

**LEADERS** Report

# Broadcast Technology: The state of play in 2020

December 2019



### **Contents**

- Foreword 3.
- Technology and the broadcast mission 4.
- 12. OTT: A how to guide for rights holders
- 16. Remote control

**Editorial Director** James Emmett

**Art Director Cherry Fermor**  Head of Marketing Milly Preston

**Sponsorship Director** SimonThomlinson

# The impact of OTT

in sports production and delivery that it is difficult to do any of them

justice in a short overview: UHD, 5G, Remote-Production, VR etc. What is perhaps more interesting is to focus on the fundamental nature of how OTT and

the technology of adaptive bitrate streaming (ABR) delivery is changing the landscape in three important ways and then make a prediction of what the future might look like based on these changes.

The initial impact of OTT streaming delivery was to connect niche events with niche audiences. The mechanism of delivering reliable broadcasts over any network connection has dramatically increased the number of live events that are covered in some way. Esports is probably the best example of this today. The key impact to this phenomenon is lowering the costs of live event coverage so that they can be achieved at a reasonable level of quality for much less. At the limit, it's someone's laptop and a fixed camera, but in B and C level events it means using high end gear without the largeT&E expenses that come with a traveling staff - this is where remote production (REMI) comes into play. As more and more of the content will be delivered as an OTT stream, this will have a greater need to make REMI an essential aspect of production going forward to provide greater reach where only OTT can go.

The second impact is that OTT can deliver -more easily-a higher quality image experience for those who have the bandwidth, budget, and desire for it. Let's contrast the transition to 4K-UHD to the transition from SD to HD that started over 15 years ago. At that time, governments had to mandate change with digital transmission; cable and satellite providers had to change out millions of set-top-boxes, and the entire delivery chain had to be upgraded to support a higher bandwidth. This is not the case for OTT. In 4K VOD this transition is already fully underway with Netflix, Disney and Amazon+ and there's no need for government decisions, or large-scale infrastructure changes to existing systems. We expect the same thing to be happening in live sports in coming years where you will hear the term 'mastering' at the highest level of quality just like you do in VOD productions. So, strangely enough, there are two diametrically opposed drivers from OTT - one that's driving costs down with

### **Broadcast Technology**

There are so many drivers of change



Charlie Dunn President, Video Test **Business Unit** Telestream

REMI to cover the long tail of events, and one that's driving quality (and costs) up with 4K-UHD broadcasts for premium content.

The third impact is one that we see in different forms today but hasn't gone mainstream. Will it make sense - long term - to include sports packaged in a linear channel offering? If we fast forward into the future and we have a world where most of the content is being consumed via OTT then why wouldn't it make sense to bundle the team, the sport, or the event into a single price to be paid by the consumer vs trying to find the right NBA game on TNT. We do it today with NFL Sunday Ticket, with big name UFC events, and things like Formula 1 or MotoGP that don't get covered in the US very well. Would you be purchasing access to these events much like you would for a live event with SeatGeek or Ticketmaster? Just as there has been a direct-to-consumer movement with VOD content (e.g. Disney+) we are likely to see this with some of the biggest events as they explore using the streaming rights to expand their revenue base. Here, using concepts such as VR to give you a great seat at any game would have a play for audiences wanting this kind of experience.

No matter which element of sports production you are involved in - whether you are consumer, sports league, broadcaster, production company, or manufacturer - the changes that have been set in motion by OTT delivery are going to impact you in a significant way. As enabling technologies such as ST-2110 and 5G emerge over the next five years we expect this to be even faster than it is today. What will be critical to success at every level is to think into the future and embrace the changes that will no doubt come.

For more information on Telestream, our products and services, go to www.telestream.net.



# Technology and the broadcast mission



# **Technology and the** broadcast mission

Sport has long provided the broadcast industry with a crucible for experimentation. The combination of live, unscripted action within a tightly controlled environment and a guaranteed viewership continues to provide both an ongoing motivation for improvement and a rich platform upon which to demonstrate it.

few months from now, Olympic Broadcasting Services will execute one of the biggest, most intricate TV operations of them all. It will produce a record 75 live feeds for

the Tokyo 2020 Olympic Games, representing 9,500 hours of live coverage and 10,000 short-form clips, and will create another 1,300 hours of coverage for the Paralympics.

As might be expected of the world's blue-riband sporting event, not least in this Japanese incarnation, it will be a showcase for some remarkable technology. OBS will enlist the support of Chinese conglomerate Alibaba, a long-term International Olympic Committee sponsor, to run the OBS Cloud, a hosting service that will streamline the workflows of official broadcasters and enable powerful Al-based solutions. And the innovations will also be visible from the ground.

Panasonic, another Olympic partner, is to roll out a new €130,000 8K camera featuring its Organic Photoconductive Film sensor for hyper-

and its Global Shutter to provide crisper fast-moving images. These will supply Japanese broadcaster NHK's 8K coverage of the Games, some of which will be carried on its national Super Hi-Vision channel but most of which will also provide fodder for the tech demos it has been running since London 2012.

Tokyo 2020 will be the first Games to be broadcast extensively in 4K, the ultra high-definition medium more familiar to consumers and more widely distributed internationally than 8K. The Olympics, then, is not just a showcase for upper-end technology but also a demonstration of how that technology is stratified through the marketplace, which in turn shows the importance of deploying resources efficiently. While mega-events provide an excellent opportunity to push the boundaries in sports broadcasting, every decision an organisation like OBS makes is anchored in a storytelling imperative.

For the recent Rugby World Cup in Japan, World Rugby created its own in-house production unit with the help of International Games Broadcasting

### Tokyo 2020 will be the first Games to be broadcast extensively in 4K, the ultra high-definition medium more familiar to consumers and more widely distributed internationally than 8K.

responsiveness, its Electronic Neutral Density Filter, which smooths the introduction and reduction of light,

6

Services. It introduced a 34-camera setup for the semifinals and final, with bespoke positions in the corner



Rio2016



### **Broadcast Technology**







### telestream





posts and behind the kicker at penalties joining earlier innovations like the GoPro-style referee cams that were already in use ahead of England 2015.

The Rugby World Cup production also made extensive use of augmented reality graphics at most venues to display statistics and team line-ups, and was broadcast in 4K internationally and in 8K in Japan. Additional crews were deployed to collect footage for digital shorts and social media. Yet for all that outlay, the core mission was easy to identify.

"Instead of setting an incremental metric of views, you need to think about relevance to the audience," said Alan Gilpin, World Rugby chief operating officer and head of Rugby World Cup, to IBC before the tournament. "We have to continually ask ourselves what we're looking to achieve with that content."

He added: "From an avid fan to a casual viewer, we need to educate, entertain and build on an interesting narrative across all content platforms - social, digital and especially broadcast."

### **Cameras and storytelling**

The most dramatic sporting moment of 2019 was also a telling exhibition of the value of the right production setup. When England prevailed against New Zealand at the very end of a Super Over in the Cricket World Cup final, delivering an almost impossibly tight finish to a tournament that had run for seven weeks, the directors had a wealth of tools available to capture the bedlam that ensued.

ICCTV, the host broadcast unit that the International Cricket Council has formed with Sunset+Vine, had introduced Spidercam to all 11 host venues, so were able to take in a sweeping shot of the English celebrations on the field as players raced around to find one another. A drone camera supplied by Batcam took in the view above Lord's, where fireworks burst to commemorate the first-time champions.

Throughout the competition, ICCTV had also made use of the Batcam-supplied Buggy Cam, which rolled around the boundary to bring fans an intimate view of play from the outfield. Those innovations helped fulfil a broadcast remit to present coverage that was familiar to existing cricket viewers but unique to the World Cup, with a more inclusive and explanatory editorial approach.

The capacity of camera technology to develop storytelling capacity is growing all the time. The Piero system, in use for the Cricket World Cup and in broad use at football and rugby events, is able to pull together several camera feeds within around ten minutes to build footage that can be magnified and manipulated through several angles for analysis.

Similarly, Intel's True View system has been deployed at selected venues across the NFL for the past

### The Piero system, in use for the Cricket World Cup and in broad use at football and rugby events, is able to pull together several camera feeds within around ten minutes to build footage that can be magnified and manipulated through several angles for analysis.

couple of years, and has since been introduced at the home grounds of football teams Barcelona, Real Madrid, Arsenal, Liverpool and Manchester City. Its specifications make it best suited for now to modern bowl stadiums: 38 small 5K cameras are installed in a ring around the venue, capturing the entire field of play.

Images are converted into volumetric pixels, or 'voxels', which capture height, width, and depth, with the data stored in on-site Intel servers. This generates a full 3D image of the pitch which analysts can use to play back the action from any conceivable on-field angle, allowing the story to be told from the perspective of an individual player or official.

Increasingly, there are events that operate in a very particular broadcast context. None has encapsulated this more in 2019 than the INEOS 1.59 Challenge, Eliud Kipchoge's historic assault on the two-hour barrier in the marathon. Quite apart from the task of global distribution on 49 linear channels as well as YouTube, there were a number of refinements required to

### **Broadcast Technology**

account for the carefully managed conditions in Vienna.

Host broadcaster Sunset+Vine had to stay a comfortable distance away from Kipchoge and his pacemakers, while keeping the laser timekeeping and lane guides in shot. A specially adapted stabilised head was mounted on a pace car to provide the main camera feed, with a 300m wire camera over the centre of the tree-lined course and a railcam installed along a 250m section. These were supplemented with radio cameras, a camera carried on an electric bike, and super slo-mo cameras operating from long range.

Not every innovation in camera technology has the desired effect. As part of its efforts to modernise the production of the World Athletics Championships in Doha in September and October, the IAAF – now World Athletics - and partner Seiko introduced micro-cameras

in the starting blocks. They had hoped to be able to capture footage of sprinters' faces in the tensest few moments before each race.

Different athletes arrange themselves in different ways at the start line, however, and the images that were actually caught by Block Cam earned it the nickname 'crotch cam' from the Associated Press. Several competitors, particularly female sprinters, were alarmed at the invasion of privacy, the German national federation lodged an official complaint, and the IAAF reviewed the policies by which athletes could approve footage for air.

There are instructive comparison to be made with the editorial challenges in non-sports entertainment. Esports events in series like League of Legends must scale up from small, purpose-built TV studios to high-spec sports stadiums with massive production budgets. Yet the central development in esports broadcasts has been to combine the grammar of sports coverage, with its crowds and commentators, with the intimacy of shared live streams on services like Twitch.

This is primarily achieved via the use of webcams directed at each player's face from their monitors. Competitors perform seated in the open arena, implying a playing field, but typically wear noisecancelling headphones to seal them into their game.

Music festival broadcasts share some elements with sport, such as the need for immediacy and for dynamic crowd shots, although the individual designs of performers' sets and the sheer scale of many venues add different layers of complication. The intimacy of on-stage coverage, though, is trickling into sports coverage - not least in the increased use of mobile and ultra slo-mo cameras for cinematic postevent montages.

### The reality of AR

The relationship between broadcast, analytics and Al is growing closer. For Tokyo 2020, for example, Intel is developing 3D Athlete Tracking Technology (3DAT). As the name suggests, it uses data from a range of cameras to extract the form and motion of athletics in 3D, processing that information through 'pose estimation algorithms' in the OBS Cloud and converting it into visualisations that can be sent to rights-holding broadcasters almost immediately.

As the technology depends on four fixed pan-and-tilt cameras, it will primarily be employed during athletics events at the Olympic Stadium. The expectation is that these visualisations can help analysts take viewers through the technical aspects of each discipline - such as the phases of a 100m race – in a way that has not been possible using traditional TV pictures.

The use of AR-based graphical overlays has had two benefits for broadcasters. It has provided a visual stimulus, creating impact and a point of difference without breaking from the live broadcast feed, while it has more importantly allowed more information to be displayed on screen at any point. That has been especially powerful in leagues like the NFL, where it is becoming easier than ever to cut through complexity and provide further value to the audience.

"We're here to tell the story of the game," said JP LoMonaco, vice president of on-air graphics and design for CBS Sports, in an interview with The Broadcast Bridge ahead of this year's Super Bowl.

He added: "For us, it's got to be on the screen for a reason and have practicality to it. We're not big believers in just throwing things onto the screen to fill it up just because. We try and stay to the edges of the screen and let the game action entertain the viewer. The game is the centre point and we simply enhance that with our graphics packages."

Properly implementing AR provides technical and creative challenges that demand careful thinking around camera setups. In many cases, the role of Spidercam - or Skycam in the NFL and other US events - is pivotal, giving directors the scope to set up clear establishing shots that provide a comfortable experience for the viewer.

To incorporate Chyronhego's player-tracking graphics for the Cricket World Cup, illustrating field placements in real time, the ICCTV team implemented a new camera position at every ground - high on a 45-degree angle at one end of the pitch. In deciding how much to include on screen, meanwhile, ICCTV found it helpful to consider a heads-up display, or HUD, in video games, giving viewers critical information at a glance without crowding the picture.

The interactivity and choice available through digital platforms will inevitably change best practice in this area. Already, Second Spectrum's CourtVision service for the NBA's LA Clippers is using Al-powered real-time statistical overlays and other AR graphics to give fans distinct options in how they want to watch basketball. This includes a player mode, fixed behind one end of the court, that gives real-time percentage chances of scoring for each member of the offensive team. Then there are two settings from the traditional broadcast angle: coach mode, which offers tactical illustrations, and the graphical overload of the cartoonish mascot mode, very much in the spirit of the 90s video game NBA Jam.

In the medium term, as OTT broadcasters like DAZN work to incorporate second-screen style fantasy sports and betting data into a personalised main feed, the uses of in-vision graphics will proliferate further. Even in this environment, however, there is no doubt as to the importance of a clear view and of imagery that adds, rather than intrudes.

### Technology and the broadcast mission

### Liberating tech

Some technologies have a primary influence on production workflows that will nonetheless be felt on screen. 5G mobile networks are expected to make augmented and virtual reality functions more accessible to consumers while their effect on remote production could be profound, allowing for directors to work from central hubs rather than outside broadcast facilities, potentially driving down costs and allowing staff to be used differently than they have been in wired fibre productions.

Still, there is ample scope for 5G-enabled mobile cameras to transform the look of some sports coverage - not least at lower levels and in smaller venues. UK broadcaster BT Sport, which has undertaken a series of 5G broadcast trials in 2019. currently carries live Women's Super League and semiprofessional National League football, with games typically played in venues unsuitable for extensive wired installations.

"The real gamechanger is when you combine remote production with producers who understand how to exploit the new technology; how to make the most of the new freedom, including the creative flexibility of wireless cameras," said BT Sport head of mobile Matt Stagg, speaking to SVG Europe at IBC in September.

Æ







### Broadcast Technology

The initial expectation at BT Sport and other networks exploring the possibilities of 5G is that it will allow for setups to look more sophisticated than they do currently - a four-camera production, for instance, could be made to look as though eight cameras were in use.

"We can make these cameras do multiple things," said Gemma Knight, a matchday football director at BT Sport, in a September interview with Techradar, "For lower-profile competitions like the National League that give us more access, we can interview a manager at home in the morning, go on the team bus, and then cover the game with the same camera."

As the use of 5G distribution becomes more prevalent, that kind of liberated storytelling could be made available in ways that change the idea of what represents a major sports venue, or a major broadcast event. The gap could close between disciplines built for high-end venue infrastructure and those taking place in open-air or smaller settings. 5G's impact on the look of incoming Olympic disciplines like breaking, sport climbing and 3x3 basketball will be worth following.

Artificial intelligence and machine learning are also finding their way into production workflows - most notably in cataloguing and archiving - but are becoming materially relevant to broadcasts lower down the pyramid. Companies like Pixellot and Mobile Viewpoint have been developing singlecamera solutions, powered by AI, that can capture footage without the need of a human camera operator and integrate with distribution channels and social media. They first found use in sports like football and basketball as training aids.

The effectiveness of these robotic products is dependent on aspects like automatic player, ball and game state detection, all tasks complicated by the presence of unexpected elements in the shot. Yet while that may mean robotic cameras are some way off use in elite broadcasts, they will provide a lower barrier to entry for small organisations keen to reach a dedicated audience.

# **OTT: A how to guide for** rights holders

From the NFL to the PGATour, the NBA to the ATP, UEFA to Formula 1 by way of the English Football League, FINA, the World Rally Championship and the IOC, sporting rights holders big and small are exploring, developing, launching and iterating their own OTT platforms. But who are they for, how is it done, how are they maintained, how much does it cost, and what do you need to think about and in what order do you need to think about it? With the help of Carlo de Marchis and Luke Gaydon, Group Chief Evangelist at Deltatre and Head of Strategy and Solutions at Accedo respectively, we ask – and answer – some key questions.

### video platform?

the marketing platform too."

### Do you understand the 'why'?

It's not enough to want to launch an OTT service simply because everyone else is doing it. Objectives need to be crystallised, understood and addressed: are you trying to maximise the value of your rights around the world? Do you understand your existing global footprint? Do you fully understand your international rights distribution? Are you looking to develop deeper relationships with hardcore fans by serving them non-premium, exclusive content? Do you intend to put pressure on your existing rights buyers by developing and manipulating a new competitive situation? What content mix is going on your service and who is it going to? "I'm a big a fan of going fully non-exclusive in every territory, except domestic," says De Marchis. "Normally the media company buying the rights would want exclusivity, but this is changing. Take the NFL in the UK, where it is available on Sky and via its own direct-to-consumer OTT service, GamePass. As part of this specific broadcasting rights deal, GamePass has to blackout two games every week which are available exclusively on Sky. Now, few customers will subscribe to Sky for these two games alone - they choose Sky because of the overall bundle. But this scenario may cause friction with customers who are looking for a seamless experience, a one-stop-shop to watch all NFL content, so both operators need to work hard in providing additional value to their customers. It's an exciting landscape that still requires plenty of exploration."

### "It's marketing, subscription payment, discovery, consumption of content, and finally customer service – all around the video."

### Is your organisation philosophically prepared?

Before any technological considerations are appraised, taking stock of the organisational mentality, the cultural set-up and capacity for change is key. "There's a philosophical shift that you've got to make to becoming a broadcaster, almost to becoming a retailer," says Gaydon. "All of a sudden your fans don't sit behind your relationship with the broadcaster. You are engaging with them one-to-one and you're on the hook for everything they love, dislike or rant about. The really important bit to grasp is that you as an organisation will probably have to change at quite a fundamental level to really be successful. Some rights holders have done that, some haven't." De Marchis has similar thoughts: "It's only in the moment your fan becomes your customer that it becomes a serious connection, on both sides. The way you behave is different and the expectation they have of you is different, but also they want to get the value they've paid for. It's like being a grown up. For me, going OTT means becoming serious about going into real direct-to-consumer marketing and operation. That's a big shift."



Carlo de Marchis, Deltatre

### How much will it cost?

How long is a piece of string? The answer, of course, is that it depends who's asking. But there are some basic costs that can be estimated. "If you're looking at a subscription model – and you're not going down an aggregator or low grade, low quality route - you're going to need around 10,000 subscribers paying you around £8 a month by the end of year one to actually start making any money," explains Gaydon. "If you're not going to get 10,000 people to pay you money, or if they will only pay you £5 because of market conditions or the content you've got, then you need 20,000. And you might not be making any money for three years, and is that ok? Maybe you have some of the technology resources in house, maybe you don't need added investment in marketing, so those numbers are open to interpretation, but they're a good foundation given the cost of the technology. If you're lower than 10,000 subscribers paying £8 a month, you're not even going to cover your technology costs."

### What are the options?

Once you've clarified why you're doing it, what you want to achieve, and whether you're set up to do it, the next step is in understanding what the various options available to you are. "It's a scale," explains De Marchis. "And where the customer lands on that scale is down to what their existing offering – if they have one – already looks like, the size of their budget, how much control they want over the platform, and their threshold for innovation." Broadly, there are three distinct options available to rights holders looking to build an OTT platform: at the lower end are the off-the-shelf, white label platforms; then there are the flexible platforms which include a mix of proprietary and non-proprietary IP; and at the top end there's the full custom build to fit precise and exclusive client requirements. "It's more expensive and takes longer to get to market," says De Marchis," but there's more control over the end result. The first one can get an operator up and running quickly, but the lack of customization will perhaps hinder the service standing out from the crowd. The middle is where we think the greatest opportunity is. It's the best of both worlds."

### Do you understand the ROI?

Richer data relationships with consumers will come, but what is your short and medium term monetisation strategy? "The cost to stand up a service in relation to things like customer acquisition costs or your customer lifetime value are not things that come too readily to rights holders," says Gaydon. "They're not necessarily metrics they're familiar and comfortable with but they're critically important if a direct to consumer service is going to be successful." Advertising and sponsorship are traditional funding methods, but those, says De Marchis, "need huge numbers. The real game for rights holders however, and the one with the steepest learning curve, is a subscription model. There are a few steps to getting this right but most important is that you need a direct-to-consumer marketing strategy to understand where your fans are – and that goes along with your decision on what you're showing and where, exclusive or non-exclusive."

### When should you launch?

As with most new tech platforms, the solid advice is to launch and iterate. "Start nimble and learn in the first phase," says De Marchis. "You have some customers that are extremely ambitious when launching a minimum viable product (MVP). They want to be available on all platforms at launch with non-essential functionality and custom integrations. Often this results in a missed launch date or overspending. You need to define what your MVP is, but not in terms of content, in terms of core platforms and complexity. And then you evolve. It's more important to start up from zero. Start having real customers, see what they do and how they react to your service. I would also suggest seriously considering the role you want to take in building the platform yourself or playing the role of integrator. Unless you see yourself as a tech company, and have the team to support that view, you are more likely to have problems. You can't just put three guys in a room and get to work; you need an expert partner who has done it before."

"If you're lower than 10,000 subscribers paying £8 a month, you're not even going to cover your technology costs."

Luke Gaydon, Accedo.

# Remote control





FEED 9



NL STL Pujols: 0-3 Holliday: 2-4, HR(1)





# **Remote control**

More efficient methods of sports broadcasting are now a reality thanks to remote production and increased automation in the workflow that takes pictures from live sporting arenas and pipes them to screens of all sizes across the world.

arge scale live sports broadcasting can be a costly endeavour. Notwithstanding the cost of the rights, the level of human and technological resource required for production can see costs stretch

easily into the high seven-figure ballpark.

As more and varied live broadcast consumption channels have come online, the demand for more sports content has grown. While that has created opportunity for rights holders and content producers, it has also created a growing burden of cost. Monetisation efforts - subscription models, advertising models or something less traditional - make up one half of the ROI equation. Within the other half sits the cost of production, processing and distribution.

Recent advances in reliable, low latency and secure primary contribution and production backhaul technologies have enabled the significant cost and productivity improvements that remote live production offers sports producers.

"Five years ago we really did not have the technology necessary to do an appropriate capture of a live

possible. These are relatively new technology innovations around optimising the bandwidth utilisation for the backhaul of those video streams into a production facility."

Puopolo's company specialises in video workflow automation software, and video quality management solutions. Founded in 1998 and headquartered in California and Massachusetts, such is the ubiquity of its technology across the global media space - and specifically in sports media - that Puopolo is adamant when he says that "if you think about a piece of sporting content, be it a file or be it live content, it's very rare that sporting video would not have touched a Telestream technology at some point in its lifecycle."

In recent years, internet bandwidth expansion and the advances in technology used to maximise its utilisation capacity have meant that increased automation and remote production have become a realistic option for producers and distributors of live content. It's a field in which Telestream is a pioneer.

Adds Puopolo: "I also think there's a mindset shift on the part of our sporting customers. Five years ago they would have seen that as exceptionally risky; God

### These are relatively new technology innovations around optimising the bandwidth utilisation for the backhaul of those video streams into a production facility

stream," explains Scott Puopolo, CEO of Telestream. "That idea of capturing a live stream and running it over public infrastructure would not have been

forbid something happened and a feed was bad. They couldn't take the chance; so the ability to do the realtime editing on location was a risk reducer. I think their





attitude has changed. And I think our investment in the development of solutions that actually measure and manage the quality of video feed has been something that's now becoming the de facto standard. And without the ability to monitor and manage the quality, I think our customers would have been a lot more nervous about trying these types of things."

The number one benefit of a remote production set-up is the potential reduction in costs. Estimates on how much broadcasters can save range from 10% to 30%. Not having to send crew and engineers hundreds of miles to deliver on-site means a significant reduction in travel, expenses and environmental impact. Back at base, with regular shift patterns and commute times, crew might also be able to double their output, producing multiple events in one shift, something that's particularly realistic for a US major league production unit with back-to-back events from the east coast and then the west. Equipment utilisation rates can also be maximised, with no need for set-up and pack down.

Higher quality is possible too. Establishing control of cameras and lighting from a remote but technologically advanced facility - such as IMG's Stockley Park just outside London - means that more sophisticated guality monitoring and measurement tools can be used to tweak the settings to deliver optimal picture quality. IMG is one of sports broadcasting's most prolific producers. Activity at

### **Broadcast Technology**

its Stockley Park production centre can be magnified and interpreted as a wider industry trend. By the end of this year, IMG will have produced more than 1,200 events remotely - including remote production aspects for Amazon Prime's tennis coverage and the production of the English Football League, with that figure only set to increase next year.

But there are still some factors inhibiting a wider adoption of remote production technologies. Better work/life balance for crew and operatives who no longer have to travel regularly might come with the catch of those very same operatives no longer feeling 'close to the action', an emotional retainer if not a technical imperative. And network provision is key. Without the requisite bandwidth, latency becomes an issue. Public 4G networks are not seen as reliable enough for many producers, and the cost of using a private network provider can be prohibitive.

"A lot of our clients are both capital and OpEx constrained," says Puopolo. "The cost of acquiring rights is becoming greater and greater, and the need to do a better job of monetising is absolutely a focus, but part and parcel is reducing the cost so that the ROI can be maximised. We're not finding a tremendous amount of pushback from sports customers we talk to about these solutions."

Telestream was a key technology supplier to Fox Sports for the broadcaster's record-breaking coverage of the FIFA Women's World Cup this summer. With the ultimate cup-winning success of the all-conquering US Women's National Team driving unprecedented interest back in the US, Fox Sports was able to satisfy that consumer appetite with an unprecedented level of coverage from the tournament in France, both in terms of quantity and quality and, with the help of Telestream, all of it more efficiently delivered.

**LEADERS***Report* 

Across the 64 matches of the tournament. Fox Sports relied on technical partnership between Telestream, cloud-based workflow automation provider Levels Beyond, and data transport and streaming technology company IBM Aspera, to deliver enhanced production workflows and shorten production cycles. In all, 6,300 video 'assets' were delivered. That's over two and half times more than Fox Sports delivered for the men's FIFA World Cup from Russian the previous year. The scale and complexity of the operation was underlined by the fact 1.9 Petabytes (almost 2 million Gigabytes) of data were transferred. Thanks to the workflow made possible by Telestream and its two partners, latency was kept to a minimum – never rising above 10 seconds - allowing quick turnaround of videos from a production team based thousands of miles away from the action in Los Angeles

"Here's how it works technically," explains Puopolo. "Basically what we're able to do is deploy our Lightspeed Live Capture units in the various venues in France. The cameras feed to the capture units. We take the live feed - and with IBM Aspera doing media file transfer and Levels Beyond doing media asset management and content workflow orchestration - back effectively over the public internet at an exceptionally high level of quality where it can be edited in the US. It enables real time remote editing of the live feed. But equally important is the ability to be able to quickly edit and utilise the content that comes back from the live feed for doing spots very quickly. Because we're so prevalent in production studios, out Lightspeed Live ingest and recording solutions feed directly into our Vantage solution, which is for transcoding, processing and delivering, which is what a lot of our sports customers use to process the file content for subsequent use - for spots, for trailers, for on-demand video. We pull all of those individual pieces together."

For Fox Sports, the technological package brought significant financial and logistical benefits. There was no need to build and maintain editing suites at the tournament's International Broadcast Centre in Paris because Fox Sports personnel could access media when, how and where they wanted it via the cloud. In fact, there was no need to run a centralised physical operation centre of any kind because of the ability for users to access and edit low-res proxy footage via any connected device. There was no need to ship out Fox Sports crew from their homes in LA to France for the six-week duration of the tournament; and there was no need for any of that LA-based crew to work long hours or odd shifts to archive the footage because that was all done in real-time and automatically.

FIFA WOMEN'S WORLD CUP





### telestream

### Remote control



### Automatic for the people: other cost-efficient production tools

The Olympic Games tends to be a powerful public laboratory for new technologies and the 2020 edition in Tokyo will be no exception, with Olympic partner Alibaba at the forefront. Working with Olympic Broadcast Services, the arm of the IOC responsible for the broadcast production of the Games, Alibaba is creating the OBS Cloud, a new broadcast distribution platform to be utilised by broadcasters around the world.

It will feature a range of services and tools, significantly reducing the physical, human and financial resources required to broadcast an Olympic Games, including high-speed editing, streaming and uploading, as well as being an outlet for a richer Alpowered level of athlete performance and timing data. Elsewhere, the rollout of 5G, with its high-speed peak data, latency of under 10 milliseconds and ability to connect with up to a million devices at one time, is also set in time to change the parameters required to produce a broadcast-quality feed. Britain's BT Sport won the race to host the first live broadcast with remote production over 5G in November last year, achieved on a 'broadcast grade network' created by EE.

Approaches to automated cameras, meanwhile, currently differ, at least according to those production executives who attended the most recent Leaders Broadcast Disruptors Think Tank, with some advocating full automation for the ultimate in low-cost, acceptable-quality production and others preferring to use automated cameras to supplement a humanoperated main camera angle.

While speed to market is an obvious priority for live sports broadcasts, it is also becoming essential for non-live content, too. The ability for a broadcaster or rights holder to post regular clips to social media has spawned a range live or near-live automated clipping services, many of them-cloud-based and Al-powered, which help direct viewers towards a live broadcast, fulfil digital sponsorship obligations or generally increase engagement. These solutions continue to be honed and refined, to allow faster, more reliable delivery and ultimately the ability to scale. **Christian Voigt** International Olympic Committee

国际奥委会 市场开发 副总裁

Mike Wragg Nielsen Sports

Nielsen 执行副总裁 全球研究负责人



### **Broadcast Technology**

### LEADERS

Tuition House 27-37 St George's Road Wimbledon SW19 4EU London United Kingdom

Tel +44 (0) 20 7042 8666



leadersinsport.com @LeadersBiz