During a time of lock down, Multi Story Media with ITV created and broadcast a show where the audience is key to the narrative. By utilising social media powered by Bee-On, the audience are able to engage even more than they would have in the studio.



SPORTS



IABM expands business intelligence offering with new Live Sports sector report

In late February, we released a new Sector Trends Report on Live Sports. Analyzed from a mix of quantitative data and qualitative input including extensive interviews and research, the Live Sports report examines drivers of change and provides both tech suppliers and media companies with the actionable insights they need to better address future challenges and opportunities in the Live Sports sector.

Sky reported a 15% drop in June 2020 and NBC alone lost \$1.25bn of ad revenues due to the postponement of the Tokyo Games

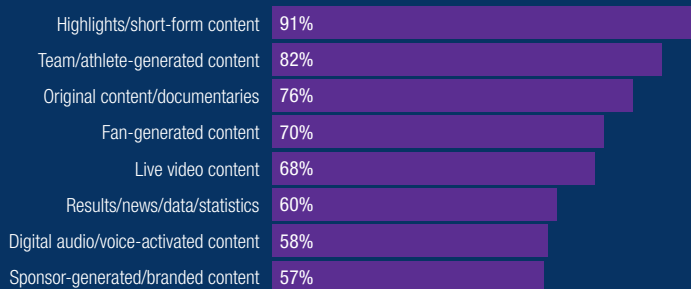
The Live Sports report dissects sports viewing habits, the sports rights landscape, monetization models, the growth of eSports, Covid-19 impact on investment, cloud and virtualization, AI/ML and Analytics and Imaging & Immersive. The report shows that the coronavirus pandemic hit the sector hard early on, with the advertising and subscription revenues much of the sector relies on heavily impacted; for example, Sky reported a 15% drop in June 2020 and NBC alone lost \$1.25bn of ad revenues due to the postponement of the Tokyo Games. Sports broadcasters had to swiftly adapt, creatively filling the holes in their programming schedules caused by the cancellations with rerun and reworked archive content, new content formats or immersive events. Even though sports viewership declined due to the impact of the pandemic, sports audiences remain a large share of overall live broadcasting consumption.

The pandemic accelerated long-standing drivers of innovation and disruption in the sports industry; innovations such as remote production, cloud-based infrastructure, data analytics and immersive experiences were all propelled forward by the constraints posed by the pandemic. However, drivers of disruption including changing viewing habits, the changing sports rights landscape, and the growth of e-sports were all accelerated.

The full report can be viewed at theiabm.org/sector-trends-live-sports/
Headline findings are:

- Dramatic drop in ad revenues due to event cancellation drives creative adaptation
- 32% of sports media companies are planning to increase investment in media technology
- 59% of live sports technology media companies plan to grow their investment in Consume, which includes consumer interface systems, while the level

Expected growth of sports media consumption according to sports industry leaders worldwide

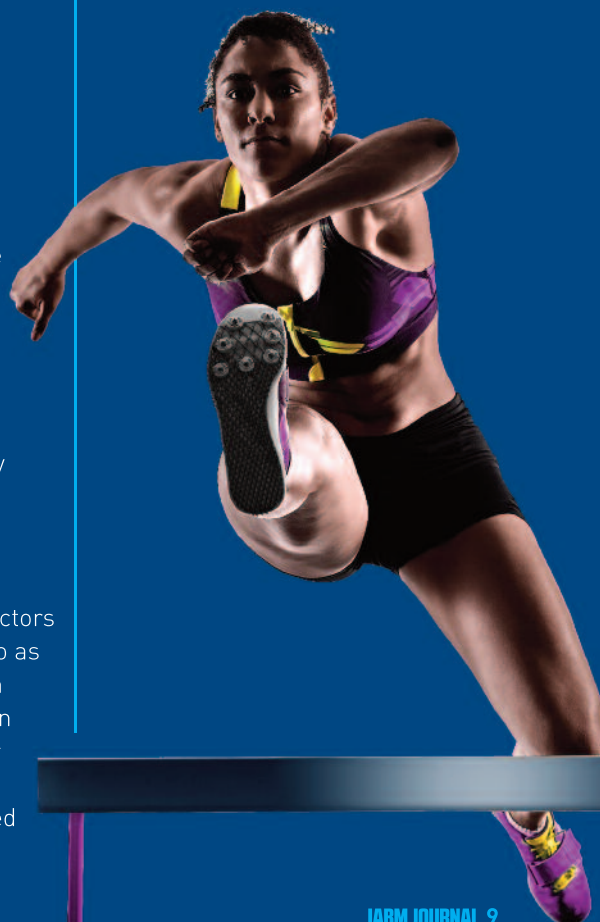


of investment in other areas of the content supply chain will however remain flat or even decrease

- Monetization models in the sports industry may become more 'fluid' than ever before with a higher reliance on interactive consumer experiences as well as e-commerce features
- The COVID-19 pandemic has impaired investment in imaging, particularly when it comes to distribution. Immersive in sports is instead a strategic area of investment
- Sports rights data suggests that the impact of the pandemic has been uneven in different geographies. While European rights have experienced a decline in recent deals, data from North America shows the resilience of sports rights' prices
- From a content supply chain perspective, IABM data shows that sports production technology buyers are also focused on real-time production graphics

"Our Business Intelligence Unit continues to expand the range of sectors and segments on which it reports so as to provide IABM members with even more actionable insights to underpin their business planning," said Peter White, IABM CEO. "Moreover these reports are increasingly being tapped by broadcast and media company

strategists to inform their decision-making – we are delighted by this trend as it fits well with IABM's ongoing drive towards true collaboration across the whole content chain that will help ensure our great industry's ongoing success. This new Live Sports Sector report will, I am certain, be eagerly received by everyone involved in this dynamic and rapidly evolving sector."





Focus on Sports

BLAST teams up with **EVS** for complete Esports production environment

BLAST, the global esports media network delivering world class entertainment experiences, has selected EVS' market-leading VIA and Media Infrastructure solutions as the backbone of its new esports production flypack. The mobile solution is designed so that BLAST can produce its own live gaming events in-house. With the Covid-19 lockdown impacting mass gatherings, the flexibility of the EVS live production workflow is enabling the esports giant to put on online-only events instead.

*Caption for main photograph:
New Blast TV esports production
infrastructure in Copenhagen*

Powering coverage of all BLAST Premier tournaments' live-action is EVS' XT-VIA and XS-VIA production servers, designed to meet the most demanding live broadcast requirements. The XT-VIA servers will deliver the power required for BLAST to record and produce live replays and highlights from the players and observers, while the XS-VIA servers provide ingest and delayed playout of the TX feeds for betting requirements. The turnkey XT-VIA solution includes 36 Full HD 1080p channels recording all the player feeds and in-game action. EVS' next-generation IP media sharing network is at the heart of the system, enabling faster, more efficient live media sharing and storytelling by all client users.

Overseeing this infrastructure is EVS Media Infrastructure's highly advanced broadcast control and monitoring system Cerebrum. Deployed by BLAST's crew to configure and manage all SDI workflows within its production environment, the EVS system manages all devices in the flypack, including the router, multiviewer, vision mixer and audio desk. Cerebrum also handles UMD and Tally for the entire system, including the XT-VIAs, built-in multiviewers. And it provides customizable panels that can be designed to BLAST TV's specific needs with production configurations that allow to easily save and reload various types of events.

EVS' all new IP-based replay and highlights system LSM-VIA will also extract maximum potential from the next generation XT-VIA servers to create super slow-motion in-game replays and support studio analysis. By providing direct access to all the content on the network, LSM-VIA will streamline BLAST's workflows so that its crew can focus solely on delivering live storytelling with the highest production standards.



Blast studio set for BLAST Premier Fall Series

Delivering fast-paced esports content to live audiences is no easy feat, which is why the BLAST team opted to use EVS' live production asset management (PAM) solution, featuring dynamic applications for live media content browsing, control, edit and playout. The team has also chosen to use EVS' web browsing tool, which extends its capabilities to access, browse and select content regardless of location, as well as publish multiple in-game clips to their social media engaged fans. Part of the workflow's speed is also due to certified integration with Adobe Premier Pro, allowing BLAST editors to instantly access clip elements made available by EVS' Live PAM suite.

The backend resources of the EVS Live PAM Production Asset Management are hosted on EVS' virtualization platform, providing flexibility and agility in operating a scalable infrastructure and offering cost-savings on power and much needed rack space. The EVS solution also offers extended file exchange, backup and transcoding, which is more than convenient when publishing clips and highlights to Twitch and social media, and simplifies the transfer of content inside demanding esports environments.

"Our priority is delivering world leading esports entertainment to our audience, in both pandemic and non-pandemic times, so partnering with a cutting-edge technology provider like EVS makes perfect sense," said Andrew Haworth, Director of Operations & Production at BLAST. "EVS' approach to this project has been incredible, understanding our unique challenges and then working through detailed technical workflows to allow us to produce however we want and beyond."

"BLAST was faced with a unique combination of challenges. These required it to adapt to new ways of producing large-scale live esports events while still providing the high level of quality and engagement its fans expect," said Nicolas Bourdon, Chief Marketing Officer at EVS. "Our high-end live production solutions along with our new range of control and monitoring tools raise BLAST's operations to the next level with greater speed, control and flexibility."

The Big Pivot: From Fans in Stands to Communities in Concert

How Sports Venues are Adapting and Thriving Despite the Effects of COVID-19



Energy, rivalry and victory – the trifecta of elements for an exciting match, no matter the sport. Over the recent years, these aspects have been key components in the sports venue playbook of innovation as they were faced with having to transform the way they did business. Their goal? To create an immersive, energetic and memorable experience that would not only entice fans to attend events in person but also leave them looking forward to coming back again.

Their rival? The home theater. With so many advances in broadcast and audio-visual technology ranging from enormous television screens that display HD / UHD content to the transition to IP-based infrastructures that make consuming that content even better, to the introduction of social media and over-the-top (OTT) livestreaming apps, more fans are choosing to stay home – enjoying the game from the comfort of their own couch.

Now it's a question of how to achieve the victory. Just as any business looking to expand their reach and

grow their operations, sports venues from near and far became laser focused on enhancing their product – or in this case, an experience – and diversifying their offerings.

Take for instance, Chase Center in San Francisco. This world-class entertainment venue is home to the NBA's Golden State Warriors and boasts more than 64 LED video displays including the star of the arena – a massive center-hung scoreboard with almost 10,000 square feet of surface LED space – the largest center-hung display in

the league. While home televisions have certainly increased in size, they're still no competition for the billions of pixels that immerse and excite attending Warrior fans. The entire video display package places a strong emphasis on giving fans all the information they could want from who is in the game to video replays and common stats – information that is fed from an all-IP video production control room engineered and integrated by Diversified. Finished just before the 2020 season, this upgrade was sure to bring broadcast-worthy event production in-house to the 18,000 fans in the venue, achieving the Warriors' goal of exciting and engaging crowds with experiences they just could not get at home.

However, enter 2020 and the global pandemic – an opponent nobody wanted or expected – and the playing field quickly and dramatically changed. Even if fans wanted to attend, stay-at-home orders made that next to impossible. According to a recent interview with co-owner Joe Lacob, "The Golden State Warriors are losing 70% of their expected revenue without live fans."¹ What's more, NBA commissioner Adam Silver has stated that about 40% of the league's revenue comes from having fans at games², and this is just one of the many sports leagues around the world to consider. With numerous, substantial venue investments slated to come online in 2020, the way in which owners and management would pivot to keep delivering those fan experiences would prove to make all the difference.

Knowing that a single sports season only lasts a few months, many venues were already seeking new ways to attract fans year-round even before the pandemic hit. Some venues go with concerts, others

¹Yahoo: <https://www.yahoo.com/now/warriors-losing-70-revenue-covid-194414026.html>

build in transformational pitches to accommodate two completely different sports. At Hard Rock Stadium, the venue's primary mission is to provide a gathering place for the NFL's Miami Dolphins to play and fans to cheer them on. Still, even in a 'normal' world, the football season only lasts for about six months, leaving the stadium unused for the remainder of the year. For this reason, Hard Rock Stadium began to seek new events that would attract additional audiences, starting with the Miami Open tennis tournament that debuted there in 2019. Just months after the Dolphins wrapped up their regular season, the same space and campus around it was replaced with a tennis facility to rival just about any tennis venue seen on a major tour². These kinds of transformations don't just happen, though. They require thoughtful design when building or renovating, which Hard Rock Stadium underwent in 2016 to prepare for such occasions as well as being the host of Super Bowl LIV.

Of course, a big part of what should be considered in those designs is the technology – how will the audio be impacted? Can the control room seamlessly transition to support completely different content? According to Diversified's director of AV and sound, Justo Gutierrez, "The first part of designing a sound system for a multi-purpose outdoor space is to understand the space itself so we know where loudspeaker coverage is needed." Fast forward a little less than a year after the Miami Open and roughly a month after their big Super Bowl debut, and the stadium found itself in a much different situation but with the same goal in mind – keep a sense of community at the venue while creating memorable experiences in a safe environment.

As the first public facility to earn the Global Biorisk Advisory Council's STAR accreditation, the standard used for facilities to implement cleaning, disinfecting and infectious disease prevention work practices, the Dolphins

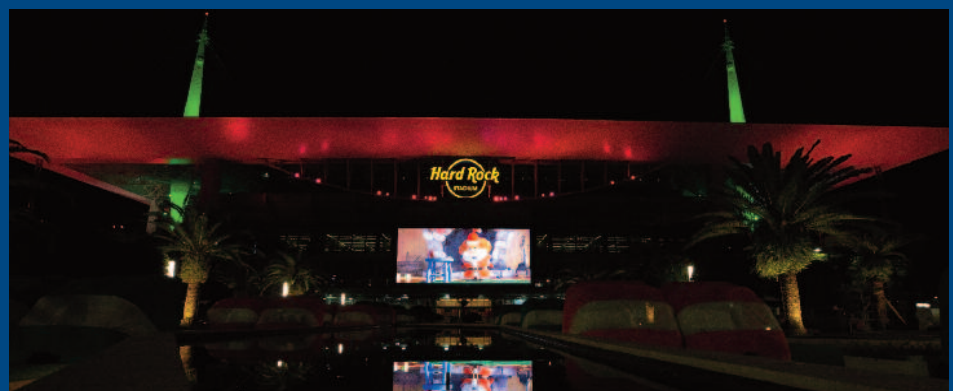


have been nothing but innovative in finding ways to stay open during the pandemic. Hence, their announcement in May 2020 unveiling both an outdoor drive-up theater inside the stadium and an open-air theater on their fountain plaza that would be used to show classic movies, marquee games in team history, commencement ceremonies, concerts and more³. "The inspiration for the outdoor theater really came from our Vice Chairman and CEO, Tom Garfinkel," says Kim Rometo, Vice President and CIO of the Dolphins. "As the pandemic set in, he wanted to create a space that was socially distanced and yet still had a communal feel and so the outdoor theaters of Hard Rock Stadium were born."

The venue started working with Diversified to utilize what they had already implemented years prior to provide maximum flexibility for the space including propagating audio all the way to the back and still filling the space with sound, as appropriate. The

result is a space that can accommodate anything from live speakers or a band to a movie night, all contributing to an impactful experience and sense of community that otherwise could have been lost.

So, what's the key to this victory? Similar to the teams on the fields, it's agility and flexibility – words that have come to mean so much in our new normal. As more venues navigate the reality of downturned attendance and audiences awaiting herd immunity from the vaccine⁴, they will need to be agile and flexible. Agile in how they reach their fans. Flexible in how they approach venue designs. Just as how we used to do so many things in our 'pre-pandemic world,' the blueprint for what a sports stadium used to be has been tossed in the shredder, making way for the future of fan engagement – expanding how, when and where you engage with them from just on game day to potentially every time they're looking to be entertained.



²Miami Dolphins: <https://www.miamidolphins.com/news/stephen-ross-tennis-vision-becomes-a-reality-at-hard-rock-stadium>

³ESPN: https://www.espn.com/nfl/story/_/id/29225313/miami-dolphins-open-drive-theater-hard-rock-stadium

⁴Sportico: <https://www.sportico.com/business/commerce/2021/fan-experience-covid-poll-1234621300/>

Supponor moves to remote delivery



Steve Plunkett
Chief Product
Officer, Supponor

Supponor enables rights owners to maximize the value of live broadcast Sports & Entertainment events through world-leading end-to-end Virtual Advertising solutions, allowing partner and brand communications to be targeted and customized for each specific audience segment. Steve Plunkett, Chief Product Officer at Supponor, talks about the challenges brought by the Covid pandemic, and how the company helped its clients move to remote delivery at breakneck speed.



2020 and the uncertainty of Covid-19 forced Supponor to accelerate the implementation of its longer term plans for remote delivery of its services – and while challenging to deliver under such a compressed time line, it has helped us to become a stronger company today. The pressure to continue to support our clients, allowed us to innovate and develop our service offering to fit with the rapidly evolving demands of the industry. Sports broadcasting was luckier than some other industries, with live sporting events returning by the summer, helping to keep us productive and busier than many others less fortunate.

Creating and delivering Covid-secure workflows which would withstand the rigours of live event broadcasting was a challenging process. The Bundesliga was the first Tier 1 league to restart its

halted season, and we were fortunate that our virtual advertising services were considered an essential part of the league's restart plan – but with that good fortune, came an incredibly challenging learning curve as we had to learn how to maintain our demanding level of service quality with only half our normal on-site crew due to restrictions in the allocation of on-site staffing slots.

Starting out ahead of the curve on our planned pathway towards remote or off-site production helped tremendously, but suddenly we found ourselves playing catch up as the industry has leapt forward five years in its adoption of remote production operations since the start of Covid. The broadcast industry's rapid shift requires businesses to iterate and innovate faster to release upgraded and new

solutions at a much more aggressive pace. What used to take months to plan and introduce we now find ourselves handling multiple iterations of new technology deployment plans in a matter of weeks. Soon that will be days.

Ironically, for Supponor, pausing live sports worldwide helped with that acceleration. Like most companies in the live sports event industry, we have a typical weekly cycle. We have plans, we develop software, we add enhancements and new features, and then they are tested and deployed over the weekend, which inevitably leads to a debrief on Monday and an examination of how it all performed in the field. It's almost a four days on, three days off cycle. But with everything halted, we found ourselves being able to work through and have a much more significant and smoother development cycle.

Was it ideal? Of course not, lockdown was a tough time for everyone. But we were fortunate to not have to lose any staff so that we could leverage the time away from production to accelerate our development processes and to build in extra capacity and new capabilities that are now proving invaluable as we emerge fully into the active part of 2021.

Remote production has been a huge part of that. We had to adopt software, processes and even hardware from the way it's been used historically so that everything we have done so well onsite for many years could be deployed fully remotely. There were powerful features already defined in our roadmap relating to remote production, that few of our customers were ready to embrace pre-Covid, and those were rapidly brought to the forefront as interest and demand grew. We had to

We had to adopt software, processes and even hardware from the way it's been used historically so that everything we have done so well onsite for many years could be deployed fully remotely

develop components around software, and add in additional remote control and remote sharing tooling into our software stack as we found ourselves suddenly working remotely at events all around the world made all the more challenging with border closures and travel restrictions.

A good example of this was a live test we conducted on a match played in Colombia, South America last year. Nobody from Supponor was at the stadium, nobody was even in Colombia; everything was operated live from London where we were creating the virtually modified feeds. This would likely still have been possible without the Covid experience, but we would probably still have had people in the stadium as a back-up. It's forced us to lean heavily on the technology and ensure its failsafe robustness in live operation.

A lot of it went further than we thought it would. It had always been theoretically possible to work from home and be driving virtual signage in North and South America, but nobody took it seriously pre-Covid. Now it is not only taken seriously, it has become the new normal in our industry.

Will that remain the case in the post-Covid era? We're not sure. Some of the gains made by the widespread adoption of remote production will very much be part of the future landscape; the environmental and cost benefits are too compelling to ignore. But we suspect that will consolidate into a middle ground, where centralised production from dedicated facilities and production



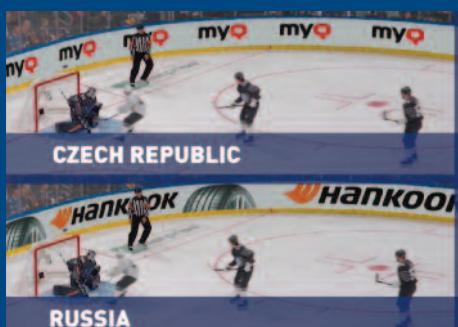
hubs becomes the normal workflow rather than people working from their kitchen tables. It's good to have the ability to be able to do that hugely distributed home-based workflow, and who knows precisely what the future holds when it comes to the need to adopt bio-secure working practices. But we see the synergies of assembling staff together into centralised production hubs as being irresistible to companies and people alike as human interaction will still be valued. People will no longer unnecessarily travel from venue to venue, but teams in production hubs will produce several concurrent games in a single shift.

But the key here really is flexibility. We have built a very solid offering; the software is robust, our technology is reliable and production-proven – no-one else has 10 years of experience in the field with this. That allows us to be agile

and respond quickly to market demands.

That has seen us in good stead during the pandemic, and it will see us in good stead in the future when we start to move onwards to deploying other new technologies. The sports broadcasting industry was brought to a dead halt very rapidly by Covid, but it has adapted with impressive speed and is already racing ahead once more.

Development in fields such as cloud-native deployments and Augmented Reality is, if anything, even faster than before and rapidly catching up with the progress made in remote production. As fans come back to stadiums, arenas, pitches, and racetracks around the world, 2021 and onward is going to be a very exciting period to be working in sports broadcasting, whether from a production hub, an onsite truck, or even on your kitchen table.



LiveU: Keeping your distance: remote production and benefits for the sports market



Ronen Artman
VP of Marketing,
LiveU

There have been many, many words written recently about remote production, indeed the wider world of remote working generally, spurred on by significantly increased use during the pandemic. But remote production didn't suddenly spring up overnight, either as a concept or reality.



Let's step back first. We've seen huge growth in the use of IP bonding across sports, especially in the last five years: from single-camera streaming to complex, multi-camera productions, often on the move.

From the Rugby World Cup, where LiveU technology was used not only to gather content but also as a disaster recovery solution by ITV Sport, to the FIA World Rally Championship, Austrian football and facilitating coverage of the Spanish lower leagues, the list goes on.

Accompanying that growth has been the rise of remote production. Why is that? What are the benefits?

Even before it was really called remote production, we saw our technology being used in this way because of its fundamental IP basis. We have worked with production companies and sports

broadcasters on multiple projects and have come to understand a wide range of remote production scenarios and therefore requirements moving forward.

Today remote production/At-home production/REMI is changing the way we produce live sports. The days of sending a full production crew and truck for a live show are fading. Even across tier-1 sports, the cost and cumbersome nature of satellite/fibre connectivity is being questioned.

Remote production delivers a very high-quality viewer experience while organisations are able to send only the minimum amount of equipment and crew required for a sports event (and beyond) and produce the content from a central studio control room in lieu of an on-site production truck. The on-site crew is likely to consist of camera operators, an engineer, and an audio

operator, while back at the studio the director, technical director, producer, talent, graphics and replay operators, and primary audio operator create the finished production. Combined with the inherent flexibility of the wireless camera approach that IP-bonding allows, this means a new era in sports broadcasting is upon us.

Remote production brings multiple benefits. Fewer staff on-site means significantly reduced costs. But it also means that sports broadcasters/streamers/production companies can concentrate far more easily on achieving the dynamic coverage – as well as additional fan engagement material – that they need to in order to compete.

This approach also greatly reduces set-up time at a given venue given the wireless nature of IP-bonding technology. It also allows for a greater re-use of both technology and people. Sports broadcasters can assemble their 'dream team', both on the technical and presentation side of things, and because they're not having to travel to venues, they can cover more events much more efficiently. Commentators for more niche events can be hard to find, so having them able to commentate from their homes, for example, is a significant advantage. And, as mentioned, the same core, centralised technology and studio setup can be reused across a far, far greater number of events. Some broadcasters can cover hundreds of events per year.

By streamlining productions, significant cost and time savings can be accomplished using IP-based remote production, provided the correct technology is implemented and guidance sought from those with the required expertise. Organisations report that the remote production model has reduced production costs between 40 and 70 percent.

Scott Rehling, President of production company L2 Productions, attributes his

...centralised technology and studio setup can be reused across a far, far greater number of events. Some broadcasters can cover hundreds of events per year

booming business to the adoption of an At-Home Production workflow featuring LiveU portable transmission units, allowing the company to produce more events with lower overhead costs. He says, "Ten years ago, all of our sports were covered with a traditional truck and satellite. Over the last four years 90% of our work has changed to REMI/At Home productions."

It's all very well and good reducing costs, but you need the other side of the coin too: increased fan engagement. Television sports coverage today is all about creating quality content that engages the fans in a sustainable way. If you can engage fans, you can attract sponsors and advertisers. Sports broadcasting is a highly competitive field. IP-bonding remote production fosters further innovation via the sheer dynamism it allows, indeed, it encourages, bringing new angles to viewers in multiple ways.

Last year, EVERTOP, a pioneering sports production company in China, looked for a solution to deliver multi-camera remote production of the Chengdu Marathon, with high-quality synchronised feeds. EVERTOP chose the LU800 PRO4, LiveU's new production-level field unit which supports four fully frame-synced feeds from a single portable unit. With native 5G transmission and HEVC hardware encoding, the unit bonds up to eight internal 5G/4G dual SIM modems for true reliability.

Remote production comes in all shapes and sizes. With production budgets usually quite low for tier 2 and smaller sport events, traditional broadcast transmission equipment, such as satellite and microwave, are simply not suitable. Covering the marathon from multiple angles, the LU800 PRO4 streamed fully frame-synced HD feeds of four cameras from the starting line. As Haitao Ma, Director of Production for the Chengdu Marathon, EVERTOP Ltd, said at the time, it was the



synchronisation that was crucial to the success of the production. The signals were then transmitted back with low delay to EVERTOP's production OB van, where the complete coverage of the event was produced. With support from China Unicom and China Telecom, 5G signal was available in the field; the LU800 combined both 4G and 5G connectivity to ensure optimal streaming conditions.

Japanese broadcaster WOWOW, which operates both satellite channels as well as streaming services, deployed LiveU technology to provide innovative, player-following coverage of the US Women's Open Golf held in December, using multi-camera remote production. WOWOW decided to significantly expand and evolve its coverage this year to increase viewer engagement, taking advantage of remote production capabilities and to help with adherence to pandemic restrictions. WOWOW deployed LiveU's IP contribution solution with multiple units via its local US production crew with only two people travelling from Japan – a producer and audio engineer. All staff were regularly checked for COVID-19 and all social distancing requirements were adhered to.

WOWOW used four units – two for each player – to follow Japanese players Nasa Hataoka and Hinako Shibuno (who came fourth) around the course. This live coverage provided dedicated player feeds as they made their way round the Champions Golf Club, Houston, Texas. Those feeds were streamed on WOWOW Members on

Demand on each player's dedicated channel. They also had an on-site reporter and another LiveU unit at the compound to send the footage. The four feeds were sent direct from the course to WOWOW's Tokyo Broadcast Centre, where commentary and graphics were added. Content from this coverage, along with footage from the world feed, was then also used on WOWOW Prime and WOWOW Live, the broadcaster's satellite-based channels.

Yuko Toda, Producer, Sports Department, WOWOW, said, "By having dedicated channels to show all holes played by specific players, we hope viewers enjoyed watching golf in a new style. LiveU was very stable during the event and we used a very minimal delay that enabled us to use on-camera live talk between the commentator in Tokyo and the on-site reporter."

Toda added, "10 years ago, the way we were doing this was shooting on-site, bringing the recorded hard disk to an SNG truck to transmit the footage to Japan. After receiving the footage, we then edited the highlights and finally broadcast it. Compared to those days, sending the live feeds from the venue to studio in Japan with a unit is amazingly easy and fantastic and it really expands what's possible and does so cost-effectively. LiveU is making this achievable for us and we're looking forward to trying more new things and rising to future challenges."

We very strongly believe that in terms of remote production, we are only at the tip of the iceberg. An exciting future beckons.

Focus on Sports

ATEME:

A changing playing field for sports broadcasters



Julien Mandel
*Contribution
Segment
Manager, Ateme*

Spectator sports are most engaging when audiences don't know what's going to happen next. For the sports broadcasting industry itself, the playing field in which they operate has undergone many exhilarating changes over the last few years. In many cases, these have been accelerated and exacerbated by the Covid-19 pandemic.

As stadiums and venues that were once packed with excitement and atmosphere have been forced to close, we've witnessed the increasing significance of over-the-top (OTT) platforms becoming the digital delivery system for the enjoyment and adrenaline sports fans around the world have been missing.

However, costly broadcasting rights that are going up in price and a growing volume of platforms saturating the market mean sports broadcasters are challenged with finding innovative new ways to maintain viewer loyalty.

With this in mind, let's explore how the events of 2020 will shape the industry in the year ahead:

Standing out from the crowd

It's almost certain that the growing trend for OTT platforms and an expanding diversity of content will grow this year following the market changes of 2020. Evidence of this is the increased diversity of streaming platforms that have newly bought rights to show English Premier League games, including such platforms as Amazon Prime in the UK. The league itself is even looking at the possibility of launching a Netflix-style service in overseas markets.

Increased market competition has led organizations to devise unique innovations to stand out in a crowded market. It has now become easier to provide a memorable fan experience via OTT to help the consumer feel like they're part of an event. Advances in technology have allowed innovations such as 'fan walls', where videos can be shown of fans from home in order to provide an alternative atmosphere while watching sport away from a venue. This is where OTT holds an advantage over traditional means of television, and it is expected that this will continue to grow.

Personalization gathers pace

The USP of highly personalized experiences is also possible through the use of OTT platforms. It is likely this year that we will see further advances in AI technology and processing which enable additional content on streams to be tailored to each viewer, such as instant replays, interactive video panning, traveling, zooming or audio options such as sports announcers and stadium sound. There is also potential for customized highlight reels featuring the viewer's chosen sports star or

favorite team, with language options depending on location. With an increasing number of viewers engaging with social media while watching high-profile sporting events, many want to see greater integration for posting controls and freedom to customize on-screen stats. Personalization can also provide opportunities for increased revenue, such as tailored advertising for certain groups of viewers.

Delayed events that are now scheduled to take place this year should provide wide-reaching opportunities for broadcasters to provide personalized content, such as the Tokyo Olympics and Euro 2020, if they are indeed able to go ahead. Flexible, cost-effective, and scalable solutions will be needed, and it's likely that remote production will be required to minimize those 'on the ground' should social distancing measures still be required. These advances in technology will enable broadcasters to not only manage events at short notice but also enable personalization in bigger and better ways. The rapid uptake of low latency OTT platforms as the preferred choice of video streaming will only provide greater opportunities in this area.

Boosting privacy and security

Unfortunately, as content volumes grow, opportunities for piracy will follow. Ongoing lockdowns caused by the Covid-19 pandemic have created further avenues for pirates to attract consumers to illegal streams given they are unable to attend events in person. High-value content creates the potential for increased piracy through stolen credentials, and solutions will be needed in order to protect the increased investment from broadcasters moving forward.

However, to combat these risks, the emergence of solutions and standards such as BISS-CA for linear are coming to the fore. In addition, Reliable Internet Stream Transport as an alternative to AEQ proprietary solutions, or Secure Reliable Transport for public internet transmission will also provide opportunities for content to be protected. Furthermore, the increased implementation of royalties on content is another avenue that broadcasters can explore to ensure their investments are protected. Broadcasters should look to react quickly to potential piracy threats with software that can be adapted and evolved quickly.

Passing it forward

While previous focus may have been placed on hardware, it is in fact software that will continue to drive sports broadcasting innovation this year, especially as more organizations make the move towards IP and cloud technologies. Evident in this software shift is the exponential growth in OTT platforms and solutions that are quickly becoming the go-to platforms for sports fans. In the coming years, technology will drive broadcasters in matching the demand for global sport, which has only increased due to the need for more enhanced content while in lockdowns.

With rescheduled high-profile sports events hopefully back on the agenda for this year, greater focus will be on sports broadcasters to provide a unique and personalized experience to each of their customers. The mission for sports broadcasters in 2021 will no doubt be the responsibility to keep fans engaged with their favorite sporting heroes or teams through the use of intuitive solutions that can match consumer demand and deliver a high quality viewing experience.



M2A Connect: helps Spark Sport gain operational insights and content delivery efficiency

Spark Sport is a premium live and on-demand sports streaming service in New Zealand. Launched in 2019, the platform offers a wide range of live and on demand content such as New Zealand Cricket, English Premier League, England Cricket, NFL, NBA and more. The streaming provider also streams channels such as NBA TV, MUTV, LFCTV, EDGE TV & TAB Trackside, through which sports content is available to viewers around the clock.

The Challenge

As an OTT platform, owned and operated by New Zealand's largest digital services provider Spark NZ, Spark Sport needed infrastructure to manage, record and preview its licensed sports content. The team at Spark Sport sought greater visibility and operational control of its live sports transport throughout the supply chain.

Already using AWS Cloud infrastructure, Spark Sport was looking for a live video IP solution that wrapped around AWS Elemental Media Services and offered them scheduling automation, the ability to monitor streams in a meaningful way and control their cloud transport costs.

The Solution

Head-quartered in London, the team at M2A Media has been developing cloud-based video solutions for global rights owners and broadcasters since 2012 and is well versed in helping emerging OTT platforms achieve their ambitions of reach and growth.

M2A CONNECT, the company's latest live IP-video transport product, was the light-touch

solution Spark Sport needed to power the delivery of sports content from its global rights partners at a competitive price point. Driven through the intuitive M2A Console, M2A CONNECT also affords Spark Sport security, reliability and ease of use.

The M2A CONNECT solution ingests redundant copies of livestreams into AWS Elemental MediaConnect in two Availability Zones providing an orchestration and oversight of the inter-regional routing between AWS regions.

All sources and proxy feeds are made available through M2A CONNECT via AWS MediaLive and MediaPackage, with the Console exposing monitoring metrics and health status of all streams. A full channel schedule can be added via the M2A CONNECT API, or the M2A Console provides an intuitive user-friendly interface allowing operators to easily schedule events. M2A CONNECT orchestrates the activation and halting of AWS infrastructure according to the events schedule, offering

safety around provisioning time and over-runs as well as automated scaling as necessary.

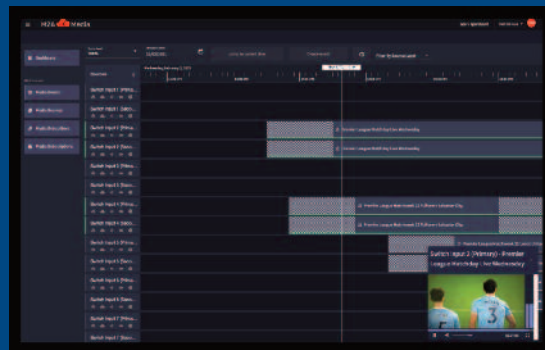
The final 'Hand-off' of the transport streams uses an AWS MediaConnect output in the agreed regions and AWS account.

Through use of M2A CONNECT, Spark Sport now benefits from dynamic automation of AWS Media Services, operational efficiency for high transport stream concurrency and operational insight via the M2A Console.

Conclusion

Through its advanced orchestration, M2A CONNECT brings a new level of ease to the provisioning of cloud infrastructure for live video transport, making it the perfect solution for sports rights holders and broadcasters. Scaling capacity up for knock-out rounds, scaling resilience up for tentpole events, and scaling all down for mid-week or season end have never been easier, and those last-minute deals no longer necessitate the round-the-clock working to deliver.

"When Spark Sport launched, its ambition was to revitalize sports delivery in New Zealand. M2A Media is the perfect partner with the perfect solution to do just that. As a smart orchestration layer on top of AWS Media Services, M2A CONNECT is helping us future proof our broadcast operations." Andrew Martin, Operations Lead at Spark Sport NZ



Is your company ready to bounce back?



Neil Goatcher
Managing Director,
Exhibition
Freighting Ltd

It's no secret that our industry cannot wait to get back to exhibitions and face to face meetings. But of course the big question is, when will this happen? Unfortunately, right now there are no definitive answers, but when those doors of exhibition centres open worldwide, are you as an individual and a company ready to push the 'play' button?

Companies need to plan ahead on elements such as stand design, travel arrangements, exhibition space, H&S protection plans, including COVID protection going forward. The key is to not wait until the last minute as it may be too late. This doesn't mean every item must be ordered and paid for right away, but in a lot of cases forward planning will pay dividends.

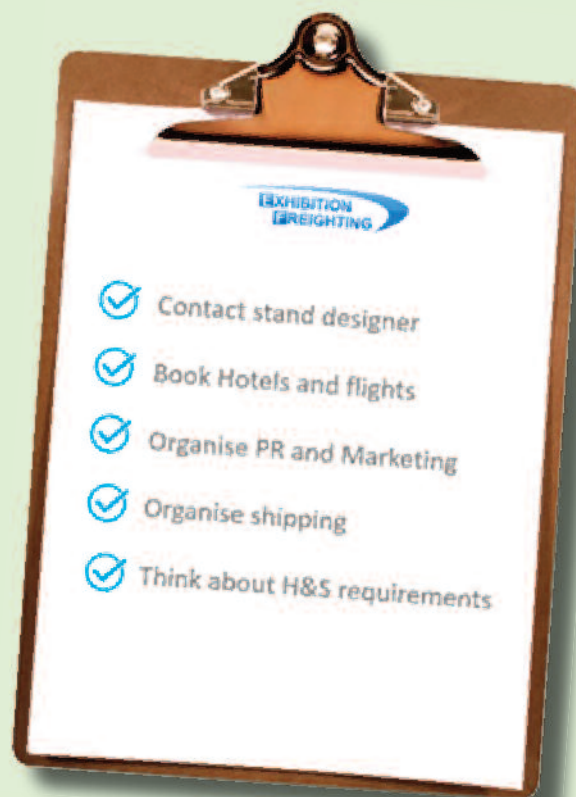
Timings have changed. With Brexit, consideration now also needs to be given to the timings and paperwork required for freight movements into Europe. Export invoices for the freight and the relevant customs procedures need to be followed, including import or temporary import into the country/city where the exhibition is being held. You can do this yourself but we would recommend turning to experts to avoid any last minute surprises.

Some tips we can offer from Exhibition Freighting include:

- **Plan ahead** – Knowing which shows you are going to and making sure you contact and organise them with a recognised forwarder will save you time in the long run. Additionally, make sure you inform other key suppliers about your intention to attend the show to ensure they have you in mind and you have an initial quote on everything, from contacting the stand designer to starting to plan for team expenses such as hotels and flights.
- **Ensure you have the right paperwork** – Check that you have a registered EORI number, which is your company VAT number, but registered for imports and exports into Europe. You are used to completing shipping invoices when shipping to shows in the US or Far East etc, but the same rules now apply for any shipments going to Europe and that includes courier shipments.

- **Adapt to the new regulations** – All wooden pallets/crates/cases must be heat treated and have the appropriate marks on them to comply with ISPM15 regulations. Again, you may be used to this for the US and further afield but this rule now applies for shipments into Europe.

Whenever we do get back to attending tradeshow in person, and that day will come, preparation is key. Putting practices in place now will ensure your entry back to the show floor runs as smoothly and successfully as possible, and we get back to making the most of the events we know and love.



Focus on Audio



Updated Audio Sector report published

We have recently released our updated Audio Sector report, which shines a light on how much the coronavirus pandemic has changed priorities in the sector compared with the last edition of the report in June 2019. The report reveals the significant and at times surprising effects the coronavirus pandemic lockdowns have had on this important, but sometimes unheralded, sector of the Broadcast and Media industry.

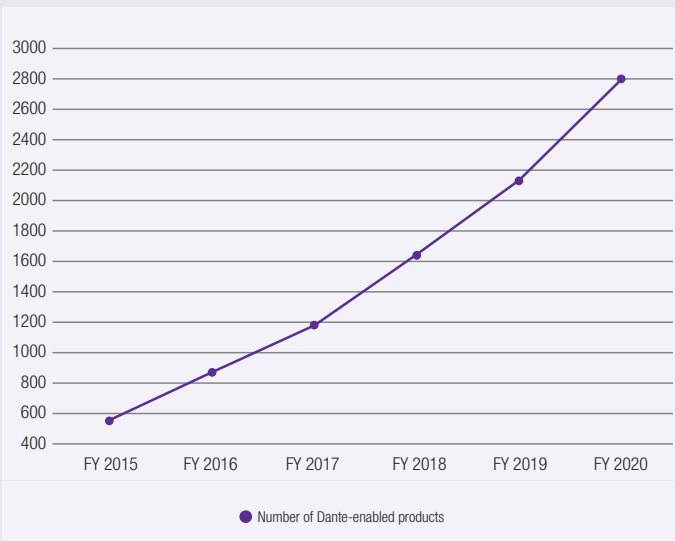
The pandemic has also driven a huge increase in the streaming of audio-only content



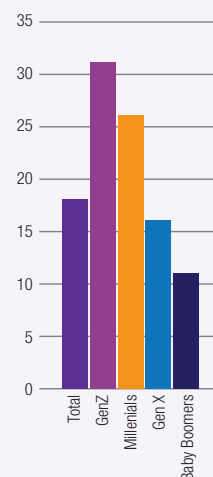
The full report, which includes an overview of the market, an analysis of the drivers of change and the entire audio content supply chain, is available at theiabm.org/sector-trends-audio/. Headline findings of the Audio Sector report are:

- COVID-19 has led to a realization of the importance of audio quality, as disruptions hit production standards.
- The pandemic has incentivized consumers to increasingly stream audio-only content, spurring growth in sectors such as podcasting.
- From a technology perspective, audio virtualization and remote production deployments have accelerated out of necessity, while other trends such as immersive audio have slowed down.
- Some audio business drivers, such as the move to easy-to-use products, have also been accelerated by COVID-19
- Demand from live sectors such as music and theatre has plummeted while other buyers such as streaming, smaller audio content creators and some adjacent markets have increased investment.
- The audio supply chain has been hit by the pandemic-induced cancellations of events and productions more than it has benefited from new waves of spending from remote working, production, streaming and small audio producers.
- Some audio technology suppliers have pivoted to cater to the needs of new segments, as well as to accommodate the health and safety requirements of the pandemic in some sectors.

Lorenzo Zanni, IABM Head of Knowledge, said: "The audio sector in general responded strongly to the challenges brought about by the coronavirus pandemic. While live events work and developments – important drivers in the sector – necessarily took a back seat, and stay-at-home viewers were increasingly happy to accept 'Covid quality' video, the importance of high-quality audio really came to the fore. Ease of use for non-expert, necessarily-remote operators has also risen up the priority list as have virtualization and remote production deployments. The pandemic has also driven a huge increase in the streaming of audio-only content, particularly podcasts and audio books, particularly among younger audiences. The updated Audio Sector Report will richly reward ten minutes' attention from everyone involved in Broadcast and Media."



Share of adults listening to more podcasts due to COVID-19 in the US as of March 2020

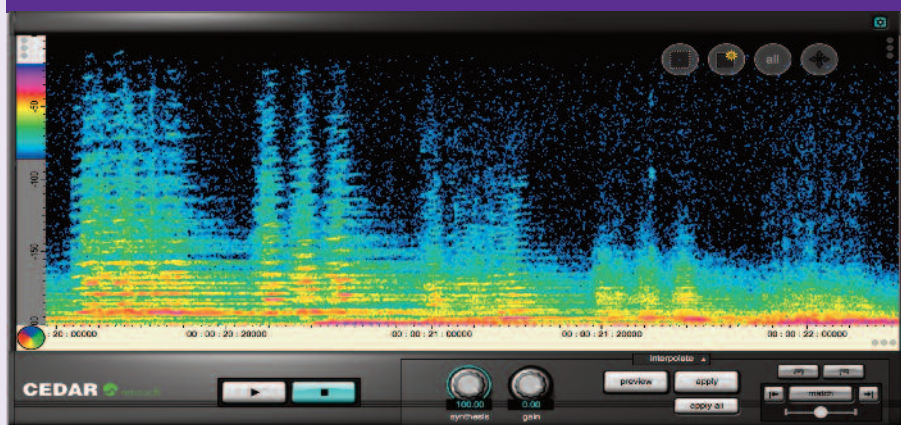


Cedar Audio: committed to noise suppression, speech enhancement and audio restoration



Gordon Reid
Managing
Director, CEDAR
Audio Ltd

CEDAR Audio is a UK based company committed to noise suppression, speech enhancement and audio restoration. It has focussed exclusively in these areas for more than three decades and is the recipient of numerous accolades including an IABM Design & Innovation Award, two Cinema Audio Society Awards and an Academy Award for services to the movie industry.



When CEDAR was established in 1989, several universities were researching what soon became known as digital audio restoration – the science of removing unwanted sounds such as clicks, crackle and hiss from existing recordings. These ‘single-ended’ processes were quite different from existing noise reduction methods that encoded and then decoded the audio to limit the noise added by the medium; they attempted to identify and remove unwanted sounds that already existed in the signal without adversely affecting the wanted sound.

Early processes were limited by the state-of-the-art of digital signal processing (which had only recently been applied to audio) and the processing power of the available hardware. At the time, there were just two companies active in the field. One

chose to implement all of its processes outside of real-time, thus allowing more computing power to be applied to each sample of the audio. In contrast, CEDAR chose to adopt newer, more powerful processors and to optimise its algorithms so that they could be applied in real-time. This immediately became CEDAR’s trademark; whatever we did, we did it in real-time so that the user could hear the effect of the processing as it was occurring. This is of much greater benefit than it might seem. If you can tweak a process while it’s running, you can soon identify the parameters needed to obtain optimum results. If you have to come back the following morning to listen to what you’ve done, you cannot. Real-time processing also removed the need for extensive hard disk storage, which was hideously expensive at that time.

Within a few years, it was apparent that the philosophy of real-time audio restoration was leading the company far beyond the bounds of libraries, archives and remastering for CDs and DVDs, and into areas such as broadcast, post-production and audio forensics. At the same time, solutions to other problems were being developed, and it was soon possible to remove complex buzzes, clipping distortion, timing errors between tracks, speed changes during a recording, and more.

However, neither the techniques nor the hardware of the 1990s were suitable for live broadcast because of the constraints on latency. Humans are very sensitive to any loss of synchronisation between lip movement and heard speech, and many (especially older) people are unaware of the degree to which they rely upon the former to aid comprehension. Consequently, the latency of any noise reduction process used for live broadcast has to be as close to zero as possible. The breakthrough in this area came in 2000 when CEDAR invented the digital ‘dialogue noise suppressor’ (DNS) and incorporated this within dedicated hardware so that the latency could be kept below 0.2ms at 48kHz. Although the earliest products were designed for post-production, units soon started to appear in areas such as newsrooms, reality TV, games shows and sports commenting.

Early versions of DNS were reasonably benign with regard to over-processing and the generation of unwanted artefacts, but they still required a degree of understanding and manual control to obtain optimum results. So the hunt began for a more autonomous version.

In 1994, CEDAR had released a product called the DH-1 dehisser, which used a very early implementation of machine learning to identify, track and remove

the broadband noise contained within a signal. Common wisdom at that time suggested that this task was impossible without the aid of a noise fingerprint, but the DH-1 and its successors proved to be remarkably successful and remained in production until 2016. But in 2015, CEDAR refined its latest machine learning technology (often, but erroneously called 'AI') to create the Learn capabilities of a new generation of noise suppressors that offered the performance and near-zero latency of DNS while eliminating the need for complex controls. This means that products could be made smaller, lighter, simpler to use, and at a lower cost.

Of course, no process addresses all problems, and there is still much work to be done to cope with situations such as rapidly varying noise, noise that is too highly tuned for a broadband noise reduction system, and noise that reaches or even exceeds the level of the wanted signal. There are existing solutions for each of these cases, but with trade-offs. In particular, the algorithms capable of removing high levels of noise from signals obtained in extreme environments introduce a degree of tonal change that make their output unsuitable for broadcast. The CEDAR SE 1 Speech Enhancer (which was developed specifically for the surveillance community) uses these, but its ability to increase intelligibility is not the same thing as increasing listenability. Indeed, the two are often mutually exclusive.

So what of the future? New sources of noise and new requirements for noise suppression are forever being encountered. In 1989, nobody sat in a noisy office while talking to dozens of people worldwide using a laptop with a whirring fan as the communications device. Today, tens of millions of people do so every day, and sophisticated noise reduction and echo cancellation algorithms are running constantly on



the servers ('in the cloud') that allow them to do so. Similarly, a telephone call made on the London Underground would be unlistenable without similar technologies being employed. Elsewhere, perhaps as a consequence of improved delivery mechanisms, old problems are being readdressed with renewed energy, while new, speculative developments are being vigorously pursued in fields such as blind source separation. Isolating a single voice from the babble in a restaurant or club and simultaneously cleaning the resulting signal has long been deemed desirable and (perhaps) impossible, but current advances are bringing this ever closer.

To combat the ever-increasing noise in our lives, we are seeing more and more noise suppression products, whether for recording, mastering, podcasting, broadcasting, communications or security. Yet the Holy Grail remains what it has always been; a magic box that removes all unwanted sounds without human intervention, does so instantly without introducing artefacts, and leaves the wanted signal sounding totally clean but exactly as the listener originally perceived it. Is this possible?

It would be unwise to say that it's not. Today's processes are vastly more effective than those of 30 years ago, and users nonchalantly expect results that would have seemed unlikely when CEDAR was established. A good example of this is the spectral editor, which we invented in 2002. The ability to remove, move or correct a single sound within a recording without damaging the surrounding audio was a huge breakthrough, yet there's already a new generation of audio engineers for whom it has always existed. Arthur C Clarke once wrote that, "Any sufficiently advanced technology is indistinguishable from magic". He forgot to add that, once it enters common usage it soon becomes accepted, if not mundane.



Telos Alliance: Case study: Thousands of Files a Day in Various Configurations

The Players

iNDEMAND distributes premium Video-on-Demand (VOD) and Pay Per View (PPV) entertainment to more than 200 North American TV operators, with a reach of more than 60 million homes. This includes movies, TV shows, events, boxing, wrestling, MMA, and digital out-of-market subscription professional sports packages for MLB, NBA, NHL, and MLS.



The Problem: Thousands of Files a Day in Various Configurations

That's a lot of entertainment! In fact, iNDEMAND processes more than 120 million content transactions annually – approximately 1,000 files per day – delivering over 40,000 hours of content every year to fill seemingly insatiable subscriber demand.

It's not just the number of files that are staggering; the associated internal audio channel identification and processing workflows required to prepare content for distribution were also unmanageable. iNDEMAND Content, provided by hundreds of vendors, contains a wide variety of program configurations, from silent tracks to tracks with tones to foreign-language tracks to content with non-compliant loudness levels. Once each audio file was identified and analyzed, every program had to be processed to

the distributor's specific content file requirements!

Even with the untiring effort of iNDEMAND's highly experienced content management team and engineers, formatting the tremendous number of content files was arduous, time-consuming, and expensive. They used several methods initially to achieve the task, including laboriously inspecting individual files manually to determine the audio configuration. The manual approach posed several issues, especially if the audio configuration was incorrectly identified leading to the output of incorrect files, which then needed to be redone from scratch. This methodology inhibited effective workflows and led to substantial downstream cost inefficiencies.



Client: iNDEMAND

Problem:

Thousands of Audio Files Per Day in Different Formats Causing Labor-Intensive and Expensive Workflows

Solution:

- Custom Implementation of Minnetonka AudioTools Server Software
- Audio file workflows that met iNDEMAND's needs
- Automation that allowed them to dramatically increase their capacity
- Intelligence built into each profile for specific application
- Atypical audio profile flagging and alert
- Silent channel alert
- Program and Channel Order identification
- Loudness measurement and reporting
- All without relying on accompanying inconsistent metadata

Result:

Increased workflow efficiency and accuracy, without additional labor costs.

The Solution: Minnetonka AudioTools Server Automates It All

Realizing that a manual workflow was unsustainable for the company's growing library of content, Jacob Gragard, iNDEMAND's Director of Engineering, was tasked with finding a solution to streamline this workflow process.

"I consulted with many trusted industry resources researching this, and because of our unique situation, I knew

it was going to take more than just an off-the-shelf solution,” he says. “What we needed was a technology partner who would be willing and able to customize a solution for our particular application.”

Gragard determined that a custom implementation of Minnetonka AudioTools Server (ATS) provided the best possible solution for iNDEMAND. Minnetonka ATS is an enterprise software system for file-based workflows that is designed to automate even the most sophisticated audio tasks. It’s a comprehensive solution for managing and processing linear PCM, Dolby E, Dolby Digital, and Dolby Digital Plus content, as well as the audio essence in MXF, QuickTime, and other clips.

Minnetonka ATS includes loudness measurement and correction; pop, click, and dropout detection; program correlation plus channel detection and validation, modification and correction. It also reconfigures channel assignments as required before content repackaging. More importantly, Minnetonka ATS detects and logs metadata embedded in audio files, which is essential to iNDEMAND’s Telestream Vantage media processing platform.

According to Gragard, Minnetonka ATS had added value for iNDEMAND because Minnetonka software engineers were able to custom-design audio file workflows that met his specific needs across the iNDEMAND platform.

With the implementation of Minnetonka ATS, iNDEMAND’s engineers pared-down approximately 200 audio profile categories to a more reasonable number, and built intelligence into each profile for its specific application. This intelligence greatly increased workflow efficiency and accuracy by analyzing the audio, performing channel identification, determining loudness levels for dialogue and more, all without relying upon accompanying metadata, which was frequently incorrect.

The information generated by Minnetonka ATS is used along with an in-house proprietary database that originates from the program’s audio configuration information, allowing operators to precisely identify each file. For example, if the database material indicates the program has eight tracks, but in reality it has only one track per channel, the proper Minnetonka ATS profile is applied to determine how to correctly feed the transcoder so that it creates the correct derivative output.

This unique hybrid solution includes accommodations for atypical audio profiles where Minnetonka ATS alone cannot confirm a profile. In these instances, an alert is sent to management for further action. Custom features were also created, such as generating a silent channel report and a customized Minnetonka-developed plug-in for seamless integration with

iNDEMAND’s Telestream Vantage media processing platform. All of these customized features offer efficiencies not only in cost but in workflows and overall operations.



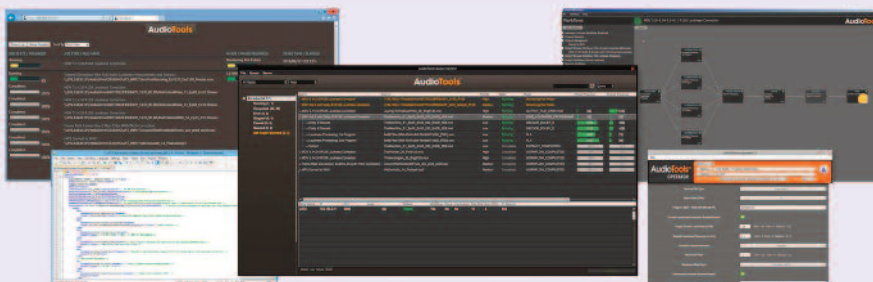
Automation for Today and Tomorrow

Minnetonka ATS also presents iNDEMAND with future business opportunities by creating a ‘clean’ file – i.e. one in which all information is known and accurate with all necessary corrections completed and rewrapped with metadata. These clean files can be archived for future use, allowing specific delivery requirements to be immediately met.

“Determining the best implementation in our specific environment, which is relatively unique, required an ongoing, growing partnership,” adds Gragard. “The outstanding expertise and support of the Minnetonka team at the Telos Alliance have been exceptional. They have developed a custom solution for us that is beyond anything I’d imagined.”

Bottlenecks in your workflows keeping you from expanding and generating higher revenue? Minnetonka ATS will increase your capacity, reduce labor costs by automating processes, and make better use of human resources.

Larry Deeds
larry.deeds@TelosAlliance.com



Genelec: Embracing Immersive Audio



Aki Mäkitvirta
*R&D Director,
Genelec*

The popularity of OTT broadcasting is really helping to drive the growth of immersive content, and this presents both opportunities and challenges for the broadcast audio world. Mixing in immersive allows the audio engineer to create a sense of envelopment and realism like never before, but as channel count and mix complexity increases, the importance of neutral, uncoloured studio monitoring with precise imaging becomes even more important.

At Genelec we've long been involved with designing monitoring systems that are scalable from stereo to surround to immersive, so here we'll examine some of the principles of immersive audio, and some of the considerations that audio professionals need to be aware of.

The principles

Immersive audio formats not only surround the listener, they also encircle them in the height dimension too. One way to understand the capability of an immersive audio system is to describe how many height layers an immersive playback system offers. The two-channel stereo and conventional surround formats offer only one height layer, and this layer is located at the height of the listener's ears, with all loudspeakers located at an equal distance from the listener (in terms of acoustic delay), and playing back at the same level.

The different channel layouts for immersive formats serve several purposes. One target is to create envelopment, and a realistic sense of being inside an audio field. One height layer alone cannot create this sensation with sufficient realism, because a significant part of the listening experience is created by the sound arriving at the listener from above. So the extra height layers of a true immersive system provide this

envelopment, and therefore add a significant dimension to the experience.

The second aim for immersive systems used with video is to be able to localise the apparent source of audio at any location across the picture. This is the reason why the 22.2 immersive format (pioneered by NHK in Japan) has three height layers, including the layer below the listener's ears. Since the UHDTV picture can be very large, extending from floor to ceiling, the audio system has to be able to localise audio across the whole area of the picture.

The growth of immersive

With the demand for immersive content gaining momentum at increasing speed, several systems are competing for dominance in the world of 3D immersive audio recordings. The front-runners are now the cinema audio formats, who are trying to increase their presence in the audio-only area and enter the television broadcast market too.

Whereas the cinema industry is always searching for the next 'wow-effect' to lure the audience from the comfort of their homes into theatres, the growth of immersive audio has been slightly slower in the world of television. But the pace is now really picking up, with several companies studying 3D immersive sound as a companion to ultra-high definition television formats,

and the International Telecommunication Union (ITU) issuing recommendations about the sound formats to accompany UHDTV pictures. In preparation for the delayed Tokyo Olympic Games, NHK has already started to deliver 8K programming, with 22.2 audio.

How many layers?

We touched on this earlier, but modern immersive formats offer two or three height layers, while current cinema formats offer two – and the emerging broadcasting formats have three or more.

One of the height layers is always at the height of the listener's ears, and this typically creates a layout with backwards compatibility to both surround formats and basic stereo. Typically, other layers are above the listener and, as previously mentioned, layers can also be located below the listener, to enhance the sense of envelopment.

Certain encoding methods for broadcast applications can compress 3D immersive audio into a very compact data package for storage or transmission to the customer. These formats offer a very interesting advantage over the many immersive audio formats, since the channel count and the presentation channel orientations can be selected according to the playback venue or room. Essentially any number of height layers and density of loudspeaker locations can be used – and furthermore, this density does not need to be constant. Creating the feeds for loudspeakers dynamically from the transport format is called rendering. The compact audio transport package is decoded, and the feeds to all the loudspeakers are calculated in real time while the immersive audio is played back in the user's location. This compact delivery format plus the freedom to adjust and optimise the number and location of the playback loudspeakers makes these flexible formats very exciting.



Common assumptions

Popular immersive audio playback systems typically share two assumptions about the loudspeaker layout and one assumption about the loudspeaker characteristics. Concerning layout, it is assumed that the same level of sound will be delivered to the listening location from all loudspeakers, and the time taken for the audio to travel from each loudspeaker to the listener will also be the same. If each loudspeaker in the system has similar internal audio delay, then this can be achieved by positioning each loudspeaker at an equal distance from the listening position. Otherwise, electronic adjustments of the level and delay are required to align the system.

Concerning loudspeaker characteristics, a fundamental assumption is the similarity of the frequency response for all the loudspeakers in the playback system. Sometimes this is taken to mean that all the loudspeakers in the system should be of the same make and model. In reality, loudspeaker sound is affected by the acoustics of the room in many ways. This can significantly change the character of the audio signal, so that even when the same make and model of loudspeaker is used throughout the system, the individual locations of the loudspeakers will change the audio in a way that renders each loudspeaker performance slightly different.

Getting aligned

To turn these assumptions into reality, Genelec have created a comprehensive range of Smart Active Monitors that integrate tightly with our own GLM (Genelec Loudspeaker Manager) software. This allows the creation of immersive systems in excess of 80 monitors and subwoofers, thus making

it compatible with all existing audio playback formats.

GLM 4, the newest version of GLM, takes care of the essentials of calibrating an immersive audio playback system, providing systematic and controlled monitoring. This includes the alignment of levels and time of flight at the listening location, subwoofer integration, and compensation for the acoustical effects of loudspeaker placement. This ensures that all the loudspeakers in the system deliver a consistent and neutral sound character.

For the audio engineer, this will improve both the quality of the production and the speed of the working process, allowing them to produce reliable mixes that will translate consistently to any playback medium. Additionally, one of the key requirements for immersive monitoring is to accurately maintain a standard playback level to the listener, in line with new recommendations about maintaining loudness in broadcast signals – including a definition of the SPL at the listening location. Happily, GLM's powerful monitor control features make this a simple and repeatable process.

Using headphones

We'd always recommend that in-room loudspeaker monitoring is the best method for evaluating an immersive mix, since our head, outer ear shapes and head movements provide us with a wonderful ability to localise sound sources. However, good headphones are also a useful complementary tool – particularly for mobile audio professionals working remotely in ad-hoc environments. Headphones, however, break the link to these natural mechanisms that we have acquired over

our lifetime for localising sound. This causes sound to appear 'inside' our head when presented over headphones, rather than appearing all around us.

Fortunately, Genelec has a solution for this challenge too – in the form of our Aural ID technology. Aural ID contains all the information about the user's personal sound localisation. When we create the Aural ID for the user, we compute how their head, external ear and upper body affect and colour audio arriving from any given direction. This effect is called the Head-Related Transfer Function (HRTF), and is totally unique to every user. Aural ID computer models the acoustics of the head and upper torso, based on data extracted from a simple 360 degree smartphone video showing the user from all directions. The user's individual HRTF is then delivered as a SOFA-format file, which can be integrated into the audio workstation's signal processing for the headphone output. This makes the immersive headphone listening experience much more truthful and reliable, with a far more natural sense of space and direction.

This is a subject that Genelec is researching intensively, so stay tuned for more developments from us in this area.

Need help?

So, whether you're a Genelec user or not, if you need help and advice on any aspect of immersive audio, then our free helpdesk is ready to guide you through the principles, technologies and practicalities involved in handling immersive audio content. Staffed by our team of global experts, we can advise on room layout, acoustics, loudspeaker choice and placement, dimensioning, room calibration, playback standards and the other equipment choices you may find useful in the immersive recording and mixing process.

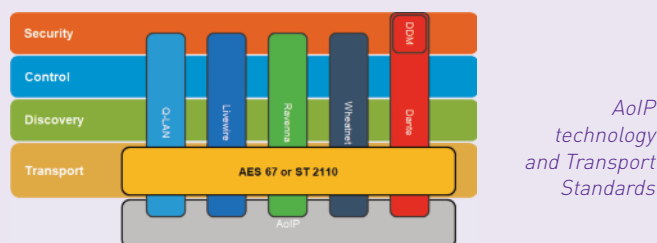
So, for personal advice, feel free to contact us at immersive.helpdesk@genelec.com and for a wealth of useful general information on immersive audio, please download our Immersive Solutions Guide [here](#)

Aoip: IP Technology for Broadcast Audio Routing Systems

As the AoIP debate continues to confuse and delight in equal measure, what is clear is different scenarios require specific solutions. So is there a solution that encompasses open standards and existing proven AoIP technologies to the benefit of all?

Introduction

By definition, network infrastructure (switches, routers and cables) is protocol and technology agnostic; it carries data. This is one of the primary reasons to use IP technology in a broadcast facility: the same infrastructure can carry different formats of video and audio data. Key to developments are open standards, ensuring the widest potential future interoperability. Key to real-world installations are system requirements and technology choices driven by the application, or specific usage case. The market share of AoIP technology stacks is also an important factor to consider for interoperability. At this point on the standards adoption curve for audio, the use of licenced AoIP technology stacks provides the widest guaranteed interoperability and greatest functionality when considering audio specific routing requirements.



SSL's System T utilises Audinate's Dante technology stack, including the Dante API managing audio routing of SSL Network I/O and over 2000 third party AoIP products directly in the console GUI, including automatic discovery. The exact same hardware interfaces on Tempest Engines and Network I/O devices simultaneously support Dante and the transport standards – AES67 or ST 2110-30 – providing the widest possible interoperability.

Stacks of Standards

Media over IP systems can be broken down into layers, the layers make up what is referred to as a stack. Within each layer different standards perform different functions. At a network level these standards are managed by the IEEE and IETF. Within the broadcast industry SMPTE and AES

standards plus the more recent AMWA specifications have been developed for media specific network requirements. It is commonplace for standards to use other standards (ST 2110 uses RTP), specifications to use standards (NMOS IS-04 uses mDNS and/or DNS-SD) and technology packages to use standards (Dante uses mDNS and DNS-SD).

Security	TLS, JWT....	BCP-003-002 BCP-003-001
Control	HTTP, TCP....	NMOS IS-06 NMOS IS-07 NMOS IS-05
Discovery	mDNS, SAP, SIP, RTSP....	NMOS IS-04
Transport	UDP, RTP....	SMPTE 2110 AES67



AoIP Stacks
of Standard

The benefit of an IP network is that both the technology packages and broadcast standards plus specification approaches use the same underlying network standards. To the network infrastructure all media and control traffic is simply data. Another network benefit is that evolution of technology and standards can be accommodated because the underlying network standards are respected.

The choice is not between using a specific technology package or standards, the choice is where is it appropriate to use a specific technology or standard? Looking at the user requirements will inform this choice.

Other factors to consider include the total cost of infrastructure. For the audio-only section of a system, lower cost 1GbE switches (perhaps with a 10GbE uplink) may well be suitable. Using 10GbE or higher bandwidth ports that are required for the video stream for every audio device will be extremely wasteful and costly. SSL have installed System T projects where over 6000x6000 Dante audio signals have been deployed on Cisco's small business range of SG350 and SG500 series switches.

Security

The best thing about media over networking technology is that everything can be seen by everything and options are limitless; the worst thing is that everything is also available everywhere.

Audinate's Dante Domain Manager provides a security layer for the Dante technology stack. DDM acts as an authorisation server that allows routing clients access to devices to make changes. Dante Controller is a routing client that uses the Dante API, the System T control software is also a routing client that uses the Dante API.

When thinking about any IT system, security, functionality, and ease of use can be considered to have a triangular relationship. A change in any one of the 3 factors also

When thinking about any IT system, security, functionality, and ease of use can be considered to have a triangular relationship

changes the others; for example adding a login pin on a mobile phone makes it slower to make a phone call. Any security considerations should always consider the intended usage of the system.

There are a number of ways of using DDM with Dante devices; thinking about IP systems in layers helps with planning how DDM may be used. Is the intention to restrict transport to stop someone 'listening to audio'? Is it to restrict control and access to make changes? Should a user be able to discover and see how a system is currently being used, but not have access to make changes? It should be noted SSL have installed a significant number of Dante enabled System T facilities without DDM; depending on requirements security can be managed at a physical and/or network level. This type of security prevents access entirely unless you are the network admin or pre-authorised, DDM provides a more granular security approach with different user capabilities.

DDM provides the toolkit to centrally manage PTP settings and stream announcements for ST 2110 on Dante devices. The manual configuration aspects of ST 2110 require a significant level of understanding when adjusting settings, particularly PTP parameters and manual configuration of multicast addresses, where duplication would cause system issues. Using DDM provides a secure way to make changes. There is the added advantage that when configuring a large system a single interface can change all of the PTP settings on many devices at the same time.

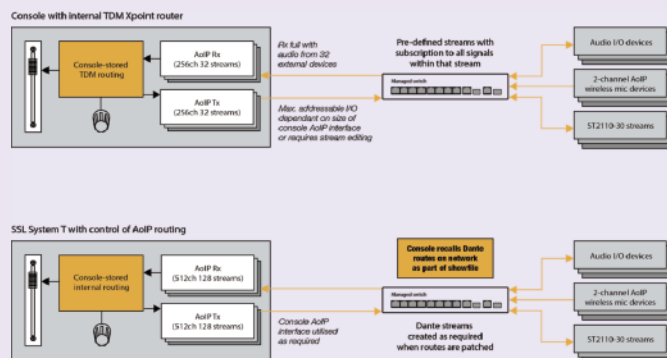
System Engineering

Coming back to the usage requirements, consider who is performing audio routing within a broadcast facility. Obviously there are variations between different facilities, but typically this can be split into audio routing performed by the console operator and audio routing driven by engineering staff, typically using a routing control system.

Console routing – including connecting microphones, or stagebox I/O to processing channels – across a network of audio consoles would be stored within the consoles' recallable settings ('showfile' in SSL System T language). To allow our clients the most flexible and future proof installations, SSL's approach is to deploy the console router on the network and use the same technology stack to provide and receive AES67 and ST 2110-30 streams. The console's routing software is a routing controller of the AoIP Dante network.

AoIP Routing Storage and Recall

The Dante API includes many key features to allow mono routing that would traditionally have been a function of TDM routing inside a processing engine. The Dante API provides automatic stream creation when routes are made, and includes unicast possibilities; both are advantageous when



AoIP Routing Storage and Recall

dealing with the relatively bandwidth light but high channel count requirements of audio relative to video.

Ensuring both the console centric audio routing and wider infrastructure hand-off is all performed on switches, using both an AoIP technology stack and transport standards removes the reliance on a proprietary TDM console router. It also negates the need for hardware shuffler and combiner nodes, that are essentially TDM routers. As the network infrastructure is agnostic, when open standards mature and are adopted these can be utilised in the software platform that is the console GUI for console driven audio routing alongside the existing Dante routing.

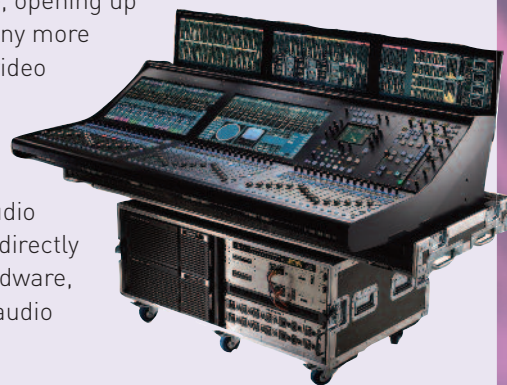
Conclusion

IP routing systems have significant advantages; a key advantage is the flexibility of the underlying infrastructure. Networks deal with data, data of any format, protocol, or standard as long as it respects the IEEE and IETF standards.

As with any system design, user requirements and intended applications are the primary concern. SSL's System T broadcast audio production environment supports Dante, ST 2110 and AES67 transport standards.

The advantages of Dante provide mono audio network routing capabilities directly from the console GUI with auto discovery and connection management of thousands of available devices. SSL AoIP devices enable transmitting and subscribing to ST 2110 or AES67 streams on the same Dante interface, opening up interoperability to many more devices including IP video systems.

With System T you can have the best of both worlds as the audio routing is performed directly on COTS network hardware, not proprietary TDM audio routing hardware.



Regional Members' Councils – sharing the secrets of success



Darren Whitehead
*Director of Business
Development, IABM*

Regional Members' Councils have always consisted of a pro-active group of members taking up local issues and supporting member initiatives through regional shows. Currently IABM is proud to support five Regional Members' Councils – Americas, APAC, DACH, EMEA and UK – Members' Councils – IABM (theiabm.org)

Throughout the last twelve months and the pandemic, the Regional Members' Councils also became a kind of self-help group where the honesty and trust built up over time really has helped members make sense of how to continue to promote brands/products/services and make sales throughout the global crisis.

Having an informal but well-informed peer group to share ideas with and to discuss successes and failures, has played an important part in how Regional Members' Councils have tried to help members over the last year. Many members have been faced with the dilemma of customer and prospect contact using digital channels only. Having access to a 'collective knowledge' of what has worked and what hasn't has proved to be invaluable, saving time and money in a period when that has been vital for survival: a real case of Regional Members' Councils being greater than the sum of the individual parts!

Thomas Gunkel, Chair of EMEA Members' Council, reflects: "At the start of the pandemic, members were using their own data to stay in contact with existing customers, reaching them through Zoom and other one-to-one digital services. Over time it was clear that more was needed to engage the existing customer community and so members experimented successfully with different formats (such as webinars) and being more content/thought leadership led."

Reaching new prospects was proving to be much harder however. Over time, members agreed on three approaches that had seen demonstrable ROI – paid-for campaigns on Google, paid-for campaigns on LinkedIn and taking advantage of IABM's digital surge and the BaM Shop Window™ on www.theiabm.org.

Darren Whitehead, Director of Business Development for IABM explains, "In March 2020, IABM pivoted hard to digital media and to enhance its online offering for members, adding functionality for members to promote themselves and their products as well as functionality for buyers of Broadcast and Media products/services to search more easily and to have automated 'short-lists'. Together with innovative digital content in the Knowledge Hub, plus educational webinars and thought-leadership via IABM's online conference brand, BaM Live!™, IABM built up a significant digital audience ([IABM Reach – IABM \(theiabm.org\)](http://IABM Reach – IABM (theiabm.org))) that now sees www.theiabm.org as a 'trusted source' with over 10,000 BaM Shop Window™ searches a month."

Alex Timbs, Chair of APAC Member Council, says, "It wasn't just the discussion of promotion/sales throughout the pandemic that was interesting to members, but the glimmers of hope as to where investment was still being made. Asia is seeing a high-level of investment, both in terms of new film and animated film productions and in new studios being built for greater production capacity in the future. One example is Netflix, that has just undertaken a huge new studio build in Mumbai. Also, many broadcasters in Asia are making significant steps (and investment) to put production and remote production in the cloud, further enhancing their flexibility and scalability."

Paul Stechly, Americas Members' Council Chair, agrees with Alex. "Group discussions have evidenced clear technical trends throughout the pandemic period, such as remote production and increased levels of cloud adoption. It has also been helpful to discuss with members where other business comes from outside of

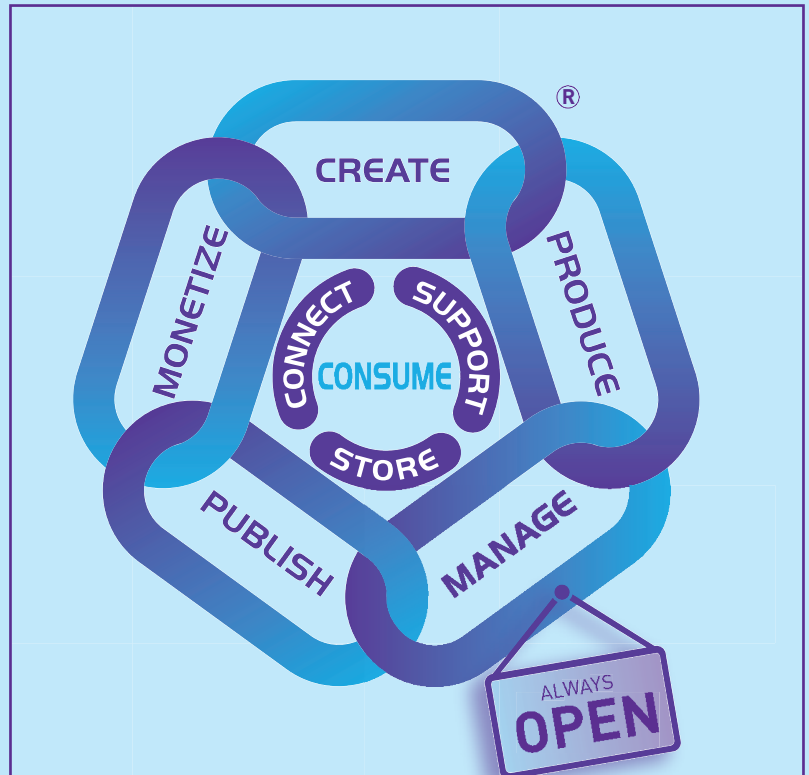
the Broadcast & Media sector. My company, Applied Electronics, has seen significant investment from the corporate communications sector, as banks and other financial institutions have invested in broadcast quality studios and facilities in order to maintain communication and relationships with high-level business and investor contacts.”

These discussions and shared experiences within the Regional Members’ Councils are also helping to shape IABM policy and direction. The importance of parallel markets to the future financial health and stability of the membership is so great that the global Members’ Board has set up a working group specifically to examine which parallel markets can offer members the best opportunities.

In addition, as a direct result of a request from the EMEA Members’ Council, endorsed and encouraged by other Regional Members’ Councils, IABM has set up the very first pan-Regional Members’ Council group, specifically to look at ST2110 and the issues around control management of ST2110 installations and infrastructure.

Darren Whitehead explains further: “When there is a common barrier to members doing business in the Broadcast & Media industry, it sits directly in the wheelhouse of IABM to collaborate and facilitate with whomsoever it needs to, in order to find a way forward and for members to be able to benefit. To be clear, IABM is not looking to reinvent the wheel of the good work already done by other organisations, but to get the wheel to turn more quickly, in order to give business benefits to members. I’m pleased to announce the formation of the pan-Regional Members’ Council Interop Group, under the leadership of IABM’s CTO, Stan Moote, that will represent members’ views on this issue and attempt to find a way forward.”

For any member wishing to join a Regional Members’ Council, IABM is always happy to hear from you, so please contact me via email (darren.whitehead@theiabm.org) and I can tell you more.



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Create Produce



and Consume

“The changes will set a new way to work even when the personal displacement will be back to normal. The trade shows will still exist but on a smaller scale and with less expenses, the cloud computer systems will be more and more relevant. Even small companies will start looking at the big data. Distribution will accelerate the on-line purchase process in comparison to going to the shop.”

*Elisabetta Cartoni,
Cartoni*

“I believe we will see more remote and more at home productions... from the homes of specific operators, such as graphics, replay, playout, etc. It would only make sense that the industry maintain the ‘new normal’ workflows that have worked successfully for them”

*Pavel Potužák,
Aveco*

SPECIAL REPORT

Has our industry changed forever?



Roger Thornton
IABM

We asked IABM member companies operating in the Create, Produce and Consume segments of the BaM Content Chain® about the effects the pandemic has had on their businesses and the industry over the last year and to take a look into their crystal balls for how the future will pan out. We received an unprecedented number and quality of responses from no less than 34 companies. While some common themes emerged – many correspondents felt that the pandemic largely accelerated trends that were already underway for example – it is inspiring to see the rich variety of positive reactions the pandemic induced and the changes it brought and opportunities it has created.



THE BaM CONTENT CHAIN®
from **Creator** to **Consumer**

Create, Produce & Consume

The questions we asked were:

- **Market change:** Has the coronavirus pandemic fundamentally changed any/all/some of the drivers in the market?
- **Company change:** How is this influencing the way your company operates and are there other factors driving change in the market?
- **Long term effects:** Do you see these changes as a long-term effect that will continue to inform your operations in 2021 and beyond?
- **What's next?:** What are the next developments you are working on and what problems will they solve?

Adobe



Michael Gamböck
*Senior Strategic Development
Manager, Creative Cloud Video*

Market change

"We have seen a strong acceleration of digital transformation, instead of a few years, everything has now happened in weeks or months. Adobe is helping companies with this transformation, so of course the pandemic has also boosted our business. Adobe Creative Cloud as a solution and the associated cloud services are location agnostic. I can use my tools and my content anywhere in the world on any device.

Company change

"We closed our global offices very early and virtually went into the home office overnight with the entire workforce. This worked very well and we used the time to find solutions for how we will work in the future. In terms of our products and services, we launched Creative Cloud in 2012 and have had a strong focus on cloud ever since. This has naturally been accelerated by the increased demand.

"Adobe's vision is to enable everyone to be creative. We call that 'Creativity for All'. Storytelling, graphics, video editing, or any content production is no longer something reserved for the few. Telling a story is part of every profession. It's no wonder that creativity is the most sought-after soft skill in job postings (according to a LinkedIn report).

Long term effects

"It is now proven that content creation works just as well remotely from the living room as it does in the office/studio or broadcaster. People are great, we have

adapted very quickly to the changed situation. I see a big trend after 2021, companies that allow their employees to be storytellers and encourage creativity in any form will be more successful than others. This was already evident before the pandemic and it has been accelerated now.

What's next?

"Here I see the following areas: Cloud. It will become easier and easier to work independent of location. Cloud will be the first choice for most workflows and processes in the future. And here I don't just mean remote access to computers, but native cloud workflows that allow you to work collaboratively from anywhere. Another point will be that it will be easier and easier to create content. AI systems will help us to create great content, complex workflows and systems will become easier to use."

Aveco



Pavel Potužák
CEO

Market change

"I believe we will see more remote and more at home productions...from the homes of specific operators, such as graphics, replay, playout, etc. It would only make sense that the industry maintain the 'new normal' workflows that have worked successfully for them. Aveco is helping all our customers to achieve their immediate goals, launching entertainment channels for people at home, remote access to Aveco workflows, as well as remote installation of new Aveco systems.



Company change

"Most of us are working from home, while some of Aveco's staff continues to go into the office to ensure that operations and customer deliveries run smooth. All of our systems can be installed from a distance, as well as be operated remotely. Thanks to that, we are working at 100% – we are here 24/7 for all our customers.

Long term effects

"I think there are several factors that may not have been caused so much by the coronavirus, but that have been brought to the forefront: launching new niche channels; the ability to work from other locations; planning for equipment upgrades and expansions – both on-prem and in the cloud. But the factors driving those changes, pre-virus, were the ability to have more flexibility and to increase viewership/revenue. Those have become necessities as opposed to something that might be considered for the future.

"When economies pick up again, the wave of postponed projects and new opportunities will come. They will certainly adapt to the lessons learned from viewership trends during the virus lockdowns and as restrictions have started lifting. And Aveco has already started to adapt to what we see as the new trends in the market. There will be more remote operations, for example, so our goal is to make that as flexible and efficient as possible for our clients that desire to keep and expand that workflow.

What's next?

"Here I see the following areas: Cloud. It will become easier and easier to work independent of location. Cloud will be the first choice for most workflows and processes in the future. And here I don't just mean remote access to computers, but native cloud workflows that allow you to work collaboratively from anywhere. Another point will be that it will be easier and easier to create content. AI systems will help us to create great content, complex workflows and systems will become easier to use."

Azimuth Soft



Elena Kiseleva
Head of Marketing

Market change

"Buyers are looking for cost-effective solutions for remote workplaces and creator contribution, better ways to automate production and broadcasting operations performed by their reduced (and often overloaded) essential personnel. There's also an unexpected growth in traditional TV news viewership in our markets, as the public is finding professionally-made news content more trustworthy than the often-controversial information distributed on social networks and messengers.

Company change

"Azimuth Soft is busy adapting to all these changing business needs and shifting technology trends, while maintaining the high level of technical support. We can be more flexible in pricing policy and adapting our solutions to customers' needs. We're proud to say we've kept 100% staff on 100% pay during the two lockdowns we've had. We have perfected our remote support procedures, but there are no fundamental changes in our day-to-day operations. Our product strategy has shifted to focus more on remote workplaces, journalist contribution and decentralized production solutions.

"The incidents with security failure of different companies brought new focus on the provision of security services. The acquisition of web-based and user-generated content has become more important for news operations, as to an extent this content has replaced live feeds and recorded footage previously brought in by the broadcasters' own journalists.

Long term effects

"The travel restrictions are not going to be lifted soon and this has changed our marketing and sales strategies as well as product roadmaps. On the other hand, there's an unexpected growth in traditional TV news viewership in our markets. This is especially true for regional broadcasters who again are playing an important role in the life of their communities. When the economy rebounds, we want to be on hand with new and efficient solutions to offer them.

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What's next?

"We've advanced our solutions and services to closely align with our customers' strategies. Artificial Intelligence in MAM and news production is going to be big, because there's practically no limit to how good the AI applications can become over time, both in saving man-hours and in giving the content creators new exciting choices. The enterprise media workflow solutions we're offering to broadcasters will need to evolve to modern architectures, with microservices, containerization and all the user functionality available in a web browser anywhere in the world. We'll continue adding new capabilities throughout 2021, strengthening and expanding the existing ones, adding new points of presence in the market."

Broadcast Pix



Graham Sharp
CEO

Market change

"Clearly there is much more interest in remote productions at the professional level, but I think the bigger impact is the sheer volume of non-traditional organizations using video in their daily business – we termed the phrase from 'Aquariums to Zoos and everything in between' – and that is literally true: we are seeing enquiries and users from all areas of Business, Education, Government and Churches all trying to communicate with their constituents through Streaming Video.

Company change

"It...is reshaping our thinking in terms of everything from product design and development, to communications and our own marketing. We became very used to operating in an environment where our customers were well known and could be easily marketed to and also well trained in the tools required for video production – now we are marketing to literally everyone and ease of use has become critically important.

"I think COVID accelerated the technology trends that were already occurring in our industry – the move to Video over IP, COTS infrastructure and the Cloud. Video

over IP and all the associated technologies and techniques have enabled the widespread use of video streaming and the ability to produce remote productions – and the pace of adoption has left many traditional suppliers scrambling to keep up, particularly in the face of declining revenues from their traditional product lines.

Long term effects

"Without a doubt – what we are seeing now is the new norm:

- The mass adoption of Video over IP
- Numerous new and untrained operators
- Mainly software functionality on COTS technology and in the Cloud
- New, much lower price points in general

What's next?

"We are very fortunate in that we already had a fully abstracted networked architecture, and this new environment reenforced a strategy we had embarked on just prior to COVID:

- Make all our products very easy to install and use, so non-Broadcast trained operators can be up and running quickly
- Demystify Networking
- Support COTS platforms and the cloud
- Provide the user with a choice of UI's from configurable touch screens to supporting MIDI interfaces for hardware control

We embarked on this strategy at the end of 2019, not knowing what was about to happen and I think the events of 2020 have accelerated these requirements."

BroadStream



Chuck Jones
CMO

Market change

"We saw a modest shift in business plans as some broadcasters decided to delay planned upgrades or new installations. Interest in cloud, virtual and streaming implementations increased. More consumers added streaming to their existing television viewing habits.

However, we see a growing desire for local news, weather and sports that are typically done via linear TV. As a result, we've seen a growing trend to look for alternative ways to provide live subtitles using voice recognition and artificial intelligence to take on some of this work to supplement human subtitling and cut costs.

Company change

"We shifted quickly to more Remote Support, Commissioning and Training. A more significant change was our customers now needed to run their operations remotely. Fortunately, many of our systems' interfaces were already equipped with this capability and others were implemented so our customers were able to continue operations without interruption. With our recent acquisition of Screen Subtitling Systems our Executive Team were making frequent trips to our offices in the UK to incorporate the new team into BroadStream's procedures and policies and join departments together into single, dedicated Engineering, Operations, Sales and Development teams. This became more difficult as everything moved to virtual meetings but we were able to continue the process with everyone now on the same page.

Long term effects

"There is likely to be a mixed effect: when travel returns we will see customers face-to-face again, but probably not as frequently as most have adapted to virtual meetings as well as sales and support discussions. We found virtual trade shows to be much less effective and expect to gradually return to some level of participation in face-to-face events at some point, but we will likely take advantage of other means to reach current and new customers moving forward. I would also expect us to continue with some level of virtual commissioning and training.

What's next?

"With the acquisition of Screen Subtitling Systems a few years ago we are committed to keeping the Screen name and brand alive and independent. You will see an aggressive stance on new approaches to package, reposition and integrate these products to meet the changing needs and demands our customers have. In addition, we are heavily engaged in automating both live and file-based subtitling solutions. These solutions will provide cost savings and improved workflows for many customers. The core technology is vastly improved compared to 5-years ago and we will add improvements that make this new technology more valuable and easier to use."

Cartoni



Elisabetta Cartoni
CEO and President

Market change

"Yes the pandemic has changed the way we work at the factory, design, marketing, sales, administration (of course not the machining and assembly), it has changed the approach to the customer who you are not able to visit anymore, the way you present the product with new tools of webinars, videos, round tables via web.

Company change

"Many employees work remotely, the meetings are on-line; we perceive the need of a common platform to share the tasks and of a CRM to handle the customers. This has brought the need for new computer skills. Even service is now handled via remote with a webcam connection with Skype or Zoom.

Long term effects

"Yes, the changes will set a new way to work even when the personal displacement will be back to normal. The trade shows will still exist but on a smaller scale and with less expenses, the cloud computer systems will be more and more relevant. Even small companies will start looking at the big data. Distribution will accelerate the on-line purchase process in comparison to going to the shop.

What's next?

"We are a camera support manufacturer so our product is very physical and the choice depends on the actual experience. We have noticed that we need to have a large demo stock to ship over to customers for real life trial. We have compensated this new expense with the savings on trade shows. When we will be back to normal I see the need of road shows more than exhibitions, it could team up companies with synergies to optimize the cost.

"During the pandemic we have designed new products as a line of supports for PTZ cameras, more and more popular in broadcasting and a UVC Disinfection cabinet called UVC BOXER to sanitize film and broadcast equipment with 99,99% effectiveness. Both lines have had a very positive market response."

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CGI



Michael Pfitzner
*Vice President,
Newsroom Solutions*



Michael Thielen
*Vice President,
Radio Solutions*

Market change

"[The pandemic has] accelerated re-usage of content to feed more channels; intensified emphasize on planning to work economically; non-verbal communication and cooperation on the same topic/item/story from different locations (home-office) through planning platform.

Company change

"Focus on supporting remote work; revisit UI/UX aspects specifically for remote working; extend CGI offerings to AI & cloud consultation for a wider range of use cases.

"AI is picking up rapidly; presence on Social Media platforms is now normal. Broadcasters are testing different formats on different platforms, e.g. TikTok vs. YouTube vs. linear.

Long term effects

"Again AI, (categorisation of content, summary, speech2Text ...). Remote work will snap back, but tools are now more evolved to allow remote work e.g. Working From Home.

What's next?

"Beyond AI and cloud - preparing the distribution of news in different formats for different platforms while staying in control of the distribution. Evolution of Products from installable FAT Clients to lightweight Web Based Services which allow performing the workflows without the need of full blown installations on a PC."

Cinegy



Daniella Weigner
Managing Director

Market change

"The broadcast market was already facing challenges from other sectors prior to the pandemic, so I see a more 'adapt or die' driver coming to the fore. This brings up opportunities to different kinds of content providers that might not otherwise have had a chance. The proliferation of streaming services and increased subscriptions to all services has risen so much, that one can't help wondering if people are even watching TV anymore. Whilst this shift was predicted ages ago, the pandemic has certainly pushed the changes though at a faster pace than anyone could have foreseen.

Company change

"Cinegy has always worked on the premise that the broadcast market needs to be more IT orientated, and to adopt the principles and approaches we find there – open, flexible, commodity, IP, applications-led. The wonders of virtualisation have been something we have been vocal about for years. Cloud-based workflows, as we call them now, remote production and total client flexibility - these are all things you see now being promoted and embraced across the board.

Long term effects

"We will not see a return to pre-January 2020 thinking or working habits. The remote working / working from home has become a bit of a trope but it is certainly here to stay. Presenteeism is in many cases frowned upon, if not actually illegal, and unless it is not possible to work offsite, then managerial thinking has been turned on its head. Work flexibility is now not just about staff work-life balance; it is an essential operational approach.

What's next?

"Our approaches at Cinegy have always been well-suited to remote production and broadcast operations. What this means for us is that we have higher, and qualitatively better customer and partner engagement than we have seen pre-2020. We know that companies have been waiting for a commercial imperative to make a change, and we look forward to being able to make



these strategic changes with our customers. We are focussing on our remote and virtualisation capabilities and how we can help our partners leverage these. Continual optimisation and continual optimism are required!”

Deltatre



Gilles Mas
*President,
Video Experiences*

Market change

“In sport – in which Deltatre is heavily involved – prioritizing digital strategies and a true direct to consumer model is a trend which is accelerating. Sports organizations and federations have had to find alternative ways to interact with fans. With this of course, is the emergence and real advent of remote production techniques.

Company change

“We know our products and services have to help clients stand-out, engender a clear and powerful brand identity, reduce churn and ultimately, give the end-user what they really want. That means helping them find the content they want, with no fuss. It means clever, intuitive design. And it means allowing editorial staff and content curators to work with accessible and actionable data. In 2020, we launched mtribes, a SaaS platform that easily plugs into an existing sport technology stack and gives operators full insights into how their audience is interacting with a service, as well as the power to customise the features, design, and content shown to each user.

“In sport, the need to establish, maintain and solidify a relationship with fans is of paramount importance. The acceleration of the need to implement a digital-first strategy has underpinned the last year. But of course, this was happening in any case. We know that many within the younger generations are experiencing sports and entertainment in a different way, and relating to brands, leagues and federations in a different way too. How can you adapt your offering to best capture these users?

“It’s vital to differentiate yourself as a company, and we can’t underestimate the importance of highly engaging and sticky multi-platform player experiences for the fan. A video player which enables the user to catch-up instantly, find key moments and watch that while not missing a second of live action is key to this.

Long term effects

“Certainly, we believe the inflection point has been reached in terms of the move to streaming. As a result, we’re seeing more greenfield adopters starting a conversation with us; this is of course on top of the more mature adopters who continue to talk to us about their owned and operated solutions.

What’s next?

“We’ve brought to market a modular, end-to-end OTT solution that puts the fan first. What we want to provide is a highly flexible and scalable reference system architecture that takes away the technical complexity of building a full-service OTT solution, allowing a client to focus on creating great content and building strong fan relationships.

“We’ve made great strides in AI and automated recognition among other topics. In parallel we are pushing hard on enhancing further our offerings into gamification, fan engagement and D2C betting feature sets for our existing product lines.”

EVS



Benoit Quirijnen
Strategy & Partnerships

Market change

“The pandemic accelerated the transition towards distributed production. This has an impact on many different aspects including workflows, the need for compression, the overall experience for the crews with the need for evolutions of the tools, the higher appetite from OPEX model, communication between the crew members. For sports events or entertainment, interactions with fans also evolved with different mechanics to artificially create a mood of live event, with different levels of success. The acceleration of the

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need for distributed production has accelerated the planning of companies in their transition to IP, fostering new reflections in terms of infrastructure and management of shared resources.

Company change

"At EVS, we reprioritized some features and the support of distributed workflows. In April 2020, EVS introduced the Live Production Anywhere program enabling many customers to benefit from a distributed infrastructure for their live operation of EVS systems. We also launched LSM-VIA – the latest generation of replay and highlight experience – which has been designed for remote operation. As part of the distributed workflows, we also see an accelerated interest in the cloud. In 2021, we initiated the instantiation of new services and applications in the cloud.

"From a corporate perspective, this also changed the way the distributed teams work with each other, strengthening some links between teams located in different regions of the world. This also changed the way we can support our customers, present more comprehensive demos without moving the overall setup on the customer premises.

Long term effects

"The changes initiated by the pandemic were expected to happen anyway during this decade. The pandemic has been an accelerating factor for the changes. Distributed production will remain and keep growing, even if it could be a bit less distributed (typically not necessarily working from home). From a corporate perspective, home working will remain, even if certainly not full time. NAB, IBC and other events will of course happen and EVS will be very happy to participate to these events to meet our customers. But the objectives will probably change.

What's next?

"We continue to further enhance EVS VIA, a central production and distribution platform enabling the management of resources, workflow and capabilities (including third party) for live operations. The VIA Platform is designed for distributed and cloud environment – to support more distributed workflows while keeping a nice and efficient experience for the operators. Thanks to acquisition of Axon in 2020, we also now better integrate Media Infrastructure elements in EVS end-to-end solutions.

"With Cerebrum as the overarching control system, we consolidate the VIA Platform with a strong asset to propose a centralized control of distributed production resources, including the control of cloud systems and resources. With Neuron, EVS offers a virtualization environment on a robust platform to support many use cases linked to audio and video conversions and compressions."

G&D



Jochen Bauer

*Director Sales & Marketing,
and member of the IABM
DACH Council*

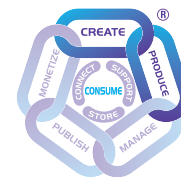
Market change

"In 2020 pretty much everything changed and we all had to get used to a new normal. However, virtualization and cloud computing have been a fast-growing trend for years and have been further accelerated by the new situation. Many broadcast houses, TV stations, productions and post productions had to adjust to the new situation and therefore introduced alternative and innovative work processes and smart working. Structures and workflows have changed. Now, more than ever, team members are working from different locations to keep a safe distance.

"Many broadcast facilities already have IT infrastructures based on KVM systems, keeping users and servers physically separate. Producers access their remote computers via KVM technology and work in real time and at full performance even though their work equipment is located in a server room. The question now is how team members will be able to remotely access a KVM system and the underlying on-site computing landscape from home. The solution is RemoteAccess-GATE. This stand-alone device links a KVM system to a network, providing remote access to the IT infrastructure connected to the KVM system via LAN, WAN and the Internet.

Company change

"The pandemic forced companies to adapt to the situation extremely fast and with the required flexibility. This clearly accelerated the trend, and companies had to introduce innovative ways of working and alternative ways of communicating and interacting with customers. We, too, had to adapt quickly by having to find new ways of providing our customers with remote presentations



and demonstrations. A time where all trade shows are cancelled and customer visits are not possible calls for new solutions. This is how we came up with the idea for G&D's ControlCenter-Xperience (CCX), a remote demo center of superlatives.

"The positive feedback and strong demand for remote demonstrations in our CCX shows us that we have hit the nerve of the time. Here, we are able to offer a platform for personal live consulting on a real control room application, independent of time and place.

Long term effects

"The trends towards virtualisation, hybrid infrastructures and remote access of systems existed long before the pandemic, but they were naturally intensified by it. We therefore see a long-term effect. KVM systems support this trend by enabling flexible and reliable infrastructures, thus creating user-friendly systems that are intuitive to operate and easily and flexibly scalable if required.

What's next?

"Another trend we've seen for years is the continuous shift to more IP-based systems. IP structures are extremely flexible and provide high bandwidths to help teams collaborate, but also to take project management as a whole to a new level. Here, too, G&D operates in a hybrid world, offering a wide range of high-performance KVM-over-IP systems in addition to classic KVM."

InSync Technology



Paola Hobson
Managing Director

Market change

"The pandemic has certainly accelerated changes which were already in progress such as transition to software-based workflows and remote production. An interesting change we are starting to see is a revival of customer concern for picture quality. As more people are spending time in front of their home TV screens, viewers are becoming more sensitive to picture quality, so high quality motion compensated standards conversion (frame rate conversion) is coming back up the list of requirements when broadcasters are looking for international distribution solutions.

Company change

"InSync Technology has been developing flexible solutions over several years, without compromising on quality. We now offer motion compensated standards conversion as SaaS services. A SaaS standards converter is accessible from any remote location, it can be easily mapped into a workflow using readily available media orchestration tools, and the user only pays for the conversion when they are using it.

"Beyond coronavirus, we see OTT services putting pressure on traditional broadcasters, with consequential impact on picture quality for the consumer due to a common myth about software players. There is an assumption that it's OK to send any frame rate to a software player since the software can decode any frame rate. However, this creates a far greater testing burden for service providers. Furthermore, while 59.94 and 50Hz content may be streamed to the player, support for clean switching between different frame rates is not supported by many technologies. Finally, achieving high quality motion portrayal requires a match between video frame rate and screen refresh rate.

Long term effects

"Recent events will certainly have a long-lasting effect due to the depressed global economic situation, but there are strong signs of appetite to reinvigorate the market and regenerate excitement in the industry. For example, we recently saw CCTV launch an experimental 8K transmission service, sports events production has eagerly embraced new technologies for the new series of events now underway, and several broadcasters are now taking advantage of the production possibilities that HDR brings. We think that there's a lot of pent-up energy waiting to be released when the global situation starts to calm down.

What's next?

"InSync Technology is continuing to develop new and advanced SaaS and on-premise solutions for international conversion requirements: frame rate conversion, format conversion (resolution up/down conversion) and HDR/WCG management. We're also continuing development of our 8K product range, as we are seeing more interest in 8K production around the world. Furthermore, we're investing in development of new products supporting ST 2110 to support the need for entirely remote production chains, which we expect to remain a permanent customer requirement."

Karthavya Technologies Pvt Ltd



Sunil Gangappa
Director, Sales

Market change

"The pandemic has changed some of the drivers in the market. Remote operability of solutions is now critical to the success of the product.

Company change

"Most of our existing solutions were ready for remote operations and during the last year, we have modified the remaining solutions also for the same. The growth of cloud-based solutions was already impacting the market. The pandemic acted as a catalyst for the same and now the transformation towards cloud-based solutions has accelerated manifold.

Long term effects

"We do see these changes as a long-term effect. The pandemic proved that with the right tools, remote operations are possible. The organizations which have tasted success in this will not want to go back considering the flexibility and cost savings it provides over the long term.

What's next?

"The architecture of our upcoming solutions revolves around the cloud-centric approach. The solutions are ground up built to leverage the advantages of cloud on scalability, collaboration, and flexibility."

latakoo



Jade Kurian
Co-founder & President

Market change

"The pandemic created a scenario of multiple and contradicting challenges for the broadcast and production industries. They had to clear house suddenly. Meanwhile, the lockdowns created an enormous

demand for content. That meant they had to keep producing in some way. Along with that, they had to tighten their belts. The broadcast and production industries were always a bit slower than others to fully embrace the cloud, but this pandemic drove them to quicken the pace. In both the news and the production sides, there is now a willingness to adopt full cloud implementations of video transfer and collaboration services. Technology services that allow crews in multiple locations to collaborate moved to the top of the must-buy list. And they will remain there because the cloud is essentially pandemic proof, removing obstacles in news and production workflows.

Company change

"latakoo is born on the cloud and our expertise in cloud architecture and efficiencies put us in a strong position during the pandemic. Even before the pandemic the way people consume content had already shifted dramatically to video on demand. During the pandemic, newly released, high value films appeared first in streaming services instead of the movie theater. Consumption of content is multi-platform, multi-device, multi-format. This requires technology companies in this space to be agnostic, fast-moving and pliable, providing software that addresses the needs of many. This has always been core to our mission: we never build it hoping they will come, but we build it based on what we know they will buy.

Long term effects

"The pandemic has left an indelible mark on our communities and on our industry. Broadcasting became small-casting. Anchors left the studio and started bringing you the news from their kitchens and living rooms. Video became our touch point with friends, family and everything else. The technologies that made that possible have a real stake in the future of the industry. We've always been a company that focused on keeping the user interface simple, creating low-touch, high-tech solutions for broadcasters and production companies.

What's next?

"Interconnectedness, interoperability and higher quality transfer and streaming video are three areas we are focusing on and three areas we believe are the in-demand technologies. The key right now and in the



future is connecting people and teams. We have released new services in 2020 and in 2021 that connect teams further, including Manifest, an assignment and file tracking system and our cloud video editor. In the end, we believe our service only works when our clients have full ease of use in their workflows and that's what interoperability achieves. We know the answer is never in being an island, but a broker. Finally, video quality online is still a huge issue. latakoo has been investing heavily in creating the next revolutionary step forward in the highest quality video delivery in all bandwidth conditions. We call it the Generative Video Codec and unlike most other codecs which are built for storage, this one is built for transfer efficiency."

Levira



Tiit Tammiste
CEO

Market change

"The Pandemic boosted very much both streaming customers and linear TV usage. That means broadcasters looking more for flexibility: how to manage streaming on-demand load, how to introduce and validate pop-up linear channels, how to automate content preparation etc.

Company change

"Levira's strategic offering didn't change too much. Platform as a service is new approach to take technical pain and scalability issues off from broadcasters but leave strategic business processes in-house. Hopefully this creates cost-saving possibilities also if to look overall value chain. We are still active in our European main markets including UK, CEE and Scandinavia.

"Cloud is coming to be commodity. I see here very similar processes like the IT-industry had several years ago. All IP is the same. It's a bit expensive yet but flexibility and future proofness is something to drive it quite quickly.

Long term effects

"There is no way back definitely. We saw these changes in the air before pandemic already, heavy acceleration is ongoing just now and it changes landscape completely.

What's next?

"On-demand services share in our portfolio will grow. Also platform as a service. Automated content creation is something we are validating at the moment. People cannot get to sport halls, but you need to bring events to the screen. Sport.television.ee is our AI based sport content sandbox."

Live News and Sports Systems



John O'Loan
CEO iOMedia
Group Limited

Market change

"It certainly has fundamentally changed many of the drivers in the market, particularly speeding up the move towards cloud and IP technology in the gathering and ingest of news, its production and play-out. We were moving that way anyhow, but the lock down certainly sped things up. With millions of people being homebound, use of television shot up. Initially terrestrial television got a big boost from news and entertainment audiences, but as the lockdown dragged on, there was a surge towards OTT platforms, offering a wider choice of programming. With media revenues declining at the same time, cloud technology is starting to enable large production centres, using up large areas of floor space, to downsize into cheaper accommodation. When life gradually reverts to something more like 'normal' the wider choice to consumers and lower operating costs possible by media companies, will be lessons learnt and retained. We will not be returning to the way things were done before Covid.

Company change

"Given that Covid touched or affected every corner of life over the past 12 months, it's hard to say that any changes wouldn't have come about, the way they did, if it hadn't been for Covid, even down to the macro economics of the consumer market. This is in turn affecting advertising budgets, and the choices of 'cord cutters' in deciding which and how many streaming platforms they can afford, to replace their old but limited choices of terrestrial channels, and more limited choices on DTH and cable. We are reacting to the market's new direction by investing more and more into

Create, Produce & Consume

R&D of cloud and IP based technology, packaging end-to-end 'cloudability' and the need for more streaming and OTT outlets and programmatic advertising.

Long term effects

"The market has changed forever, particularly with the increase in the need for OTT content. The cost of entry continues to drop, as the need for new channels and content continues to climb. There will be more of everything available from streaming and OTT services, requiring more medium priced and more flexible production and distribution technology.

What's next?

"Our heads are firmly fixed in the cloud at the moment, as the need for OTT continues to grow for live production and programmatic play out. They will enable faster and sharper 'coal face decisions' in the field, in the studio, and in the control room, which in many cases will cease to exist."

Net Insight



Per Lindgren
CTO

Market change

"Remote production workflows and cloud and IP- based platforms were already shaping the broadcast and media industries. The pandemic led these workflows to become the go-to video production and delivery models that ensured the media industry could keep going despite the challenges. The success of these models has demonstrated that open IP networks and the virtualization of media functions using cloud-based technologies have a huge role to play in the future of live content.

Company change

"At Net Insight, we've been driving the industry transition towards remote production for many years, with the first full-scale remote production set up at the 2012 London Olympics. During the past year, we supported several leading service providers, broadcasters, production companies and enterprises to shift to remote production workflows while ensuring the

reliability and robustness they need for uninterrupted feeds. Our Nimbra platform is designed for processing and transporting high-quality media over IP, allowing customers to handle contribution, distribution, cloud ingest and orchestration on one platform and open up new business models.

"The media ecosystem will encounter further mergers and adaptation among industry players. Cloud players will be moving into the media industry, venue contribution players will be entering media transportation and service providers will invest in production capabilities. We will also see greater consolidation among broadcasters as they look to ensure access to content rights and production companies will increasingly acquire networks to gain control, enhance connectivity services and pave the way for remote production in the future.

Long term effects

"Media companies that had to pivot their video production and media delivery to cloud and IP technologies have enjoyed the cost and resource benefits and the flexibility of distributed production workflows. Most customers we have spoken to will continue to use these models, even though some adjustments will be made. The move to cloud-based and remote workflows has also accelerated the move to a more flexible and scalable OPEX price model. We don't expect these players to revert to CAPEX.

What's next?

"Net Insight's Nimbra and Aperi media ecosystem is fully virtualized and additional upgrades that will support its transition to all-IP and cloud-based workflows will be announced later in the year. We will also be introducing a subscription and recurring price model for our platforms in the coming months. This will allow our customers to make the most of the economics of the cloud in a way that suits their business needs.

"In addition, we are enabling our customers to reap the benefits of 5G. Net Insight's Nimbra solution portfolio is designed for next-generation media processing and delivery workflows that are 5G-ready. Broadcasters can ingest and distribute any live media stream, in any format, securely to multiple destinations across any IP network, with 5G dramatically increasing network capacity to make this process faster and more reliable."



nxtedition



Roger Persson
*Sales & Marketing
Manager*

Market change

"The big change over the last year is that remote production shifted, overnight, from a science project or 'nice to have' into an absolute essential. Remote production depends upon good collaboration, best served by having a smaller team of multi-skilled individuals, supported by the right technology using automation that takes away the repetitive tasks leaving the team free to stay engaged with the creativity of telling the story. The industry is still talking about IP and not IT: IP is not just an enabling technology, it also allows us to leverage all of the power of IT's capabilities in the service of the media industry. Only when we do that can we really embrace the possibilities of what's possible.

Company change

"We are a relatively new company, starting in the IT era. Our initial driver was a frustration with the traditional ways of working. That drove us to create a new production system that was inherently agile, inherently collaborative, inherently remote capable. As a company we have always encouraged remote working. It is built into our culture as well as our products.

Long term effects

"Some broadcasters cannot wait to go back to the old ways of working. They are comfortable with their traditional workflows and operations, and they believe that they will be back there soon. More opportunistic companies are looking on the changes forced upon them as an opportunity to re-evaluate their whole philosophy. The move to an IT platform gives them the chance to take a completely fresh look, and if traditional broadcasters are reluctant to change, then we will see new media houses emerging, which will take market share. But change is always tricky.

What's next?

"For us, we are going to carry on doing what we did before. Our emphasis was always to evolve new,

collaborative, efficient ways of producing content and telling stories. We use IT technology to do this, and we code the way the big guys – Facebook, Google – do. We will draw on emerging standards like 5G and SRT to help broadcasters and media companies make much more use of remote working.

"We are already seeing some of the biggest sports broadcasters create facilities and workflows for remote production. Those broadcasters may have been sceptical before the pandemic, but have learnt that – given the technology to underpin fast workflows – remote production is perfectly possible without compromise, and has many advantages. Working from home, at least some of the time, gives your precious staff a better work/life balance, and the reduction in travel helps save the planet.

"We sometimes say that nxtedition is the aspirin of the media industry. We take away the headaches of systems and workflows. Our future is to find ever better ways of doing that, ways of relieving these industry headaches efficiently and creatively through software."

Octopus Newsroom



Gene Sudduth
*National Sales
Director for
North America*



Gianluca Bertuzzi
*Sales Manager
Africa & Latin
America*

Market change

"I'm not sure I'd say that things have fundamentally changed, but there is much more interest in cloud-based products that can be easily accessed, scaled and used from anywhere, preferably with a simple web browser. The tendency is to postpone investments due to a reduction of the budgets; nevertheless clients keep inquiring about the product and they try to overcome the obstacles because they know they have to modernize.

Company change

"OCTOPUS has supported work from anywhere operations for a long time and we're bringing new products to market that promise to provide even better tools to work with. The company was coping well with the situation even before the pandemic, through innovation and the creation of new systems like

Create, Produce & Consume

iReporter, Ko:r and improving the existing Octopus NRCS. Instead of shrinking we grew organically and increased marketing.

"There is always a need to work with our customers to add functionalities and to improve efficiencies in every workflow. Another prominent driver is the constant pressure to reduce expenses, both CAPEX and OPEX. Acceleration in the realm of technology and new ways of thinking about content creation among broadcasters and publishers are changing the needs and landscape of players in the market.

Long term effects

"Yes, I believe that we're seeing another permanent shift in our industry. The broadcasting industry has been quite the same for a long time; now there are changes which will influence the near- and long-term future. Innovation is paving the road for a more collaborative way of working at distance but also better and more effective content creation.

What's next?

"We believe in crowd journalism and for that we have created iReporter as video gathering platform and Ko:r, a brand new, cloud-based collaboration and planning tool, to our flagship product, the Octopus X newsroom collaboration system. This will boost content creation and open new horizons for clients who want to be market leaders and monetize from bigger inflow of videos. AI will be even more present in our technologies in order to facilitate and streamline workflows. The interoperability between our systems and third-party systems joined with cloud architecture will generate new opportunities also for businesses outside the broadcasting industry."

On-Hertz



Benjamin Lardinoit
CEO & Co-Founder

Market change

"Although we were advocating for a shift towards dematerialized production infrastructures with distributed operations for a few years already, the

pandemic has transformed a latent topic into an immediate requirement. Interestingly as well, before the pandemic, the technical / support teams were quite skeptical about virtualised tools because it is a major paradigm shift for them and it requires a new set of skills. On the other end, production people saw the new opportunities and were quite enthusiastic. After the pandemic started, the mindset shifted quickly as the focus was on restoring 'normal' operations and software-based solutions could help in that regard. At that point, end-users had to take the plunge / learning curve with new tools with limited support from the technical teams (because they were remote).

"The pandemic accelerated the launch of our turnkey, cloud-based offer that was in the roadmap but awaiting the right timing in terms of market acceptance. It seems to be quite clear for everybody now that there is no coming back even after the pandemic. Broadcasters need to be ready whatever happens, and traditional facilities with centralized operations simply won't work.

"Our focus is on audio and we can see that audio is on the rise everywhere. A recent report from eMarketer and relayed by Spotify shows that mobile time spent listening to audio content is now outpacing time spent on social media, video, and gaming in the U.S.

"There are plenty of new distribution platforms requiring new / more flexible production chains; think podcast, home assistants, the growing eco-system around AirPods and the likes, Clubhouse... Media fragmentation goes hand in hand with the increase in the number of content creators and the commoditization of production tools. Traditional broadcasters have a lot of challenges to face, usually with less resources, to remain relevant in that landscape and we are helping them do just that.

Long term effects

"While the coronavirus took everybody by surprise, it surely would be very hard for any broadcaster to justify being unprepared / not organized for similar situations in the future. Remote / distributed operations is a long-lasting trend, also because it will help everybody work more efficiently.

What's next?

"Without revealing any big secret, we think the silos between audio, video and IT in broadcast are things of the past. We don't see production infrastructures as rigid entities but rather as a fluid combination of technologies that should adapt behind the scene



without requiring extensive expertise from end-users for example. Just like operations, the infrastructure itself will be distributed. And on the user-level, we should make sure every user profile is presented with interfaces that make sense for him/her, no matter the complexity of the operations in the background.”

OWC (Other World Computing)



Larry O'Connor
Founder and CEO

Market change

“The world will never be the same when the pandemic is over. Near term it has driven a need for more localized independence as well as cloud/multi-user solutions (like Jupiter and Jellyfish) that enable users to still have remote collaboration/contribution from their work that has become remote vs. teams together.

“We are about to enter a hybrid world of in-person and remote collaboration with everyone being able to choose easily between both. The companies that adapted to this time effectively will be the most successful in the post pandemic era.

Company change

“While we’ve seen these trends coming for a while, the abrupt shift to remote work has forced us to optimize faster than had planned, and we are now fully prepared for the hybrid world. Whether employees are in-office or working from home, we have effective solutions for that at OWC. We’ve used this time to build the future.

“Fiber, 5G, 8k/higher bandwidth video demands, the rise of influencers and independent filmmakers, and the overall explosion of content creation for social media, YouTube, and streaming services due to the lack of in-person engagement have transformed OWC’s customer base. While everyone is looking for reliable cloud-based workflows, the reality is that the need for cost effective, powerful local solutions that interact with the cloud has never been higher. So long as bandwidth, resolution, and codecs improve and file sizes continue to rise, there will be no getting around the need for physical media devices and solutions. The cloud will complement, and OWC is committed to finding the happy medium

between local and the cloud, and creating the practical workflows needed to solve these challenges.

Long term effects

“In the nutshell – I think a direction was already in motion, but the circumstances over the last year have highly accelerated both remote service utilization as well as on site, individual capability. As we go forward, OWC will have even more synergy and the advances/acceleration I would expect to see benefit all user workflows.

What’s next?

“The primary challenge that every post-Covid industry is trying to solve is how do you cost effectively manage your digital data, communication, marketing, and content? How are you building your in-office and remote team member solution workflows? If everyone and everything now needs to be their own movie studio, what is the most efficient way to create, search, and store those assets and data? And how will you share it with your remote collaborators? It will be a hybrid approach to in-person, remote, local/shared storage and cloud storage that will win. More than anything, though, it will be about crafting effective, holistic, and affordable SOLUTIONS to manage this problem.

“With the acquisition of Lumaforge/Jellyfish and BRU, OWC is committed to provide that seamless workflow incorporating individual creators as our existing line always has into the feed for collaborative/higher demand production and with the addition of strong cloud services integration both for remote collaboration and also direct distribution capabilities that provide more control to the content creators.”

PlayBox Technology



Phillip Neighbour
COO

Market change

“Coronavirus shifted the focus quite rapidly to remote playout and media management for broadcasters both big and small. As a result, the journey to the cloud and hybrid cloud environments for many broadcasters has been implemented sooner than initially planned.

Create, Produce & Consume

Company change

"After identifying those new pain points for our customers, we got to work with a number of initiatives – incorporating SRT protocol into our playout products and introducing tools for remote centralization in our Neo & Cosmos product ranges. We also revamped our E-commerce strategy – you can now purchase PlayBox Technology products through a variety of vendors and our enhanced worldwide dealer network.

"Whilst it's difficult to focus on anything but COVID-19 at the moment, OTT, digital video and the connected TV experience are still having a major impact on how broadcasters look to distribute their content for the future; and how this content is monetised.

Long term effects

"We'll likely see a range of broadcasters take stock and decide which routes will be best for them going forwards – remote or in-house? Hybrid-cloud, cloud or remaining on premises? The pandemic has completely altered business strategies and long-term objectives, especially for our industry. We'll be there to support all of our broadcasters with these crucial choices as we move further into this new decade.

What's next?

"Expect a new cloud-based product range and greater emphasis on streaming for up and coming broadcasters who love digital video content delivery. Our dedicated support team will remain on-hand to advise our customers and provide the best solutions for them as we move forwards into 2021."

Primestream



Claudio Lisman
President and CEO

Market change

"The global health crisis has profoundly changed the broadcast and video markets. Operations have had to adapt – almost overnight – to remote collaboration workflows that keep team members safe while ensuring production continuity. Another big dynamic is the exploding demand for online video content, which only accelerated further in 2020 with legions of viewers stuck

at home and craving new programs. The industry's ongoing migration to IP- and cloud-based operations was well underway prior to the pandemic, but over the past year these paradigms have played a critical role in helping broadcasters move quickly to remote production. The entire video industry – both traditional broadcast and streaming – has had to speed up its IP adoption exponentially.

Company change

"At Primestream, we were laser-focused on helping media operations make the shift to IP-based operations well before the pandemic began. That means we're better positioned than ever to empower our customers to respond to the immediate demands of today while preparing for the challenges of the future.

"The IP revolution would have continued even without the jolt from COVID-19, as video operations all over the world have been moving away from centralized, studio-based, SDI operations to decentralized, remote production enabled by IP technologies and solutions. It's a fundamental shift that is bringing unprecedented levels of efficiency, cost savings, and flexibility to broadcast operations. And as we've seen over the past year, IP and the cloud are key to helping broadcasters respond nimbly to rapidly changing requirements.

Long term effects

"The IP migration will continue to shape the broadcast landscape long after the pandemic is over. Driven by IP and the cloud, the shift to remote workflows is another trend that is here to stay. Broadcasters of all sizes have found out just how much they're capable of doing remotely, and how easy and cost-effective it is to adapt operations to remote workflows. Broadcasters who had already taken the plunge will continue to refine and expand their remote capabilities, and those who were in the exploration stages will continue to build on the successes they have experienced over the past few months.

What's next?

"As IP continues to go mainstream for remote video production, broadcasters are looking for solutions that will deliver the same capabilities as legacy, SDI-based studio operations. They need IP streaming solutions that can integrate easily into production workflows and ingest non-baseband sources. They also need to be able



to use all IP-based protocols and adopt fast, frictionless ways to transcode feeds into multiple house formats for asset management and distribution. To meet these requirements now and into the future, Primestream is continuing to deliver on its concept of the IP Network Operations Center (NOC). The Primestream IP NOC focusses on advanced, IP-based signal acquisition and cloud-based media asset management. These technologies offer a paradigm shift from traditional broadcast operation centers and satellite trucks to smaller and more nimble transmission gear, cameras, and capture devices. With the IP NOC, broadcasters can assemble an entire IP operation using off-the-shelf hardware and acquire signals from any IP source.”

Rascular



Ephraim Barrett
Sales Director

Market change

“From our perspective as a control applications design house, in many ways what was happening pre-pandemic has continued and that is the rise of NDI right across the sector and, of course, AV. We are seeing many uses and continue to have a very wide range of conversations about how it can be used with customers. This is not least for remote working and previewing/ monitoring content/ programme streams, regardless of what the ultimate output may be. But it really is right across the whole space. We’re also seeing more activity across the traditional SDI space now than we were a couple of years ago. It’s a very fractured market and we are having to be very fleetfooted. This is primarily – though not exclusively – with existing customers. This is for two main reasons: either channel count expansion, which involves the control of additional technologies; or refreshing existing workflows – which may well mean new routers, as an example, and therefore control protocols – to extend life. This also requires additional licences from us or different licences.

Company change

“We have spent the last three years developing our understanding of NDI and launching router control

products – RouteMaster and RouteMaster Lite. We are continuing our application development. The amount of bespoke work we are doing, tailoring software to the precise requirements of customers, has also increased because of the fractured nature of the market. This dovetails with the fact that we are seeing a move away from all-in-one big systems – the MAM space being a prime example – to smaller, application-specific software. In response, we’re working with other suppliers to help our customers in terms of integration; our relationship with Woody Technologies is a good example..

Long term effects

“We think in terms of NDI continuing to grow, yes, this is very much a long-term prospect, not least because it’s clear that remote working/production is here to stay, and NDI is a powerful format in that regard. There are also the NDI ‘islands’ that are being installed within overall SDI workflows. We also see great prospects for it across the AV space.

What’s next?

“We are working on expanding our NDI product suite – there will be another application release soon and more across 2021 in terms of the Rascular NDI ecosystem. Based on many conversations that we’ve had we know that there are customers eager for our next developments.”

ROE Visual Europe



Marina Prak
Marketing Manager

Market change

“[The pandemic] has driven the event sector towards a remote approach, relying on hybrid/virtual event approaches that use virtual production technology. We see a steep rise in the use of this type of technology and also an inventive and creative use of virtual production techniques. With the absence of audiences (or limited audiences) the revenue model also changes for concerts and events. The Billie Eilish live stream is a good example of how you can turn that to work out positively

including options for fan shopping). For broadcast and film it has driven teams towards a more remote based workflow, reducing the amount of persons that actually need to be on the work floor, where parts of the work can be done from a remote work place. The use of virtual production makes it possible to create background shots without the need to travel with complete camera crews, making it easier and faster. The demand for content is huge, which will drive streaming companies to invest even further in (fully equipped) production locations; we see this reflected in the demands we receive.

Company change

"Being involved in virtual production technology at an early stage, we have been able to foresee the effect this would have on the film and broadcast industry, and act accordingly. This has meant a turnaround in the market we serve, from mainly event and live music orientated, to film and broadcast. Alongside some of our clients, we have adapted our product lines and market focus. This meant also adapting new workflows and technologies and training our entire staff to be able to service and support clients in this market. We have engaged in partnerships with companies like disguise and unreal engine. Apart from all this there is a drive for more efficient workflows, and enabling production teams to work more time- and cost-effectively. The overall market sees a tendency for smaller pixel pitches in general and being able to drive content on 4 or 8K platforms.

Long term effects

"Virtual events are here to stay – (larger) companies see the advantages of being able to broadcast a message to a wider audience, without the need for extensive (and time-consuming) travelling. Our engagement in the film and broadcast market as well as for (hybrid) events will continue to grow, the diversification on virtual production for film, broadcast or for events will grow, since the requirements differ. Events will return, but the events industry will need time to recover. The diversification in product lines and applications will continue and ROE Visual has launched/will launch dedicated products for these markets, like the BP2.2 and (soon to be launched) the Ruby 1.5 in both a regular as well as a studio version.

What's next?

"Very soon we're going to release groundbreaking features in LED walls and image processing: more options for virtual events, broadcast, XR stages and film production volumes, resulting in higher production efficiency, enabling focused target group marketing for broadcast and events."

Shotoku UK



James Eddershaw
Managing Director

Market change

"[For us, things have not changed] fundamentally, in the long term. Our drivers (robotic camera systems) have always been around efficiency and on-air quality of productions. The pandemic has put more pressure on the efficiency element, but essentially it is simply more of the same. Remote working (to reduce staff in control rooms) is a slightly new angle in that sometimes these operators might be at their homes, but they were very often remote from the studio in any case (sometimes in entirely different cities), so again not a fundamental change in the requirements our customers have.

Company change

"The pandemic and restrictions surrounding it have significantly affected the way we physically work, but not too much in the overall workflow of our development and manufacturing processes. It has slowed things down as we have to operate in a physically changed space with additional processes, but overall the changes are manageable and proportionate, meaning we can still achieve the things we need to, in an acceptable timeframe. Customers' demands for delivery timescales and support interventions have tended to stretch for reasons of their own severely affected working practices, so our own processes have aligned with those of our customers in a natural way.

Long term effects

"Hopefully we will see a return to a (mostly) normal operation as 2021 progresses. That said, we have certainly moved to more staff working at home, more



often and we have found that has worked well, much better than anticipated in fact – even for roles I would traditionally have considered 100% office based. I am certain that more home working will be a pattern that remains a permanent feature.

What's next?

"More automation and more integration with third party systems is a trend that was well established prior to the pandemic, but has certainly been re-enforced and accelerated among small or medium clients who previously may have had limited automation in their process. We have accelerated our AutoFrame face-tracking system enabling customers to maintain camera framing with no, or minimal, human intervention for the entire live broadcast. This concept was attractive to news broadcasters at any time, but especially now when they are trying to reduce the number of people sitting in a control room together."

StormGeo



Ragnvald Moberg
Vice President Media

Market change

"The pandemic has for many changed the workflow, and introduced new ways of working. Many, if not most have been working from home – which was somewhat unheard of prior to the pandemic. This will most likely impact how we work post-pandemic as well, where the flexibility as for when, where and how we work will be changed in the long run. This will require organizations to take on more online tools in their day-to-day operations, in order to ease tasks shared across many competencies (and people).

Company change

"The focus on a more cost-efficient workflow has been accelerated due to the pandemic; we're compelled to work in new ways. Since many TV studios have been closed or in limited use during the pandemic, quite a few additional tasks have been pushed to the individual when producing editorial content i.e. camera, sound, research etc. Weather shows are a good example, where earlier it was produced using larger virtual set in

studios and now, during the pandemic, it has been done outdoors. In combination with new online tools, this has strengthened the editorial staff in telling the story more efficiently.

Long term effects

"I think, we might see many more organizations becoming more flexible in their day-to-day operations based on the learnings during the pandemic.

What's next?

"We will continue to optimize and innovate our online and cloud-based solutions, where scalability and easy access for the use of editorial staff is in focus."

Telos Alliance



Martin Dyster
VP of Business Development

Market change

"COVID has effectively *accelerated* TV studios' migration toward cloud-based workflows out of necessity as work-from-home production becomes the norm. The pandemic has made it clear that the need for reliable, scalable, and secure off-prem products and services will continue to grow, with broadcasters becoming increasingly skilled in these workflows. The new work-from-home norm has also made simplicity more important than ever. This is important for fast on-the-fly set up in a home environment where a team member might not be technically proficient when it comes to IT. It's not enough for the technology to adapt to remote working, it has to be easy for users at all skill levels to set up and connect.

"Telos Infinity IP Intercom, for example, has this kind of functionality built-in and adapts to 'WFH' natively. However, we realized at the outset of the pandemic that the configuration was not going to be simple for all users to undertake, so we made some fundamental changes that made the product as close to 'plug and play' as possible. We've even found that some customers whose incumbent in-house Intercom might not be Telos Infinity have found it easier and more cost-effective to use Infinity for remote operation than to adapt their existing technology.

Create, Produce & Consume

"Another factor influencing the market is the transition to Next-Generation Audio/ATSC 3.0, which has been slightly slowed due to COVID. However, we've been impressed with broadcasters trudging on through the pandemic and transitioning to ATSC 3.0. We hope to see some early adopters on the creative side moving toward incorporating these exciting new technologies to create a richer viewing experience and are excited to be a part of it all with our Next-Generation Audio products from Linear Acoustic that can help broadcasters get up and running fast with these new standards and with top audio quality.

Long term effects

"We do not see this transition slowing down. At Telos Alliance, we are energized by this trend and have ramped up our own transition to cloud-based products based on the demand and have also adapted some of our hardware technology to facilitate remote and work-from-home use.

What's next?

"Using remote hardware products that are connected back to core infrastructure has been the model adopted by most broadcasters because the technology can adapt to this workflow, but it isn't efficient. The utopian solution is virtualization of hardware technology and virtual intercom is something that we get asked for all the time. Telos Alliance is known for innovation and we've been listening, learning and evolving. We hope to be announcing some exciting developments in the near future."

TVU Networks



Paul Shen
CEO

Market change

"The pandemic rapidly accelerated changes that were already underway within the media industry. The forced move to remote production has shortened by years the migration from everything operationally needing to be in the studio to cloud-based workflows in which production can occur outside of the four walls. We saw this vividly in content acquisition with reporters and anchors using

their mobile phones and mobile apps like TVU Anywhere to broadcast from their living rooms. It's now just another regular tool available for broadcasters. Another area of change is the challenge of true collaboration in a remote environment between crew, hosts and guests when producing programs. The use of consumer grade video conferencing to replace the dynamics of in-person interaction to create live programs falls short of goal. Perfectly synced audio and video, low latency, mix minus audio and high-definition video are examples of what are needed in a video platform to help bridge the gap with team collaboration.

Company change

"In addition to our portfolio of IP based solutions, we've continued to launch cloud-based products and services designed to address the new challenges faced by media companies. Last year, we rolled out TVU Partyline for broadcast grade video conferencing, allowing production crews and hosts to collaborate and interact nearly seamlessly. We're able to address remote production with our cloud-based TVU Producer which allows for full featured, multi-camera video production practically anywhere with a web browser and internet connection.

"The industry changes have also propelled the need for much faster technology development and innovation. As a company, we embraced and incorporated the DevOps process, allowing us to capture requested features and enhancements by customers and rapidly developing and testing the changes. We're able to deploy very rapidly and have the new feature in the hands of our customer within days.

Long term effects

"We see these changes propelling the shift to newer cloud-based technology adoption and faster technology innovation for the foreseeable future. As media companies have determined it's possible to run production without the traditional heavy reliance on lots of hardware in studio infrastructure, we expect the changes are long-term and will continue to move towards cost-effective cloud production.

What's next?

"The next development is going to be a data driven media supply chain. We've been active in this area and will continue to expand our efforts here. We expect to see an emphasis on a heavily automated content lifecycle which would encompass planning to distribution. This also includes acquisition which covers



the ability to not only deliver more of our content but also content from other suppliers. We would describe this future as DevOps for content in which effective rapid development encourages experimentation and faster innovation.”

Vitec Group



Mike Dowson

(VPGM Manual Supports) and Richard Satchell (VPGM Robotics/ Prompting/ Lighting and Mobile Power)

Market change

“In the last 12 months with the Covid pandemic in mind the key driver that we have seen is health & safety – whether that be moving to remote production for studio and OB events, or distanced working on a film set. In the studio and OB environment this has translated and extended to themes such as IP and cloud, that are providing the level of flexibility and workflows required to facilitate safe working, deliver greater levels of resilience, flexibility and redundancy to overall operations and content production. We have also seen an increase in demand for smaller tripod systems as additional camera sets ups have been installed due to the restrictions and reducing the number of people around each camera. Interest for small camera set-ups for home studios has also increased.

Company change

“With the emergence of Covid there was an initial need to focus on continuing studio operations in the face of restricted ways of working. This fueled investment in remote / home studios and is driving creativity in how content is captured with interviews being done virtually using VR and AR environments etc. There has also been an acceleration towards IP and cloud infrastructure, for example creating entirely virtual control rooms that can be spun up / down on an as needed basis. There is a greater use of remote operation (REMI) in outside broadcasting. This is to minimize the number of people who need to be on site without reducing the number of camera points at an event as the requirement of quality content remains as strong as ever.

“We see an ever-increasing demand to be able to do more with each piece of equipment on set or on location

– to be able to derive the greatest level of flexibility and performance, facilitate the speed of shooting/content creation, and in doing so, deliver the highest return on investment for our customers.

Long term effects

“The pandemic has only accelerated the direction of travel. The fundamental drivers and dynamics of our markets haven’t changed however the pace of adoption in IP, cloud and remote production has seen a shift change that will be here to stay.”

Vizrt



André Torsvik

Head of Marketing Strategy and Planning

Market change

“I think it has massively accelerated three things; the move to IP, the move to remote workflows and the move to software-based solutions. All of these can be seen as one driver – a desire for more flexibility. Out of these three I think software by far is the most important as it is the enabler for the other two. The second [trend] I see is the democratization of video production, in that broadcasters have been forced to use ‘mundane’ tools to get on air. Simple screen backdrops in garages, anchors on Teams calls and compressed video over regular Ethernet – all these things have had to be accepted, in order for broadcasters to be able to deliver content.

Company change

“I think the pandemic acted as an accelerator – but the trinity of software, IP and remote was already happening. The virus was not the cause, but it created a shift in speed of uptake. We were always a software company, and this situation has made us thankful of that, and made us double down on our software vision of production technology.

Long term effects

“I think this is the de facto new production reality – flexibility will be the mantra it has been over the last year. The virus situation showed us that the customers

Create, Produce & Consume

with the most flexible setups and the willingness to leverage new technologies such as NDI and remote calling to create news, were the most successful. This means we need to support this demand in the future as well.

What's next?

"We have just launched Flexible Access, which truly is the innovation to match the zeitgeist. Rather than forcing customers to put down a large, up front capex bet on technology they do not know how or even if they will use two to three years hence, we allow access to all our technology through monthly or annual plans – with no huge investment at the start. The great opportunity in this for the broadcasters is that they can shift their technology stack to match where their revenue streams come from."

VSN



Patricia Corral
Marketing Director

Market change

"Overall, 2020 has forced a leap in the natural trend towards direct-to-consumer services, SaaS services and technology solutions that are not only innovative, but also robust enough to ensure service and business continuity in the medium and long term. In short, the transition that was already underway seems, in many ways, to have progressed 5 to 7 years rather than one."

Company change

"We need to provide our customers with more flexible solutions, both in terms of accessibility and contracting. Our priority is to enable them to continue operating under any circumstances and in a very agile way, and that means greater capacity in cloud environments and remote connectivity, features that many of our systems already have or will have, as well as maintaining our levels of implementation and support when we perform these services remotely. We were already offering these kinds of solutions and services in pre-pandemic times, but 2020 has encouraged us to improve even more in all these areas."

Long term effects

"The transition to remote working with decentralized teams is here to stay, basically because it has proved to be

very efficient in terms of flexibility and cost effectiveness. In fact, we expect 2021 to be the year for the consolidation of this trend. Customers will no longer seek technological solutions to resume their pre-Covid style operations but instead will look to establish new, innovative ways of working and approaching their audiences once and for all.

"Technology will need to improve to become much more efficient in cloud-based infrastructures. Business models will need to gain flexibility to accommodate the changing requirements and needs of customers. Some services like solutions' deployment and training will need to be optimized and shortened in time as well. And D2C models will probably affect competition in the market and even give rise to new players that will change the dynamics of our customers forever. We are confident that some of these effects will remain in the long-term."

What's next?

"We are paying a lot of attention lately to multiplatform content scheduling and delivery. In fact, having content consumption raised 40% worldwide in 2020, we could not have had a better timing to keep working on our VSN Crea Broadcast Management System (BMS) and its tight integration with our VSN Explorer Media Asset Management (MAM). We are also placing a lot of resources on improving VSN Crea's non-linear module, as well as the possibilities it brings for content monetization through multi-platform advertising. Concerning remote production, we are enhancing our solution as well including new powerful integrations with NLE systems to support low res workflows and editing. And finally, in regard to content production, we are now participating in some very interesting research projects to apply Machine Learning inside our MAM system for the self-creation of content based on semantic content searches."

x-dream-distribution GmbH



Jutta Schönhaar
Managing Director

Market change

"It's difficult to speak about the market in general, but for us the work has changed fundamentally. We are not able to



travel, we are not able to meet people in person. Some of the strategic and long-term projects have been put on hold or postponed to later. On the other hand, we got much more requests for the quick fixes in the past year.

Company change

"Everything now happens remotely: not only are customer meetings virtual, but also project meetings with vendor and reseller partners are virtual. Also, installations and services are operated completely virtually. It is easier now to find time slots for project realization if you do everything remotely, as all people are at home. This may even push some projects. On the other hand, personal interactions help to reduce misunderstandings. Customer requests with regard to the products we offer changed. They also started to look more into a Software-as-a-Service, use cloud versions of the software from our portfolio.

"We saw the world changing quite fast in the past years, and we saw a slowdown in the last 1.5 years. The biggest change of the past years and which is also going into the future, is digitization. This even got a push with the pandemic. I think, in the future we (and of course, our customers) will experience even more remote work.

Long term effects

"We do see a long-term change: travelling will not happen as often as it happened in the past, also because some people will stay in their home offices, so customer visits will become more difficult to organize. There will be a different style of trade shows where we meet people in person, or they will be more regionally focused. The approach to find new customers will change, but the requirements from the customers to bring their content on-air will be always the same. Interesting fact: before Corona everyone said that classical broadcast is dying. I think, the last months pushed forward traditional broadcasters and all the streaming and VOD libraries. So yes, there is a change, but if this is related to Corona or to the improvement of the world, it is not clear.

What's next?

"In general, the focus is on bringing on-premises technologies to Software-as-a-Service opportunities for all products we offer. It can be a hybrid approach of on-prem and Software-as-a-Service, a remote work, basically creating remote operations to enable people

broadcast remotely. Plus, we are working on the new ways to approach our existing and potential customers. Last year we invested a lot of our time and money into developing our own online platform to run virtual events <https://x-dream.events>. We got rid of the boring webinars and now attract people with interactive interviews and panel discussions. As an additional outcome [from talking to our customers] we noticed that there might be products we want to add to our portfolio to be even more complete and satisfy the needs of our customers also in future in an innovative way."

x-news



Andreas Pongratz
CEO

Market change

"Marketing for solutions and product has completely gone digital to community network platforms like LinkedIn, FB, Twitter as well as marketplaces like the IABM, DPP and others.

Company change

"We have launched an offer for topic based free of charge research (Covid, US elections) to prove the benefits and that has already attracted new customers that then have signed on. We have asked customers of what their pains in workflows are and adapted the features of the product.

Long term effects

"Travel and in person meetings will not take place in the same way as it used to be prior to covid. Continuity hence will be an important aspect of partnering, marketing and innovation.

What's next?

"We will further support a user's journey to become even more efficient and focused on creative story telling."



Wildmoka: How did news broadcasters use social media during the 2020 US Elections?



Matt Loreille
CMO at
Wildmoka

The time when news broadcasters used social media as a 'nice-to-have' publishing platform has well and truly passed. Digital OTT and social media platforms are now mainstream and are the front line in the battle for audiences.

Wildmoka has produced a report that analyzes the social media strategies adopted by the following nine major news broadcasters during the week of the 2020 US Elections: NBC News, MSNBC, CNBC, Fox News, ABC News, CBS News, CNN, as well as two leading European broadcasters, Sky News (UK) and Altice BFMTV (France).

The aim of the research was to understand how different news broadcasters use video on social media during major events. The findings from the study can inform us about what strategies are most effective, what impact different approaches will have, and can inspire further innovation from broadcasters who plan to cover major events of this kind.

The document concludes with an overview of how Wildmoka was used by most of these leading news broadcasters to produce and publish near-live clips, highlight reels and live streams to digital OTT and social media. The Wildmoka cloud-based digital media factory is the platform of choice for Tier-1 news broadcasters because it is proven to scale to the largest events (US Elections, Olympic Games), it guarantees linear TV broadcaster SLAs (it does not fall) and it lets news providers be the fastest to publish any form of content to any digital destinations.

From 7pm on Nov. 3rd to 1pm on Nov. 7th there were more than 1 billion views and thousands of videos posted on Facebook, YouTube and Twitter in just 3.5 days

Why the focus on social media?

A recent study by the Pew Research Center ([News Use Across Social Media Platforms in 2020](#), Jan 12th 2021) reports that – about half of U.S. adults (53%) say they get news from social media ‘often’ or ‘sometimes’. This finding was certainly corroborated by our research. **With more than 1 billion views and thousands of videos** posted on Facebook, YouTube and Twitter in **just 3.5 days** (i.e. from 7pm on Nov. 3rd to 1pm on Nov. 7th), these three leading social media platforms played a key role in keeping the population connected with the counting status, via news broadcasters’ social channels.

What types of content were analyzed?

The focus of Wildmoka’s research was on the use of **video** on social media (as opposed to text or photos).

- **Live streaming:** Live streaming to social media saw significantly higher use in this US Election than in previous ones. It was common to see more than one live stream occurring simultaneously on Facebook on the same news broadcaster account. News broadcasters no longer hesitate to create live streams on social media as pop-up channels to cover live events as they happen. They also don’t hesitate to produce very long emissions (such as this one Fox News broadcast on YouTube which lasted **135 hours!**). Overall, live streams received more views than short and mid form videos and Facebook was the platform most used for live.
- **Short form video (clips/reels):** Thousands of clips, highlights, reels were edited together and shared on social media during this week of election. This ‘snackable’ form of content is easy to consume, highly shareable and engaging.

At the 2020 US Elections we observed a phenomenon that often occurs during major sports competitions. That is to say, the videos which received more views were those which came with real emotional weight. With **48 million** views for an eight second clip, the MSNBC/ Kamala Harris video with Kamala announcing the victory to Joe Biden set a new record for a viral US Elections clip.

What about monetization?

Monetizing content on social platforms with ads was not a major focus during the election week. Outside of pre-rolls heavily used on YouTube, most news broadcasters (but not all) didn’t use monetization on Facebook and Twitter at all. However, as described in this document, several broadcasters used social media videos and/or thumbnails as teasers to encourage viewers to jump to their OTT portal where ads were present (in the form of pre-rolls and banners) or where viewers were encouraged to take a subscription.

Principles of news on social

The importance of news on social media is continually increasing and news can quickly go viral. Drawing on our research, there are a number of best practices ‘principles’ that broadcasters can implement:

- A. Being first.** News broadcasters need to be the fastest to publish news because the algorithms used by social media platforms are designed in a way that means videos which start to create a buzz are given further prominence (i.e. the snowball effect). Being first to publish is therefore crucial and requires an optimized end-to-end production and distribution workflow.
- B. Being everywhere.** As this report confirms, the majority of the top

news broadcasters published videos on all three major social media platforms (but not all).

- C. Being diversified.** It is important to offer a rich choice of content:
 - a)** very short form clips (10 to 30 secs) for people who don’t have much time and just want to get the relevant info;
 - b)** longer form highlight videos such as interviews or press conference summaries (typically one to five mins) for people who have time and/or interest to go deeper; and
 - c)** live streams for people who want to follow a particular moment live.
- D. Producing a large volume of content.** Producing a lot of content allows people to stay connected with what’s happening and keeps them engaged. It also increases the chance of some videos going ‘viral’.
- E. Being innovative and differentiating.** Compared to sports, where broadcasters may have exclusivity rights for content, news broadcasters share a lot of content in common (e.g. a press conference with Joe Biden). As a result, it is not always easy to innovate and differentiate. This, however, is what BFMTV achieved by broadcasting all its live content simultaneously on linear TV 16:9 format and in vertical 9:16 format which is more suitable to deliver a mobile-first experience.

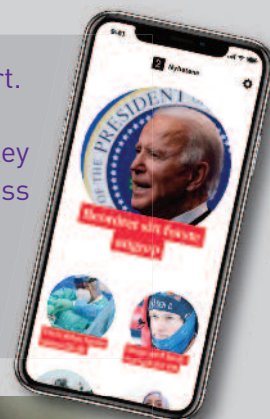
To read the full report, go to:
<https://offer.wildmoka.com/us-presidential-election>

Vimond and TV 2 – improving the newsroom



Paul Macklin
Product Manager,
Vimond IO

The lifecycle of a story in the media world today is increasingly short. Sparking the interest of your audience, gaining their attention with exciting and important stories as well as being first to publish are key goals for all media organisations. As a broadcaster in a modern mass media consumption space, one has to keep up with the end-users' constant demand for fresh content around the clock and hold a reputation as the first platform that reports breaking news stories.



The Norwegian broadcaster TV 2 has a history of using technological innovation to empower creative talent to provide engaging viewing experiences. In early 2020, in collaboration with Vimond, TV 2 created the TV 2 Nyhetene ('TV 2 News') mobile app available on Android and iOS to deliver breaking news and global events in their viewers local language. In contrast to other digital services from TV 2, this app features only video content.

Within the news app journalists drive the whole content creation and delivery process, operating the tools for production and the content management system behind the online video platform.

- *Allowing us journalists to be part of the whole process enables a faster workflow from production to distribution without any unnecessary bottlenecks. This creates a more efficient workflow than journalists are used to from other platforms. In addition, we value that the system is cloud-based. This gives us more flexibility and possibilities.*
Camilla Island, reporter in TV 2 News.

TV 2 Nyhetene app

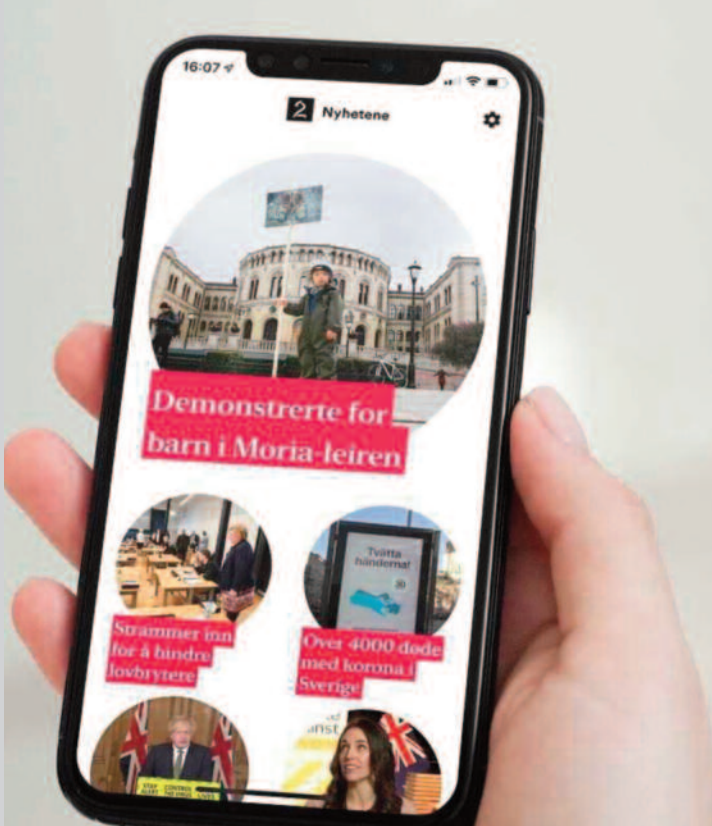
TV 2 news app provides access to Breaking News, Sports, Politics, Crime, International, Business, Lifestyle, Entertainment and Regional News. The app summarizes the most important recent news in its top section, before proceeding to categorized news. Its navigation is inspired by the



'stories' format of social media applications that enables the users to easily select the stories relevant to them.

For Breaking News the app supports live video feeds and push notifications to instantly inform the viewer of the latest events. Vimond IO allows TV 2 to create different versions of stories from their live content or content in their Media Asset Management system. All videos are produced with embedded subtitles to support video viewing without sound enabled on the device. Most news stories also have descriptive voice overs.

TV 2 News APP is designed to be a platform for getting daily updates about the latest current affairs. Journalists not only create content but also operate the CMS to curate the applications, so the tools need to be easy to use and respond to the time demands of a modern online news service. In this highly competitive space, if you're not first, you're last and delivering breaking news stories to their viewers first is vital, with a lean technical and operational footprint.



■ *In order to keep up with the ever-evolving user preferences of how they want to consume news, we need to be agile and experiment with our distribution. It may require a significant effort to change or add to an existing workflow in an established news organisation, but by utilising cloud services like Vimond IO and VIA we get the flexibility to quickly test out our theories. If successful, we can scale up and optimise the workflow.*

Arild Rugsveen, Project Manager in TV 2 Digital.

Cloud native workflow

To support the TV 2 News app, Vimond provided a browser-based end-to-end cloud solution. Starting with the Vimond IO, a video editor and clipping tool, TV 2 journalists can work from any location at any time to create breaking news stories.

Through IO the teams can source content both from live feeds and files uploaded directly in the UI and mix it with restored content from the TV 2 News archive. Content can be saved in multiple aspect ratios ensuring the right fit for the right distribution point. TV 2 has taken advantage of this by creating 1:1 aspect for Social Media in parallel with 9:16 for the news app. Videos are also rendered in various bitrates to support different internet connections from 3G to high speed broadband. When editing one can add custom graphics, images, music, video and audio transitions and voice-overs to create visually striking content suitable for each platform.

Working in a browser-based application allows for remote work that gives flexibility and the ability to scale up teams beyond a physical location. By using one that is also cloud native, TV 2 can replace the heavy on-premise systems,

hardware expenses and the need for a fixed physical location to save cost and speed-up the process.

Once the stories are finished and edited, they publish to Vimond VIA, Vimond's powerful CMS, where journalists curate the content for the mobile applications keeping the content current and updated. The solution also distributes content to the Airport shuttle train in Oslo, with daily headlines playing in carriages for all passengers to view. Using Vimond's tools, journalists can create and distribute video content in different formats to online platforms before their competitors, creating an experience that is part of their viewers' daily routine.

Operational Workflow

The reporter starts by identifying source video content in TV 2's MAM. The selected content is pushed to an AWS storage area and picked up by Vimond IO. The content is made available in IO's library, where it becomes an asset in the video editing process. Clips are trimmed and adjusted to the output aspect ratio, and graphics and voice are added before the video is rendered in a preconfigured selection of bitrates and resolutions.

When the video is rendered the reporter adds some simple metadata and the content is pushed to the Vimond VIA CMS application. The various versions of a clip are linked so when the reporter assigns the video to a section all versions are available to the mobile app which selects the appropriate version to be applied to the specific display category.

Brainstorm: Virtual production for news & sports



Miguel Churruca
*Marketing and
Communications
Director, Brainstorm*

The digital age has driven profound changes in how News & Sports are produced and consumed, as new digital platforms offer audiences endless options for news and sports. Moreover, the traditional way of doing business in television has been seriously impacted because of the COVID-19 pandemic, since production dropped all around the world, travel restrictions were applied, and many other related issues. Broadcasters now have to work ever harder to attract and retain viewers. However, the current situation also raises opportunities for virtual production, from remote shooting to virtual events.

Within this highly competitive context, successful broadcasters need to be flexible and responsive to dynamic News & Sports environments and agile enough to take advantage of both simplified and more complex broadcasting infrastructures.

For example, hyper realistic virtual production based on game engines such as Epic Games' Unreal Engine is now broadly used in many broadcast applications. Technology providers with extensive broadcast and film experience like Brainstorm have taken advantage of game engine rendering technology to improve the output quality, but at the same time have improved such content with their own applications like real-time graphics created from external data sources, increased workflow environment's compatibility and much more, expanding the benefits of game engine rendering to other content creation areas such as News & Sports.

Another great example of collaboration and integration between Brainstorm and other developers and manufacturers to enhance News & Sports production is Dalet, which now includes the Brainstorm real-time graphics engine in their next generation platform for news graphics and workflows called Dalet CubeNG.

With the integration of the Brainstorm engine, Dalet CubeNG takes advantage of the most advanced features available in Aston, Brainstorm's motion graphics creation, CG and playout solution, which significantly expands on-air and file-based graphics capabilities. These include support for 4K and user-defined output formats, advanced primitives and objects for creating 2D and 3D graphics, support for Unicode fonts and languages, and StormLogic, Brainstorm's acclaimed

transition logic between templates, along with extensive options for data-driven graphics with external data link.

Also, the integration with cost-effective PTZ camera tracking systems of companies like Panasonic or Sony, allows Brainstorm technology to sit perfectly in any broadcast workflow and environment.

Customers all around the world take advantage of Brainstorm's technology to enhance their content production. Users like CNBC use Brainstorm technology to broadcast more than 4,000 graphic pieces per day, and lately has used AR to elevate its storytelling while creating graphics that improve audience understanding of complex data. A Brainstorm eStudio user since 2006, CNBC raised the level of sophistication of on-air data driven broadcast graphics in the United States.

World Wrestling Entertainment (WWE), the integrated media organization and recognized leader in global entertainment, reaches more than 800 million homes all around the world with events such as WrestleMania, and makes use of high-end Augmented Reality content and technology to enhance the production in a new and exciting way and InfinitySet allows WWE to create a wide range of different content.

InfinitySet is used to create content that airs across WWE's many media platforms including their award winning direct to consumer WWE Network as well as their various digital outlets and through their broadcast partners.

More recently, broadcasters like WarnerMedia Latin America are using InfinitySet with Unreal Engine for advanced virtual production in Chile and Argentina to



achieve greater efficiency in ROI related to content creation, reinforcing its position as undisputed leader in the region in terms of generating high-level hyper-realistic television content, which they have aired on CNN Chile, Chilevisión and TNT Sports.

In another example of using AR for Sports, Brainstorm was key in the live broadcast of the Opening Act of the Rafa Nadal Academy in Kuwait. The show used Aston to create, modify, animate and playout augmented reality content and graphics for the live broadcast of the ceremony by Kuwait Sport TV for millions of viewers at home.

Brainstorm collaborated with national public Spanish television TVE in a News Special that received the 'National Television Ondas Award' for the Best News Programme or Special Coverage of the year.

This News Special was produced remotely from a school in Toledo, Spain, and broadcasted from the channel's News Centre in Madrid integrating virtual augmented reality content live on a blackboard in the classroom where the presenter was, using InfinitySet to finish it.

Brainstorm worked with RTVE to create and calibrate a multi-camera system capable of displaying AR animated graphics perfectly placed over a real-world blackboard, allowing the director to freely use both steady-cam and fixed cameras to display information in a visually appealing manner, at any time, alongside the news anchor.

Many other top broadcasters and content providers around the world are examples of how Brainstorm's advanced technology plays a key role in creating the most stunning News & Sports content to increasingly demanding audiences.

The Future

AR technology not only serves to enhance content or deliver great data-driven graphics. As the news landscape is rapidly diversifying as a result of internet broadcasters and lower-end market entry costs, new challenges and opportunities arise. Also, broadcast news and real journalism faces the challenge to remain relevant, engaging and appealing to audiences, particularly at a time of tightening budgets. Brainstorm is committed to creating accessible, affordable ways to enable a new breed of journalists to deliver compelling broadcast news that reflects traditional values of journalism, whilst embracing the possibilities offered by new technologies.

This objective has been deployed with the development of Brainstorm's TelePorter project, which was selected amongst the winning projects of the Google's Digital News Initiative (DNI). The DNI Fund is a European program designed to help journalism thrive in the digital age, and directed to organisations and individuals that aim to produce original journalism and to enlighten citizens with trustworthy journalistic content, whose projects focus on encouraging a more sustainable news ecosystem.

Building on Brainstorm's experience in 3D graphics, virtual sets and augmented reality, Brainstorm's TelePorter creates compelling, immersive visual news content through the use of augmented reality (AR) broadcast technology. As it has been developed on the ground of Brainstorm's patented TrackFree™ technology, and more specifically the acclaimed TeleTransporter feature of InfinitySet, this technology allows for 'teleporting' journalists or participants into an AR environment, viewers can have access to rich visual news, where reporters appear 'in situ' or placed together with interviewees regardless of their physical location.

IABM Bronze Members

IABM Bronze members include PR agencies, video services, event organizers, event support, intellectual property protection, research, strategy and decision making support – the full gamut of specialist services to support technology vendors. Bronze members have an in-depth knowledge of the broadcast, media and entertainment technology ecosystem that IABM members serve. We asked them to share a summary of their services for this special feature.

Bubble Agency



2020 forced many companies to rethink their business and marketing strategies. At Bubble Agency, we decided to broaden our services, with the appointment of our own in-house experienced and qualified Marketing Director, Nikita Panchal. This adds to our existing, well-known, PR, social media and events services, used by clients globally in the M&E space.

Bubble recognise digital marketing is an essential practice required to target customers at the right time, in the right place, in the right way. Whether it is implemented together with a PR strategy, or as a stand-alone option, our digital marketing offering will help you get it right from strategy, all the way through to deployment.

To learn more, contact hello@bubbleagency.com

Caretta Research



Caretta Research is here to help you make better, faster decisions.

Whether you're buying or selling technology, we're putting real-life information to accelerate and target your decision-making for product selection, production positioning, sales targeting or go-to-market.

Built on accurate, comprehensive data for global technology buyers in media and telecoms we're pioneering a fresh and innovative focus on digital transformation technology buying priorities. We look at the world through the eyes of buyers, grouping trends and segmenting behaviours to make sense of who is deploying what technology, how and why.

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Exhibition Freighting



COVID-19 has paved a new way forward for physical events, and although tradeshows may seem a thing of the past, they will happen again, and Exhibition Freighting will be with you every step of the way.

With decades of experience and meticulous attention to make sure your goods arrive on time and intact, our worldwide network of hand-picked agents can help you to ensure your next tradeshow experience runs as smoothly as possible. We can also take care of your customs requirements, including new Brexit regulations that have come into play this year.

Learn more about how we can help you at your next event at www.exhibitionfreighting.co.uk

KitPlus



KitPlus is now more than just the leading online portal for industry tech news & articles but with the daily TV show offering a mix of news, reviews and guest interviews KitPlus can spread your news and messages across a wide and very attentive audience.

In addition, The KitPlus Show with its simple popup one day formula in London and Manchester is both cost effective and easy to take part in, and rearrange if necessary. Crucial with today's tight budgets and unpredictability over live events. Check out kitplus.com and kitplusshow.co.uk or contact us at hello@kitplus.com

Manor Marketing



We work as part of your organisation. We strategise and deliver, share broadcasting knowledge, ultimate marketing experience and a passion for telling your story. We offer an unrivalled skillset and have been doing it for 20 years.

Business today should be focused, relevant and regional. Regardless of the offering. Different languages, engaged dealers/partners/customers and inclusive promotion. Your brand and what it can achieve (ROI) is the secret sauce.

The marketing mix includes publications – online or in print – but so much more. Take one story – regardless of the subject – and make it work for different platforms, audiences and ultimately, gain sales/revenue.

info@manormarketing.tv www.manormarketing.tv

Media Technology Group



IABM members will benefit from the key focuses of Media Technology Group, Inc. (MTG) and its subsidiary Television Consultants, LLC:

- helping technical companies with advanced engineering but little or no sales or marketing experience develop a strategic plan for market penetration
- working with international companies to expand or enter the Americas market.

MTG's expertise includes sales strategy, processes, and tools; establishing the right type of sales organization; technical evaluation of products to determine market suitability; and traditional and digital marketing and marketing tools. Our goal is to develop a clear and workable go-to-market strategy that will ensure success.

We work within your corporate culture during every step of the process. Only by being a stakeholder with you can we tailor the best solution to achieve your goals.

Rich Hajdu

Principal

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MKM Marketing Communications



Founded in 2004, MKM is recognised as one of the industry's leading full service, international B2B marketing communications agencies. We pride ourselves on providing a service that is personal and professional.

Whether we're working with you on PR support, content creation, events and tradeshow (physical or virtual) or your social media presence, you will always deal with a core team of highly experienced specialists. One of our inherent strengths is that we have well-established and well-nurtured relationships with the international media, end-users, vendors and reseller channels. We

have a firm grasp of technology and market trends and solid writing expertise. Our team is results driven and committed to forging long term relationships.

To find out more about the services we offer and our team, please go to <https://mkm-marcomms.com> or email meriam@mkm-marcomms.com

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Media and entertainment brands are facing unparalleled challenges. The lack of physical trade shows has made it harder to identify and engage clients and prospects. Competition is increasing across digital channels

Our full service offering – from media relations and content to digital marketing and PPC/SEO strategy – helps you target the right audience, at the right time, and on the right channel. Our M&E specialists in London, Paris, Berlin, Boston and Los Angeles help your brand stand out. Our Convoy partner network provides global reach and access to local experts. We help position your brand, engage audiences and drive business growth.

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Temple Bright



Agile, responsive, ready. Temple Bright is an innovative law firm with wide-ranging experience in the technology sector. Offering a refreshing alternative to traditional firms, clients are guaranteed direct advice from experienced partners whatever the size of organization or mandate.

Just like the broadcast and media technology sector, Temple Bright's clients range from multinational giants to SMEs and start-ups. The firm offers a broad range of business law services, including in specialist areas such as intellectual property, which we know is a priority asset for most readers of the IABM Journal – whether in relation to brands, data or hot areas like AI.

Jeremy Morton, Partner, Temple Bright

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www.templebright.com

Member Success –

Alma TV: The rapid development of the Internet makes us step up our game



Alexander Trubin
Director,
Alma TV

‘Almatel Kazakhstan’ is one of the biggest telecommunication companies in Kazakhstan working under the trademark ‘ALMA TV’; its audience includes more than half a million users. The company provides all kinds of TV services and organizes rebroadcast of more than 150 channels from all over the world in a digital format, including 30 HD channels.

When Alma TV changed from DTT to satellite broadcasting to increase signal reach and quality, it turned to Elecard to help implement a system for receiving HEVC/H.265 streams from the satellite across regions, high-density transcoding and delivery of the content in MPEG-2 and MPEG-4 formats to end-users’ playback devices. According to Alma TV technical department head, Dmitriy Basin, “The Elecard high-density transcoding solution based on Supermicro blade system made it possible to transcode all our channels in each region on a 3U server. This solution is power-efficient and space effective, while there is no any visible quality degradation. Our benefit is evident as we shouldn’t spend money on new end-user devices.”

We talked to Alexander Trubin, the director of the Alma TV unified network management center, about results of the switch to satellite and the company’s future plans.

This year the company celebrated its 26th anniversary. How do you describe Alma TV today?

Alma TV is the first cable operator in Kazakhstan. We remain the only company in the country that provides all kinds of Pay-TV services: analog, digital, satellite and Internet television as well as telephony and Internet services. Today we rebroadcast over 140 channels from around the world, including up to 30 HD channels. The company is present in 20 cities of Kazakhstan and has more than 2,000 full-time and part-time employees.

How is the pandemic affecting Alma TV?

I think it’s hard for everyone to work during pandemics because of the introduced restrictions. It was clear that the load on the network would be increased dramatically, so in the shortest possible time we took measures that made the Internet faster and more stable, and the service quality higher. The lockdown led to difficulties with customer service, so we opened non-contact offices.

We reconsidered the working hours and shifted some employees to remote work in order to protect both the team and the company as much as possible. We even joked that we would bring folding beds and live in the office to avoid difficulties getting to work: to move around the city it was necessary to receive a pass. Nevertheless, the pandemic’s uncovered some internal issues regarding both the team and the equipment capacity, so we reconsidered some approaches to service delivery.

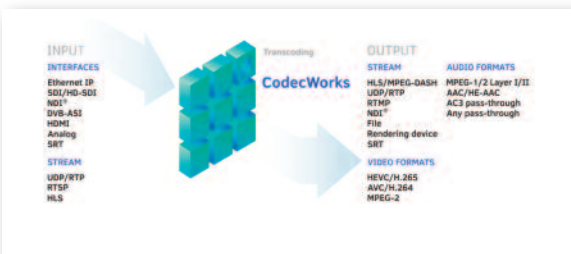
Three years ago, you switched from terrestrial to satellite broadcast. Why did you make this decision?



We decided to switch from over-the-air MMDS broadcasting to DVB-S2 throughout Kazakhstan in the first place to unify head-end stations. As a result, now we have a unified point of reception, and this greatly simplifies the work. Satellite signals became available in even the most geographically remote points of the country, which allowed expanding the potential subscriber base. DVB-S2 TV channels are transmitted to the satellite in HEVC format and then received in every region of Kazakhstan. Switching to the new compression standard allowed us to save on the bandwidth of external communication channels and to reduce costs.

What difficulties did you face during the implementation of this project?

We needed to transcode the HEVC signal received from the satellite into MPEG-2 or AVC that the end-user equipment supported. The company has been on the market for a long time and has a variety of client equipment, so we faced the necessity to transcode the TV signal. Channels are received in each region separately, so the number of streams for transcoding increases

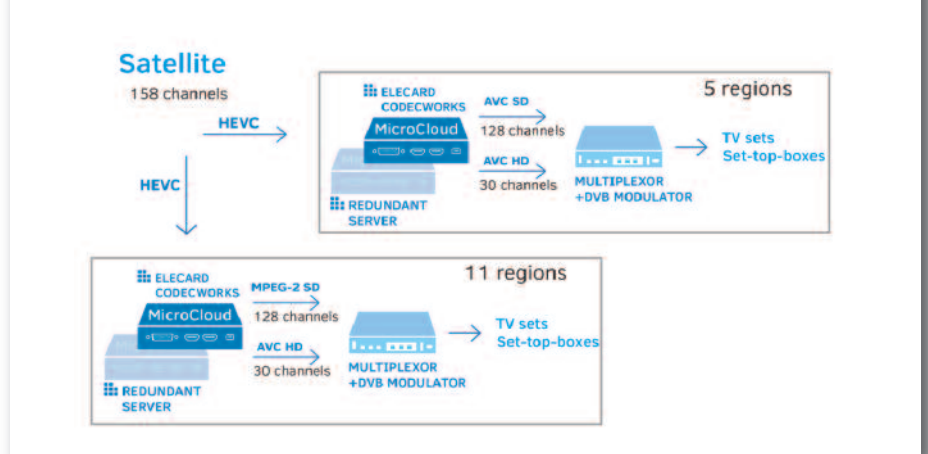


by 16 times – according to the amount of head-end stations in the regions.

Besides, it was essential to keep a large audience without expensive replacement of end-users' STBs.

To start broadcasting via satellite, the company needed new equipment. How did you choose the appropriate solution for Alma TV?

We had taken into account many aspects: solution reliability, power capacity, ease of setup and management, the possibility of integration with monitoring services, signal quality after transcoding, and solution price. For such a difficult task, we have chosen CodecWorks, the software encoder from Elecard. It allowed us to significantly reduce the amount of equipment, operation costs, and server workspace. The Elecard solution allowed transcoding channels of different formats into the unified signal for every region and improving the quality, which simplified the work of our engineers. The software is configured to react to problems with the streams and restore service or restart the channel, if necessary. The



SNMP notification system allows us to monitor the status of all servers in each region in real time.

Three years later, it is possible to sum up the results of the decision taken. How do you assess these changes?

The decision was 100% right. Thanks to switching to satellite, we have improved signal reception and enhanced the quality of broadcasting, so now our users enjoy a better picture on their receivers. Moreover, we managed to increase the number of TV channels. Despite the difficulties during the initial setup, the Elecard transcoding system has not caused any complaints throughout its operation. It is a robust and stable solution.

OTT is trending right now. How are you going with this type of broadcasting?

The development of OTT is the absolute must. We understand that the Pay-TV market will change very quickly under the pressure of global OTT players. Previously, the classic Pay-TV operators competed only with other operators. But now, with the rapid development of Internet service and its availability, we have to compete with global services. This forces us to step up our game, and we have a clear idea of what we have to do to be successful in this aspect. At the moment, we are considering installing additional servers with the Elecard CodecWorks software for a new project: we want to start OTT broadcasting nationwide.

Three years ago, illegal subscribers were a serious problem for national satellite operators in Kazakhstan. To deal with them, at the end of 2017 a law was passed. What is the situation now?

Today, we see stable growth of the digital TV subscriber base. We understand the demands of our target audience, who appreciate high quality and a wide choice of content. For example, we offer popular channels that our competitors do not provide.

Unfortunately, a large market share is still occupied by the so-called 'gray' satellite dishes, which operate outside the legal framework, thus gaining an advantage due to low costs. Such operators do not pay taxes in Kazakhstan and do not fulfill a number of mandatory requirements. For us, the challenge in developing satellite television is also to gain the trust of 'gray' dish users.

What are the company's immediate plans for development?

We want to improve all aspects that affect user satisfaction like communication, sales, content, operation stability, service usability, availability of call center, etc. We plan to pay a lot of attention to the NPS (Net Promoter Score), which determines customer loyalty. To do this, we have to mobilize all departments, and most importantly, set up correct priorities. The focus of our product strategy will be the development of interactive services based on high-speed data transmission and, in particular, OTT.

Behind the scenes at BaM Live!

KitPlus – Coming out from behind the camera



Simon Tillyer
Managing
Director, KitPlus

Let's face it most of us are 'behind the camera' sort of people and if Covid hadn't reared its ugly head then that's most likely how it would have remained.

Rewind just over 12 months and the KitPlus Show in Shoreditch, London had just taken place with a packed show floor and copious amount of hand sanitizer on offer and if anyone had suggested our much-loved print magazine would be replaced in favour of a daily TV show, even temporarily, we'd have probably taken a sharp intake of breath!

As with many small companies when Covid hit we had to make quick decisions. Do we hide under a rock until it's all over or create something that may actually help spread the news and messages that so many manufacturers, suppliers, experts and leaders in our industry were keen to tell? And so KitPlus TV was born.

For the last 10 years KitPlus has had a reputation at trade shows such as IBC or NAB as the company that turns up on your booth (invited of course) does a short video and dashes off to the next booth, all filmed, edited and shared online within 12 hours. We were fortunate to have already organically grown an online video subscriber audience and we did at least have some production and post production skills to tap into. But wanting to be a little different, we teamed up with our good friend and streaming guru Jon Pratchett and created a virtual studio within our vMix software suite into which we could be teleported from the comfort of our green screened homes / sheds and attempt to look like we are all in the same studio, from where we would interview guests and read the news. So leaving our TV project there for a

second let's digress, as we often did in 2020, to dreaming about trade shows and with NAB, CABSAT and IBC on hold, our next digression was from the IABM with their own 2020 event now going virtual. During the summer and autumn of last year a few event organisers had tried virtual events with varying success; webinar video style chats were seemingly starting to wear everyone down and the IABM came up with the #nodigitalfatigue tag.

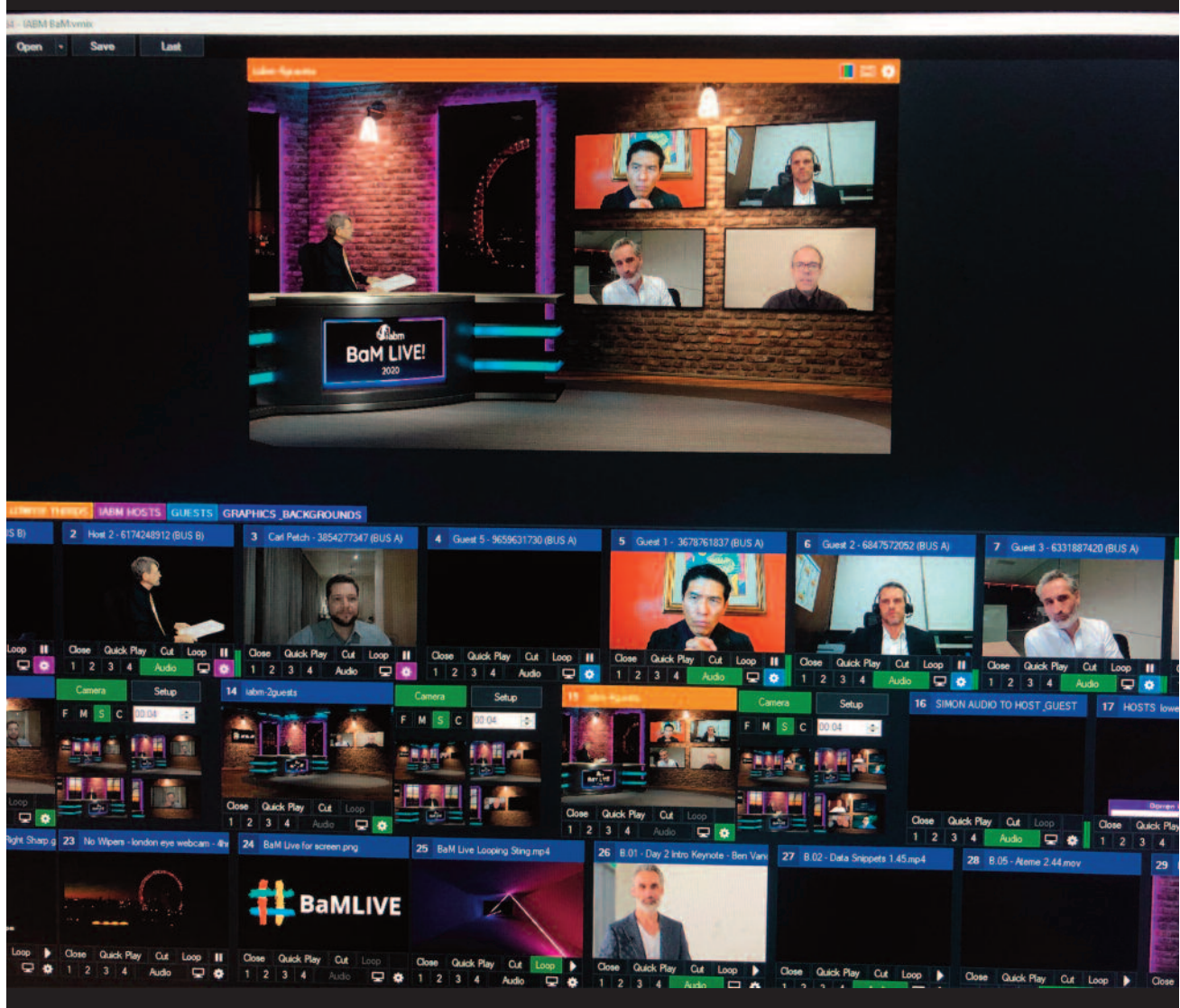
With Jon's help we'd learnt a lot during 2020 about virtual sets and production, in fact we literally immersed ourselves in it for six months and our platform offered guests a chance to do something slightly different and although we were still all a long way apart we did feel close, which was nice for the conversation. But with Jon now back to doing his 'proper' job the question was how to apply our lockdown learning to work with the IABM to deliver the best virtual event of the year, something which we were delighted to be asked to help with.

The brief: Create a virtual set that needs to accommodate 8 hosts rotating around 21 shows with 35 guests over a three day event. Then

add an awards ceremony with a glitzy virtual stage where all 48 nominees across 10 award categories would connect and be brought into a virtual set where the host will be introducing and speaking with the winners. And neither of these must look like Zoom and, here's the thing, it must all be streamed live as it happens with everyone (everyone!) in their own home or office – that's hosts, guests, nominees and tech. Remote production here we come!



The brief created a few initial challenges. Firstly anyone appearing in the virtual set must look like they are there. So with hosts at home we created six host presenter kits that we sent out (including green screen, broadcast mini camera, mic, lights etc) and during the 'rehearsal' phase we tested each host in situ to get the



best look possible as well as connecting all 48 guests in advance to check audio and camera connections. As for KitPlus TV, we used vMix to control the whole event with hosts and guests connecting to a central production system where the virtual set and graphics were mixed and then streamed out to the IABM BaMLive!™ platform with recording locally and remotely for on-demand viewing.

The preparation and planning was meticulous along with disaster recovery and failover; after all we are at home using domestic power and internet, so we needed to cater for the unexpected. To set the scene, one moment involved a green screened host in Brazil interviewing three guests, one in Houston, one in New York and one in India... all in their homes, connected to a virtual

studio and streamed live from a house in an English Thames Valley village on top of a hill... and that was just one show out of 21 produced over the three days.

The applause the IABM received from the first BaMLive!™ in December was very well deserved on all fronts and we're delighted that we're once again working on the March virtual event, creating a new set to be streamed live to the IABM's new platform.

And whilst this all goes on the KitPlus TV daily show, now in Season 3 with over 150 shows under our belts, continues with our news roundup show on Mondays followed by guests and kit reviews during the week. One of our missions for 2021 is to promote VPRs (video press releases) to insert into the news show. These are 30-60 second news

items filmed by the manufacturer 'No Frills' and then embedded into the news creating a welcome break from Matt or Simon reading the news!

Editorial participation in KitPlus TV is free of charge thanks to support from those advertising around the frame and of course to Mediaproxy who spotted the show way back in April 2020 and wanted to assist in its development, so it's important to acknowledge that without this help and support KitPlus TV might not be here today. So a big thank you to Mediaproxy and all those companies who believed the concept a refreshing change to traditional marketing and got behind it. Finally thanks as well to the voice on the end of a tech call, fortunately for him not so often now, JP.

Case Study – **EUROPA+ – the best and latest European TV shows, series documentaries and concerts direct to your devices**

Europa+ offers a unique alternative to the existing SVOD and traditional television services throughout Latin America and the Caribbean – more than 1,500 hours of the latest and most popular European TV series and specials presented ad-free are easily found by genre, language, and sub-title options.

Customer goals:

- Understand their whole business in a single **platform, predict their subscribers' behavior and boost acquisition.**
- Get **advanced insights** and answer the most critical questions about their streaming service.
- Understand their subscriber's behavior relationships to answer critical questions and **target different subscriber groups**
- **Increase retention** by understanding why your users leave, before they leave

Our solution:

Europa+ is taking advantage of **JUMP for Video Streaming** to manage and understand their subscriber base, identify subscriber clusters, reduce churn, increase retention and engagement, increase marketing effectiveness and track campaign performance.

By using **JUMP Insights** the customer receives daily advanced insights about its Pay TV business performance. It can then identify immediate actions to optimize their key business areas.

“Bringing premium European content to the Latin America and Caribbean region, many of these titles for the first time, necessitates that we consistently monitor and adjust our offering based on what customers actually engage with. JUMP offers us the ability to get a comprehensive view of activity on the platform to enable these decisions.”

Rubén Mendiola, COO
& Managing Director of Europa+.



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