

4TH QUARTER 2019

JOURNAL

111

REPRESENTING THE BROADCAST AND MEDIA TECHNOLOGY INDUSTRY WORLDWIDE

publish



Special Report:

Publish – Bringing home the bacon

Also featured

Business Transformation – thinking like a start-up

How Nevion is helping bring 5G into live production

Peter Wayne Golden BaM Award Finalists



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IABM – Platinum Members

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Change. Innovate. Adapt.



Peter White
CEO, IABM

Welcome to the final edition of the Journal for 2019, published to coincide with the IABM Annual International Business Conference & Awards. The theme for this year's event is Change. Innovate. Adapt. – embracing the new reality of an industry at the tipping point of its transformation to an on-demand, IP-delivered, cloud-enabled future.

At the Conference we are exploring how all media business and technology leaders can transform, compete and avoid being left behind. Many of the articles in this edition of the Journal further explore this theme, with the emphasis firmly on business transformation.

Like every company, IABM is not immune from the changes all around us, and we have taken a long, hard look at IABM's core mission in the light of everything we're doing, and the result is an ambitious program for the coming year that will align the association's activities even more closely to its core purpose. You can read about what we're planning on page 4.

This month, we are saying goodbye to John Ive, who has served IABM so ably as Director Strategic Insight for the last nine years. His final article for the Journal looks at how the industry has once again transformed for the fourth time in his 40+ year career in broadcast and media. It has some excellent advice on how to keep ahead in turbulent times that will chime with many readers. I'd like to personally thank John for his brilliant contributions to IABM over the years – as well as producing some excellent Annual Conferences for us.

Still on the subject of business transformation, the Journal editor interviewed me for my thoughts on the subject in the 'Think like a start-up' article on page 8. The article also includes some excellent advice from

Grass Valley's President, Tim Shoulders, on how scale and an established market position can be turned to advantage to provide not just the same, but even better agility than start-ups enjoy.

As the pace of change continues to increase, standards and specifications become ever more important in delivering the interoperability that underpins operational agility. Paul Treleaven, our Specialist Technology Consultant, is one of the IABM team that keeps abreast of the latest developments and represents the interests of members to several key standards bodies. His latest report on page 24 will bring you up to date with all the major standards and specifications news.

IABM has bestowed Honorary Membership on Naomi Climer CBE this year in recognition of her enormous contribution to our industry over more than 30 years. This edition of the Journal includes an interview with the very modest Naomi about her career to date; it is great reading!

We interviewed Imagen ahead of the 'Cloud Collaboration and Integration' webinar we are running on 15th January 2020. The resulting article on page 56 makes interesting reading on the real state of cloud adoption from one of its pioneers, and is also an excellent primer for the webinar.

There is much talk about the potential of 5G in broadcast and media – particularly in live production. The EU's VIRTUOSA project, led by Nevion, is

exploring practical applications for 5G in live, and we've been fortunate to be able to include an article from Nevion's Olivier Suard describing the project and talking more widely on the impending 5G revolution.

There are also some interesting articles on a diverse selection of members – Brightcove, Levira, TVLB and Matrox – and a deep dive into the thinking behind the recently launched Grass Valley Technology Alliance. I commend them all to you.

For this and future editions of the Journal, we are introducing a new category of member articles alongside Member Speaks and Creative Collaboration pieces. Success stories give members a chance to share news of major projects – how they contributed and reflecting the dynamic transformation of our industry and looking at how companies can not just survive, but thrive in such a fast-changing broadcast and media landscape.

Finally, let me extend a warm welcome to the three new Platinum members who have joined or upgraded this quarter – IBM, Skyline Communications and Telestream. You can read more about these industry leaders on page 49.



Peter White
CEO, IABM

IABM in 2020 – time for change



Peter White
CEO, IABM

As 2019 draws to a close, a brief look backwards reassures me that we have continued to grow and develop IABM to better serve our members over the last year – more extensive business intelligence, event participation and networking opportunities, a new BaM Shop Window™, achieving wide acceptance for our new industry model in the BaM Content Chain®, launching the Technology and Trends Roadmap® and introducing the BaM Content Chain Maturity™ model to mention just some of the things we have done to make IABM work harder for our members.

Changing times means time for change

Looking forward, however, the words of Rasmus Ankersen from his keynote speech at our 2016 annual conference still ring in my ears – “If it’s not broken, consider breaking it”. In these times of tumultuous change, that advice is ever more sage: whatever industry you are in, change has become a fact of everyone’s life. Complacency is too often a precursor of failure. I have written elsewhere in this issue on how Business Transformation is essential if our members, and the wider industry as well, are to survive and thrive. The same advice applies equally to IABM of course. So, we have taken a long, hard look at IABM’s core mission in the light of everything we’re doing, and the result is an ambitious program for the coming year that will align the association’s activities even more closely to its core purpose.

Reality check

IABM is of course owned by its members and exists purely to serve their needs and interests. While we spend a lot of time talking with many of our members, we want to make absolutely sure we are concentrating our resources on all of their main concerns. That’s why we have embarked on a detailed member survey to further deepen our understanding of all our members’ requirements and priorities and find out how we can serve them even better over the coming year and beyond. When the project is complete in the New Year, we will be using its findings to further inform our 2020 plan.

In the meantime, 2020 waits for no one, and we have formulated and presented an ambitious plan to the Members’ Board for our planned 2020 activities, which I have outlined below.

Increasing engagement

I have already mentioned the member survey; beyond this, we are committed to engaging strategically with all our members on a continual basis. During the latter half of 2019, our Head of Marketing, Lisa Collins, has been in touch with more than half of our membership to talk through their engagement with their association and ensure that they are getting the very most out of their membership. It quickly became clear that this was immensely productive – not only for IABM in better understanding their requirements, but also in highlighting services and opportunities that some members had not been either aware of or leveraging fully.



As a result, we have now appointed Lisa to the role of Head of Member Engagement, and she will continue to interact with all our members on a full-time basis to ensure they are getting the very most out of their IABM membership. We will recruit someone to take on Lisa’s former marketing responsibilities and enhance our data management capabilities to enable Lisa to fully tap into the wealth of data we gather to ensure each member gets what they need. The result will be an enhanced membership experience and increased level of engagement both ways.

Sharing our knowledge

The Knowledge Hub on our website has grown into a superb source of information with a fantastic breadth of written and video resources. It includes literally hundreds of on-point videos – technology presentations, panel debates, future trends theatre presentations and much more – alongside educational content, white papers and business intelligence reports, slide decks

and presentations. Our Knowledge Hub content is key to being successful in supporting members and informing the wider industry.

The challenge we are addressing is to make this easily discoverable by organizing and categorizing it and giving users the ability to create their own paths based around their individual interests. To enable this, we are recruiting for a new role – Head of Knowledge, who we hope will soon be in place, working alongside our digital experts, Ben Dales and Joe Mace.



Training and CPD

In times of constant change, there is an even greater need for training and CPD to keep staff current with the latest developments and thinking in our fast-moving industry. The Head of Knowledge will also have responsibility for our significant training offer, and enable IABM to become a training aggregator – to position us as the go-to place to find training content. Our newly announced knowledge sharing initiative with SMPTE is the first step in this direction.

Effective and active in all regions

Our Regional Members' Councils have proved to be effective in addressing regional issues and increasing member engagement. In 2020 we are looking to extend the concept of regional support much further with more localized regional groups to more accurately serve unique local needs. Led by Darren Whitehead,



this will take several years to fully achieve, but based on the success of the locally-focused DACH and UK Members' Councils, the results should be very worthwhile. Key to this initiative will be the recruitment of new IABM staff with strong experience in each region, and we are actively seeking such people to move forward with more regional emphasis.

Global engagement

An essential element in supporting IABM members is having a full picture of, and engagement with, all sides of the market. The Global Engaged Partner (GEP) program we launched in the latter part of 2019 is beginning this process. We are inviting end-users into the IABM community and offering them access to some IABM resources in exchange for their knowledge and engagement. This is ultimately a win-win for everyone: IABM members get a closer understanding of the challenges our customers face as well as the opportunity to build new relationships; the GEPs in turn get the opportunity to tell suppliers what they need and discover new partners. We will be driving this program forward throughout 2020.

Event intelligence

We are also committed to reinforcing IABM's role as an advisor to our members on a much wider range of sector activities and events. We intend to achieve this by commissioning our Events Manager, Dom Louks, to lead analysis and reporting on these, covering important

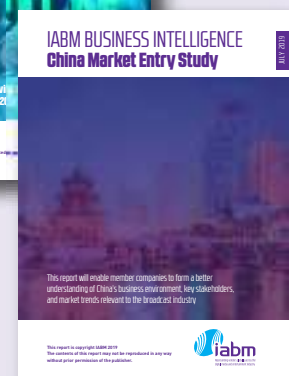


attributes such as market covered, visitor numbers/demographics, costs, ROI expectations and growth potential. This will continue alongside our existing Exhibitions Task Group operations, and should provide members with useful information to help them decide whether to invest time and resources in participating.

Talking of events, we are also looking to expand the number of shows around the world with which we cooperate (and so deliver extra benefits to members) – expect several announcements over the coming months.

Business intelligence

Last but by no means least, we will enhance our investment in our world-class Business Intelligence Unit, led by Lorenzo Zanni, which continues to provide more and more high quality, actionable research in addition to its traditional output. The NAB and IBC Special Reports are excellent examples of this, together with the recent much-enhanced Buying Trends Report.





Get involved in IABM Activity during 2020

We have designed and arranged various activities to help increase your company exposure, many of which are included in your standard benefits package – and a few which require additional investment.

IABM TV

IABM TV will be at shows around the world. As always you can secure your one-to-one interview with the team. Slots can be reserved via our online booking system.

We will be enhancing our service during NAB Show Las Vegas and IBC by offering members the opportunity to take part in our facilitated panel discussions. Themes will focus on:

NAB Show

- eSports
- UHD
- Telecoms as content distributors – barriers, benefits, opportunities
- 5G
- Demystifying AI/ML in the media industry – focus on practical implementations
- Collaboration focusing on co-development between buyers and suppliers, new collaborative business models and working with other suppliers
- Content consumption and monetization technology

IBC

- eSports
- Streaming
- Progress in connectivity enabling OTT
- Trends in satellite
- Content localization
- Cloud – challenges and opportunities

We are also looking for member companies to work with us and sponsor kit and services to improve the

services that IABM TV provides. We would love to hear from you if you think you could support us with:

- Teleprompter system
- Lights
- Tripods
- Radio lapel mics
- Transcription software to make a text version of interviews
- AI tools to make the tagging and searching of our content more effective

IABM Journal

Our Journal is produced four times throughout the year, and we are always looking for contributions to feature stories, member articles and customer case studies/collaboration pieces.

■ Q1 (NAB issue)

BaM Content Chain® Special Feature: Monetize
Feature article: funding your growth

■ Q2 (summer issue)

BaM Content Chain® Special Feature: Connect
Feature article: eSports

■ Q3 (IBC issue)

BaM Content Chain® Special Feature: Support
Feature article: 5G

■ Q4

BaM Content Chain® Special Feature: Store
Feature article: Collaboration

To have your content considered for inclusion, please visit the 'My IABM' area of the website and upload your ideas or alternatively email marketing@theiabm.org

Opportunities to be on the stage

During 2020 IABM will be curating a number of theatres and conference sessions on behalf of show organizers around the world and we are calling upon IABM members to submit papers and ideas for these. We have opportunities for keynotes, panelists and creative collaboration case study sessions at the following shows:

- Prolight + Sound
- BIT Madrid
- ConnecTechAsia
- BIRTV
- IBC
- Inter BEE

In addition, IABM will also design and produce a series of half-day thought leadership and networking combined events around the world. These will provide platforms for a deeper dive into the various elements of the BaM Content Chain®, vendor collaboration and the opportunity to meet potential customers. Members can apply for both stage presence and other brand enhancement opportunities during these sessions.

These events are scheduled as follows:

APAC

17th August – alongside BIRTV

18th November – alongside Inter BEE

Europe/UK

February – alongside Streaming Media (UK)

11th May – alongside ANGA COM (Cologne)

July – UK Summer event

11th September – IBC Executive Breakfast Event

MENA

30th March – Alongside CABSAT

North America

February – alongside VidTrans 20

19th April – NAB Show

One further date to be confirmed

Members should submit their ideas for all events via the My IABM area of the website or by contacting membership@theiabm.org

Priority will be given to Platinum Members and companies that can provide a genuine use-case/case-study or joint presentation with a customer and sessions that cover our key themes.

Key Themes for 2020

- Key elements of the BaM Content Chain®
- Future Trends
- Collaboration to include co-development between buyers and suppliers, including BIY and new collaborative business models based on risk sharing between buyers/suppliers
- Technology including AI/ML, cloud business models and transformation, multi-cloud challenges, 5G and blockchain
- New business models
- eSports
- Regional Focus

Other ways members can get involved

Contribute and enhance your profile during 2020

IABM Members' Councils

To ensure IABM is relevant in all territories its members trade in, our Members' Councils create a forum for discussion and debate on issues relevant to local markets and activities. Each council consists of a minimum of eight members and a chair.

During 2020 elections will take place for our APAC, Americas and EMEA councils. Look out for further information during the year.

Supporting you at Exhibitions around the World

Our popular IABM Member Lounges will be available at many major shows around the world, providing open meeting areas for members who are either exhibiting or just visiting. Lounges can be found at:

- Cabsat
- NAB Show Las Vegas
- NAB Show New York
- Broadcast Asia
- IBC
- Broadcast India
- Inter BEE

Private meeting rooms are available for members to hire by the hour on a first come first served basis at both NAB Show Las Vegas and IBC

To find out more or to discuss your individual needs and involvement please email lisa.collins@theiabm.org



*...the only way to move away from an old
mindset is to overcome that fear and take
a huge, huge leap of faith...*

Business Transformation – thinking like a start-up



Peter White
CEO, IABM

‘Business Transformation’ is a phrase we hear bandied about a lot today – but what does it really mean? We spoke to IABM CEO, Peter White, to get an insight based on his own experiences of change management and what Business Transformation is all about in the broadcast and media industry – just how vital it is if the industry is going to continue to thrive in these turbulent times.

What is Business Transformation?

It’s making fundamental changes to how the business operates to meet the changing demands out there, both in the marketplace and in the wider ecosystem. Of course, it is about driving efficiencies and creating an effective and lean organization but given the dynamic change in our industry, it may even be about survival. So, if you were used to working in a particular way and your business has been around for some time, then practices and procedures become second nature – ingrained in the company culture. And sometimes it’s difficult to move your organization into a new era and a new way of working because of not only just hearts and minds being in a different place, but also legacy practices, familiarity and sheer habit.

They say ‘old habits die hard’ but die they must if we are to transform ourselves, make ourselves ready for success and continue to compete.

One of the biggest issues back in the day when you undertook ‘business process re-engineering’ as it was then called, was resistance to change. Trying to change workflows and processes was quite difficult. Even when introducing an enterprise-wide computer system, the

people in the business would want to hold on to their ways of working and given the choice would just automate the existing workflow with all of its inefficiencies. In short, change is about people not about technology; if we could take away the fear of change we would be further ahead as a world than we are.

Leap of faith

It follows therefore that the only way to move away from this mindset is to overcome that fear and take a huge, huge leap of faith. It requires a degree of bravery and a willingness to leave all the old behind to create something that’s newer, more agile and responsive to what’s going on in the marketplace. This is why new startup organizations can enjoy substantial growth in a very short period of time, if they are properly funded: they’re not held back by the legacy of past practices and indeed in some cases, the traditional customer base of an existing business. You can take the high ground very quickly if you don’t have any history and any obligation to meet the needs of a more traditional customer base.

Business Transformation is about moving outside your comfort zone and understanding that you will never make an efficient and agile organization if you just

purely bring in new technology. You need to work in a different way to compete with the new, more agile businesses who are only ever focused on the now and the future, rather than the now **and the past** and the future. It’s thinking differently – thinking like a start-up. Business Transformation is about the whole business and every member of staff – nothing’s ‘safe’ from it.

This doesn’t just apply to broadcast and media companies – with the rate of change fueled by changing technology in every vertical, every company needs to start thinking in the same way. For example, IABM has to do this too – we have to change the way we engage – which is why we’ve had a close look at our core mission and are resetting ourselves to deliver that using new tools, thinking and processes.

Think like a start-up

The key here is the mindset. Large companies also have the advantage of scale so if they can adapt their approach and think like a small business with great direction, communication and delegation and create an agile workflow, they can leverage their scale and resources to their advantage. Imagine a large-scale business that thinks and acts like a lean start-up – what a powerful and successful business that would be. If we have been established and relatively successful for many years we cannot be complacent. This was brilliantly expressed by Rasmus Ankersen in his keynote at our annual conference a couple of years ago – “If it ain’t broke, consider breaking it” he said. This has become a bit of an internal mantra for me, because it’s easy to think that everything’s comfortable, everything’s good, everything’s working well.

Complacency kills successful companies; a start-up is never complacent!

Driven from the top

I think in terms of the mechanics of Business Transformation, it requires an open mind and willingness to change from the top. This is the absolute key – transformation has to be driven from the top; in all of the change processes I’ve been through in years gone by, the Executive Board had to be the champions of it; they had to be willing to prove that despite the fact they may have been running that business for say 20 years, they’re willing to change.

In my experience it’s usually the middle management who are the ‘blockers’ – they need to feel confident that they’re not going to lose their jobs – but just be retrained and redeployed in a new exciting transformed business.

Imagine a large-scale business that thinks and acts like a lean start-up what a powerful and successful business that would be

Start with Why

It’s about asking “Why” not “How” or “What” – it’s the purpose for which the business exists. As Simon Sinek says in his book ‘Start with Why’, “we should remind ourselves to start everything we do by first asking why.”

Once you understand why, you can determine how you go about achieving this purpose and what products and services you provide to ensure you are always on track.

This is why new organizations coming in are much more agile and seem to be much more on point, without any

legacy – without a tradition of doing things in a particular way. They are close to their original ‘why’. For example, putting my IABM hat on for a moment, our mission is still the same, but our road to achieving that is completely different – our members’ needs have changed and grown. We know why we exist, but we regularly have to review how we go about following this ideal and what we need to develop and change to maintain this focus. This is a key driver as to why we are undertaking a detailed research project with our members and all stakeholders in the industry over the coming months. We know the results from this will necessitate some further business transformation.

Poking the bear

Taking this thinking out into the wider industry, broadcasters’ traditional business has suddenly fundamentally changed. A good example here is how Netflix came to such prominence so quickly. Their early competition was Blockbuster; Blockbuster thought it was a video rental company, while Netflix saw itself as purveyor of video in whichever way it was delivered. Thus, Netflix was quickly able to change to digital delivery and, over a very short period of time in the history of broadcasting, captured a large slice of the market for OTT, in which they were one of the prime movers.

For a while, legacy businesses – traditional broadcasters and content owners – found it really difficult to challenge, but fairly quickly they recognized the need for change – to transform their businesses. This has taken some time because they had the anchor of traditional infrastructure, traditional technology and traditional people with an ageing

engineering-based mentality. We've also seen other organizations come into the marketplace – notably the FAANGs because they already had the essential one-to-one relationship with subscribers, so they could move quite quickly to start delivering video.

So if I'm Netflix now, I'm possibly thinking I'm absolutely top of the pile, so perhaps, 'I don't need to fix it, because it's not broken. Where's the threat?' The threat is that they've poked the bear and the traditional broadcasters are beginning to react by launching their own platforms, either through collaboration or acquisition and are taking content away from the Netflix platform.

Many of the broadcast suppliers have moved too slowly to change to meet the new demands for agility and efficiency of broadcasters' new platforms. That's why broadcasters have begun building some of their own technology – they just couldn't find what they required in the marketplace and they needed to move quickly; they need the efficiency of a one-to-one marketing platform rather than a traditional one-to-many. They also want a collaborative arrangement with suppliers rather than a sales pitch, they want best of breed and an iterative approach to development; in this day and age it is about partnerships and not a traditional buyer/seller relationship.

Fighting back

Will the reformed 'traditional' broadcasters be able to fight back? I think so. They have a past – a brand, huge catalogs and deep experience – which they can leverage to give themselves a competitive advantage. It's about changing their emphasis to pick up the new methodologies and skill sets. They have the muscle; in the medium term they can potentially negate the new players' 'first mover' advantage. But then they can't sit back – it's a never ending cycle of development – 'the broadcast circle of life'; they can expect new businesses to come in, or businesses to fall off the end or be subsumed into something bigger. So they need to be permanently on their toes – there is no destination anymore; it's a journey of continual change, which requires continual business transformation.

Funding transformation

For the technology vendors – IABM members – many of them have an understanding of these changing needs and they also have a unique understanding of how something is put together in the content chain. So they have something to leverage too – and brand still matters as well, alongside relationships and understanding how the whole process of making content works. And the larger companies have the scale to use revenues from their 'legacy' sales – which may

be reducing but aren't going away any time soon – to fund their transformation into a 'new' business. This is quite often achieved by breaking their operation down into a structure that enables the business to have the mobility and ability to change, using legacy business to fund that change. There's a long trail of technology nowhere near the leading edge, and you can always use those revenues like a cash cow to fund the change.

I have direct experience of doing this – albeit outside this industry – with Kalamazoo. When I took over as CEO, I inherited 500 people and a legacy paper-based one-write systems business that was going down the tubes if it didn't make some significant change. What I did was to cut the company up into bits. I took the very traditional business systems section and streamlined it to make it efficient, and it generated lots of cash, with repeat business generating lots of profit too. Simultaneously, I was able to go into new markets by creating a Security Division and a whole range of digital products based on the original one-write concept.

The point of this story is that we went back to look at what the company was about – it wasn't a printer of business forms (though this had been the operating basis of the business) – it was a business systems company, and recognizing this enabled us to transform the company from one that many viewed as a dinosaur into a very successful, modern business. And we did it by funding the new from the legacy.

In the same way, the likes of Disney have the brand, the legacy, the rights – and now they're doing the transformation. That's why they have a very good chance of prevailing in the longer term. Meanwhile Netflix who started as just a purveyor of video is also heavily investing in content creation and they do have a huge subscriber base built on that first mover advantage. Netflix has these guys coming up fast behind them doing exactly what they're doing currently but also with the benefit of either established subscription bases like Amazon, great innovation like Apple, or just a massive amount of content and legacy funding like Disney. It will be interesting to see how this all pans out in the long term; perhaps there is space for all to co-exist.

Business Transformation holds the key to the door to a successful future for all of us – suppliers and end-users. And it is going to be a fact of all our lives every day from now on. As I said above, change is a constant, there is no longer any destination, but a continuing journey. Those who are continually 'breaking it' have a bright future; anyone sitting on their laurels had better watch out!

Business transformation at scale – the view from Grass Valley



Tim Shoulders
*President of Grass Valley
(a Belden Brand)*

Following on from the point made in the interview with Peter White on how a large scale established business can be effective in this time of great change, we asked Tim Shoulders, President of Grass Valley (a Belden Brand), how they have transformed their business to succeed and leverage that scale to their advantage.

The last several years in our business have indeed been filled with challenges as our customers have been faced with new competition from streaming services and consumers have migrated to these new ways to consume and interact with content. Grass Valley has been able to successfully navigate through these choppy waters for a number of reasons.

First, it's no secret that our company is large – we are one of the largest suppliers of solutions to the media technology market. This scale has enabled us to spend more than nearly every other vendor in the market on innovating to meet our broadcast customers' changing needs. It also allows us to deploy resources swiftly to new opportunities as customer requirements change. Many start-ups or less robust competitors aren't able to be so nimble as they beholden to the one or two revenue opportunities that keep them afloat. We are able to be nimble due to a management commitment at GV to distribute tactical decision making down into the organization. I'm comfortable doing this because we at Grass Valley have a clear understanding of who we are and where we're going and we can communicate that down through the organization via our goals and objectives setting process and our internal communications. When the entire organization is on the same page regarding what matters, it's easier to delegate authority.

Second is the enormous amount of domain knowledge and experience we have at our disposal on the Grass Valley team. We have experts that understand many different elements of the broadcast workflow, which allows us to build efficiencies between workflow

components. We're proud to have a group of professionals on the GV team consisting of SMPTE fellows and even some who have founded and grown successful businesses on their own. We provide leadership in standard setting and in return receive technical credibility. This diversity of thought and expertise helps us innovate in ways other competition with product offerings limited to point products cannot innovate.

Finally, our relationships with our customers are invaluable to ensuring we're heading in the right direction. Grass Valley serves, in some capacity, nearly all the major media companies globally. There are very few significant media projects where we aren't asked to bid. This broad perspective allows us to identify changes in the market that other vendors may miss. We collaborate with our customers and the depth and strength of our many relationships with broadcast leaders worldwide allow us to stay focused on innovation that makes a difference to these customers. Without our customers suggesting and, ultimately, validating our product development decisions, we'd simply be throwing darts. We know these relationships are critical and we put a lot of effort into ensuring our customers understand their importance in the present and future of Grass Valley.



Make the most of membership



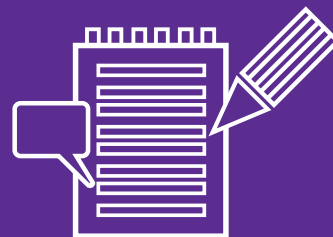
BaM SHOP WINDOW™

Connecting you to the entire broadcast and media technology eco-system



PROMOTE YOUR COMPANY

A wide range of opportunities to promote your company across the broadcast and media industry



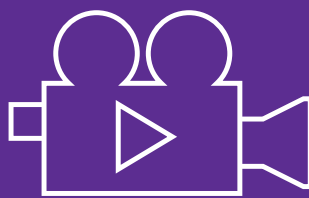
INDUSTRY NEWS

Up-to-the-minute news from the entire broadcast and media industry



INSIGHT & ANALYSIS

IABM is the leading provider of data, research and business intelligence reports in the broadcast technology sector



IABM TV

IABM TV keeps you up to date with key industry events and trends, no matter where you are



SKILLS & EDUCATION

Our portfolio represents industry newcomers, established experts and everything in-between



IABM GLOSSARY OF TERMS

A one-stop, online knowledge base for everyone involved in broadcast and media



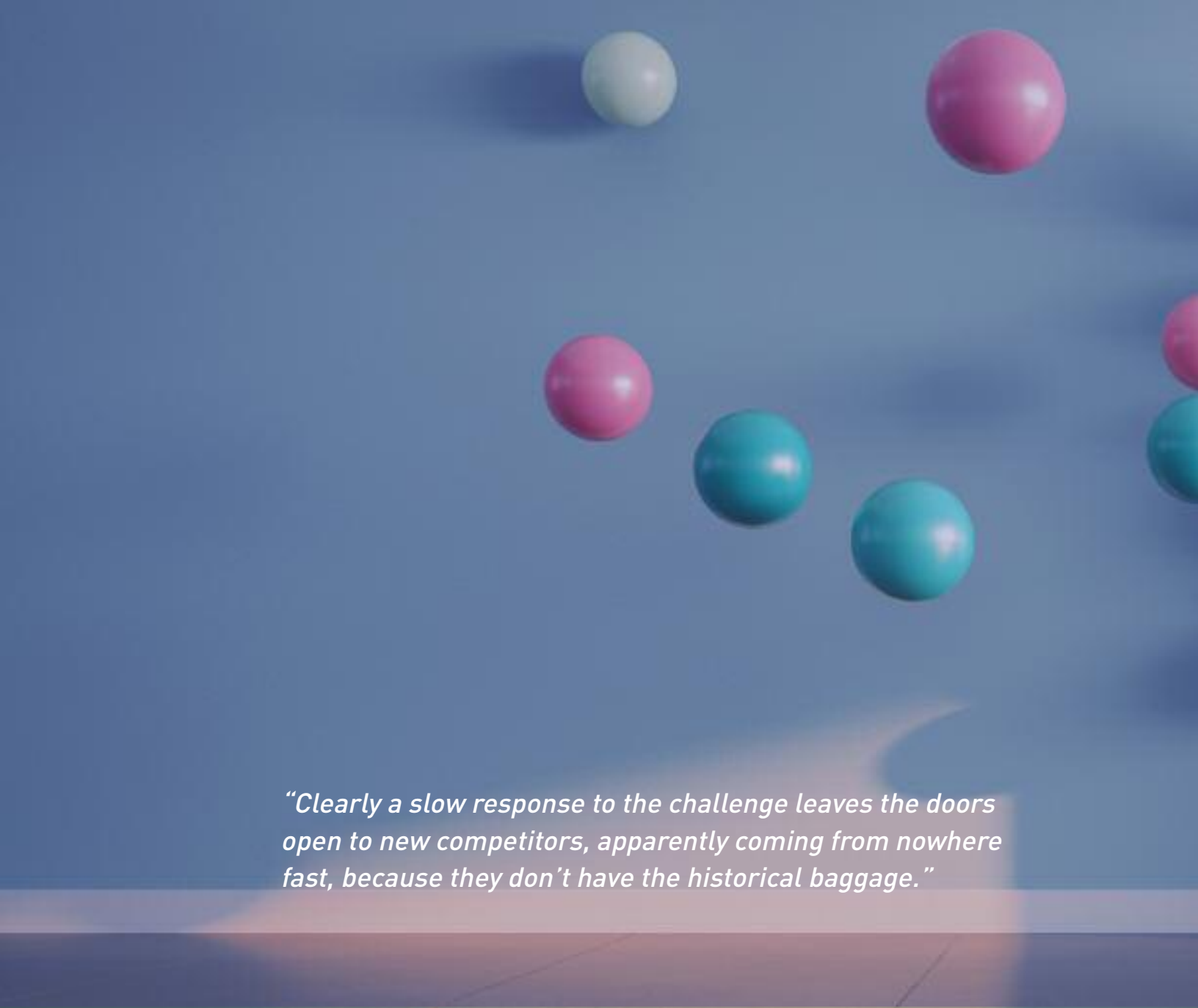
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An abstract background featuring several translucent, colorful spheres (pink, teal, and white) floating against a gradient of blue and purple. The spheres are arranged in a way that suggests movement or a path.

“Clearly a slow response to the challenge leaves the doors open to new competitors, apparently coming from nowhere fast, because they don’t have the historical baggage.”

What goes around comes around..



John Ive
Director Strategic
Insight, IABM

This is John’s final contribution to the Journal in his role as IABM Director Strategic Insight after nine years in the role where he has seen both the technology and the industry once again transform – for arguably the fourth time in his 40+ year career in the broadcast and media industry. It takes the lessons and experience from those 40 years to look at the present and future of the industry he is now leaving – and echoes some of the themes Peter White highlights in his Business Transformation article, but viewed with a technologist’s hat on.



..but more frequently

John started his career at the BBC in the 70s and is returning to his roots. This may be John's swansong as a technologist in broadcast and media, but what we are losing, the music and video world is gaining as he sets off on his new creative career as a producer. I am certain all our members will join us in wishing John every success. Rock on, John!

Many articles speak of the revolution the broadcast and media industry is experiencing right now and for many adapting and embracing change is a serious challenge. This is not new, it's something that has been experienced through the decades back to the very beginnings of television.

It could even be argued that the current round is not as radical as earlier incarnations such as the transition from monochrome to colour or the transition to wide screen and high definition. These were all changes that influenced the core video signals delivered to end consumers. However, as we have seen in other areas such as audio, there comes a time when further quality improvements to a mature system are incremental and go beyond what consumers need or appreciate.

So, the point of this introduction is to highlight that this revolution is different and unlike the past, it's not primarily about sound or vision improvements. This is a rather basic and obvious assertion but surprisingly many large enterprises don't get it. There have been (and continue to be) many examples of refinements to mature products and systems when end users are looking for something more radical in terms of operations. Such short-sightedness has brought organisations down, not realising that their customers don't want minor updates. I won't embarrass specific enterprises by naming names but I'm sure you can identify examples of this yourself, perhaps it's happening in your company right now!

If we are not talking about audio and video quality improvement, what is it that the next generation of professionals and consumers will spend money on? Well consumers' eyes have been opened to new ways of consuming content, ways which make the traditional delivery methods appear antiquated. An obvious example can be seen in charity shops overflowing with CDs and DVDs (although vinyl seems to refuse to die!). Even conventional broadcast television is giving way to a multitude of on-demand offerings. This has not only dramatically changed the consumer experience but also the ways in which professionals must prepare and deliver content.

As previously mentioned too many organisations, both suppliers and end users, will be persevering with traditional systems, improving them but not getting the level of return required to satisfy the emerging needs

It's never clear whether new technology drives change or whether the need for change drives technology development; probably a combination of both. What is clear, is the scale of the changes in the 'back office' of media production and delivery are huge. The magnitude of those changes presents challenges way beyond the technology itself and in the future will be the subject of educational training around change management. It comes back to the power of momentum behind traditional solutions and the discontinuity that the new era brings.

As previously mentioned too many organisations, both suppliers and end users, will be persevering with traditional systems, improving them but not getting the level of return required to satisfy the emerging needs. And the time spent on these low return activities is time lost in building up new businesses and radically different operations. Clearly a slow response to the challenge leaves the doors open to new competitors, apparently coming from nowhere fast, because they don't have the historical baggage. It's very easy to sympathise with organisations that struggle to adapt; they are often much loved and rich in history and former innovation.

The decisions needed to stay relevant are tough and go far beyond technical considerations. The culture of a company often needs re-invention, leading to staff changes and business model revisions. The burden of support for existing products can also draw attention and finances away from the new issues to be addressed. If the company has a background of success and the funds to invest in

change, then these challenges are not insurmountable but need very strong and visionary management.

Team members in an organisation are often overloaded with day to day pressures of keeping the current business going and therefore don't have the time to see the bigger picture and certainly don't have the time to spend on re-invention at a fundamental level. This is where the senior management, the CEO, President and other key players really must step up and identify the trends and take the necessary bold decisions despite the short-term disruption it will cause.

Year on year the renewal cycles have reduced to the point where stability no longer exists, replaced by perpetual change. Daunting though this may sound it just requires a different mindset.

Companies new to the industry don't suffer from the preconceived ideas of established players. They are in full listening mode and quick to identify the shortcomings of existing practices.

Introducing new products and systems in the past took years, followed by further years of steady growth and profitable maturity. Planning new products could begin once the signs of decline were evident and this cycle could cover a decade or more.

Year on year the renewal cycles have reduced to the point where stability no longer exists, replaced by perpetual change. Daunting though this may sound it just requires a different mindset. Because end users of products and services need certainty through these changes, there is a growing requirement for closer relationships between the supplier and end user. Evidence of this is visible with some large corporations purchasing or creating long term contracts with their suppliers. This optimises and speeds up the 'feedback loop' of operational requirements and service delivery. I use the word service delivery rather than product delivery because we are heading towards a service business model and away from capital expenditure for mission critical solutions.

Companies new to the industry don't suffer from the preconceived ideas of established players. They are in full listening mode and quick to identify the shortcomings of existing practices. They have nothing to lose and everything to gain by introducing radical new concepts and new technology. The absence of a track record may be a drawback, but new business models often provide limited exposure should the relationship not work out. Adding to the advantages that new businesses have are the latest software tools enabling fast prototyping and proof of concept.

So, looking forward, it's not just about improved picture or audio quality, although in select environments these will be important, but delivering new and innovative experiences to consumers. A part of this is a proliferation of choice, even though consumers tend to migrate in large

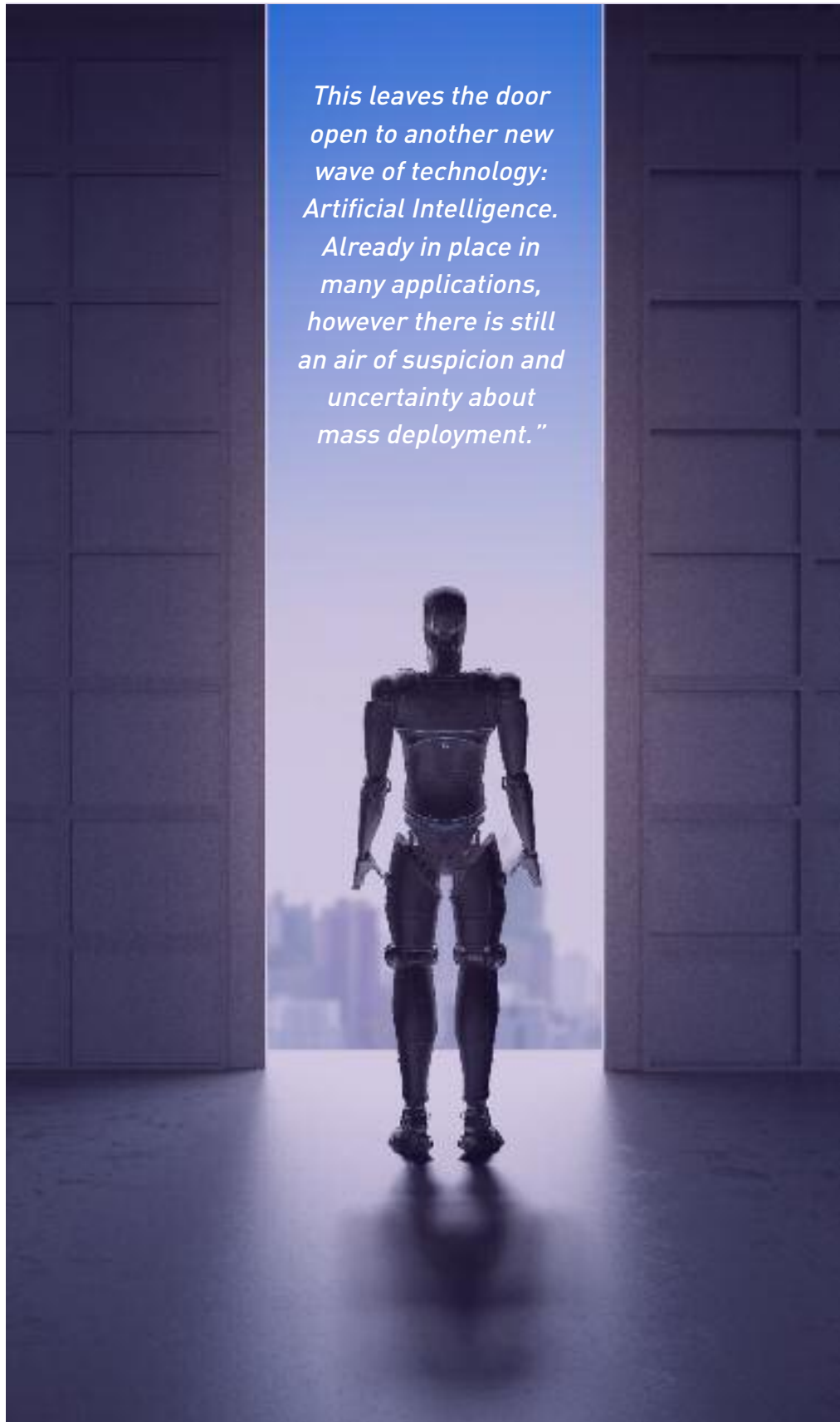
It is typical of new innovations to perform worse than their mature counterparts in the short term, to be discredited, and then accelerate way beyond initial expectations

numbers to a limited range of popular content or services. If choice and a proliferation of services is the future, then the cost of providing that must be minimised through substantial gains in operational efficiency.

This leaves the door open to another new wave of technology: Artificial Intelligence. Already in place in many applications, however there is still an air of suspicion and uncertainty about mass deployment. Well publicised failures and statistics that say AI is not one hundred percent accurate in its actions fuel these doubts. Once again this is an example of an immature technology coming from behind but with a potential to take operational activities to an entirely new level in the longer term. For end users it means that staff with specific skillsets will no longer be necessary, so disruption will run deep within organisations. It is typical of new innovations to perform worse than their mature counterparts in the short term, to be discredited, and then accelerate way beyond initial expectations.

For the bold and brave there are fantastic opportunities going forward. New services and new ways of working are going to make everything we have come to know and feel comfortable with obsolete. The market for the new era solutions will be bigger than the past with new thinking, new business models and new skillsets. For visionary leaders in existing successful companies and new start-ups the opportunities are huge, the only thing that will hold you back is assuming the broadcast and media world is not about to experience radical change or that you will be immune to the fallout!

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The VIRTUOSA project – how Nevion is helping bring 5G into live production



Olivier Suard
Vice-President of
Marketing, Nevion

We spoke to Olivier Suard, Vice-President of Marketing, Nevion, about the company's leading role in the EU's VIRTUOSA project which aims to take advantage of the potential of 5G in live production.

Before we get into discussing the VIRTUOSA project, please remind us of the background of Nevion and give us an overview of Nevion today

As the self-styled architects of virtualized media production, Nevion specializes in helping broadcasters and service providers revolutionize the way they do business, by transforming broadcast workflows using IP network technology and IT concepts like virtualization. This positions Nevion in the 'PRODUCE' area of the IABM BaM Content Chain®.

When it was first founded in 1996, Nevion (then called Network Electronics) specialized in providing hardware products for the transport of video, audio and associated data, primarily in the facilities. Over the subsequent years, other companies (VPG and T-VIPS) merged into Nevion, bringing IP and WAN (wide area network) expertise with them. As a result, Nevion became a pioneer of IP media transport both in WANs and LANs (facilities). However, in the past five years, Nevion has transformed from being a supplier of hardware products into one that delivers transformative solutions based on software-defined products and with associated services. The solutions are focused in four main areas within the broadcasting business: facilities, contribution, remote production and terrestrial distribution.

Nevion solutions are used to power major sporting and live events across the globe. Some of the world's largest media groups and telecom service providers use Nevion technology, including AT&T, NBC Universal, Sinclair Broadcast Group Inc., NASA, Arqiva, BBC, CCTV, EBU, BT, TDF and Telefonica.

Tell us about the VIRTUOSA project – what is its objective, who are the partners and how you will measure its success?

The purpose of the EU-funded project VIRTUOSA is to explore through real-life examples how 5G (the Fifth Generation of Cellular Network Technology) wireless communication can be combined with virtualization concepts from the IT industry to enable broadcasters to produce live content (such as sports or music coverage) more efficiently and cost-effectively across locations, to meet growing consumer demand.

The project involves four international leading industry players with complementary competencies: Nevion AS (Norway), Mellanox Technologies LTD (Israel), LOGIC media solutions GmbH (Germany) and IRT – Institute for Broadcasting Technology (Germany). These partners bring to the project expertise in, amongst others, IP networks including SDN (software defined networking) and

The purpose of EU-funded project VIRTUOSA is to explore through real-life examples how 5G wireless communication can be combined with virtualization concepts from the IT industry growing consumer demand.



virtualization, media transport, network architecture and system design, as well as real-life experience of broadcast production.

The ultimate aim of the project is to develop and launch a product (or solution) that will enable virtual connections of any studio, control room and on-site production across multiple locations, and live feedback from the audience straight into the production chain via 5G acquisition.

For this purpose, the VIRTUOSA project received a grant of €2 million from the European Union's Horizon 2020 research and innovation program, 'Fast Track to Innovation'.

Nevion is leading the project – what special expertise and experience are you bringing to the table?

The VIRTUOSA project fits into Nevion's core expertise of real-time media transport over IP networks. Nevion is bringing to the table a wealth of experience in creating solutions that enable distributed live production and virtualization of resources.

One of the keys to the success of the VIRTUOSA project will be the ability to orchestrate real-time signals

across LANs, WANs and 5G networks. Nevion's orchestration and SDN control software, VideoPath, will be used to deliver that essential capability.

Is 5G the missing link in viable remote production? Tell us about its advantages and the potential it can unlock

It is no secret that broadcasters are looking to do more with less – create more content with fewer resources. One aspect of achieving that goal is to become more light-weight and nimble in the process of acquisition, and to centralize the production to make optimum use of equipment and production staff.

The trend for IP based remote production fits squarely within that framework. With 5G though, the acquisition becomes even more portable (e.g. fewer cables) and more mobile. This means that broadcasters can set up on site more quickly and cost-effectively almost anywhere, to handle breaking news for example. It also means that events that require tracking over considerable distances, e.g. sports such as cycling, road running, or cross-country skiing, could become easier to cover.

5G can also be used as back-up link for more conventional remote production connections, which is

expected to be more versatile and economical than traditional diverse routing over fixed connectivity.

How will you solve the critical issues of timing and security of pairing?

One of the purposes of the VIRTUOSA project is precisely to investigate the performance of timing distribution over 5G connectivity, and in particular whether the intra-5G network timing distribution will be sufficient for all of the standard IP requirements. That said, separately, Nevion has been investigating how real-time production can work effectively with latency that historically has often been considered unacceptable, and it is clear that there are additional ways to reconcile timing downstream, so this area is not critical.

Security is important in several levels. The key areas are authentication of the devices, encryption of the content and secure control channels. There are both existing and emerging standards that can be applied to this area, and it is anticipated that the VITUOSA project will investigate these also.

Are there any extra considerations from a management/orchestration point of view with 5G?

A key area of exploration within the ongoing work on 5G is that of interfacing to the control API of the 5G orchestration. There is potential within the future technical capability of 5G for dynamic setup and teardown of connectivity. Using an API into the 5G orchestration system would potentially allow a media orchestration system such as Nevion's VideoPath to

create end-to-end media flow provision over a hybrid of fiber and 5G IP connectivity. This feature, like many elements of the 5G technical potential, would rely on service providers being willing to open this capability and provide it as a service.

What will it take to persuade carriers to put aside a 'custom slice' to enable the guaranteed quality of service that 5G live contribution requires? You are competing for bandwidth against some very big potential payers!

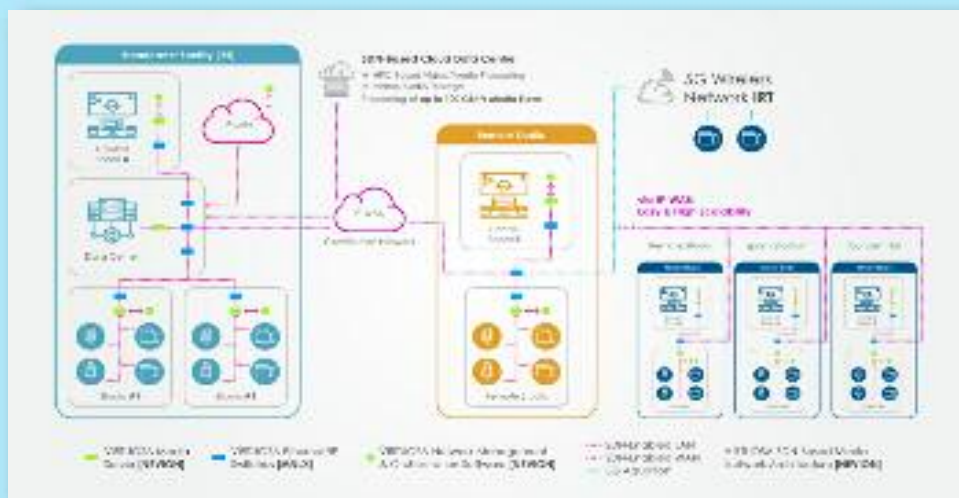
The first point to make here is that a 'custom slice', i.e. dedicated bandwidth, may not always be required. For example, where 5G is used as a backup connection for contribution, using 5G 'as is' may well be good enough, in the same way as the Internet, with its fluctuating bandwidth, can provide good enough connectivity as a backup. It's largely down to the balance between the cost of the bandwidth vs. the probability of it being needed.

Of course, where 5G is used as the main connectivity, a guaranteed bandwidth will be required. That's when a 'custom slice' would need to be negotiated with telecom service providers.

The biggest challenge when we start talking about Custom 'QoS' slice provision with dedicated bandwidth is whether service providers will see a sufficient large potential market in these services to make them worthwhile providing. Broadcast contribution alone is unlikely to provide sufficient stimulus for this, but combining forces with other 'niche' areas such as emergency services, more generic dynamic event-based

data requirements and maybe military applications could make this approach viable.

In the context of remote production (which is what the VIRTUOSA project is primarily looking at), the 5G connectivity is typically needed in a very specific location and for a very time-delimited period. This makes the case for the allocation of



bandwidth much easier to make in that it is less likely to be in competition with other uses.

Of course, it will also be down to pricing.

It is not the purpose of VIRTUOSA to investigate this aspect of 5G in broadcasting – it is looking at the technical aspects. The working assumption for the project is that there is a strong business case for broadcasters to use 5G, and they will work to overcome the issue of competition for dedicated bandwidth.



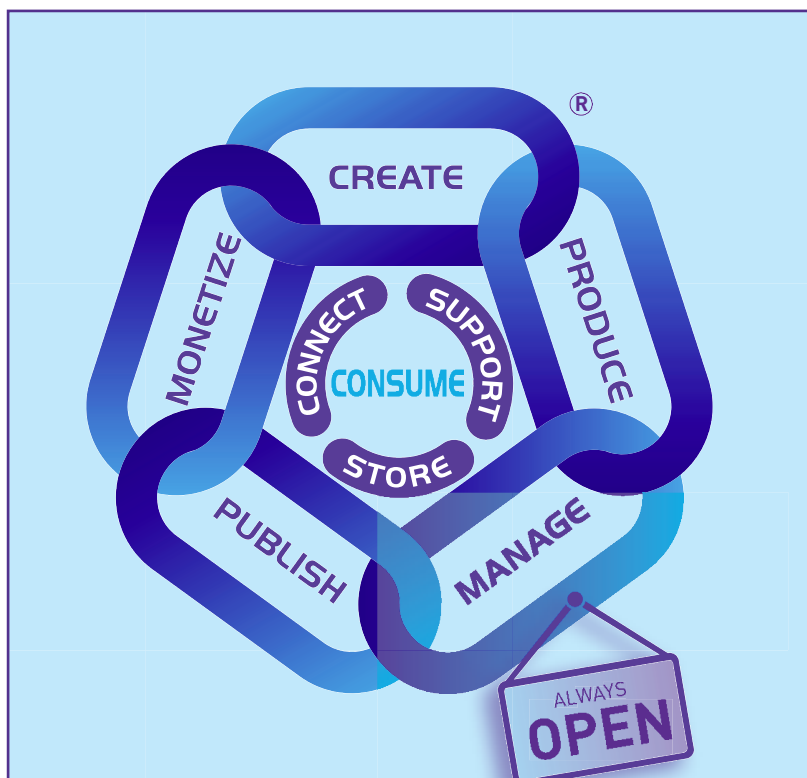
When will 5G-enabled remote production become practical? What barriers are still to be overcome?

The technical issues surrounding the transport of media over 5G networks can be overcome in fairly short order. The VIRTUOSA project for example is set to run for just 24 months.

The biggest issues will be the speed of roll-out of 5G and its performance (actual vs. theoretical), providing sufficient capacity and geographical coverage.

Finally, Nevion has been an IABM member for some time. What are the most valuable IABM services from your perspective?

As a neutral organization for the professional broadcast sector, IABM can facilitate information and knowledge sharing across the industry and stimulates valuable debate in a unique way. For Nevion, which has always believed in industry collaboration (through the adoption of standards or business partnerships) this debate serves to cement that process.



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Publish

"Publish is arguably the most important stage of the content supply chain. Satisfying the demands of an increasingly demanding audience is the most important factor in keeping you in the race."

Nav Khangura –
Deluxe

Publish – delivering the bacon



Roger Thornton
IABM

The Publish block of the BaM Content Chain® came out as one of the most important in the recent IABM Buying Trends survey, with 57% finding it to be the most important in terms of investment. Unsurprisingly, this is reflected in buyers' top media technology purchasing priority being multi-platform content delivery. Even though BIY is on the rise across many content chain blocks, 90% of broadcasters have no plans for this in their Publish operations. With most technology buyers looking to increase their technology investment by up to 10% in the coming year, the future looks bright for media technology suppliers in Publish over the coming months and years.



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

For this issue's feature article, we asked IABM members with products and services in Publish to assess its current drivers, opportunities and challenges, and to take out their crystal balls to look into the future – including the potential impact of 5G. As Deluxe's Sr. Director Product Solutions, Nav Khangura, says, "Publish is arguably the most important stage of the content supply chain. Satisfying the demands of an increasingly demanding audience is the most important factor in keeping you in the race."



Despite some heavy editing, this is a long article – for which I make no apology. 13 IABM member companies contributed to it and each has a different opinion and approach to the market. It will be an illuminating read for everyone involved in delivering content in our rapidly changing M&E landscape.

What are the current market drivers?

Changing viewing habits and demands were top of most people's list. "The main drivers of change in Publish all stem back to one key theme: the ongoing change in consumer viewing habits," Deluxe's Nav Khangura says. "Whether it's the volume increase of original content, the explosion of localization needs, the evolution of higher quality formats or the continual increase in the number of digital platforms, all drivers lead back to meeting consumers' viewing demands and the endeavor to have a competitive edge in the race to win consumers' viewing time. As original content grows year over year, so does the need for instant scalability and intelligent automation to transform, package, distribute and publish."

Consumers in charge

Shawn Carnahan, CTO at Telestream, also sees consumers driving change – and so Telestream too. "We have been witnessing some basic changes in consumer behavior for some time. From their perspective, consumers are seeking to transition to more flexible ways to consume content. The MSO/Aggregator model is steadily being replaced by direct relationships between content creators and their consumers. This is fragmenting the market. Then there is a large group of linear TV broadcasters that are seeking to replicate their channels in OTT."



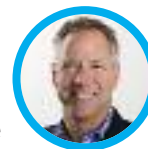
"These factors are definitely driving the technology companies to support these moves. At Telestream, it is driving our roadmap, and in conversations with colleagues at Harmonic and other companies, they say the same thing. Our collective challenge is how to build more cost-effective, flexible and elastic origins," Carnahan adds.

"It is not OTT first, it is everything first."
Tim Felstedi – Rohde & Schwarz

Unsurprisingly perhaps, Harmonic's Director Payout Solutions, Andy Warman, agrees, and suggests the route to success. "We see three main drivers shaping buying decisions: growing demand for OTT content delivery, adoption of media over IP technologies and the move to cloud-based technologies. This underscores the market's desire to transition toward software-based solutions and away from an appliance-based approach. It provides customers with flexibility and the ability to quickly adapt to changing market needs."



Richard Heitmann, VP General Manager at IBM Aspera, also sees the cloud providing the current answer and looks to 5G's potential future impact. "Cloud has become an acceptable option for traditional publishing workflows with several channels deploying "payout origination" from the cloud as commodity editing in the cloud becomes more prevalent. In the coming years, more and more production workflows and traditional broadcast editing will move to the cloud. In the US, the reallocation of C-band satellite frequencies to mobile carriers is driving traditional network distribution from satellite to terrestrial carriers. Furthermore, with the advent of 5G (though widespread consumer usage is likely several years out), edge compute will offer consumers tremendous opportunity for customized consumption from ads to long-form content," Heitmann says.



IBM Aspera

Choice of viewing devices

Nick Fielibert, CTO, Video Network at Synamedia, identifies the profusion of different viewing devices as driving the market: "The main drivers are devices (smart TV, media players, tablets, smartphones, PCs etc.) that can consume video over the internet. Content providers see the audiences growing if they publish content outside the traditional model of a Service Provider (SP) as a content





"Our collective challenge is how to build more cost-effective, flexible and elastic origins." Shawn Carnahan – Telestream

aggregator. For this reason, all Content Providers (CP) create a direct connection to consumers with an OTT service. Because of the abundance of devices, SPs also see a need to provide the aggregated experience to their subscribers."

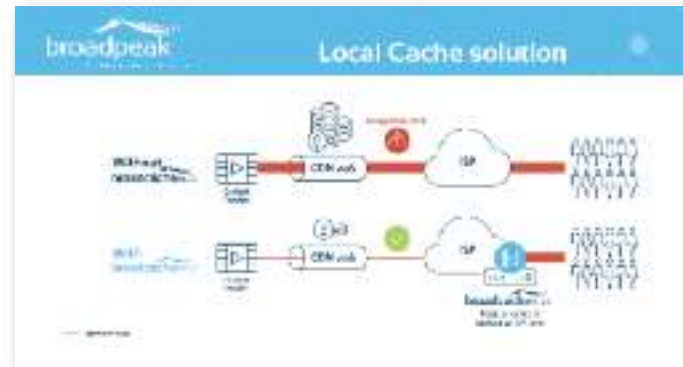
Rohde & Schwarz Strategic Marketing Manager, Tim Felstead, also sees the change in consumer habits as a driver, but adds a second, as well as looking forward to 5G: "Allowing the possibilities of technology development to improve and further integrate the variety of processes required to produce content for consumers. These include integrating and virtualizing playout solutions including great graphics capability, and automating content generation for VOD file delivery and promo versioning to offer two direct examples. And there is also the increasing value of live events while at the same time the opportunity presented by highly capable hand-held mobile devices and associated networks. Our research, product development and trial deployments driven by our transmitter group, along with many key industry partners, is enabling the tight integration of telecommunications (wireless and mobile broadband) and linear broadcast delivery through the 5G Broadcast standards," Felstead adds.

As a service provider at the sharp end of Publish, Red Bee Media is well placed to see where the market is heading – and what is required of the technology. "It's about multi-platform more than ever. In this rapidly evolving business and tech landscape, it's crucial to be able to get content to the right place/right time/looking perfect. Agility, control, visibility," sums up Steve Russell, Head of OTT & Media Management at Red Bee Media.

Quality of experience

For Antonio Corrado, CEO, MainStreaming, it's back to the consumer – and QoE. "For us, the main driver of change is the consumer demand in regard to quality. Traditionally, streaming over the internet has been a risk as companies could only guarantee a 'Best Effort' service when streaming content for broadcasters or content owners, which is dramatically different from what they were used to with satellite providers where they used to purchase services based on quality of experience. The delivery network providers whose technology and services are built specifically for video and focused on enabling the future of streaming over the internet will be the providers that are able to guarantee quality of experience to broadcasters and content owners based on QoS as they go direct-to-consumer," Corrado asserts.

Broadpeak VP Marketing, Nivedita Nouvel, concurs with Corrado: "More and more, content providers are driving the delivery of valuable content, both live and VOD. This has an impact on the technologies required by network operators to serve their subscribers with the best QoE possible."



Joined up linear to VOD workflows

"The drive to adopt IP technology and – beyond that – to virtualise continues to drive interest and investment in linear playout technology," says Pebble Beach Systems Marketing Manager, Alison Pavitt. "From a Pebble perspective, several years after the first deployment of our 'Orca' virtualised playout solution there are now multiple deployments in diverse applications, including a full cross-continent business continuity service, and a large scale multi-channel deployment which broadcasts in multiple languages requiring precise synchronisation and comprehensive audio playout rules.

"The buzz around virtualised playout keeps growing. However, questions remain about the economic, logistical and technical benefits to the end user, and judging by the high volume of on-premise playout solutions that we continue to install and commission – whether IP or baseband – it's clear that this path is not one that every broadcaster or media company is ready to follow," Pavitt continues.

"The adoption of new technologies and standards is not an end in itself. In our experience the key drivers of change continue to be the need for greater efficiency, and for 'joined-up' linear to VOD workflows. The fact is that linear playout continues to be where broadcasters make their money, and with pressure for them to invest and expand to other platforms to help them compete with on-demand and OTT services, any efficiencies that can be gained in their playout workflows and infrastructure become very attractive," Pavitt adds.

"In this rapidly evolving business and tech landscape, it's crucial to be able to get content to the right place/right time/looking perfect. Agility, control, visibility."
Steve Russell – Red Bee Media

OTT or linear – where's the investment going?

We asked our respondents where they are seeing the market moving in terms of what their customers are asking for. While OTT is getting a lot of attention, it's clear that linear isn't going anywhere soon, and an integrated, hybrid approach is often preferred.

A hybrid world

Videon CEO, Todd Erdley, sees OTT first as the ultimate destination. "Videon is seeing a hybrid approach to the market where there will continue to be linear provided in parallel to OTT. Our focus is supporting low latency live events, particularly sports. In this area, the focus is on OTT being delivered with the same delay as linear. That is step one where the linear experience and OTT experience are effectively the same. With advances in areas like eSports and other sports gamification including better, more and more we are seeing providers consider much more focus on the OTT delivery. Videon anticipates a highly differentiated workflow where OTT provides 2nd screen users that are evolving to have 2nd screen as 1st screen be a much more interactive, engaged production. This necessitates a transition to OTT-first," Erdley says.

"We believe that there will be a mixed environment for some decades to come," says Rohde & Schwarz's Tim Felstead. "While there has been a relentless trend towards OTT (including VOD and streaming live services) over recent years, linear terrestrial delivery remains a powerful and often still primary market. The key for our customers is to ensure that solutions they build to service their customers serve all of the publish mechanisms at once in the most efficient manner possible. We believe workflow automation, integration, virtualization and great file or signal processing capabilities hold the keys to this expectation. In summary, no, it is not OTT first, it is everything first."

Red Bee Media's Steve Russell again provides the view from the output end. "Our customers like the fact we span across these domains. It's about an integrated business plan that leverages all distribution models. It's a mistake to see these as separate domains. It's a continuum of distribution and monetization possibilities. And one channel supports the other," he asserts.

Telestream sees the focus as very much on OTT, perhaps reflecting its broadcaster customer base. "Looking at one of our core markets – owner operated linear multi-channel broadcasters – they are almost exclusively focused on OTT build out," says Shawn Carnahan. "Currently, virtually



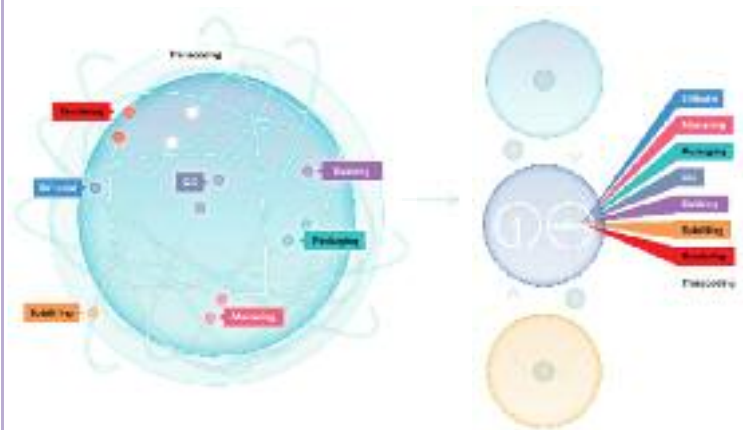
everything we are doing with them is in response to the challenge of how to create an OTT network that is on a par with linear television in terms of quality of service and experience. The transition from OTT being a novelty to having the same consumer expectations as the linear TV experience in your living room is massive."

"Broadpeak's customers are mostly Pay-TV operators, and we find that they are investing more in OTT technologies like ABR streaming rather than legacy cable or IPTV streaming. The same is true for satellite operators. They need to address multiscreen and are hence moving to ABR formats," Nivedita Nouvel explains.

Linear lives on

"OTT is certainly growing in prominence, with customers increasingly looking to take on the FAANG companies via their own Direct-to-Consumer offerings," adds Deluxe Director of Strategic Planning, Ian Robbins. "For traditional linear players, their budgets are still heavily focused on their core offerings, but naturally they are having to move more focus towards their digital platforms as a means to diversify their revenue streams and compete in the digital space. That said, linear is still an important medium for the big players and something we envisage continuing to carry a significant level of focus for the foreseeable future."

"It is now crucial that vendors enable their customers with a technology platform to seamlessly orchestrate fulfilment for both initiatives via the same tool set. This inflection point led Deluxe to create the One platform. Now more than ever, Deluxe is positioned to meet high-volume processing requirements for both linear and OTT fulfilment as well as having the ability to support customers seeking a D2C solution," Robbins adds.



Deluxe – From Chaos to Deluxe One

"The data indicates more and more people are using 2nd screen as primary. This creates an opportunity for a highly interactive delivery where differentiated content must be enabled." Todd Erdley – Videon



For MainStreaming too, OTT is the prime focus. "All of our customers are transitioning toward OTT or adopting an OTT-first approach, as we are a streaming service provider focused on delivering video over the internet. As the OTT industry continues to grow exponentially year over year and with the now direct-to-consumer approach many content owners or traditional broadcasters are taking, this is exactly where we see the market heading," says Antonio Corrado.

Size matters

For Harmonic, customer priorities depend on the size and type of organization. "On the production side, we are seeing continued growth in the adoption of OTT," says Andy Warman. "And this appears to be a priority for larger organizations, though linear channels still receive significant ongoing investment. In small- to mid-size organizations there is relatively little movement on the adoption of OTT, with linear being the focus. On the distribution side, we see more investment in OTT than classical broadcast."

For IBM Aspera's Richard Heitmann, while OTT is the overriding trend, cloud-based distribution is not yet feasible. "There is a massive transition to OTT networks – from the largest of content owners to the smallest of niche creators. However, with the reallocation of C-Band spectrum, traditional linear networks – particularly 'digital' and secondary sub channels – are testing transmission over internet. OTT first relies on on-premises, followed by data center hosted and CDNs due to the favorable financial models. While linear channel migration may lead to a surge in budgetary spend, cloud-based distribution is not yet financially viable due to the fees which come from moving content out of public cloud providers. Broadcasters and OTT providers will still face trade-offs between long term capital investments and the high operating costs associated with cloud-based distribution. Being more economical, especially when launching pilot content/channels, will make cloud the preferred platform. Cloud usage is even more logical as more facilities try to move their operations off site for economic, scale and update incentives," Heitmann explains.

Will more broadcasters internalize OTT capabilities as Disney has done – or will they continue to outsource them?

The bigger operators in this market want to control the viewer experience and build their brands," says Telestream's Shawn Carnahan. "Today, the technology is not experimental: there has been a shrinking in the options for how they distribute content across all the consumer platforms that they need to cover. It's not as much of a mystery for them as it once was. So, I believe that many of the bigger players will build their OTT channels out internally, whereas earlier, the strategy was to wholesale outsource the challenge. This internalization process will include the entire workflow including App development for these platforms. This will enable them to better control consumer behavior, consumer experience, monetization and analytics of the process.

"At Telestream, the development of our iQ portfolio is driven by the problems that are unique to the delivery of media over IP," Carnahan continues. "This continues to be true for OTT delivery – it's just a different set of problems. Our customers seek control over this, and also to control costs. When OTT was an experimental novelty, organizations weren't staking revenue on these new channels. But as they transition to OTT becoming the core business, then bottom-line profitability is directly related to costs. For Telestream, this speaks to the level of integration we have within our customers' workflows. As a technology vendor, we can do so much more depending on the amount of the whole process that we're participating in. OTT is not as componentized as television was in the past. We must have a broader portfolio of system solutions. We're not there yet, but strategically it is where we are heading."



Telestream's OptiQ monitor

"The move to the cloud is more than just a technology change, it's a transformational exercise for broadcasters and playout service providers which can result in attractive reductions in content distribution costs." Ian Robbins – Deluxe

Core competencies

For Rohde & Schwarz, it's all about the old maxim of sticking to core competencies. "We envisage some customers making some elements in-house," says Tim Felstead. "The determining factor will be in answer to the question 'what is core to their businesses?'. Put another way, when is it imperative to do in-house developments and when is it not? Undertaking a technology development program while at the same time offering a media service to consumers can increase financial and operational risks if not executed with great care. In this case we see some in-sourcing by our customers, and to enter development operations with them, but these are always case by case and often conclude with the realization that some core competences can be bought in from technology suppliers with far less risk than BIY (build it yourself)."

Harmonic sees different requirements depending on the scale of the organization, and like Rohde & Schwarz, sees concentration on core business as a key consideration too. "We have seen a trend with AT&T buying Quickplay, and most recently Disney buying BAMTech. They are choosing to develop in-house technology for their OTT delivery platform and, as such, create a vertical integration strategy," Andy Warman explains. "This is a trend for large tier-1 distributors that has some impact on Harmonic's business, but we also anticipate they will be buying solutions from vendors like Harmonic."

"Other organizations are doing the exact opposite: they are launching their OTT services with in-house technology and buying certain components of their platform from vendors like Harmonic when they need an upgrade. They want to focus all their efforts on creating the best content and viewer apps, which are key to making their OTT services a success and providing a significant differentiation in terms of QoE. They believe that all of the internal R&D efforts spent to keep their platform up to date with the latest technologies and maintained was ultimately too complex and expensive," Warman adds.

IBM Aspera's Richard Heitmann also sees the key being in delivering the services. "'Build it or buy it' has been an expansion mantra for years. There will continue to be a few dominant players in OTT origination and management services, and they will be used as outsourced providers for smaller services. Other big

networks/content owners are poised to launch their own services and will likely also offer those services to other parties. Regardless of who is originating, managing or distributing the content, we expect the use of IBM Aspera for file and stream transport of OTT content to continue to grow."

For MainStreaming, bringing the expertise in house is the way to go – and it has advantages for MainStreaming too, as Antonio Corrado explains: "We think that this is smart as it will allow them to control the technology flow on their platforms with an experienced team instead of starting from scratch. It helps us as we will be able to now partner directly with broadcasters instead of having to go through third parties which may speed up the process for adoption of technology."

For Red Bee Media's Steve Russell, it depends on scale. "The technology is really a hygiene factor, it just has to work, at scale and across all platforms. Perhaps a handful of truly global players can own and operate the full stack. Our view is that it makes more sense to partner with a service provider that is laser-focused on getting the platform right, so that our customers can focus on their brands, their narratives, their fans, viewers and their business model."

Synamedia's Nick Fielibert agrees: "Some big media companies can afford to do their development in-house. They will probably keep doing this until they feel they can buy solutions on the open market that fit their needs. We see this happening as vendors like ourselves meet media companies' specific requirements."

Riding both horses

Deluxe sees advantages in both approaches – and feels it is set up to benefit whichever route the customer chooses. "As the volume of content continues to grow, we see customers opting for a range of models, from those that continue to wish to operate via a 3rd party managed service to those, such as Disney, who take some steps towards internalizing," says Ian Robbins. "Via its One platform, Deluxe is in the position to work with customer wishes and provide a range of options from the traditional managed service model through to a PaaS (Platform as a Service) model where the client is in more control. By designing and building One in a modular fashion, we are able to offer platform services in the same way – providing customers with the choice of what capabilities they would like to internalize and

"What cost benefits cloud does bring come through faster deployment time rather than lower licensing costs."
Steve Russell – Red Bee Media



what they would like to outsource to the market for self-service.

"For clients wishing to go further and develop bespoke capability in-house, Deluxe has a wealth of experience and know-how that we are open to use in partnership with customers to ensure they get the outcome they desire and can continue to publish content to all necessary output points. Whether the trend continues towards further internalization of technology development of publish capabilities or if it swings in the opposite direction, Deluxe is strategically positioned with API integration at the core of the platform to support the industry and lean into either model," Robbins adds.

"The trend established by Disney is an indicator of what will happen with greater pace," says Videon's Todd Erdley. "If delivery were based on OTT and linear being the same experience, rapid change would not be needed. We do not feel that linear=OTT is the trend and this is due to how people are consuming video on 2nd screen devices. The data indicates more and more people are using 2nd screen as primary. This creates an opportunity for a highly interactive delivery where differentiated content must be enabled. Broadcasters will look for emerging platforms and service providers to create that fast differentiation."

Following the moves of companies such as Discovery into the cloud for playout, is it now the natural destination for all playout – and is this putting pricing pressure on playout vendors?

Not any time soon according to Pebble Beach Systems! "[Cloud playout] is absolutely still the exception, but these pioneering projects rightly attract much interest within the broadcast community, along with much debate as to whether the hoped-for cost savings actually materialize once systems are deployed," says Marketing Manager, Alison Pavitt. "We are regularly asked to put proposals together for such deployments, and to participate in exploratory proof of concepts from end users who expect to be playing out from the cloud at some point in the future."

"Customers do see the cloud as a way of gaining efficiency, but let's not forget that the majority of channels are always 'on', whereas cloud deployments are particularly suited to 'bursty' activity. Is it really useful to have an infinitely elastic ecosystem for playout,

when playout is usually static? Pricing, however, remains robust. With linear playout still at the heart of broadcasters' revenue generation, there is emphatically still a strong market for proven, specialist enterprise solutions from expert vendors with experience and ability in this field," Pavitt adds.



Pebble Beach – DMC playout

"The cloud does not solve everything, especially when we talk about public cloud, where valuable content is treated just like any other data," says Broadpeak's Nivedita Nouvel. "The public cloud is good for some processing, analytics, and head-end functions, but when it comes to delivery, you need to control the network and its equipment (even virtualized and containerized in the operator's private cloud) to achieve the best QoE possible."

Transformational change

For Deluxe, "At the moment, we see major broadcasters moving their main channels to the cloud as an exception," says Ian Robbins. "That said, it's a trend we expect to see continue as broadcasters gain more trust in the cloud and seek continued workflow and cost efficiencies. But the move to the cloud is more than just a technology change, it's a transformational exercise for broadcasters and playout service providers which can result in attractive reductions in content distribution costs. As companies take on this transformation, it's critical they keep the end goal in mind and realize that the software-defined and cloud-based nature of this model ensures that, operationally, the service can be run from any location – it is geographically agnostic, enabling a new variety of servicing models to broadcasters."

IBM Aspera also sees playout moving towards the cloud, while acknowledging some of the barriers Pebble Beach

"The \$64 million question is what is a broadcaster achieving by migrating linear playout to the cloud? Essentially, they are third partying their IT team and renting their data center. Is it more cost-effective than building it yourself – eventually, yes." Shawn Carnahan – Telestream.

points out. Says Richard Heitmann: "While the cost for cloud playout with the same resilience and redundancy as traditional infrastructure is still high – and the mentality gap between cloud and traditional broadcast engineering still needs to be overcome (good enough vs. 'broadcast quality', iterative vs. stable and wait, etc.) – cloud-based linear playout is expected to grow.

"IBM Aspera is helping broadcasters with the transition. Our Orchestrator and Aspera on Cloud (AoC) automation tools can assist with automating complex content ingest and prep workflows both in and out of the cloud to reduce cost, increase reliability, and therefore, build confidence," Heitmann asserts.

"Harmonic is also a player in the linear playout cloud space," says Andy Warman, who also sees the move to the cloud bringing benefits to its customers. "We refer to this as Channel Origination as it represents the start of the content delivery chain, originated in the cloud. We offer a full, end-to-end video delivery solution running on the cloud – supporting everything from live and clip playout to delivery via broadcast and OTT to consumers. This puts us in a unique position, as we can offer as much of the linear and OTT delivery chain as the end user needs. The move to cloud-based playout is actually helping rather than hindering our ability to assist customers in leveraging cloud-based technologies."

The \$64 million question

"The \$64 million question is what is a broadcaster achieving by migrating linear playout to the cloud? Essentially, they are third partying their IT team and renting their data center. Is it more cost-effective than building it yourself – eventually, yes," says Telestream's Shawn Carnahan. "Moving to the cloud for linear playout is not an inherently difficult thing to do: the key question is one of cost. If broadcasters are migrating to the cloud, they want to exploit any potential economies of scale.

"With the cloud, broadcasters have more elasticity to cater for increases in channel demand. Whenever they win new business, they can build up the new channels in hours. And just as easily, they can tear it down again if they lose the channel playout contract. At Telestream, we introduced OptiQ this year to meet exactly this demand. Whenever you need to create channels automatically, perhaps event-based channels, that meet all the service level expectations associated with 24x7x365 live linear playout. In developing OptiQ, we have solved the

challenges associated with this need and applied it to a much broader audience," Carnahan adds.



Telestream's OptiQ Channel

"We have made a very significant investment in moving to a cloud-model for playout and can now deliver extremely complex broadcast channels from our cloud-based operations," says Red Bee Media's Steve Russell, who also points to their "agility and flexibility, which boost opportunities for growth for our customers. What cost benefits cloud does bring come through faster deployment time rather than lower licencing costs. If they focus on automated deployment and efficient operations, vendors can still offer a great deal of value in the Linear Playout space. Our new platform has been born out of investment in software, engineering, operational innovation, partnerships and private cloud infrastructure. Public cloud is fantastic for many use cases, but it is not ready for primetime, live, uncompressed, low latency linear experiences at this point on numerous levels."

Is latency still an issue in live streaming – what hurdles still have to be overcome?

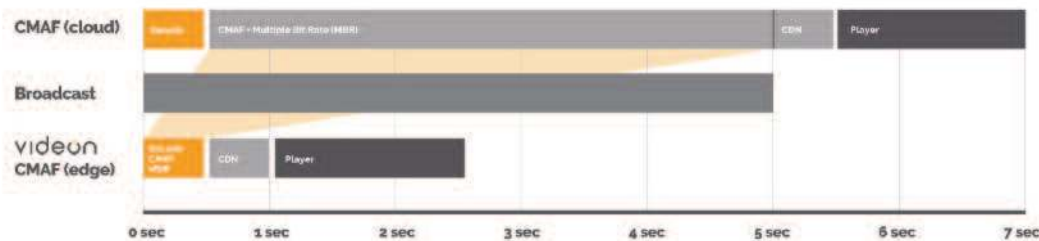
"If you ask 10 people to define 'latency', you might get 12 different answers!" jokes IBM Aspera's Richard Heitmann. "Where possible and necessary, latency should be kept to a minimum to keep the in-venue fan experience in time with the event, support remote control/operations (REMI), and prevent 'New York Neighbor' syndrome. Further, *artificial latency* – while in some cases offering a higher class of service – gives the originator less control over end-to-end timing and release.

"Encoding/decoding technology could still be improved to provide lower latency at lower cost for contribution. Recent innovations like CMAF (Common Media

"Public cloud is fantastic for many use cases, but it is not ready for primetime, live, uncompressed, low latency linear experiences at this point on numerous levels." Steve Russell – Red Bee Media



Latency graphic from Videon



Application Format) and low latency HLS may help with reduced latency over the 'last mile' to the consumer. IBM Aspera's streaming technology can substantially reduce contribution transport latency while maintaining high fidelity, resiliency and reliability. When combined with low-latency encoding and decoding, end-to-end contribution latency can be significantly reduced, leaving any significant latency on the distribution side," Heitmann adds.

Barriers still to be overcome

"Latency is the #1 issue for live streaming," says Videon's Todd Erdley. "The days of linear being delivered 30+ seconds in advance of OTT will come to an end very soon. By 2022, the latency discussion will go away for OTT vs live. Latency will then take another twist as OTT provides the opportunity for true interaction. And with 2nd screen becoming first screen, OTT will experience another rush to move from linear latency levels to truly interactive latency and this will be done at mass scale. Overcoming the first hurdle can be done through broad adoption of CMAF with HTTP streaming. That can solve the linear/OTT problem. Moving to interactive delivery will require a shake out of technology including WebSocket, WebRTC, Apple LLHLS, advances in HTTP streaming along with new signaling standards. This shake out is slowly happening but will not be available for wide adoption until we initially solve the OTT/Linear latency barrier."

"Latency continues to improve," asserts Harmonic's Andy Warman. "We are seeing latency in the 5- to 6-second range for OTT-based live streaming and playout from the cloud. This puts latency for OTT in the same range as broadcast. The result is that, for example, live sports viewers for streaming via OTT and broadcast see the game action at the same time. This is possible thanks to CMAF (fragmented MP4 or fMP4), which enables much lower latency delivery to consumer devices. The challenge is iOS went a different route than CMAF LLC, and we still do not have a unified workflow

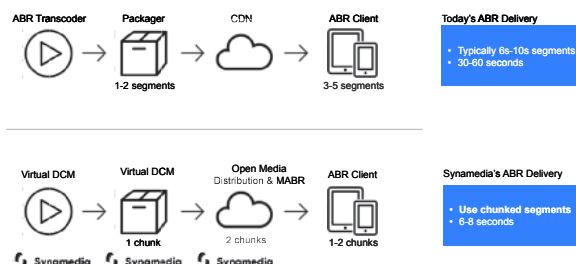
where we can package, encrypt and stream one file format with two manifests (i.e., DAS/HLS)."

"The big question is what are your expectations?" says Telestream's Shawn Carnahan, reflecting Richard Heitmann's answer above. "The elegance of http-based OTT is that it enables media distribution through content delivery networks that don't treat media any differently than a web page. When we first did it, people said, 'Wow, that's cool! Yes, there's latency but the positives more than outweigh the negatives.' Now, as this is understood, there has been a search to optimize the video through conventional approaches. If we can reduce latency to around 10 seconds without having to change the network, that is largely problem solved for the vast majority of applications... the standardization efforts of DASH and HLS have largely solved the problems for mainstream applications."

"Latency is still an issue for linear OTT, but the technology is ready to overcome this and provide latencies similar to traditional broadcast," says Nick Fielibert. "Synamedia is a leader in this space and provides an end-to-end approach that avoids a weak link in the chain. For example, in some cases the OTT player is not supported by the devices. This is now also changing with Apple providing its own low latency HLS specification, which we support."



Low Latency ABR Solution



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"The major hurdle that needs to be overcome now is actually rolling out CMAF on a broad range across the industry. The success of CMAF will solely rely on the uptake by the industry." Nav Khangura – Deluxe

Standards required

Red Bee Media's Steve Russell thinks the latency problem is being mastered but standards work still needs to be done. "We have received a lot of attention and recognition for our market-leading work here – delivering as low as 3.5 second latency for live OTT streams. The challenge we overcame was to deliver low-latency results using open standards so that we can still inter-operate with the wider tech ecosystem. These technologies are still maturing, as standards adoption takes time."

Standards are also an issue identified by Deluxe. "Beyond production we are still seeing latency being a typical sticking point due to the variety of formats and standards that need to be supported," says Nav Khangura. "CMAF is a new standard announced by Apple and Microsoft which aims to address the low latency requirements by introducing chunked encoding and chunked transfer encoding. This approach not only reduces costs and complexity (by doing away with multiple formats for multiple devices), but it also has the potential to reduce latency to the sub-three second mark. The major hurdle that needs to be overcome now is actually rolling out CMAF on a broad range across the industry. The success of CMAF will solely rely on the uptake by the industry. For example: Apple recently announced their own 'Low-Latency HLS' which once again contradicts the push to try and standardize the industry to CMAF."

MainStreaming has also reduced latency problems – through a combination of direct connections and AI. "Network workflows are essential to minimizing the way video is streamed which is why we realized we couldn't rely on legacy providers and instead built up our own network that connects to clients at the point of ingest and directly interconnects with ISPs to deliver video seamlessly to audiences," says Antonio Corrado. "With our AI that also prevents congestion and this approach, we have decreased latency by up to 3x the standard rate, essentially increasing the speed of streams TTFF (Time To First Frame) and E2E (End-to-end) delivery."

"Latency has become a way for network operators to differentiate themselves," says Broadpeak's Nivedita Nouvel. "Many technology providers pitch low-latency solutions based only on head-end (i.e., encoding and packaging) and player optimizations, but they forget the network implied in the delivery. It is a mistake that leads to low-latency solutions that work in the lab but not in real conditions. At Broadpeak, we have solved this by combining CMAF Low Latency with a multicast ABR

managed network, creating the conditions necessary to reduce buffer sizes in players without impacting service continuity and hence QoE."

Try and try again

"Yes, latency is still an issue," says Tim Felstead from Rohde & Schwarz, giving us a recent example – and providing me with the perfect link to the next question on 5G. "One of our Munich based staff members was watching the Rugby World Cup semi-final over a streamed service. They received text messages from New Zealand (the country) saying the English team had scored very early in the match BEFORE seeing it happen on the screens in Munich. That said, I think there is a difference between the state of the art in deployments and the state of the art in current technology. There are solutions to reduce latency across network components and R&S is busy building one in the shape of 5G Broadcast. Latency in 5G Broadcast is tiny in that part of the network 5G broadcasting technology so if the other parts fall into line (encoding, network buffering etc.) then this is certainly a solvable problem."



Rohde & Schwarz's 5G transmitter.

"5G as a cellular platform offers faster speeds and reduced latency resulting in higher resolution and higher bitrates. The user experience can also be greatly enhanced, especially when combined with edge computing." Richard Heitmann, IBM Aspera



5G – an incremental advance or a revolution for content distribution?

"Advances in networks are crucial to industry advancement," says Steve Russell of Red Bee Media. "It's about wider pipes and greater agility in points of content acquisition and distribution. Yes, it's all incremental, of course, but 5G offers a really important step-change in capacity and capability. We are leaders in live and are really excited by what 5G offers in that domains for sports, events and greater interaction for fans everywhere."

Videon agrees on the content acquisition side of the 5G equation, but sees some barriers to full-on consumer adoption. "In the next few years 5G will revolutionize event production in a controlled environment," says Todd Erdley. "5G will merely be a small incremental gain for consumers until such time that consumers can use high speed data delivery in the manner they expect. Such expectations will only be met when propagation issues are solved which is a very, very, very significant problem for the highest data rate 5G."

Revolutionizing content distribution

IBM Aspera has some skin in the 5G game, and sees a bright future. "5G will revolutionize content distribution, particularly for more personalized content," says Richard Heitmann. "5G as a cellular platform offers faster speeds and reduced latency resulting in higher resolution and higher bitrates. The user experience can also be greatly enhanced, especially when combined with edge computing. New AR/VR experiences require real-time processing in the supply chain.

"For 5G as a wireless LAN, there will be substantially improved network throughput and offerings. The most common use case for this will be in (sports) venue real-time fan interaction. If content is served locally (from the venue), the offerings could be endless with instant and fast delivery. IBM Aspera will continue to provide transport layer improvements with 5G, in addition to core enhancements to FASP transfer and streaming technologies which will continue to have a prominent place in the delivery/distribution ecosystem."

Will mobile become 1st screen with 5G?

While seeing some advantages, Telestream's Shawn Carnahan is skeptical of the wider benefits of 5G. "Will 5G make better experiences more portable – yes, highly

likely. There's definitely something to be said for portability. It doesn't affect the content – it just further moves the viewing experience to smartphones. But a key question to me is just how good can that experience be on a four-inch screen? At Telestream, we're doing a lot of work with HDR, which is a technology that really positively impacts the home viewing experience. But, how much of that quality can be seen on a smartphone in bright daylight?"

But just maybe the future will be mobile-first viewing, in which case Antonio Corrado at MainStreaming's optimism is justified. "5G will be great for content distribution as it will increase the bandwidth every device is able to utilize which may possibly push the industry into a mobile-first focus for video streaming. The best part about 5G is that delivery networks will essentially be able to stream video more easily compared to the existing 4G networks today as it will increase speeds and the ability to stream heavier files," Corrado says.

Deluxe's Ian Robbins also sees 5G driving mobile viewing. "Improved speeds [with 5G] should continue to drive the demand from consumers to watch more and more video on the go, with this increasingly stretching to the streaming of feature content and live events versus the streaming of short form and the viewing of downloads. I expect that 5G will also be an enabler for the type of content being viewed on the go with an increasing desire to watch things in UHD with the greater transfer speeds offered by 5G. In this sense, I think it's likely that 5G will have big impact on content distribution as we'll see increased volumes of content, in increasingly advanced formats, being distributed to 'on the go' platforms," Robbins says.

Harmonic's Andy Warman also sees a bright 5G future. "5G is a new technology that will lead to new services and therefore new revenue streams. Some of the services that will be offered with 5G not currently available for 4G include: multi-game, multi-view, virtual reality and augmented reality to mobile devices. We expect mass adoption in 2022-2024, given that only a few countries will have a 5G network set up in 2020."

Eliminating the network bottleneck

Avraham Poupko, Manager of the Architects Team at Synamedia, also predicts a massive impact for 5G: "We believe that 5G will revolutionize content distribution.

"Piracy directly impacts your investment in content, whether that's the money spent on content creation or the revenue associated with content distribution."
Alan Ogilvie – Friend MTS

"One of the main barriers to offering truly interactive content at very high definition is the network. 5G will eliminate that bottleneck. The increase in delivery capacity with 5G will allow video service providers to distribute bandwidth-intensive content including 4K and high quality interactive content such as 8K based virtual reality.

"We then expect breakthroughs in related areas such as high availability storage and video processing. Synamedia is paying close attention to this space and plans to play a leading role in this revolution," Poupko concludes.

Final word on 5G goes to Rohde & Schwarz, who are heavily involved in 5G broadcast testing and rollout. "R&S believes in 5G Broadcasting (and as a corporation the wider 5G standard as a whole)," says Tim Felstead. "We believe that 5G Broadcasting is a huge opportunity for several industries including and beyond live entertainment distribution. In the media space we see it as a goal that our industry has been working towards for some time; linear media delivery to mobile / telecoms-based consumer devices. For the first time we have a telecoms-based standard that has been written with broadcasting input from the very beginning. This makes delivery to mobile devices highly network efficient (read any number of articles about the explosion of video content consumption that will saturate networks), with very low latency and that can operate SIM-free (to tablets without a contract for example)."



Rohde & Schwarz is enabling the tight integration of telecommunications (wireless and mobile broadband) and linear broadcast delivery through the 5G Broadcast standards

Piracy remains a major issue with losses in the \$billions being reported. How are you helping your customers to fight back?

With \$billions of potential revenues being lost to video piracy, this is a key battlefield if broadcasters and media companies are going to be able to get the returns on their content investments to fund the creation of new content – and of course, remain profitable. Alan Ogilvie, Lead Product Manager at Friend MTS, recognizes this, and has some weapons to help the industry fight back. "Friend MTS recognizes that piracy directly impacts your investment in content, whether that's the money spent on content creation or the revenue associated with content distribution," Ogilvie says.

Protecting investment and revenue

"We have tools to aid the fight to retain control and protect your investment and revenue models. On OTT, some people still believe that Digital Rights Management is enough. In the Conditional Access systems in Satellite, some believe that's enough too. It certainly isn't. While these methods are important, it's vital you let us apply an audience-imperceptible watermark either in the distribution chain and/or on the client-side in a robust and trusted manner. Then you need our global monitoring and investigations services to go looking for your content being pirated and to determine the subscriber that leaked it or the distribution method used. These proprietary technologies work together to help you to detect, deter and disable so that you can protect your investment or revenue," Ogilvie concludes.

"IBM Aspera has always offered the ability for both encryption in transit and encryption at rest," says Richard Heitmann, who also agrees that integration with specialist services is the way forward for complete protection. "At rest, encryption supports both client side and server-side secrets. This is just part of a solid content security framework. When used properly, encryption at rest is a reliable deterrent.

"Further, we recently released an automation feature for Aspera on Cloud that allows integration with third-party services as part of the file transfer process. Specifically, along with our partner, Irdeto, we have integrated forensic watermarking capabilities into our distribution workflow, thus enabling content to be tracked to each recipient. This automation feature to incorporate



third-party best-of-breed services such as watermarking, fingerprinting, blockchain and the like, significantly improves security for high-value content,” Heitmann concludes.

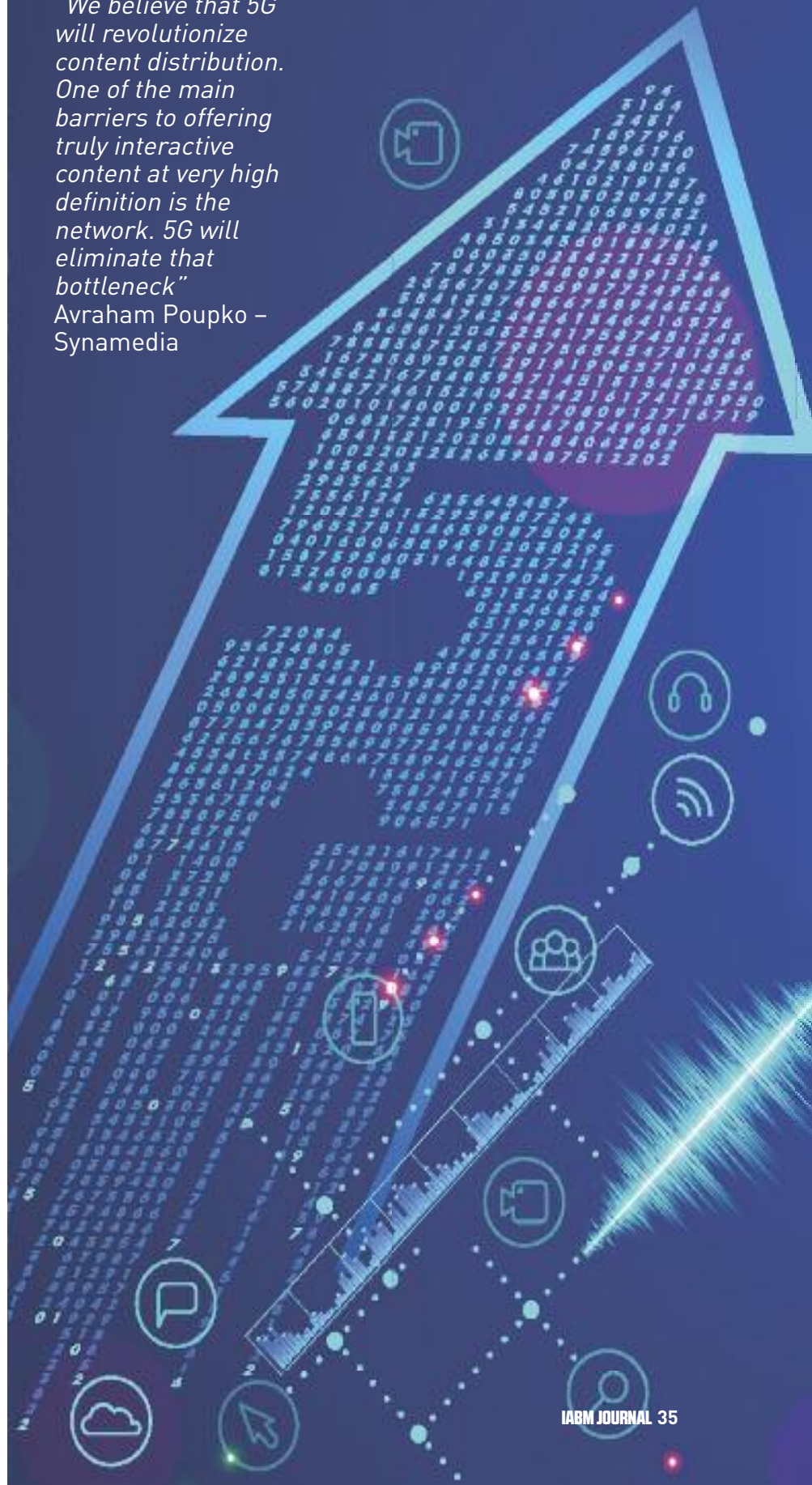
Staying ahead of the pirates

Final word on piracy goes to Synamedia, whose Video Security Product Manager, Rinat Burdo, points out that “Synamedia has a track record in securing Pay-TV services and revenues for over 30 years. We support our customers with layers of security to stay ahead of the pirates – anticipating their attacks and reaction to our security counter measures. This includes preventative measures as well as reactive measures to fight the inherent ecosystem vulnerabilities that pirates exploit.”

Burdo continues, “Our approach is to offer an end-to-end solution rather than point products. This approach is more effective against attacks that exploit the weakest link, and provides our customer with a continually enhanced umbrella against evolving attacks.”

Burdo agrees with Friend MTS’s Alan Ogilvie that to complete the circle, you need to be actively on the look out for piracy too. “Proactive intelligence is the key to an effective anti-piracy solution. This intelligence has to be global because streaming piracy ignores any country borders. We employ technology tools and data analytics to track pirate activities at scale. We combine it with human intelligence to investigate pirate operations, and anticipate pirate next steps, as well as forensic analysis of tools used by pirates. Armed with this knowledge our solutions are ready to defend our customers’ systems against new and evolving attacks,” Burdo concludes.

“We believe that 5G will revolutionize content distribution. One of the main barriers to offering truly interactive content at very high definition is the network. 5G will eliminate that bottleneck”
Avraham Poupko – Synamedia



Naomi Climer recognized for major contributions to the industry with lifetime IABM Honorary Membership



Naomi Climer CBE

Naomi Climer CBE is the latest industry luminary to be awarded lifetime Honorary IABM Membership. The honor was officially presented at IABM's Annual International Business Conference and Awards on 4th December 2019.

Naomi joins an exclusive club of people who have had an enormous impact on the broadcast and media industry as it has grown and developed over the last 40+ years. This illustrious group comprises Alan Brill, Roger Crumpton, Jan Eveleens, John Ive, Larry Kaplan, Lyle Keys, David MacGregor, Mike Martin, Derek Owen, Peter Owen, John Ross, Martin Salter, Clyde Smith and Roderick Snell.

Open to opportunity

Naomi modestly describes her stellar 30+ year career in the broadcast and media industry as a combination of "Serendipity and being interested in, and open to, new things." She graduated from Imperial College in London with a Chemistry degree in 1986. "My father's an engineer, and he always said I should be an engineer – so like any self-respecting teenage girl, I ignored his advice and did something different," Naomi recalls with a smile. "But after university, I soon realized I didn't really want to spend my life as chemist, and I happened to notice the BBC advertising for non-engineering graduates to convert to engineers. This was part of a positive action campaign to try and get more diversity into their engineering workforce. It sounded rather fun and I got the job, but the moment I started working at the BBC, I knew it was for me – I absolutely loved it."

Real world experience

"After training as a maintenance engineer, I moved into project management at the BBC," Naomi continues. "I then took a break to move to the Channel Islands in the early 90s and as luck would have it, this was just at the time when independent radio licences came up in Jersey and Guernsey – so I applied and became the

chief (actually only!) engineer of Independent Radio and got stuck right in building the stations from scratch." This chance move proved to be a watershed in Naomi's career. "I learned an awful lot – how to cut corners, save money and really got my head round the broadcast chain as well as working closely with marketing and the producers. I also got to understand the P&L side of a business – how the real world works. I think it was the best training I could possibly have."



Learning lessons

Naomi returned to the mainland in 1994 and back to the BBC, where her already rich operational experience made her first choice as Controller Technology in News, ultimately becoming a board member of BBC News. In 2000, she moved over to ITN to oversee the ultimately doomed ITV Digital project – which subsequently became the Freeview service that everyone in the UK benefits from today. "Although its demise had an inevitability about it despite all our very best efforts, it was an amazing journey I wouldn't have missed. It was very painful at the time but I learned lessons during that period that I'm still applying today," Naomi reflects.

Another job opportunity immediately appeared with Sony Professional Services Europe, and Naomi promptly jumped the fence to the supply side of the industry to begin what turned into a 13-year career with the company, initially as Director of Professional Services and subsequently, Vice President. In this role, she had P&L responsibility for around \$1bn of product,

solutions and services business across EMEA and expanding into a wide range of verticals alongside broadcast and media – cinema, healthcare, security, education, sports and venues. “It was interesting seeing how broadcast technology was suddenly becoming applicable in all sorts of other verticals,” Naomi remembers.

Moving to the cloud

In 2012, “The cloud popped up and was evidently going to be a tool for broadcasters” in Naomi’s words. “It was really time for a change and I was seduced by the cloud model. Even now there are still technology issues to be overcome, but the impact it could have on worker flexibility – enabling people to contribute and engage in ways they couldn’t before – just really fascinated me. The recurring revenue business model also looked really interesting.” Prescient indeed! As a result, Naomi took up the role of President, Sony Media Cloud Services, and moved to California for three years to incubate and build Sony’s Media Cloud Services business for the global B2B environment.

Back to earth

In 2015, Naomi moved back the UK to become President of the IET, leading the board to deliver the IET’s vision of ‘working to engineer a better world by inspiring, informing and influencing everyone affected by engineering’. She has some advice for busy young engineers as a result. “I really wish I had engaged with all the opportunities the IET offers earlier. It gives junior people the chance to mingle with very senior people and chair committees – really great development opportunities. I would urge young people to engage early with their professional body.”

Subsequently, Naomi was invited to chair the UK government’s DCMS Future Communications Challenge Group, which she did from 2016 to

mid-2017, and she also became Governor of the National Film and Television School from 2017-18. Today she holds several non-executive director, chair and trustee positions, with the greater part of her time given over to the charitable ones alongside an important non-exec role at Sony UK Technology Centre working with the board on Industry 4.0 transformation, new business models and mentoring its talented women.

Recognition

In the Queen’s 2018 Birthday Honours, Naomi was awarded a CBE for services to the engineering profession. Naomi’s response is typical of her modesty. “It was an extraordinary surprise. I got a letter in the post saying the Queen is minded to give you a CBE and I just turned it over and over in my hand and called my husband over and said, ‘Do you think this is joke?’! To be honest, I am definitely suffering from impostor syndrome on this!”

Championing women

Naomi has held top positions over the last 30 years in an industry that remains heavily male dominated, something that continues to concern her – “progress towards gender diversity has been glacial,” she says. As the current Chair of IBC Council, Naomi has enthusiastically supported IBC’s efforts on gender diversity; the IBC conference boasted 37% women speakers in 2018 – but the chasm is still obvious when you walk the show floor, reflecting the heavy gender imbalance in the industry. “The IET did some research that suggests people’s minds are almost set when they’re young children – between the ages of five and eight. We need to address this with parents, grandparents and the teachers, many of whom still seem to have outdated views of the role of women. That’s an obvious place to start, but changing attitudes is not easy.”

Opportunities and threats

How can IABM members keep up with our rapidly changing industry? “I think there are threats and opportunities. Firstly, being awake to the threats and countering them is really important – for example, new players who just pop up out of nowhere and disrupt. You have to face up to them and keep scanning the horizon, and be brave and open to understanding who the competition really is – and not just the names that you’ve maybe traditionally looked at. Secondly, really ask yourself about the opportunities; it’s not as easy as it looks to just pop into a bunch of adjacent markets because you need different expertise. Notwithstanding this, there is a much bigger marketplace out there now, with video of relatively professional quality being used so widely; the opportunity to grow into adjacent markets is there. Finally, consider the recurring revenue business model to go after new customers, which you need to move into alongside continuing to serve customers who are still in the traditional space. It’s the classic innovator’s dilemma,” Naomi observes.

Time to relax

What does Naomi get up to when she’s not lending her expertise to the many organisations she works with today? “I love sailing. We have a 7-berth catamaran that my husband built with his father 25 years ago. It may not be the glamorous end of yachting, but we’ve sailed down to Italy and up to Copenhagen in it. I’m also a biker – I’ve got a Triumph Trident and a BMW 1200RT. Family is very important to me and I love just socialising too!” she concludes.



Standards and Specifications... vital for interoperability



Paul Treleaven
*Technology Specialist
Consultant, IABM*

We have seen in recent years that the user community is resistant to adopting new technologies unless there is a clear demonstration of interoperability between vendors' implementations. This is evident from the large number of plugfests that have been held for technologies like IMF, ST 2110, AES67 and ST 2059 suites of standards. There are also efforts such as the NMOS 'incubator' to get multiple suppliers together to test concepts before the specifications are designated as 'stable'.

And sitting atop these efforts, schemes such as 'JT-NM tested' have been introduced to assist the user community to find interoperable solutions for new IP projects.

We want to encourage greater engagement with you, our members, to ensure that your views are understood and contributed. This article will focus on what the IABM does and how technologists in your companies can stay in touch with standards developments with just a small investment of their valuable time.

There's so much going on

Even within the two standards bodies whose meetings we attend, SMPTE and AES, there's too much work for us to cover every project in depth. As a result, we have restructured our reports into sections according to our perception of the relevance to members – if we are wrong, let us know!

The last SMPTE report is from the September meeting round.

The next SMPTE meeting round is 9–12 December, so that report should be available for holiday reading!

The last AES report is from the October meeting round. The next meeting round is not until May 2020.

See link 1 at end of article for SMPTE reports, link 2 for AES reports.



The IABM devotes a lot of effort to supporting and helping to develop the standards that underpin the technology in Broadcast and Media. Much of that effort occurs 'behind the scenes' – we attend SMPTE and AES meetings and contribute to the smooth introduction of standards and improvement of their content. Whilst there are many other standards bodies that are relevant to members, we have selected these two as the best places to channel our resources.

Digging Deeper – the IABM Standards Monitoring Group

The bulk of the standards development work that gets reported at the SMPTE and AES meetings is done in drafting group teleconferences. The more active groups hold teleconferences typically weekly or fortnightly. The IABM participates in selected teleconferences and therefore has up-to-date information on the state of the various documents that are in development or revision.

For technologists in our member organizations who need up-to-date status information, we have a Standards Monitoring Group (SMG). Indeed, the SMG is a forum where members can comment on the provisions contained in draft standards documents and the IABM can submit those comments as part of the consensus-building process in the drafting group. It is usual and encouraged for the participants in drafting groups to consult with their colleagues to review and improve the provisions of the document. For information on joining, see link 3 at the end of this article.

We have selected some topics that we believe are important to members and we monitor them in greater depth.

SMPTE topics:

- Professional Media over Managed IP Networks – ST 2110 suite
- Network-based Synchronization System – ST 2059 suite
- Microservices in Media
- Extensible Time Label (a replacement for timecode, with expanded feature set such as source identification)
- 'Better Pixels' Projects – HDR, WCG, HFR, EOTF (most work now complete)
- Media Device Control over IP – ST 2071 suite (and options for a harmonized control future)

AES topics:

- Streaming audio metadata over IP
- High-performance streaming audio-over-IP interoperability – AES67 (continuing revision and associated work)
- Open Control Architecture – AES70 (includes revision and adaptations for connection management of AES67 and other formats)
- Open Directory Architecture – Study group
- Application of RJ45-type connectors and quad twisted pair cable for audio interconnections

A selective update on current standards status

The hardest part about covering the status of standards is deciding which ones to mention! The IABM has paid considerable attention to live IP over the last couple of years and I had considered switching focus. However, I am writing this having just attended 2 days of the Asia-Pacific Broadcasting Union (ABU) Technical Committee where the major topic in presentations was SMPTE ST 2110 and related NMOS and JT-NM documents. The ABU also passed a resolution supporting the EBU technology pyramid (link 4). The JT-NM technical recommendation TR-1001-1 addresses a number of these requirements (link 5).

So I will devote the remaining space to an update on those documents dealing with IP-based media facilities.

SMPTE ST 2110 Professional Media over Managed IP Networks

The following parts have been published for more than a year and have been reviewed for any required revision in the light of implementations and interops:

- System Timing and Definitions – Part 10. A revision is underway. Some issues are being discussed related to RTP time stamps and clocks and how to handle asynchronous inputs. Balloting of the revision expected soon.
- Uncompressed Active Video – Part 20. A revision is underway; changes are minor.
- PCM Digital Audio – Part 30. No revision required.
- SMPTE ST 291-1 Ancillary Data – Part 40. A revision is underway. The aim is to avoid large ancillary data delays in transfers to/from SDI.
- Traffic Shaping and Delivery Timing for Video – Part 21. Published and there may be a revision to tweak some values; actively under discussion.

These parts are published and not yet due for review:

- Constant Bit-Rate Compressed Video – Part 22
- AES3 Transparent Transport – Part 31 Documents going through development:
 - Single Video Essence Transport over Multiple ST 2110-20 Streams – Part 23. This provides a method for handling extremely high essence bitrate. The document is at the final audit stage before publication.
 - Standard Definition in ST 2110-20 – Part 24. This has just been started and it will clarify some poorly-defined parameters from the original SD standards.
 - There are also two planned documents on fast metadata streams, but there has been little progress to-date.

AMWA Networked Media Open Specifications – NMOS

Document status:

Discovery & Registration – IS-04.

Version 1.3 status is stable.

Device Connection Management – IS-04. V

ersion 1.1 status is stable.

Network Control – IS-06.

Version 1.0, there appears to be less interest in implementing this.

Event & Tally – IS-07.

Version 1.0.1, being implemented, status not yet stable.

Audio Channel Mapping.

Version 1.0, status not yet stable.

There are other documents in development on System, Authorization, Natural Grouping, API security; for more information on all NMOS documents see link 6, below.

SMPTE ST 2059 suite on Precision Time Protocol

These two published standards are in revision following one-year-review, mostly to improve clarity:

- Generation and Alignment of Interface Signals to the SMPTE Epoch – Part 1
- SMPTE Profile for Use of IEEE-1588 Precision Time Protocol in Professional Broadcast Applications – Part 2

Also, there is a published Engineering Guideline, Part 10. It needs no revision

AES67 – High-performance streaming audio-over-IP interoperability

The current version was published in 2018 and a list of topics for possible revision is being maintained. At the last meeting round, some improved language was agreed to deal with the range of permitted IP addresses for AES67 networks.

Control Protocols in IP-based Networks

It is possible that a new top-down layered approach will finally bring interoperability to control in IP networks. The current situation is fragmented – AES70, SMPTE 2071, elements of NMOS, proprietary solutions. The topic is slated for discussion at the December SMPTE meetings, with participation from key AES players.

Please remember that members can submit enquiries about standards at any time to paul.treleaven@theiabm.org

Links:

1. IABM reports on SMPTE standards meeting rounds:-
www.theiabm.org/standards-activities-smpte/
2. IABM reports on AES standards meeting rounds:-
www.theiabm.org/standards-activities-aes/
3. SMG info and sign-up:-
www.theiabm.org/standards-monitoring-group/
4. EBU Technology Pyramid for Media Nodes:-
<https://tech.ebu.ch/pyramid>
5. JT-NM's TR-1001-1 document:-
https://jt-nm.org/documents/JT-NM_TR-1001-1:2018_v1.0.pdf
6. NMOS:- <https://amwa-tv.github.io/nmos/>



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www.aputure.com

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Azimuth Software
www.azimuthsoft.tv

Broadcast Solutions GmbH
www.broadcast-solutions.de/

Calnex
www.calnexsol.com

Ebantic
www.ebantic.com

EcoDigital
www.goecodigital.com

HUAWEI Technologies Co., Ltd
www.huawei.com

IBM
www.asperasoft.com

Intertrust Technologies Corporation
intertrust.com

IPV
www.ipv.com

iSize Technologies
www.isize.co

Kane Consulting
www.kane-consulting.com

Levels Beyond
www.levelsbeyond.com

Media Production & Technology Show
mediaproductionsshow.com

Mo-Sys Engineering Ltd
www.mo-sys.com

NetCom Group S.p.A.
www.netcomgroup.eu/it/

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Telikou Technologies Co., Ltd
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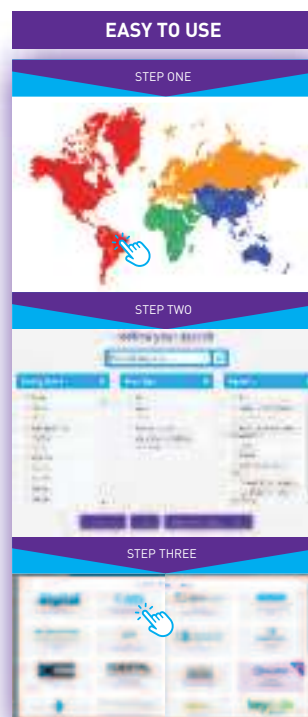
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APAC region update



Peter Bruce
*Director,
APAC, IABM*

Whether you are an end-user or supplier to the broadcast and media industry, this is the time of year when we reflect on what has happened in the last 12 months and start to budget for 2020. There continues to be monumental change within our industry. For several years now we have discussed the move from hardware to software solutions; CAPEX to OPEX; trends from transmission to OTT; “cutting the cord” etc. All this alongside the continuation of acquisitions, mergers and consolidation in both the buy and supply sides of the industry.

I will forgive you if you think that I am totally delusional for being full of optimism about the future of the industry, particularly in Asia. But if you stand back and review what our industry is and what’s happening, I see plenty of reasons to be cheerful: we are in the entertainment industry, and that most of all relies on eyeballs viewing screens. In Asia the number of eyeballs continues to increase rapidly due to population growth across many nations. Additionally, the sought-after middle class, who are willing to pay for a great cinema experience or VOD subscription, is growing in many APAC countries.

Since entrepreneur Chatri Sityodtong (Chairman and CEO) and former ESPN Star Sports senior executive Victor Cui set up ONE Championship, an Asian martial arts channel, they have seen exceptional growth. Although they have signed a 10-year agreement with ESPN in Asia, Chatri is very proud to explain that the growth has come from OTT subscriptions in which they have a direct relationship with the viewer. They also have some agreements with terrestrial channels. However, with the ability for viewing on any device, they have reached not only new, but most importantly, young customers in countries with large populations such as Indonesia, Malaysia and the Philippines, as well as across the whole of Asia from the Middle East to Japan. ONE Championship now has an estimated audience of 25 Million, which has given it a valuation of over US\$1 Billion – remarkable since it was only established in 2011.

Another growth channel in the APAC region is ‘Rugby Pass’, based out of New Zealand. The amazing growth of tens of millions of subscribers globally for this OTT-only channel has occurred in just 2-3 years. Once Rugby

Pass secured the rights to some key rugby outlets such as Rugby Dump, Rugby Onslaught, Rugby365 and Fantasy Rugger, its online and App channels have grown exponentially. With a subscription starting as low as US\$1 for the special-interest sport, its loyal viewership just continues to rise. This has all been achieved from being based in such a small nation as New Zealand that has a focus on a specific sport – in New Zealand’s case driven by the ongoing success of its All Blacks rugby team.

Inter BEE 2019 in Japan has now concluded. At the opening ceremony the emphasis was on connectivity and sports, in line with the adage that ‘Content is King but Connectivity is Queen’; success will only come if both demands are met – e.g. content that people actually want and the ability to receive it at the highest possible quality. Clearly, following the great success of the Rugby World Cup in Japan and with the 2020 Summer Games on the horizon, sports is a huge priority in Japan. The high quality content may be there, however the connectivity then becomes an issue, particularly with the move to covering major sporting events in 4K and even 8K.



Inter BEE 2019 in Japan has now concluded. At the opening ceremony the emphasis was on connectivity and sports, in line with the adage that 'Content is King but Connectivity is Queen'

The question is how does the public receive the content with such great quality (and so at a high data rate)? Last December Japan started transmitting UHD on 10 channels via satellite, of which one was 8K (from NHK). Importantly, as our portable devices become more and more powerful, our mobile phones and tablets will be ever-more the first choice for viewing. We will always look at the largest screen for quality reasons, but convenience is the key. Traveling on the JR (Japan Railway) after the Inter BEE show one evening, it was clear that commuting passengers were divided on how to spend the time – 50% were sleeping and the other 50% watching content on their mobile phones, as they face the 1½ hour commute home; this is where the connectivity comes in. Hence several stands at the Inter BEE show were demonstrating how 5G will work in reality to support this kind of viewing. New IABM member Soft Bank was at the forefront of this at the show.

Rumors of more mergers and acquisitions of traditional hardware suppliers persisted during the Inter BEE show, fueled by the announcement by Belden that it is selling Grass Valley and also global investment firm KKR taking shares in Hitachi Kokusai Electric Inc (the broadcast division of Hitachi). Other broadcast divisions of major corporations have also come under the spotlight.



However reviewing the environment at the show, there has been a significant increase in the booth sizes for software related companies such as AWS and Microsoft over the last few years. My optimism is driven by these kind of software solutions that help distribute material at the highest quality. The Japan market has been notoriously hard to break into for international media suppliers, but with great software solutions, it is all possible and doors are opening.



Another growth channel in the APAC region is 'Rugby Pass', based out of New Zealand. The amazing growth of tens of millions of subscribers globally for this OTT-only channel has occurred in just 2-3 years.



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EMEA and UK region update



Darren Whitehead
*Director of Business
Development, IABM*

The biggest thing in Q4 2019 for all members in the UK and a lot of members in Europe was/is Brexit! Of course, we know now that the state of limbo remains as the deadline of 31st October was yet again pushed back by both sides whilst a consensus is sought.

As the October deadline approached many Council Members sought guidance from IABM on the implications of Brexit for members specifically in the Broadcast & Media industry. In direct response to this IABM teamed up with the Institute of Export and International Trade for a Broadcast specific webinar on the issues surrounding Brexit which ran on the 18th October.

For those who missed it there is still the opportunity to listen to the presentation and see the slides here – www.theiabm.org/how-best-to-prepare-your-company-for-brexit-iabm-webinar/

There is a lot of good advice in this webinar, especially for those involved in SaaS or providing a service in Europe; whilst the business is based in the UK, I urge you all to give this a look.

The exciting thing about elections every two years for Members' Councils – (like we had in the summer for UK Members' Council) or creating new Members' Councils because of incredibly strong interest and engagement from different regions (like IABM's newly formed DACH Members' Council) – is that there is a continuous stream of new ideas and enthusiasm to drive new initiatives.

All Members' Councils in UK and Europe have spent a great deal of time working alongside IABM head office staff on a wide-ranging series of events for members and end-user customers across Europe for 2020.

The link between a lot of these events is an opportunity to do something different – an opportunity to reach a different audience, to try something new or simply to understand a different part of the value chain. Members' Councils believe, in this time of dynamic change in our industry, that it is vitally important to step away from the norm and do something out of the ordinary.



Confirmed so far –

Special content session – January
Hamburg Open, Hamburg, Germany

Executive Summit – March/April
CABSAT, Dubai, UAE

Member Pavilion/content sessions – March/April
Prolight & Sound, Frankfurt, Germany

Executive Summit – May
ANGACOM, Cologne, Germany

In the planning stage to be confirmed

Member event on cyber security – Q1
London

Member event in association with a customer – Q1
Ireland

Member Pavilion/content sessions – Q2
Spain

There will be participation and speaking opportunities at all of the above!

So I urge any member wishing to get involved in the content/speaking sessions for the above events to get in touch with me directly –

Darren.whitehead@theiabm.org

or to visit the Regional Members' Council pages –
www.theiabm.org/member-councils/
and contact any of the Council Members highlighted.

North America region update



Kathy Bienz
Director, North America,
IABM

Americas Event Engagement

Quarter four has been busy with the lineup of industry events for IABM and its members.

NAB New York

Held in mid-October, IABM kicked off the first show day with our Annual State of the Industry breakfast. It started with an update on IABM benefits, with Stan Moote, CTO, presenting the latest business intelligence regarding *'The Business of Broadcast & Media: Current & Future Trends'*.

IABM member speakers then presented on the topic of *'Re-tooling for the Cloud'*:

- **Larry Johnson** – Global Director, Media & Entertainment, Oracle: *'Can cloud really allow us to turn on a dime?'*
- **Sasha Zivanovic** – CEO, Nextologies: *'On-Premises Vs. Off-Premises: AKA Local or the Cloud'*

After excellent insights from the speakers, they joined the following end users and members for a panel discussion chaired by Stan, where a lively exchange on cloud-based operations took place:

- **Renard Jenkins** – Vice President, Operations, Engineering & Distribution, PBS
- **Andy Liebman** – Founder & Chief Strategy Officer, EditShare
- **Usman Shakeel** – Worldwide Tech Leader for M&E, AWS
- **Mike Strein** – Director, Engineering and Technology, ABC News



During the show members had the benefit of taking advantage of the IABM Member Lounge for informal meetings and refreshments. Stan and I also helped some newer members by recording their complimentary annual IABM TV video during the show as they were unable to do so at IBC.

SMPTE Annual Technical Conference

SMPTE followed the next week in Los Angeles. For the first time, IABM had a booth which was a resource to both existing and potential new members by providing literature, business intelligence and other industry information and support.



IABM Executive Summit

Mid-November was the third and final Americas Executive Summit, which dovetailed with Streaming Media West in Los Angeles. The event theme was *'The Business of Broadcast & Media: How the Streaming Landscape is Changing'*.

I presented an update on IABM member benefits and Stan Moote followed with a presentation on the *'Global Media Business & Technology Trends'* with an emphasis



on the latest buying and selling trends across the industry that are having the most impact in the broadcast and media market.

IABM Principal Analyst Riikka Koponen then presented *'Trends in Streaming – Niche OTT'*. She covered the latest in the competitive situation of the largest streaming providers across TVOD (transaction-based video on demand), SVOD (subscription-based VOD) and AVOD (advertising-based VOD), then did a deeper dive into niche OTT business opportunities and activities. This information was an excellent entrée into the next stage of the Executive Summit.

The following three IABM members delivered compelling presentations that had the audience frequently taking photos of the wealth of data and information appearing on the screen:

- **Keith Zubchevich** – Chief Strategy Officer, Conviva: *'The Value of Streaming Advertising: A New Measurement Standard'*
- **Andrew Heimbold** – CEO, SingularLive: *'Graphics Revolution for OTT and Next-Gen Production'*
- **Steve Green** – Vice President, Media Sales–North America, Brightcove: *'Trends in Direct-to-Consumer Video'*

These gentlemen joined the following members on a panel discussion led by Stan, with multiple questions posed by the audience as well as from Stan:

- **Mark Russell** – Chief Technology & Strategy Officer, MediaKind
- **Scott Goldman** – Director of Product Management, Verizon Media
- **Kirin Patel** – Sr. Product Marketing Manager, AWS

Respondents saying they currently spend '0-10%' of their annual revenues on professional media technology grew by four percentage points over the past six months

At the conclusion of the panel, discussion continued during the networking time over drinks and appetizers, with great feedback heard about the importance and relevance of the information shared. Scheduled for an hour, over two hours later the networking session concluded.

2020 Around the Corner

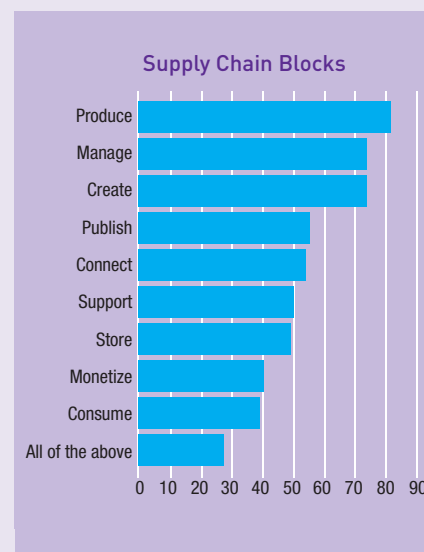
As we approach 2020, let's look at where the industry buyers tell us they are focusing their purchase budgets. Below are insightful excerpts from the IABM Buying Trends Report (Oct. 2019).

Media Tech Investment – By BaM Content Chain® Function

When it comes to analyzing the relevance of each BaM Content Chain® block, the clear majority of respondents (81%) found 'Produce' to be the most important for their business followed by 'Create' (73%) as well as 'Publish' (55%). Compared to the previous IBC 2018 survey, the values of the top three categories – 'Produce', 'Create' and 'Manage' – grew significantly.

Media Technology Budgets

Next, research participants were asked to approximate the proportion of their annual revenues spent on professional media technology, while 16% said they spend something between '11-20%' and 16% of respondents '21-30%'. The results were otherwise similar to the figures of our previous IBC 2018 survey, except that the share of respondents saying they currently spend '0-10%' of their annual revenues on professional media technology grew by four percentage points over the past six months. This is in line with an overall trend that media companies tend to spend less on professional media technology as they increasingly move towards IP and cloud infrastructure, which enable them to spend more on an operational basis (i.e. pay-as-you-go).



Efficiency and interoperability are the most important drivers of purchase and they are more important than the technology behind them

Strategic Drivers of Media Technology Purchase

Media technology purchasing decisions are driven by a complex mix of factors. An understanding of this may help vendors to present their products in a way that better resonates with their customers. Research participants were asked to select at least three important factors that drive the purchase of media technology. Respondents cited 'make us more efficient/save money' more often than any other factor as the most important driver of product purchase. The percentage of this variable increased exponentially compared to the previous survey. 'Interoperable with other products' rose from the sixth position in our previous survey to the second in this one. 'Makes us more agile' dropped slightly to third in the list. In contrast, 'after sales service and support' and 'vendors understanding of specific needs' gained ground. 'Total cost of ownership' and 'cutting edge technology' dropped too followed by ROI which stayed the same. Overall, this change reflects a shift in media technology behavior that we saw already underway at IBC 2018. Efficiency and interoperability are the most important drivers of purchase and they are more important than the technology behind them.



Visit the IABM site to read the full report:
www.theiabm.org/buying-trends-report-october-2019/



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IABM welcomes 3 new Platinum Members



Lisa Collins
Head of Marketing,
IABM

IBM, Skyline Communications and Telestream have all joined IABM as a Platinum members – the highest membership level. These companies join a select group of industry leaders including Avid, AWS Elemental, Dell EMC, Google, Grass Valley, Oracle, Piksel, V-Nova and Verizon in enjoying the wide range of benefits and recognition that top-level Platinum membership of IABM confers.



Telestream is a global leader in file-based media workflow orchestration, media streaming and delivery technologies: for over 20 years, the company has been at the forefront of innovation in the digital video industry. It develops products for media processing and workflow orchestration; live capture, streaming, production and video quality assurance; and video and audio test solutions that make it possible to reliably get video content to any audience regardless of how it is created, distributed or viewed. Telestream solutions are available on premises or in the cloud as well as in hybrid combinations. Telestream customers include the world's leading media and entertainment companies: content owners, creators and distributors. In addition, a growing number of companies supplying and servicing much larger markets such as ad agencies, corporations, healthcare providers, government and educational facilities, as well as video prosumers and consumers, are turning to Telestream to simplify the access, creation and exchange of digital media.



Skyline Communications is the global leading supplier of end-to-end, multi-vendor network management, orchestration and OSS solutions for the broadcast, satellite, cable, telco and mobile industry. Its widely acclaimed flagship DataMiner® network management platform, which has received various prestigious awards (including an IABM BaM Award®), enables sophisticated end-to-end integration and orchestration of the most complex technical ecosystems, across any vendor and technology boundaries, and has been already widely deployed and adopted by leading broadcast and media corporations, as well as technology vendors around the world.



IBM offers transformative technologies that are used by thousands of organizations in the Media & Entertainment industry. **Aspera** technology moves the world's digital assets at maximum speed. **Watson Media** helps businesses unearth video insights that improve viewer engagement, video analytics, delivery, and monetization. **The Weather Company, an IBM Business**, delivers accurate, personalized, and actionable weather and traffic data to help keep audiences informed. Together, IBM solutions help individuals and corporations dramatically increase productivity, expand revenues, explore new business models, and improve the media experience.

The top level of IABM membership, Platinum is the **choice of leading companies in Broadcast and Media technology that want to take advantage of extensive individualized services and consultations** supplied by IABM specialists to support their unique business objectives. Every Platinum membership package is thus individually tailored.

The prerequisite (to joining) is being able to show a working integration with one of Grass Valley's products

The Grass Valley Technology Alliance



Boromy Ung
VP Product Marketing,
Grass Valley

We asked Grass Valley's VP Product Marketing, Boromy Ung, to tell us about the company's recently launched Grass Valley Technology Alliance (GVTA) – why it was created, what are the requirements for membership and how he sees it developing over the coming months and years.

When did the GVTA get started?

The GVTA was 'soft' launched at NAB Show this year. At the time we had just one founding member but the objective was to do a full launch at IBC with more members on board – which we did, with five companies signed up. These are ChyronHego, Frankly Media, Net Insight, RT Software and Telemetrics.

We're in the process of signing up more members with the objective of having at least 12 by NAB Show 2020. This should give us enough critical mass to consider doing other events – maybe a GVTA conference where we could invite some panelists and guest speakers to discuss industry trends. We're certainly considering things like this for the future.

What are the objectives of the GVTA?

The principal goal of the GVTA is to create an alliance that would allow our customers to get a fully integrated solution with added value and capabilities and enable them to deploy the solution without any risks. It is about guaranteeing interoperability between GVTA members' products and Grass Valley's for the benefit of our customers. Often in the past – especially for very complex systems – we found we take the 'rap' for solving interoperability problems even when

they were not our fault – customers look at us almost as a systems integrator. We see this across large software deployment projects in news, playout and so forth. The GVTA addresses this at source.

Who can join the GVTA?

Technically, the GVTA is open to everybody – including competitors at some level. For example, we have an existing integration with the Avid newsroom computer system and we support the Ross newsroom system too, as well as integrating with some MAM vendors. As long as the company has a product that integrates with one of our products, we would definitely consider having them join the alliance.

Having said that, we may of course need to find a way so that we don't promote a directly competitive product. The alliance carries the Grass Valley name, and while in theory we would love the alliance to be really neutral and industry-wide, it is inevitably a Grass Valley-centric thing – but it is all done for the benefit of our joint customers. I'm not saying that the mission of the GVTA will not change over time, but right now it's about deploying systems that include at least one Grass Valley product.

What qualifies a company to join the GVTA?

The prerequisite is being able to show a working integration with one of Grass Valley's products. We are happy to host the testing at one of our facilities if required. We also first need to assess if there's any major competitive threat. After that, an internal team comprising the relevant people that have a stake in the integration gets together to properly evaluate the integration. The GVTA member commits to doing some co-marketing with us that will work to both parties' advantage. A formal agreement is then signed.

I should emphasize that Grass Valley is not undertaking to resell GVTA members' products, although where we have an OEM agreement in place (as with Telemetrics, for example) this will be the case. We will be dealing with this on a case by case basis as to the best way forward with each member. Of course, where a customer who is perhaps building a new studio, for example, says that they also need other services beyond what Grass Valley is offering – automation, graphics etc. – we would say that we integrate fully with any member of the GVTA offering those products, so they get help from us promoting their products too.

Grass Valley celebrated its 60th anniversary this year and we have a lot of history and a lot of customers, so I would see this as a positive step forward

How do you define interoperability? it's a very broad term

You're right – it's hard to define it in abstract. I would summarize it as something that provides greater value than the sum of its parts – i.e. that adds value. For example, if you were building a studio and it has a production switcher and a graphics system, normally you would have a director controlling the vision mixer deciding which camera goes to air etc. and a graphics operator generating lower thirds, tickers etc. By integrating a Grass Valley production switcher with a ChyronHego graphics system, the graphics system can be controlled directly from the switcher, giving the director the ability to directly preview the graphics without having to ask the graphics operator or having to look at a different UI, making the director's job easier.

In another example, Frankly Media's Express Video platform integrates with our GV STRATUS content management system which allows any content owner to acquire, edit, manage and publish content whether it is for broadcast, web, social or OTT distribution. While Grass Valley's platform shines at managing the 'broadcast' content, Frankly Media brings the 'digital media' side of the solution which requires content to be exchanged seamlessly between the two systems. This ultimately means better collaboration between the broadcast and the digital media teams under the broadcaster's umbrella.

What's in it for Grass Valley – and other alliance members?

Let's be transparent here – we're doing this not only for our customers' benefit but also for our own. We're using our name to attract companies to join the alliance so that we can of course improve our chances by selling a broader solution. But ultimately,

everybody wins: Grass Valley and all GVTA members – and let's remember that the end-user wins as well, by deploying a guaranteed interoperable solution which ultimately de-risks the deployment of the solution.

We're at the very beginning here – the first step. I think the industry would benefit tremendously from having a broader interoperability alliance like AIMS – but AIMS was about more than just systems interoperability. I've never seen any vendor that didn't support SDI, so because we all wanted and needed to replace SDI, we had no choice but to at least try and standardize the whole IP thing.

With the GVTA, it's a bit more subtle – because it's much harder to define what interoperability means, it's much more difficult to make it industry-wide – at least at the start. So rather than trying to boil the ocean, we set out to see if we could fill some holes with some of the GVTA partners' products. Eventually, more and more people will start to see the benefits and the alliance will gain wider traction over time. I'm aware that having Grass Valley in the name will put some people off – but on the other hand, Grass Valley celebrated its 60th anniversary this year and we have a lot of history and a lot of customers, so I would see this as a positive step forward.

What's the benefit for GVTA members?

As well as the co-marketing opportunities mentioned previously, they also gain exposure at exhibitions and events. At IBC we had a section on our booth that was reserved for GVTA members, giving them the opportunity to present on our booth, talk to our customers and our staff and promote their solutions – as well as potentially showcasing their product fully integrated with ours on one of our demo pods.



Is there a plan for an Interop Lab?

Some of the integrations lend themselves to a lab-type approach, while others don't, so we will be taking this on a case by case basis. In theory, depending on the application, we have the ability to test all these systems together and could show an end-to-end ecosystem to a customer. We do this at trade shows, and on roadshows or smaller, regional shows. In other cases, it may very well be that we are already shipping one of the members' technology 'inside' one of our products, which is the case for RT Software for example, as their graphics engine is integrated within our ICE playout product. This means the integration is tested every time we release a new version of ICE!

Do you have any examples yet of successful projects under the GVTA banner?

We're working on several projects right now that are confirming we're on the right track, with remote production being a key trend in this, and working with Net Insight is proving to be very beneficial in some of these projects – and customers really appreciate seeing us working together. I'd say in general that the whole concept of the alliance has definitely been well received both by customers and also the press – we had a lot of editors coming to our booth at IBC to find out more about it. In short, it's getting good traction.

More information about the GVTA can be found at

www.grassvalley.com/products/gvta/



Member Speak – TVLB spreads its wings in China



Cong Feng
*General Manager,
Touch Video Live
Broadcast (TVLB)*

We spoke to Cong Feng, General Manager of Beijing-based IABM Gold member company, Touch Video Live Broadcast (TVLB), about the company's activities and rise to prominence in the burgeoning China live broadcasting market.

Tell us a bit about the history of TVLB – when was it founded, what was the expertise of the founders, where did they see the market opportunity?

TVLB was founded in early 2002 and has a history of 17 years. Founder Cong Feng, who graduated from Beijing Film Academy, has rich experience in the television broadcasting industry, and he was the first person in China's industry to put forward the concept of EFP (Electronic Field Production). He learnt by chance that the market for EFP elsewhere in the broadcasting world is huge, while in China it had scarcely begun. To make the most of this opportunity, Cong Feng decided to establish TVLB to focus on live event broadcasting services.

Explain the relationship that TVLB has with CSM and what sporting events TVLB is covering?

CSM (China Sports Media) is the controlling shareholder of TVLB. TVLB provides coverage of many major sports, including: Chinese Football Association Super League, Team China, AFC Champions League,

CFA Cup, World Boxing Association, Asian Games, 2014 South American Derby Cup – Argentina vs Brazil, World Police and Fire Games, and the 7th CISM Military World Games, and many more.

Tell us about the range of services TVLB offers today and illustrate this with a few examples of recently completed jobs

Our main business includes all-round services of broadcasting solution design, project management and signal production. TVLB is able to present the most wonderful broadcasting signals to customers. It has recently successfully completed the Public Signal Broadcasting Mission for 2019 Hunan Hengyang International Marathon, the Shandong Rongcheng International Marathon in CCTV5+ and the Asian Cup 40 for the 2022 World Cup qualifiers – China vs Guam. We are also doing all the broadcasting production for the Chinese Super League.

TVLB is clearly very successful in the China market; why do your customers choose you ahead of your competition – what is your 'special sauce'?

Yes, as one of the larger commercial TV broadcasters and broadcasting solution providers in China, TVLB already has around 10 HD and 4K OB trucks. While continuously increasing equipment investment, with its deep technical accumulation and equipment advantages, TVLB has made countless successful classic cases for broadcasting of more than 10,000 large-scale events at home and abroad. Secondly, we have cross-border integration capabilities, are familiar with the industry, and do the implementation on site. Furthermore, we not only create broadcasting solution designs and provide the broadcasting service, but also undertake the broadcasting production.



TVLB has made countless successful classic cases for broadcasting of more than 10,000 large-scale events at home and abroad

How do you see the coverage of Sporting events growing in China?

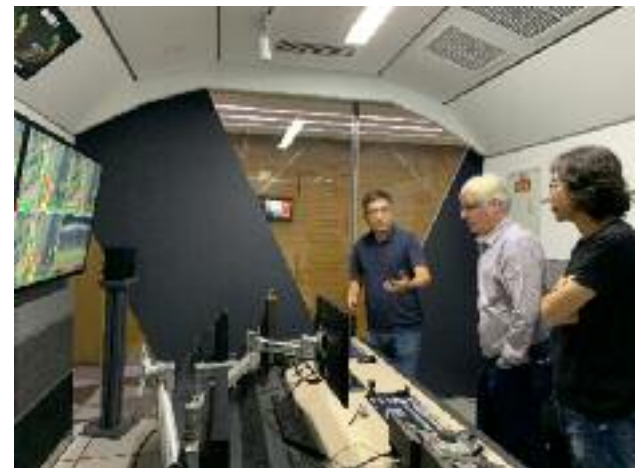
As the consumption level of residents increases, the domestic consumption structure is gradually changing. More and more people are paying attention to physical and mental health, and the participation demand for sports events has exploded. The operation of the event is the core of the entire sports industry chain. The entire sports industry is centered around the operation of sports events, the marketization process is accelerating, the potential of the whole industry chain is huge, and the demand for broadcasting is also huge.

Does TVLB operate outside of China?

Yes, in Singapore.

TVLB is a Gold member of IABM. What are the most valuable member services for you?

Networking at Events.



Member Speak – Brightcove – revolutionizing video experiences



Lexie Knauer
*Product Marketing
Manager,
Brightcove*

We spoke to Lexie Knauer, Product Marketing Manager at Brightcove about the company's rapid rise to prominence, its current solutions and how it is helping to drive the video explosion across all platforms.

Give us a brief overview of Brightcove

Brightcove is the leading global provider of powerful cloud solutions for managing, delivering, and monetizing video experiences on every screen. Our core products include:

- Brightcove Video Cloud
- Video Marketing Suite
- Enterprise Video Suite
- Brightcove Player
- Brightcove Live
- Brightcove SSAI
- OTT Experiences
- Zencoder
- Brightcove Beacon
- Brightcove Audience

Our mission is to revolutionize the way organizations deliver video experiences. We provide the world's best software platform for online video by delivering the best quality, reliability, innovation and customer experience.

Tell us a bit about the history of Brightcove

A pioneering force in the world of online video since the company's founding in 2004, Brightcove's award-winning technology, unparalleled services, extensive partner ecosystem, and proven global scale have helped thousands of companies in over 70 countries achieve better business results with video.

Give us some examples of how your customers in broadcast and media are exploiting Brightcove to enhance their video offerings

As audience demographics and viewing preferences shift, long-time broadcaster Christian Broadcasting Network boldly stepped ahead to launch their over-the-top (OTT) streaming services across multiple devices and platforms – giving their viewers the freedom to view content wherever they are, all with a consistent and intuitive viewing experience.



CBN uses the Brightcove Beacon™ SaaS-based OTT platform to deploy its new CBN Family application, a one-stop shop for CBN-produced news and video content. In order to reach their audience effectively, the app is published on several distribution platforms, including connected TV (Roku and Apple) and smart TV (Android, Samsung Tizen, and Amazon Fire).

You have an impressive list of partners and also acquired Ooyala's online video platform earlier this year. How important is collaboration in driving Brightcove's future success?

We believe deep partnerships and integrations with industry-leading platforms, make it easy for content providers to connect systems across their organization. Enabling these integrations allows us to broaden our reach, and help streamline workflows.

What is it about Brightcove that makes your customers choose you over the plethora of other video delivery options out there?

Whether video hosting, OTT, interactivity, or monetization Brightcove leads in the latest technology

and standards. We have multiple active patents and heavily invest in research in development to ensure we are at the forefront of technological innovation.

Our platform is powerful enough to handle whatever you throw at it. From out of the box usage to highly customized solutions for your specific needs. We pride ourselves on the reliability, scalability, and security of our platform. Brightcove has an award-winning support team, recognized by the TSIA six years in a row for support staff excellence.

Furthermore, we work seamlessly with leading technologies so customers can simply connect to systems like marketing automation platforms (MAPs), content management systems (CMS), ad serving, ad management, and audience measurement technology, so they can make the most of their investment.

You've been in the OTT market longer than most people. Where do you see the industry heading next – and how will Brightcove be helping it get there?

We were an early entrant in the OTT market and we have 15 years of proven leadership in the video space. Based on our experience in the OTT trenches, we have applied our best practice models to give our viewers the best experience possible.

At Brightcove, we believe OTT is not a one-size-fits all market, but there are a few universal truths. We know that viewers have:

- Increased expectations
- Increased appetite for watching and consuming videos
- A list of devices they use that keeps getting longer

Our goal is to make OTT device-proof so our customers can focus on the content and experience they are providing instead of having to focus on the breadth of device choices and resulting technology requirements.

Live video has unique demands. How does Brightcove address these?

Brightcove Live is a broadcast-grade, cloud-based live-streaming solution with broad device reach and integrated monetization capabilities using server-side ad insertion (SSAI). Broadcasters, publishers, and brands alike can originate live events using Brightcove's globally-distributed architecture, and deliver a high-

quality experience to viewers with minimal delay across multiple platforms and devices.

Brightcove Live is an end-to-end live streaming platform enabling customers to streamline workflows to make live streaming easy and achievable for companies of all sizes and in all geographies. Brightcove Live is supported by an award-winning support team to ensure each event is successful and provides the best experience for viewers.

Since deploying support for live stream ingest via the Secure Reliable Transport (SRT) protocol, Brightcove became the first SRT Ready OVP with the feature available to customers across its global points of presence. As we look at the features and functionality that will help our customers succeed in a competitive market, we believe the SRT is the protocol of the future and it was a no-brainer to become SRT-ready as soon as we could.

Brightcove has been an IABM member company for some years now (and incidentally, IABM has been using Brightcove to serve video for the last five years too!). Which of the member benefits and services do you find most useful, and why?

Personally, I find the IABM Knowledge Hub incredibly useful. It's a great way to keep up with industry trends and educate myself on topics I'm unfamiliar with. I also love the IABM lounge at events. The IABM lounge is always a safe haven at events where you can have a quiet conversation with a customer or just unwind and have a snack.



Member Speak – Imagen – leveraging the cloud in media management experiences



Tim Jobling
CTO,
Imagen

Ahead of the upcoming IABM webinar on cloud collaboration and deployment on 15th January 2020, we sat down with Imagen CTO, Tim Jobling and Partnerships Director, Owen Shackman, to talk everything cloud.

Imagen was a very early cloud adopter with systems deployed since 2014, when most other media companies in our space were only just beginning to look at its advantages. Today, Imagen's customer list includes Endemol Shine, Reuters News Archive, BP, LADBible and the BBC among many well-known names. This makes the company well placed to lead the discussion with practical, real-world advice based on experience not only in broadcast and media but a number of other verticals too.

Imagen was founded in 1996 as Cambridge Imaging Systems. "The initial problem we set out to solve was of organising media databases for historic film archives, and then we moved into video. Back then databases were quite difficult – and media was only just starting to be something you could do on computers," says Jobling.

"To this day, we still follow the same philosophy of building useful tools around media management. Up until 2011, we were very much a project-led business; we had technology, but we didn't really have a product," Jobling continues. "In 2011 we decided that we would completely refocus the business and our expertise on building an actual product, taking advantage of all the knowledge we had accumulated. That was also the point at which we decided we would focus on a cloud-first solution."

Experience counts

"When we started offering a product-

based SaaS model, we were definitely at the forefront of the new wave in our industry and we had to extensively explain the model to get people on board. That's not the case today – most commercial decisions these days are taken by people who are themselves well aware of the advantages of cloud SaaS solutions, though there is still sometimes an educational element to getting the whole business on side," Jobling adds.

Ticking the right boxes

What kind of companies does Imagen work with? "They do tend to be organisations with huge amounts of assets, but the size of those organisations varies quite considerably," Shackman explains. "Our primary audience is people who are either content rights holders or content creators. And they're producing enough that they have the management headache. If you tick both of those boxes, then you're probably a good candidate to be a customer of ours."

"Now that doesn't constrain us to any one particular industry," adds Shackman. "We work with media companies of course, but we've also been able to tap into the massive growth of video in other sectors; our clients now include energy companies, sports clubs, government and religious institutions – essentially, any organisation that has a large volume of content that they need organising. We're most useful when companies have a need to not just preserve their

content but make it easily surfable for internal and external access.

"A lot of the focus in Media & Entertainment industry forums is still directed at consumption via broadcast and OTT platforms, but consumption of content is much more than that now: independent creators, influencers and YouTube channels are a massive part of the modern eco-system," Shackman explains.

"One of our clients is LADBible, and we fit a workflow which is outside of traditional broadcast, but it comes back to that usability and search element," adds Shackman. "Our focus on straightforward cataloguing and advanced search is invaluable for platforms like LADBible who are dealing with huge volumes of user generated videos."

Usability is key

"I think one of the reasons we have been able to extend the business outside of the traditional media and broadcast space is that the Imagen system has been very much designed with usability in mind," says Jobling. "I've evaluated plenty of MAMs and workflow orchestration tools; while complexity has reduced in the last few years, they still typically require dedicated expertise. The nice thing about the Imagen system is that you can log in as a media manager, marketer or salesperson and leverage a very powerful toolset without having to read a huge instruction manual to be able to do it."

Look and Feel

"Our philosophy has always been that we want to build effective tools which provide the user experience of consumer grade products," Jobling adds. "It's a single solution, but with extensive options to customise its look and feel. For all our customers their brand is an important asset, and we present their content through their brand by configuring the theme. We can build them a custom theme which matches all of their brand requirements, but the technology and the functionality is a single product."

Collaboration is king

"The most obvious point of collaboration is the fact that we are the technology that enables people to do their jobs more efficiently," says Jobling.



"Therefore, the first level of collaboration has to be with the people who actually make the content, understanding the systems and processes they rely upon.

"Most of the utility our customers get out of Imagen is that they are storing and managing their finished assets and then doing onward distribution for first or secondary usage. We need to work closely with production teams to facilitate processes which add efficiency. Rapid turnaround in the case of live sport can mean getting clips and highlights packages available often whilst players are still on the field.

"We're also the middle point for other data coming in. For example, in sports that's player data and metadata, or it

could be rights management; there are basically people inputting data into our system from 3rd party sources which helps get the content packaged or usable for the next stage in its journey, and we need to accommodate these feeds," Jobling says.

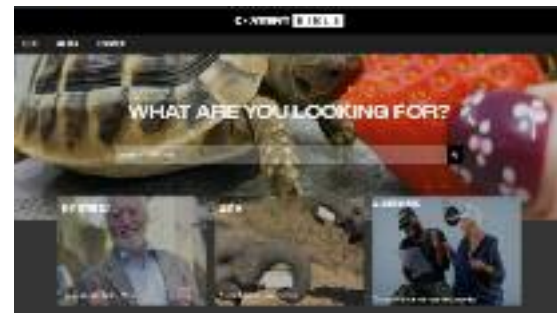
Shackman adds, "Many of our customers naturally utilise external production companies, but then their customers in turn are international broadcast licensees. Our system sits in the middle of this so it's essential our functionality works effectively with both sides.

"Other organisations might want to have a more sophisticated integration with their internal systems. They're less interested in a pool model where users just go and have a look at a website and decide what they want, instead requiring the entirety of a subset of content to be pushed to them. For these, we utilise APIs to create custom feeds which match their requirements. It's then possible for content takers to consume those feeds by utilising technology which integrates with their own internal stack, automating the process of taking content out of the Imagen platform that matches their interest criteria.

"In the upcoming webinar, we're going to go through some such scenarios – the challenges we've overcome in these cloud installs – based on our real-life learnings from the field in over five years of doing this," Shackman explains.

Any cloud

"We view cloud platforms as commodities, and don't build our technology stack to depend on any one particular vendor in that commodity; our technology stack has been designed to effectively run on cloud infrastructure, but not rely on auxiliary services so we're not tied to any one vendor," says Jobling. "It depends what the customer's needs are – it's often driven by territory, sometimes it's driven by price. And occasionally, it's driven by



technology advances. So if it turns out that this week's Google AI is much better than everybody else's, then you can be sure that's the one we're going to be leveraging when people need some AI action."

Business transformation

"While cloud is the enabler, our real job is to help organisations progress to better media management, overcoming issues around infrastructure or just habits, to take them to the cloud very much in the way that we evolved – realising that the cloud is the only sensible, sustainable way forward," Jobling contends. "We didn't do that overnight. It was a considered process, an evolution. It plays into the maturity of our potential buyers, and is also why we find collaboration with systems integrators so valuable; they are the traditional consultants – it's their job to pull together the Best in Show to deliver the result. That's part of the business collaboration as well as we provide a level of consultancy around the transformation required; we've picked up some niche expertise along the way over the years!"

Why Imagen?

"It all comes back to that profile of people who have a remit to manage a large amount of content in the right way. If you're feeling the pain points around it, then it doesn't matter if you're a content creator, enterprise, or systems builder, you've got those challenges, and we've got the solutions to help you – based on unmatched experience in the cloud," Jobling concludes.

Member Success – Levira – base jumping into the future



Indrek Lepp
EVP, Head of Media Services, Levira

We spoke to Indrek Lepp, EVP, Head of Media Services at Levira, the Tallinn, Estonia-based digital services provider about the company's proud history, current operations, future plans and how it is championing start-ups – as well as base jumping the 314m Tallinn Tower which is its home.

A proud history and secure future

Levira is a technology partner to companies whose business depends on technologies and who wish to involve a professional service provider that can offer the necessary infrastructure solutions.

The history of Levira goes back to 1920s when radio broadcasting first began. At the same time there was also a need for broadcast network and other technical services, and the predecessor of Levira was established to supply these. Today almost 100 years later, although the industry has changed and keeps on changing, the need for technical competence, innovation and reliable services is undiminished.

Throughout those 100 years, Estonia has been through very different and some difficult times, but our organization has survived, and our people are carrying forward our history, knowledge and competence. During my time at Levira, which I joined in 2001, we have on several occasions celebrated 50 year work anniversaries of our colleagues and there are many more such celebrations to come.

Broadcast network services have been our historical core role in the Estonian domestic market and this is still an important part of what we do. Today we focus on helping broadcasters and media houses to transform, to keep up with changes, to grow and develop, not just to

survive. We appreciate innovation, continuity and creativity, and we design agile solutions together with our clients. We value strong partnerships which is the foundation of trust.

Levira operates one of the largest independent TV play-out centers in Northern Europe serving local, regional as well as international broadcasters. Our dedicated fiber-based Media Distribution Network, which spans Europe, allows us to deliver linear content to TV-platforms in all the major networks in Scandinavia, the Baltics and Central-Eastern Europe in a reliable and cost-efficient way.

Our Asset Management, Orchestration and Automation solutions fit the various needs of media companies, but are also well applicable in other industries working with video, audio, photo or other digital assets. Levira's Outside Broadcast team is recognized to be the best in the region and is regularly involved in various productions with the highest requirements like FIBA Eurobasket tournaments or Eurovision Song Contests to name just two.

We operate a data center of over 1000m² in one of the safest and securest premises – in the basement of Tallinn TV-Tower – surrounded by tons of concrete; we also provide various IT services on the top.

Levira has been profitable since it was re-established in 1997 and we have two very strong shareholders: the Estonian government (with 51%) & TDF Group from France. This is important to allow us to innovate, develop, and test and means we can also allow ourselves to fail with some innovations.

On top of all above we also operate Tallinn TV tower as a tourist attraction, hosting annually close to 200,000 visitors. There is an interesting connection between Levira and the TV-Tower as a tourist attraction: every year in the summer there is one week when base jumpers from around the world come to jump from the 314m TV-Tower. By a coincidence (or not...) one of the very first to base jump about 15 years ago was our current chairman of the Council. Jumping with a parachute, particularly from the top of the building, is a real challenge and takes a lot of courage – exactly like jumping into a new technology, into a new service, into something what no one has done before and you do not know if you will succeed or not. I can imagine that for start-ups 'base jumping' is their everyday life, with only one difference: unlike start-ups close to all base jumps are successful.

What is our 'secret sauce', you ask? It is dedication, competence and courage to try out new ideas, to

disrupt traditional approaches. We are not afraid to fail, as long as we do it fast, and learn the lessons from it.

Moving into IoT

We see IoT as an important part of the future of our living and existence. Therefore we put efforts into developing and securing IoT infrastructure and IoT platforms to be used in various applications and services. Broadcasting and IoT solutions share an essential requirement: 100% reliability. Our network of high masts covering 100% of the country with secured

power is an unbeatable asset for services which need the highest possible reliability. One cannot imagine a situation when self-driving cars on highways all of a sudden lose control because a power line was broken or some batteries on base stations went flat.

Tuned for synergy

We are all in the same boat – one cannot succeed without others succeeding too. Particularly in today's world, you need to collaborate with every party: with your providers, with your clients as well as with your competitors and always keep in mind that it is always about people, not companies or brands.

Our team is tuned for synergy. As people we all are different but each of us will supplement others and the result is smooth and optimal communication inside and outside of the company in relations with clients and partners. We are good listeners and can provide successful solutions because of this. This is our DNA – synergetic partnerships.

Change or die

It is change or die, as simple as that. Over its history Levira has faced this situation tens of times. Some changes were forced by state/government decisions, but mostly it has been a need coming from the market. However, over recent decades most changes were technology driven – kind of a replacing one box with another, better one. Changes which are happening now over last years are, of course, also technical, but much, much more business model-based. So replacing one 'box' with another is not sufficient anymore. You need to adopt or even better, you need to drive those changes, if you are smart enough.

Championing start-ups

It is our true goal to be in the forefront of innovation; we bring validated early stage media solutions to our customers, helping them to innovate. In doing so we also work closely together with the disrupters of the industry. There are already several products developed by start-ups which we are closely working with to help them develop, improve, productize and bring to the market. One example here is Votemo, a real-time audience interaction tool which brings innovation in audience engagement with extra revenue streams from extra ad-space and paid voting options. This autumn Freemantle's X-Factor in Latvia has been using Votemo with great success. Other examples are Adbreak AI, an automated ad spot scheduling tool and Slash9, an automated media monitoring and enhanced statistics tool. Both are using the same AI based engine in the background and on top of it they have developed tools bringing efficiency and savings. It has also become a great tradition at Levira to run internal

Hackathons to generate new ideas, initiatives and solutions as well to develop agility and teamworking within organisation.

We see our role here as a technology partner to companies whose business depends on technologies and who wish to involve a professional service provider that can offer essential infrastructure solutions.

What's next for Levira?

From technology perspective SMPTE ST 2110 based workflows will make a significant impact in the near future and Levira is fully geared up for this. Last summer we set-up for a client a real live ST 2110 based test platform which was tested for all possible functionalities and capabilities. As testing was successful, we have already started planning a commercial set-up of the platform to go live by mid-2020.

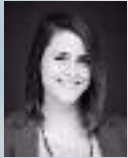
Also, various new AI-based solutions are coming to make different operations more efficient and more accurate. Levira cooperates with several start-up companies developing such solutions and helping them to take their products to the market as briefly described above.

On another note, while we see growth of different new content platforms, I still believe traditional television will remain an important part of the media industry. It will transform and change to focus more on live content, sports and news, but it will remain at the top of viewer preferences – at least for quite some time. Just like TV/DVD did not kill cinemas – quite the opposite with cinemas now having best time ever – I personally believe there is a place for linear TV, but it will likely have to change, become much more attractive and engaging.



Vans US Open of Surfing held from July 27 until August 4 in Huntington Beach, California, the Vans Showdown featured some of the best-of-the-best skaters competing at one of the biggest skateboarding events of the year

Member Success – Vans Showdown 2019 Gets Some Serious Air(time) with Matrox Monarch EDGE



Emily Engott
Technical Publications
Writer, Matrox

Matrox Monarch EDGE encoder enables B Live to offer a state-of-the-art, multi-camera viewing experience to Vans Showdown fans tuning in to watch live streams

What do veteran skateboarders and their fans have in common? No limits. At the skate park, athletes push the boundaries of what is physically possible all the time, performing gravity-defying tricks and making them look easy. Skateboarding fans are the same. They don't want to tune into a live webcast that is anything less than cutting-edge, giving them the look and feel of being at the skate park following their favorite athletes. Thanks to the Matrox Monarch EDGE encoder's ability to receive multiple HD feeds and composite them into a flawless quad-split stream, and B Live's innovative user interface that allows for seamless switching between multiple camera views, fans of the Vans Showdown skateboarding competition got 'star treatment, just like their favorite skaters.

Part of the Vans US Open of Surfing held from July 27 until August 4 in Huntington Beach, California, the Vans Showdown featured some of the best-of-the-best skaters competing at one of the biggest skateboarding events of the year. Meanwhile, during the competition, fans used their smart devices and desktops to head to the Vans US Open of Surfing's official website and watch the B Live interactive user interface's live streams of the action at the skate park.

Giving viewers total control

In order to give fans a seamless viewing experience, New York City-based live event production company, B Live, needed an encoder that could accept four discrete SDI inputs and deliver a stream as a single quad-split composition. Before B Live purchased its Monarch EDGE encoder, its user interface did not allow viewers to watch multi-camera video with continuity. Instead, the player would need to buffer each new camera angle selected by the user before the video would become available for viewing. "Before we got the Monarch EDGE, we were doing things 'the old way'," said Jay Kopelman, Director of Digital Engineering for B Live. "That is to say, every time the viewer switches camera angles, it loads a new independent stream. Because we can now do quad-HD streams with Monarch EDGE, it has enabled us to feed a single 4K stream into the player. That is why it seamlessly switches on the B Live interface."

During the competition, viewers could watch live feeds of their favorite skaters by visiting the Vans US Open of Surfing official website. The B Live user interface gave fans the chance to feel as if they were on their own decks alongside their favorite skaters at the Vans Showdown by allowing them to select from and switch

Fans were able to easily decide which skater they wanted to view from the three isolated feeds available in addition to the director's cut – all from their smart devices or desktops

between three different isolated camera angles of the athletes or the director's cut – all thanks to the robust and dynamic H.264 encoding capabilities of Monarch EDGE.

Monarch EDGE carves up live webcasts

B Live's camera crew captured each competing skater separately. Four 1080p30 video streams, including three isolated views of skaters and one director's cut produced on-site by a different team, were sent back to the B Live office. There, Monarch EDGE received the three isolated feeds and director's cut, and encoded these feeds into a single 4K, 20-Mbps stream that was then sent to the B Live platform.

"Because we can now do quad-HD streams with Monarch EDGE, it has enabled us to feed a single 4K stream into the player. That is why it seamlessly switches on the B Live interface."

Jay Kopelman, Director of Digital Engineering for B Live

On the B Live user interface embedded in the Vans Open of Surfing official website, fans were able to easily decide which skater they wanted to view from the three isolated feeds available in addition to the director's cut – all from their smart devices or desktops.

The ultimate no-fail, no-bail encoder

With Monarch EDGE's ability to encode four 1080p30 video feeds together into one 4K stream has made B Live's work of bringing best-in-class, live, multi-camera event footage to viewers around the world more feasible than ever. During the Vans Showdown, viewers of B Live's interactive user interface enjoyed seamless switching between views of their favorite skaters without all the buffering required from outdated methods of displaying multi-camera content. Thanks to Monarch EDGE, fans saw every ollie, kick flip, and more from this year's elite competition without missing a beat.

Kopelman said that B Live is also looking forward to leveraging Monarch EDGE's upcoming closed captioning support capabilities in addition to continuing to use the device for live events with demanding quad-stream requirements. "One thing I haven't seen on anything except Monarch EDGE is the 4:2:2 10-bit encoding. It is a hardened platform," he said. "You know it's going to keep working."



Peter Wayne Golden BaM Award® Finalists

**The BaM Awards® celebrate and recognize
achievements and new solutions.**

**Judged by a truly independent panel of
experts, they are a valuable vehicle for
raising awareness in the industry.**

**All of this year's winners are automatically
shortlisted for the Peter Wayne Golden
BaM Award®. Following is a
selection of the finalists.**

Adobe After Effects Content-Aware Fill for Video Entry

Adobe's Content-Aware Fill for video in After Effects is an industry first feature that's an innovative game-changer in the post-production industry. 2019 is the year of AI in video, and Content-Aware Fill for video is leading the charge with the power of Adobe Sensei, which leverages intelligent algorithms to remove unwanted objects from video.

From removing cars, power lines and people from shots, to erasing signs of production equipment such as boom microphones or special effects wires, Content-Aware Fill for video aims to make it easier for video professionals, regardless of budget, to save time on tedious manual work. Whether you're an editor or visual effects artist, tighter timelines and an increase in workload are driving the need for quick-turn post-production processes and Content-Aware Fill streamlines this process.

Powered by Adobe Sensei, Content-Aware Fill for video uses an intricate new algorithm to estimate the motion and depth of masked objects throughout a video clip. Marrying dense motion tracking with pixel replacement, the algorithm finds areas of adjacent images and backgrounds and reveals those pixels throughout the clip and subsequently removes the object by replacing them with pixels that did not have the object in the first place. It not only benefits traditional filmmakers, but is useful to everyone from a professional VFX artist to a wedding videographer who would like to convincingly erase any object from an image. For videos where the region behind the object is never seen, the system employs Content-Aware Fill to guess what is missing.

According to a research report for Business Insider investigating how VR, AR and 360-degree video are shaping the future of content creation "the global VR market is forecast to grow at a nearly 81% compound annual growth rate (CAGR) from 2016 to 2024." This means that with the advent of increased VR and immersive work the demand for expertly erasing unwanted objects will rise, making the implications of this technology is huge. This toolset is indispensable for immersive VR projects, as there's nowhere 'off-camera' to hide crew, tripods or lights. It not only saves editors copious amounts of time but also democratizes post-production tools in developing industries to provide a level playing field for creators of all stages to be digital storytellers.

After being honored with the IABM BaM Award® at the NAB Show in Las Vegas this year, receiving the Peter Wayne Golden BaM Award®

would reaffirm that Adobe's Content-Aware Fill for video in After Effects is a leading post-production tool for editors and is transforming the industry by leveraging innovative technology.

Content-Aware Fill for video significantly reduces time spent on a task that is necessary for almost every professional in the post-production industry and allows editors to invest a greater amount of time in polishing their work to a higher standard and becoming masters of their craft.



Arvato Systems

We, at Arvato Systems, were absolutely delighted to win the IABM BaM Award® at IBC2019. It proves our leading role to serve our clients with innovate technology helping them to stay ahead of the curve.

Ratings forecasts are critical for broadcasters in defining their prices and sales models; models that are becoming increasingly complex as broadcasters look to offer cross platform campaigns to compete with newcomers disrupting the market. Advertisers want to know how and when they will hit their target GRPs or impressions. At the same time, the accurate prediction of ratings, by human beings, takes years of experience and practice and is very much increasingly a dying art.

This is a crucial business. In Germany, for instance, linear television still dominates advertising expenditure with a market share close to 50%.

There are a large number of factors that may affect ratings and the relative importance of these factors varies significantly between peak and off-peak viewing. Factors included in our historical analysis and the resulting prediction models we developed include related data such as genre, time information like weekday, week and month and also contextual data.

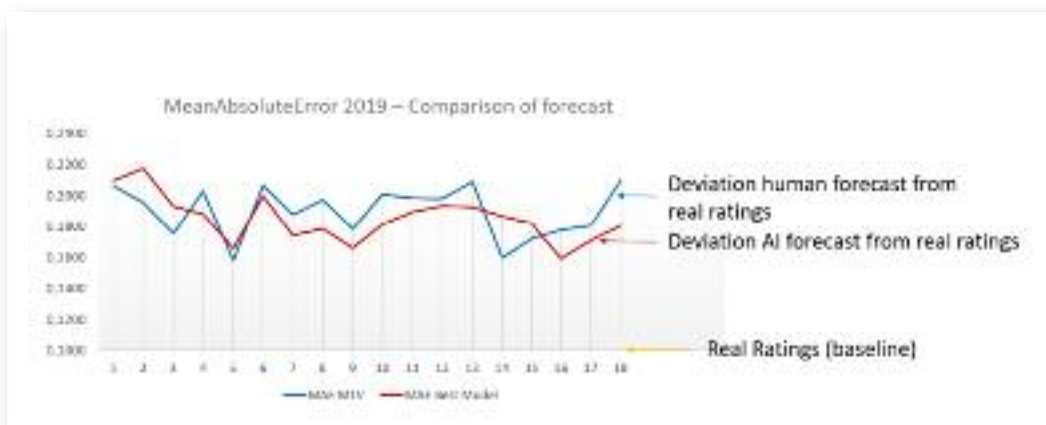
Many factors were considered with even just the top 15 varying significantly as models were developed. Four different machine learning methods were also evaluated with significantly different error – or accuracy – rates in the results.

From the start of the project, we very quickly reached a point where the AI was matching the accuracy of the human predictions. This included areas (particular in terms of weeks or time slots) where the error rate was higher both for machine and human. This became a focus point for the AI model to analyse what factors were driving the higher error rate which led to further models delivering even higher levels of accuracy.

As a result, we are not only now providing more accurate forecasts with BMS AdStore, we are able to do so faster and to iterate forecasts as critical external factors change.

There has been a lot of ‘buzz’ around AI in recent years, but the vast majority of demonstrations have involved augmenting or adding metadata – speech to text, object recognition etc. While this makes a good demonstration, our application of AI in ratings forecasts has a much more direct relationship to the commercial success of our customers. By providing more accurate forecasts more often, broadcasters are able to better optimize the placement of commercials and ensure they hit the KPIs of their advertisers.

What’s more, BMS AdStore can also be combined with other innovations in advertising sales and delivery models that are proved to maintain or even grow the value of TV advertising in an increasingly competitive space.





Broadpeak nanoCDN™ with Ultra Low Latency and Device Synchronization

New devices, including tablets and smartphones, enable television viewers to enjoy live sports and news anytime, anywhere, however latency remains a real issue. It's not uncommon for consumers to be watching a soccer match and hear their neighbor shout "Goal!!!!!" before seeing it happen. Video streaming delays frequently occur nowadays and can be especially unsatisfying during live sports events.

Traditional IPTV video services typically experience low delay because there is guaranteed bandwidth and a requirement for limited buffering in the set-top box (STB). For Adaptive Bitrate (ABR) video streaming in HLS, HSS or MPEG-DASH, it's a whole different scenario. Secondary screens such as connected TVs, smartphones, and tablets are accessible on various unmanaged networks (i.e., 3G, 4G and OTT) where the HTTP ABR streaming format is used. HTTP is a best-effort protocol, not initially designed to manage live video delivery that requires regular data sending. It is therefore necessary to use an important buffering at the player level to guarantee service continuity without stalls, with the buffer absorbing the irregular aspects of the HTTP traffic. Player buffer accounts for 70 percent of end-to-end delay.

Broadpeak's nanoCDN solution resolves this issue by using multicast ABR technology at the network level, enabling operators to successfully stream video without massive buffering on the player side to guarantee a good quality of experience. The solution involves deploying a unicast-to-multicast transcaster in the head-end and multicast-to-unicast agents in the home gateways, allowing players to decrease their buffer sizes to 1s – the same level as traditional IPTV – instead of 18 to 30s, bringing latency down to 7 or 8 seconds instead of the typical 30 to 40 seconds.

But 7 to 8 seconds is still too high nowadays. Hence, Broadpeak's added support for the next-generation CMAF standard and chunked transfer encoding (CTE) technology to its nanoCDN solution, bringing latency for video streaming down even further – to 2 seconds and below.

CMAF includes a low latency mode that allows encoders to generate sub chunks or fragments that are smaller than the chunks traditionally used for HLS and MPEG-DASH. By combining low latency CMAF format with the CTE technology at the level of its unicast to multicast transcaster component, Broadpeak's nanoCDN solution allows operators to send video chunks while they are being processed. Prior to CTE support, the transcaster would need to process the full chunk before it could be sent to the next phase of the delivery chain, introducing a delay of a chunk's length (2 to 6s). The combination of both elements – smaller chunks and delivery of chunks before they've been fully processed – lowers latency in the head-end.

Broadpeak's nanoCDN solution is the only multicast ABR technology available on the market today that combines multicast delivery with CMAF and CTE, enabling operators to stream live content with no delay and guaranteed quality of service. For subscribers, nanoCDN increases their satisfaction during live events, ensuring sports fans never miss a second of action because of latency. Winning the BaM Award® recognizes these tremendous achievements.

Dejero – Rockin’ Romania: breaking barriers for holographic technology over a 5G network

Dejero, along with Musion 3D and Vodafone Romania are all very proud to be recognized for playing significant roles in supporting the world’s first live rock concert using 5G and holographic technology.

When Luca Mihail, a talented 11-year old guitarist, was asked to join rock band Vita de Vie on stage during their performance at Romexpo in Bucharest, he almost turned down the opportunity because of severe stage fright. Producers, however, found a way for Luca to perform without the intimidation of the live audience, with the help of Vodafone Romania.

Utilising Musion 3D’s Eyeliner™ display, a leader in ultra-realistic, life-sized, interactive 3D holographic video shows and effects, Dejero’s state-of-the-art mobile transmitters and receivers, and Vodafone Romania’s rock-solid 5G network, the producers were able to place Luca on the stage as a hologram while he played in a private studio two kilometres away.

Musion 3D designed and assembled an image capture room that included a monitor for Luca to see the audience without feeling the pressure of actually being there live, on stage.

The illusion depended on a Dejero EnGo featuring patented Smart Blending Technology for the reliable transmission of Luca’s hologram over the 5G network. The signals were synced to both the venue and a return video and audio feed to Luca in the nearby studio. Dejero also assisted the production team with its renowned technical support during project conception, set up, and live production.

The project involved moving a large amount of data across Vodafone Romania’s 5G network between the studio where Luca was playing, and the live concert venue. Without absolute synchronization between the audio and video channels, the effect would fall flat.

Even the slightest delay would cause a ripple effect between hearing the audio and seeing the visual representation of Luca on the stage.

“The crux of this event was the delivery of a high-quality live stream across the network in a way that creates a realistic image on stage. There can be no degradation of service whatsoever to preserve the ‘reality’ of the experience for viewers,” said Ian O’Connell of Musion 3D.

Although holograms have appeared on stage at live events in the past, the cost, technical restraints, and set-up time previously involved have rarely made it justifiable. Now, with 5G and smart blended technology, the viability of such events and the possibilities it opens up, are immense.

“We are extremely proud to have played a crucial role in the successful delivery of this event, creating the ‘live’ experience by connecting Vodafone’s 5G network in a way that allowed Musion 3D’s hologram to appear on stage and freely interact with the audience and band members in real-time,” said Todd Schneider, chief technology officer of Dejero. “The possibilities of 5G when it comes to the creation of live events around the world are nearly limitless, and in those cases, extremely reliable transmission technology is vital.”



DELTACAST

DELTACAST core strategy is to constantly address new technologies and new workflows ahead of its customers, in order to propose both the right tools when pioneers start their transition and mature products and solutions when the actual and massive market adoption happens.

So far, this strategy succeeded from SD to 8K thanks to the nature of the DELTACAST products, which are video interface cards for computers, provided with a software development kit, and designed to be part of our customers appliances and end products. Beside the technical innovations, that success also relies on the quality of the products as well as on the VideoMaster SDK which is a real plus to ease customers migration between different DELTACAST products, and from one technology to another one.

A couple of years ago, in parallel of designing its dedicated hardware devices, DELTACAST took the decision to also invest in pure software products designed to run over COTS equipment. It was a serious challenge for the company engineers.

Starting with a first SMPTE ST2022-6 implementation, then evolving to handle ST2110 content, the concept of software stack progressed step by step to progressively take the form of the VideoMaster Virtual Card submitted to the IBC 2019 BaM Award and showcased on the IBC show floor.

During the whole IBC, the DELTACAST booth hosted a live demonstration where multiple instances of the Virtual Card were concurrently executed in virtual machines – an additional challenge for accurate video streaming!

More than a satisfaction, winning the BaM Award is another confirmation that DELTACAST adopted the right strategy. Together with the very positive feedback we are continuously receiving from our customers about the Virtual Card, being recognized as a reference in the industry makes us trust our choices even more.

As a summary, the Virtual Card is an addition to our VideoMaster SDK of the capability to send and receive ST2110 streams using the standard NIC available on the platform. The Virtual Card implements different streaming technologies, some of them being optimized for performances and high-bitrate use cases and other ones being more tailored for interoperability with the underlying operating system and IT equipment. DELTACAST designed the Virtual Card to offer a scalable and cloud-ready solution to its customers. To ease the transition from baseband (SDI) to IP, and from dedicated hardware to generic IT systems, DELTACAST designed its Virtual Card as a new element of the VideoMaster SDK common to all its other products.



EVS –Overcam: autonomous camera system

Combining artificial intelligence and robotic cameras, the Overcam system is designed to automate key camera positions around the field of play, helping live sports productions capture more content, more efficiently.

Powered by VIA Mind, EVS' AI engine that integrates machine learning methods, the Overcam uses smart tracking to analyse the game's key parameters, such as player and ball positions, and steers the cameras to find the most appropriate framing of the scene.

This processing is done in real-time which means the system can integrate with existing multicamera live production workflows, mixing both robotic and manually operated cameras. This provides enhanced storytelling capabilities for live sports productions as they have additional content they can work with. It is also seen as a real opportunity to allow the coverage of live sports that don't normally get broadcast.

The Overcam system provides optimal visual results since it operates real cameras and is trained on real life customer footage to mimic the traditional camera framing for each position. It runs on a 2RU COTS server provided by EVS which can be located either in the venue or in a remote operation center. On match day, there is no lengthy setup time, the system is deployed smoothly and cameras calibrated automatically.

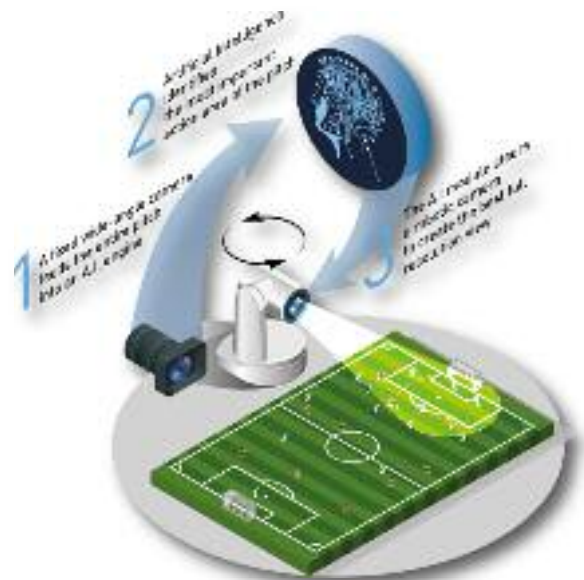
Christophe Messa, Product Manager at EVS said: "Participating in the IABM BaM Awards® is a true accolade to the team and our hard



work, and shows that EVS' ability to cost-effectively enhance the output of any live production really resonates with the industry".

Overcam has been created to help organizations save money, expand camera coverage, standardize hard-to-achieve viewing angles, and position cameras in costly or constrained areas to avoid blocking the sale of seats.

While the debut iteration of the solution is intended for live football, in particular smaller leagues with tighter production budgets, the system can ultimately be used for other sports such as basketball and hockey television channels and production houses.



GB Labs – Mosaic Automatic Asset Organiser

Winner of the IABM BaM Award® at NAB Show 2019, GB Labs' 'Mosaic' – an industry-first combination of AI and intelligent storage – is an automatic media asset organiser that is a dynamic, all-new, and vastly enriched way to track and find media assets, saving its users enormous amounts of time and, therefore, money.

Mosaic eliminates the tedium of old and inefficient search methods by automatically scouring all in-built metadata and integrating it with a professional AI tagging system. This not only eliminates the need for users to manually tag anything but also presents them with what they need based on what Mosaic intelligently determines they want.

Dominic Harland, CEO-CTO of GB Labs said, "We are deeply honoured to have received a IABM BaM Award® at NAB Show 2019 for our new Mosaic automatic asset organisation software.

"It's always gratifying to be recognised by your peers, but when the judging panel is comprised of no less than 40 industry experts, it's even more satisfying. It's meaningful not only because it is independently judged but because, as the IABM acronym suggests, the judging panel, organisation, and recognition are truly global.

"The uninitiated might assume that Mosaic is some flavour of MAM, but it's not, and doesn't try to be and the judges clearly got that. For many, a full-blown MAM, particularly in relation to storage, is unnecessarily expensive and complicated. They got that, and Mosaic as a solution, too.

"We arrived at the Mosaic solution because we looked at the problem from another angle. We knew there had to be a better way for storage users to track, tag, and retrieve what they needed, so we set about making that happen in a way that made sense. And a big part of that sensible approach was to, for the first time in the industry, couple intelligent storage with AI. That gave us, and the industry, an elegantly designed asset tracker and organiser that is a dynamic, highly enriched way to store, track, and quickly present relevant media assets."

What makes Mosaic work so well is that it generates a lot of data automatically, which therefore provides users with a far more flexible and efficient way of quickly and accurately finding precisely what they need rather than having to manually tag, hunt, and hope.

However, just as important as its automated tagging and search capabilities is Mosaic's direct link with GB Labs' intelligent performance management component, which dynamically prioritises tasks so heavy processing loads can be handled during periods when spare cycles are available. In the real world, that means the technology is working for the user at all times as opposed to becoming yet another storage headache that typically occurs when they're least welcome.

GB Labs' philosophy is that assets should present themselves to the user in an order that they decide is important rather than the user wasting time and money trawling through terabytes of data to find what they need. Mosaic offers a timely solution to a real-world issue.



MediaKind, Deutsche Telekom, Tiledmedia, INVR.SPACE, Magnum Film

It was an honour for MediaKind to be recognised by IABM at NAB Show 2019 for delivering the world's first live 6K tiled 360-degree sports coverage of a professional basketball match. Winning the IABM BaM Award® was a stunning achievement for both ourselves and our project partners Deutsche Telekom, Tiledmedia, INVR.SPACE and Magnum Film.

Deutsche Telekom commissioned the project in December 2018 which saw a live 360-degree video stream of the basketball match between Telekom Baskets Bonn and EWE Baskets Oldenburg, delivered from the Telekom Dome in Bonn, Germany, to Deutsche Telekom's Magenta VR consumer app at 6K resolution. MediaKind managed the workflow as a key technology provider for the project commissioned by Deutsche Telekom. The live 360-degree video encoder was developed using MediaKind's virtualised software encoding technology, integrating Tiledmedia's tile-based video pre-processing and packaging, and deployed in Google Cloud Platform. Magnum Film was responsible for on-site 360-degree acquisition and production, with INVR.SPACE providing and managing the cameras and the stitching platform.

The delivery of this award-winning project demonstrated the application of MediaKind's Cygnus 360° Events offering, an as-a-Service (aaS) solution providing a cloud-based workflow for live 360-degree video processing and multi-platform publishing. This solution enables operators and content owners to efficiently capture and produce high quality, live 360-degree video at up to 8K resolution and deliver immersive content to the consumer with delivery bitrates of between 10-15Mbps.

From a single high-quality contribution source, live 360-degree video is processed and delivered into suitable resolutions and formats for simultaneous live publishing to an operator's app over public CDN, as well as via social media platforms. A core part of the service is MediaKind's technical support and monitoring throughout the staging and broadcasting of the event, therefore reducing delivery risk and the need for operators or service providers to place skilled staff on-site.

The breakthrough technology that helped deliver this project is incredibly exciting and we can already see a number of truly immersive live experiences and use cases it will enable over the next few years. 2020 will be a major year for live sports with the Tokyo Olympics and UEFA Euro 2020 fast approaching. Consumers want to



experience their favourite live events in the highest quality and be as close to the action as possible. This is driving a major need for innovation in broadcasting technology. 360-degree video technology can enable consumers to experience live event coverage from the comfort of their own home, alongside the immersive realism of standing in the middle of the basketball court or soccer pitch. This is an experience that not even the best seats in the stadium can offer.

There is enormous demand for 360-degree video, both for sporting events as well as live music, entertainment and more. To have our technology recognised for its excellence by IABM – one of our industry's most prestigious international trade associations – is a tremendous achievement for MediaKind. The award strengthens our resolve to drive innovation in broadcast technology and deliver immersive experiences to everyone, everywhere.

OWC's extreme performance award-winning ThunderBlade™

OWC's extreme performance award-winning ThunderBlade™ might just be the ultimate working drive for media professionals. In terms of pure transfer speed, ThunderBlade is the fastest external drive OWC has ever made.

When performance is everything:

- Data transfer speed up to 2800MB/s1
- Capacities up to 8TB
- Daisy chain up to 6 Thunderbolt 3 devices
- Rugged portability in a sleek design
- Includes a custom-fit ballistic hard-shell case
- OWC 3 Year Limited Warranty

More Powerful Than Users Imagine

In a fast-paced, professional environment, time is money and performance is everything. The success of a project depends on quick data processing and demands performance and efficiency working with uncompressed, high bandwidth content streams. ThunderBlade delivers the performance to match – capable of transfer speeds up to 2800MB/s1. And with SoftRAID, two ThunderBlades can reach dizzying heights up to 3800MB/s1.

At Home on the Road

Designed to be rugged and dependable as well as blazing fast, ThunderBlade is equally at home on the road, on set or in the edit suite. Compact and tough enough to withstand rough treatment between locations; it comes with its own ballistic hard-shell case for even greater protection. And with two Thunderbolt 3 ports, ThunderBlade is a perfect fit for a daisy-chain workflow.

Pro-Tips: Daisy-Chaining with Thunderbolt Devices

With the ability to run up to six devices per port, Thunderbolt ports amplify laptops and desktops with peripheral power.



Workflow and Storage Solutions for Pros

Whether finishing and mastering, creating proxies or working with state-of-the-art VFX and AR, creative professionals need dependable tech that keeps pace with work demands. OWC's ThunderBlade storage solution covers every angle, delivering processing speeds up to 2800MB/s1, capacity for all five levels of RAID, and the freedom to daisy-chain and hot-swap.

Windows Workflow

The ThunderBlade fully supports Windows workflows as well. When using Windows Storage Spaces users can pool the four internal drives together with support for all the Storage Spaces configuration options including the ability to add another ThunderBlade to expand a storage pool on the fly.

ThunderBlade is rigorously quality tested and backed by OWC's 3 Year OWC Limited Warranty plus award-winning, 24/7 customer support.



Skyline Communications

With the migration to all-IP, the deployment of virtualized products and the integration of a multitude of cloud services, the media industry is facing plenty of new challenges such as dealing with non-linear behavior of ecosystems, maintaining a secure environment and a complexity that goes beyond the human understanding.

This leads to a new era in which everybody will be in a constant state of transition. Leveraging all that flexible technology and consolidating it in an agile end-to-end operation is the ultimate goal.

The new DataMiner X is all about enabling you to catch those continuous waves of transition in an ever more agile operation.

DataMiner Dashboards visualize the most complex ecosystems. Using off-the-shelf graphical components, any piece of information from across your entire operation can be simply dropped into your dashboards with a single gesture.

Fully user-definable **DataMiner Apps** enable you to literally handpick data and control workflows transparently across the entire operation, and to bundle them on the fly in easy-to-use and highly intuitive apps.

DataMiner Cloud Services offer a seamless extension of your DataMiner System, irrespective of whether you deployed it on premises, off premises or in a hybrid constellation. Share any data or controls on the fly and effortlessly, across your entire operation.

DataMiner Service and Resource Manager (SRM) includes a wealth of new features, such as full life cycle service orchestration and support for non-linear services, and truly enables you to leverage any technology from any vendor, on premises or off premises, and to deliver the most sophisticated end-to-end services as if they were a commodity.

With DataMiner Augmented Operations cutting-edge artificial intelligence and machine learning is fully embraced, sophisticated capabilities such as automated pattern recognition and automated

incident identification have been added to the DataMiner platform. Finally, collaboration is key in an agile operation. DataMiner redefines how agile teams can interact with each other and their end-to-end operational systems. **DataMiner Collaboration** features innovative capabilities to share live operational data such as integrations with Slack and Microsoft Teams.

“A perfect real-world example of how DataMiner enables broadcasters and media operations unlocking the potential of a flexible SMPTE-2110 infrastructure is our DataMiner **PTP Management and ST2110 Media Flow Tracking Solution**,” commented Thomas Gunkel, Market Director Broadcast at Skyline Communications. “DataMiner provides a global real-time view on PTP. It not only constantly indicates the current Grandmaster and monitors and compares PTP metrics and counters, it also integrates third-party PTP and network analyzers to get an in-depth view into the PTP network traffic. Identifying and visualizing the video and audio signals in a media network is another DataMiner key capability. Next to a detailed view on all streams, issues are proactively detected and operators are warned in case of service degradations or outages.”

“The nomination for the prestigious Peter Wayne Golden BaM Award® shows that DataMiner has already been recognized as the number one platform for orchestration and monitoring by the biggest broadcasters around the globe,” said Ben Vandenberghe, CEO at Skyline Communications. “The world is in a constant state of change, and so is the business of our customers. When you’re in the middle of a transition, you must already adapt to shifting needs in the market or prepare for the next transition, while at the same time capitalizing it. DataMiner X is meticulously designed for that specific purpose, a very clever new take on the whole subject of orchestrating and managing an operation in the newly emerging world of our customers. And at the end of the day, it is this kind of technology that will be the definitive factor for a successful operation.”

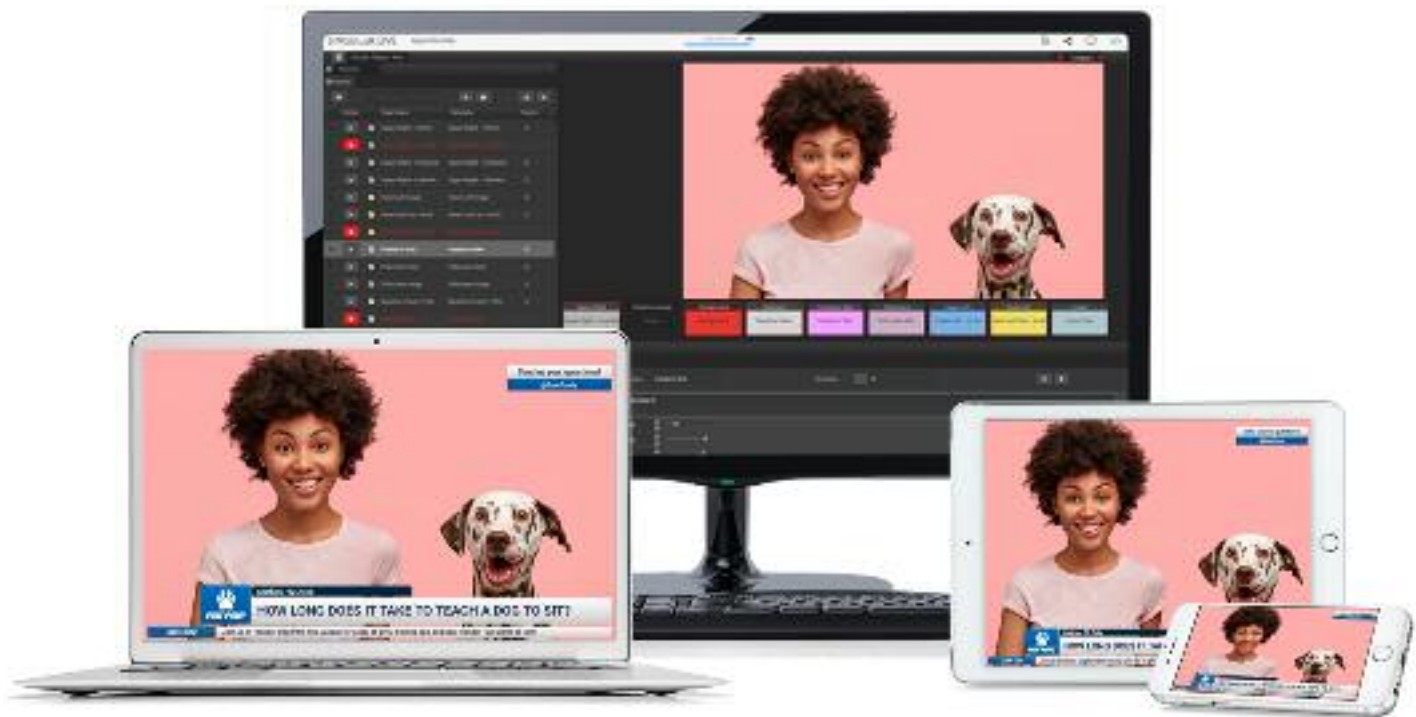
Singular is a revolutionary platform that is on a mission to transform our industry

Already working on some high profile projects with big name clients, we've made great strides already, however we are still very young, very small and trying to revolutionise an industry that has been working in the same way for decades. It's a pretty massive undertaking but one that we are passionate about, because we've spent the last couple of decades leading our industry and we know it has to change.

For a startup like Singular, awareness and recognition are absolutely crucial. When people become aware of our platform and our mission they are mostly excited and supportive of what we are doing. So getting the word out is essential, not least because in order to make Singular a platform that is accessible and affordable to anyone, we need a lot of users and partners to make it a success.

The IABM have been an amazing champion for Singular, acknowledging our work, giving us a platform to spread the word and even helping support our Singular For Schools initiative to help train the next generation of talent in our industry. All of this makes a huge difference to us and will genuinely play a role in determining the success or otherwise of our mission.

Winning the IABM BaM Award® at IBC was a shock because we were up against some really fantastic competition, but it says a lot about the IABM that they were able to treat each entrant on it's own merit without reference to the size of the company behind it. Industry recognition is a very welcome honour and one that meant a great deal to the whole team who have dedicated so much time and effort to building Singular.



SINGULAR.LIVE

Telestream's revolutionary new channel creation system – OptiQ Channel

Telestream winning an IABM BaM Award® for OptiQ Channel this year was a key moment in the evolution of this new and radically different approach to the channel creation challenge. The product gained its worldwide debut at NAB: market reaction has been spectacular and the IABM BaM Award® was the ultimate seal of approval for this important product.

It is worth explaining more about OptiQ Channel. It is a solution for one-click OTT video channel creation in cloud environments. It has a number of key elements to it that the industry is looking for:

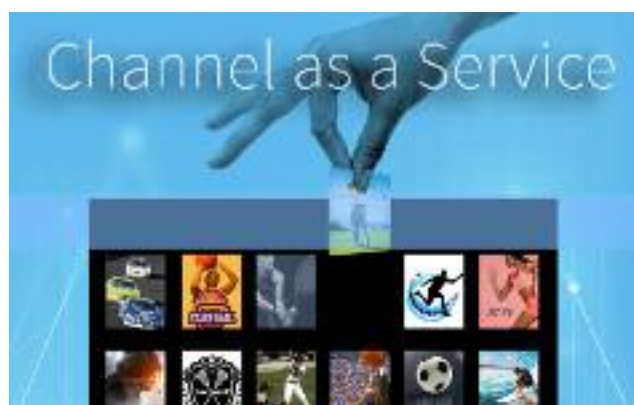
- Instant channel creation (minutes)
- Integrated monitoring throughout
- Multi-cloud support
- Pay as you go/subscription business model

OptiQ is a merging of the entire Telestream skill set around live streaming, workflow, cloud, integrated monitoring, containers and much more: it is an ambitious project and the intention is that the initial release will be a SaaS offering.

Telestream customer research highlights the importance of 'dynamic innovation' where organizations can rapidly startup new video services, quickly scale up if needed and shut down if they aren't. Also, when at on-premise capacity due to multiple major events, content providers have to leave valuable additional content on the shelf due to lack of streaming infrastructure.

OptiQ provides a migration path to hybrid cloud/on-premise capabilities for content providers that do not have the skill-set to embrace cloud. The solution also addresses the needs of content providers that want to have the choice of which cloud provider to use: many do not want to be tied to a single provider or want to migrate away from or de-risk their current provider, but simply do not have the choice.

The intention is that OptiQ Channel will support most major cloud providers, in addition to on-premise data centers at a later stage. OptiQ Channel enables the integration of the latest encoding/packaging capabilities that may not be available in legacy on-premise architectures. Video streaming is constantly evolving, and by leveraging the cloud for streaming, content providers will be able to access the latest capabilities available. Maintenance offload, and



additional capacity during peak loads are also an advantage, in addition to empowering trials of new channels and allowing companies to build confidence in cloud migration.

In moving to a dynamic software architecture where capabilities can be instantiated on demand, Telestream is enabling significant new possibilities for self-healing and self-optimizing architectures. A critical piece of this is a real-time feedback loop, where Telestream iQ solutions form a key differentiator. By combining dynamic orchestration with real-time diagnostics, we start paving the way for true self-X capabilities around video streaming.

Telestream is busy presenting OptiQ Channel to potential customers worldwide. Being able to say it won an IABM BaM Award® helps open doors in broadcasters, network operators, telecoms companies and media organizations everywhere.

Tracis and Vocas Systems & Service

Tracis and Vocas Systems & Service are honored to have received the IABM BaM Award® for Tracis's first-ever product: the Tracis Lens Scanner. Tracis is a startup based in Silicon Valley, California, focused on using modern software capabilities in the optics industry. Vocas is an experienced manufacturer of optical measurement devices, having worked in that market for more than 25 years. Together, they're introducing a new way of doing lens condition assessments.

All rental companies have had **damaged lenses**. All production companies have dealt with disagreements over the condition of the lenses they've rented.

Damage leads to many issues, from knowing when the lens was damaged, to knowing who was responsible and should pay the insurance deductible.

The Tracis Lens Scanner will solve these problems by providing a **quick, reliable and certified** way of tracking the condition of a lens before and after every rental.

Revolutionary new lens checker

After every rental, best practice is to check each lens for damage, dust, or other condition changes. Manual lens checks are time-consuming and prone to human error. They are difficult to record, compare, and use when subtle damage is spotted.

The Tracis Lens Scanner automatically creates a 3D map of any damage in the lens light path, such as scratches, coating issues, dust, mold, and so forth. A scan takes only about a minute, and produces a report that's easy to read, and that's easy to compare with previous reports.

Improve your workflow

The Tracis Scanner is easy to use for anyone: insert the lens, press a button, and wait a minute. Rental companies can use it as part of the day-to-day workflow when checking lenses in and out. While previously lenses might have waited for days for their post-rental inspections, now they'll be available for the next rental in a matter of minutes, without compromising on tracking.

Certified results

Tracis certifies its scan reports, for an impartial assessment that everyone can trust: from Camera Assistants and production companies, to insurance providers or rental companies doing subrentals. With a Tracis report you can have an easier discussion about liability for lens condition changes — everyone knows there is no 'judgement call'.

Connected and always improving

The 'secret sauce' for the Tracis Scanner is that it draws on the power of cloud-based algorithms that use modern distributed systems computing. It uses those to provide computationally intensive insights, and to learn from the data it gathers. The service is provided on a subscription basis and each Tracis Scanner will get even smarter over time: new features, updates and improvements will continue to increase ROI for years to come.

Honored by the IABM BaM Award®

Tracis is honored to have received the IABM BaM Award® for its Lens Scanner. That recognition accelerates the continued development of the Lens Scanner's capabilities, as it shows crucial Silicon Valley software experts and investors (who are often unfamiliar with the optics industry) that the Lens Scanner is indeed an exciting new development for its target market.

Stay tuned

More information is available at www.tracis.io, or by writing info@tracis.io





Rohde & Schwarz Peter Wayne Golden BaM Award® Nomination

At IBC this year, Rohde & Schwarz reached a strategic and technological milestone since it introduced the world's first comprehensive 5G Broadcast solution. At IBC 2019, Rohde & Schwarz was presented with IABM's BaM Award® for this revolutionary new 5G Broadcast solution. Reaction to this new system solution has been incredibly positive and the IABM BaM Award® has contributed to this success since it provides global recognition for this innovative technology solution.

To fully understand the significance of this development, you need to know about the product and its development. The Rohde & Schwarz solution for the first complete 5G Broadcast transmission consists of the core network functionality provided by the new R&S BSCC broadcast service and control center and R&S Tx9 transmitters, which support FeMBMS. This all-in-one solution covers all 5G Broadcast chain stakeholders from the content provider to the consumer and is fully compliant with 3GPP Release 14. R&S BSCC empowers broadcasters to efficiently distribute high-quality video to the 5G ecosystem.

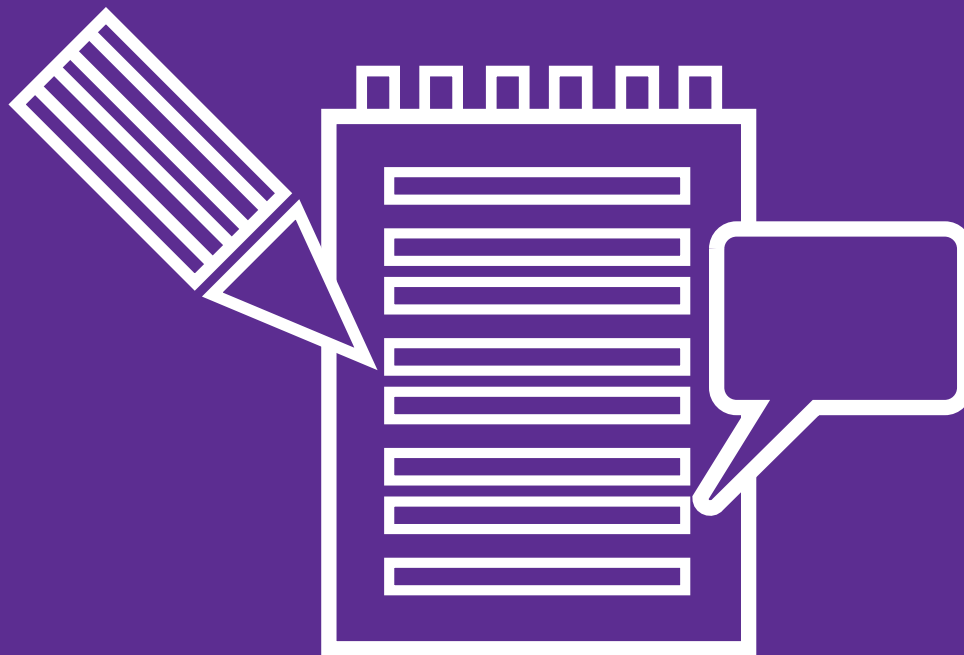
In recent years, media consumption has shifted significantly toward smartphones and other portable devices. Reaching the billions of smartphones around the world will be the future of broadcasting. 3GPP Release 14 is enabling this future by using FeMBMS (Further evolved Multimedia Broadcast Multicast Service). As a part of the Bavarian research project 5G TODAY, Rohde & Schwarz has investigated large-scale TV broadcasts in the FeMBMS mode. Using high-power high-tower (HPHT) transmitters allows broadcasters to distribute video over 5G networks in downlink-only mode with all the advantages of classic broadcasting. This provides high quality levels, similar to HDTV broadcasts in terms of low-latency live content as well as enormous spectrum efficiency and wide coverage. Importantly, there is no need for a SIM card in the mobile device.

To help harness all these benefits, Rohde & Schwarz is the first technology vendor worldwide to offer a complete 5G Broadcast solution for network operators. R&S Tx9 transmitters provide FeMBMS based content on a unique software-based signal processing platform. The software-based signal processing platform gives network operators great flexibility and prepares them for future signal processing requirements.

At IBC, Rohde & Schwarz launched its new 5G Broadcast core network element: the R&S BSCC broadcast service and control center, which enables Rohde & Schwarz terrestrial transmitters to deliver LTE/5G Broadcast content. The main benefit of the R&S BSCC is that it reduces 3GPP core network entities' complexity to meet broadcasters' needs for a straightforward LTE/5G Broadcast experience. The overall Rohde & Schwarz solution makes it very easy to configure network parameters. Multiple Rohde & Schwarz FeMBMS transmission sites can be centrally configured in the R&S BSCC core network element.

Since IBC, Rohde & Schwarz has been actively engaged with customers worldwide. Some have instigated 5G Broadcast trials, which the company is actively engaged with. Others are looking a Proof of Concepts, attempting to understand the benefits that 5G Broadcast brings to them and their customers.

The IABM BaM Award® supports this investment, providing a valuable endorsement from a global leader in technology development and knowledge sharing.



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