BROADCAST & CABLESAT

July-September 2020

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EDITORIAL

Ever since COVID-19 reared its ugly head, there has been a general sense of despair. Country after country fell into economic disruption, as each battled the pandemic. The broadcast industry, like many others, reprioritized spend and focused on their cash position. The significant reduction in CapEx, with a portion of that moving to OpEx investments is expected to continue till mid-2021.

IPL 20, being held in UAE from Sept 19-November 10, is poised to be a savior in more ways than one. Star India is the official broadcaster and over 500 million fans in 120 countries are being able to view their favorite sport, cricket, while it spans over the festive season. The IPL broadcaster in the absence of the Chinese brands, is moving toward the ₹3000 crore revenue target, Disney + Hotstar, its online video streaming platform, is looking to overtake its FY19 revenue of ₹1089.39 crore, and Jio and Airtel are offering exciting prepaid recharge plans.

IPL TO BAIL OUT THE BROADCAST INDUSTRY!

July-September 2020

To get this right, the broadcasting industry is being put to the test. Emboldened by the IPL broadcaster's recent experiment in an exhibition match at Centurion Park in South Africa, when the commentators were based in Baroda, Kolkata, and Mumbai, virtual commentary has been introduced this year. These anchors, armed with a minimum internet speed of 20 Mbps have access to 25 camera angles. The technical production team are also pursuing remote attendee feedback with fans cheering in the background. Star Sports had perfected remote production in the June 2018 VIVO IPL series, when it partnered with NEP and Tata Communications, centralized many of its core operations, and managed them remotely from its production hub in Mumbai.

As the broadcast industry transitions in current circumstances to a remote workforce, CapEx is rebalanced to include new expenditures. In many cases, streaming products and remote desktop software are being utilized to keep the traditional infrastructure up and running.

Even prior to the current crisis, the industry was experiencing a shift toward remote production workflows that leverage SDI infrastructures in tandem with IP and streaming technology, and we can expect to see this trend continue throughout the end of the year and into 2021.

Anju Arora

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Broadcast&CableSat

Website: www.broadcastandcablesat.co.in

Volume XX Issue 3
July-September 2020

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Publication Office
B-102, Queens Court,
E Block, Greater Kailash-II,
New Delhi-110048

Subscription

Inland	
3 Years (12 Issues)	₹1080
2 Years (8 Issues)	₹ 720
1 Year (4 Issues)	₹ 400

Edited, Published & Printed by Anju Arora on behalf of ADI Media Pvt. Ltd. B-102, Queens Court, E Block, Greater Kailash-II, New Delhi-110048.

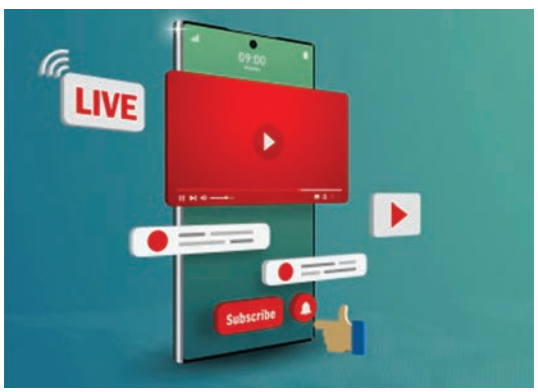
Total No. of Pages: 54 (Including Cover)

The changing face of the broadcast equipment industry

Expensive, inflexible, bulky, and disparate hardware systems, with the adoption of IP, are finally making way for a more flexible, dynamic future.

Affordable technology in a time of crisis

Video streaming has been available for decades, even with increasing ease of access to encoding technologies and affordability in data bandwidth has not become mainstream. The abrupt onset of the COVID-19 pandemic, ironically, forced us to adopt new technology in order to adapt quickly in a fast-changing environment. Suddenly, academic institutions, corporations, government bodies, and houses of worship are all turning to video streaming in their efforts to hold on to some semblance of normalcy and yet adhere to social distancing requirements.



It is at this time that the Blackmagic ATEM Mini Series of affordable switching and streaming solutions was introduced. The timing was appropriate. Priced at only USD 295, the ATEM Mini makes it easy to create professional multi camera productions because it is portable enough to do a wide range of work, but it is still a powerful broadcast grade switcher! Plus ATEM Mini is easy to set up! Simply connect some cameras and you are ready to start your first live stream!

This technology has become convenient solutions for many segments of our society in our daily lives. For example, many Singaporean schools now broadcast their daily assembly speeches to their students on their computers and projectors, through streaming. Subsequently, all schools are conducting classes over the internet, via Zoom. Life as a student has moved from the classroom to the living room.

Many traditional businesses have become viable again through the use of streaming. Instead of the old brick-and-mortar way of selling and buying, they now bring their goods online, such as fish, vegetable market sellers to clothing merchandisers. This has created new business models and new influencers who are now able to hawk their goods via live streaming, often on social media platforms.

Corporates and governments who are forced to work from home now conducts daily meetings in their individual living rooms, or bedrooms for that matter. In fact, Singapore called for elections during the period of lockdown and for the first time, political parties turned to live streaming to pitch their political ideas to garner vote. In a bid to reduce huge congregation, houses of worships have been mandated to close.

In order to continue to provide spiritual engagements with its worshippers and to continue to offer solace and support during this difficult time, the houses of worships have also turned to video streaming of their worship services.

It is often during times of crisis that give birth to technologies or trends. This time, Blackmagic Design's streaming and switcher products and technology have come to the forth. It heartens us that whatever we are doing for our product and technology, making it affordable so that people can be creative, and now so that people can connect and stay relevant. With affordable and empowering products and technology, we have played a small part in keeping this world intact, for there would come a time in the near future, where lives can get back to as normal as we can, and adoption of technology slows down again, waiting for another crisis.

Or one can learn from this pandemic and use affordable technology to evolve, to learn, to take the plunge, and open up a new world. ●

Introducing ATEM Mini

The miniaturized television studio for creating presentation videos and live streams!

ATEM Mini is a whole television studio, miniaturized down into an easy to use solution for creating live multi camera television shows. Simply connect up to 4 HDMI cameras, computers and even microphones. Then push the buttons on the panel to switch video sources just like a professional broadcaster! You can even add titles, picture in picture overlays and mix audio! Then live stream to Zoom, Skype or YouTube!

Create Training and Educational Videos

ATEM Mini includes everything you need. All the buttons are positioned on the front panel so it's very easy to learn. ATEM Software Control is also included for accessing more advanced features! The 4 HDMI inputs allow connecting cameras and computers, plus the USB output works like a webcam for Zoom or Skype. The multiview even allows all cameras to be viewed on a single monitor!

Use Professional Video Effects

ATEM Mini is really a professional broadcast switcher used by television stations. This means it has professional effects such as a DVE for picture in picture effects, commonly used for commentating over a computer slide show. There are titles for presenter names, wipe effects for transitioning between sources and a green screen keyer for replacing backgrounds with graphics!

Live Stream Training and Conferences

The ATEM Mini Pro model has a built in hardware streaming engine for live streaming via its ethernet connection. This means you can live stream to YouTube, Facebook and Twitch in much better quality and with perfectly smooth motion. You can even connect a hard disk or flash storage to the USB connection and record your stream for upload later!

Edit and Fix Live Streams

With the new ATEM Mini Pro ISO model, you can now edit your live show to fix any mistakes or make improvements. You get all video inputs and program recorded as 5 separate video files! Plus a DaVinci Resolve edit timeline is saved, so you can open the live show and make changes with a single click! It only takes a few minutes to edit and upload a perfect version of your show!

ATEM Mini ..... Rs 25,250*
ATEM Mini Pro ..... Rs 50,900*
ATEM Mini Pro ISO ..... Rs 76,550*

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*Price includes custom duties only. Excluding VAT and Octroi.
Price is FOB New Delhi. Prices subject to change.

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Learn More!

Rebooting live sports in the COVID-19 era

Ranjit Bhatti
Director-South Asia,
LiveU

The world has been turned upside down with the COVID-19 pandemic, which is a still-developing situation for many. Nowhere is this more evident than in the sports sector with the cancellation/ postponement of the Summer Games in Tokyo, the IPL, FIFA Under 17 Women's World Cup and hundreds of other major and smaller sports tournaments. While the situation is still uncertain, especially in India, there are signs globally that sports are slowly coming back with fans greatly missing the live action.

Having come to dominate the newsgathering market, we have witnessed a huge rise in the use of LiveU across the sports sector over the past few years. From the Rugby World Cup, where our technology was used both to gather content and also as a disaster recovery solution, to the FIA World Rally Championship; cycling coverage in the UK and South Africa to motorsports with our relationship with Griiip, it has been a period of tremendous growth. We have also been active across eSports, our work with the Mexican football league being a prime example. But we also knew that to continue our expansion across sports and into more Tier-I use, we had to develop a true production-grade product family with all the capabilities highlighted above and that, of course, is the LU800.

The pandemic is pushing remote production and remote working more generally to centre stage. In terms of remote production, we had already established a powerful reputation in this area with regards to our wireless at-home production solution, using LiveU Precision Timing. Remote production was already rapidly growing as a methodology and we see this expanding as the world gradually opens up again, looking for cost-effective solutions, which also minimise the number of people required onsite.

In the face of the new reality, broadcasters and sports organizations need to be more creative than ever in finding ways to broadcast live sports to sports fans and other audiences. Portable cellular bonding technology and remote production workflows play a key role in enabling this to happen, making the launch of LiveU's new LU800 production-level field unit even more relevant.

The LU800 combines multi-camera production and superior video and audio capabilities with mission-critical transmission in a native 5G unit. The LU800 supports up to four fully frame-synced feeds in high resolution from a single unit, using powerful IP bonding of up to 14 connections. It also offers the highest-quality video performance, with up to 4Kp60 10-bit HDR transmission for optimal colour depth and richness, as well as up to 16 audio channels for high-end productions.

In terms of social distancing, the LU800 minimizes the number of people required on site, offering high-quality and reliable multi-camera remote production. Live events can be produced from your centralized studio using your existing equipment, with only essential personnel required on site.

With today's budget limitations, this is an important advantage. There is no need to send an expensive OB production truck to the venue, and no need for cabling. Events can be simply be covered using cost-effective wireless technology, instead of traditional transmission methods (satellite/fiber).

Today's COVID-19 situation is also making long-term planning a challenge with some organizations in survival mode and others struggling with reduced sponsorship revenues. CapEx expenses are hard to justify at this time so our OpEx model is of even greater benefit now.

Over the last few months, LiveU has been used to cover NASCAR races and PGA tour in the US where no one needed to be close to the athletes. In China, LiveU technology was used to stream live the Simulation Game of the International Skating Union (ISU) Championships in Beijing within the strict limitations of the COVID-19 outbreak. There is a massive demand for live sports: we are proud to be making it happen. ●

NEW TIMES NEW NEEDS

LiveU has got you covered with resilient IP live broadcasting solutions.

For today's remote production (REMI) workflows.

LiveU

Contact us for a demo:
ranjitb@liveu.tv/+91-98209-98272
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Short-term and flexible lease options available

Now is the time for hybrid on-premises, remote and cloud playout

Diversify. It's what we're told to do with our investments—never have all your assets in one place. We do this for our personal investments. Our organizations do this with their corporate investments, but do we do it for our most valuable investment—the services we provide to our viewers?

There are plenty of technologies to originate and deliver programs to the audience. Some just show up in a flash and disappear to make space for new ones. But some are here to stay, and Cloud is one of them. Cloud is mature, widespread and offers not only to IT, but also to media industry features worth to explore.

As in every modern technology, Cloud is different, complex, and to utilize its services requires a fair amount of technical. But, Cloud is mainly part of a business model, it is supposed to bring the Cloud providers money, a lot of money. Thus, the users must understand and get experience with the pricing structures of Cloud services, to make use of Cloud benefits, and to avoid Cloud as a burden.

This is what the Aveco's Hybrid playout concept is all about, to open the gates to the world of Cloud for media companies.

Aveco playout solutions are well established and well known for their technical qualities, reliability, as well as the ability to adopt any technology, any workflow and any business model. This assures a solid and reliable bottom line, and adds a space for Cloud exploration. Broadcasters can start with moving one channel to the cloud, launch one or two new ones, utilize Cloud for regional programming insertion, or perhaps run a disaster recovery in the Cloud. Aveco's ASTRA MCR playout automation system makes sure your experience will be seamless and straightforward.

The *Remote* in the title of this article names just another technology that can be added to the mix: insertion of regional programming. Edge devices located at the points of regional distribution, managed by Aveco's automation from headquarters, can deliver solid additional revenues to the broadcaster, without any additional burden put on the staff.

The ability to control on-premises, remote and cloud-based playout functions from ASTRA MCR's single easy-to-use user interface means that master control operators don't need to know (or even care) where the services are originated from, and where the assets are located. They have optimum control wherever they are. All technicalities, as well as asset exchange among on-premises, remote and Cloud-based storages are automatically handled by the Aveco's ASTRA MCR and ASTRA MAM systems.

Aveco's Kulvinder Singh, VP Sales India & SAARC, together with Peter Steiner, Sales Director APAC, holding the 2019 IBC Innovation Award that Aveco won for the ETV Bharat project in the category *Content Everywhere*

Deciding what goes where is a corporate business decision. Deciding how to manage all those services and media assets in all of those locations—and how your master control operators handle all these assets in all of these locations—is an easy decision: Aveco's automated ASTRA MCR.

The decision can change over time, as business requirements dictate, so after gaining experience with a handful of channels in the Cloud, those Cloud operations can be expanded or shrunk to optimize the technical mix and to optimize the services and revenues. Aveco has the technologies, experience and personnel to support you in your decisions.

For providing services in the Cloud, Aveco has teamed up with Harmonic for integration of Harmonic's VOS® 360 dedicated end-to-end video cloud infrastructure as a service (IaaS) platform. Aveco's ASTRA MCR handles all the back-end work.

This type of multi-location control of services and assets including the Cloud, provided by Aveco and Harmonic—can open up new business possibilities, while ensuring that current operation workflows are as smooth and seamless as possible. ●

LET'S TALK AUTOMATION!

MASTER CONTROL PLAYOUT
NEWS PRODUCTION AUTOMATION
INTEGRATED CHANNEL PLAYOUT
HYBRID ON-PREM & CLOUD, IP & SDI, ON-AIR & OTT

DURING THE CORONAVIRUS CRISIS | WE ARE COMMITTED TO BROADCAST CONTINUITY OUR

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The continuous evolution of broadcast technology has resulted in a considerable increase in the capacity of the transmitted bandwidth and has enabled many more services, better picture quality, and improved coverage across the world.

With the rapid audience shift from television to digital, staying relevant in broadcast media is challenging but necessary for long-term viability. Broadcast television is not dead–but is evolving rapidly, and there is a need to transform to avoid becoming irrelevant. Transforming means shifting from serving a TV audience to serving audiences, no matter where they are–essentially, going from being a TV broadcaster to an overall broadcaster.

The demand for better-quality video and audio from consumers has resulted in products and technology being upgraded at a rapid pace in recent decades. With content being produced in UHD and 4K, transmission in the same format for improved quality of viewing has led to IP live-production technology. This is particularly significant for live production, where a premium is placed on flexible and efficient system control.

Broadcasters are adapting to the changes in trends to be able to stay relevant. They are focusing on identifying the key changes and emerging trends in broadcasting, which is helping the broadcasters in the industry for determining how to adjust media strategies, what tactics will lead to success, and how to better prepare for the future.

The broadcast equipment market

The global broadcasting equipment market has been growing at a moderate rate over the last 5 years on account of escalating eminence of broadcast automation and increasing number of digital channels. The market is estimated at USD 29.273 billion in 2019.

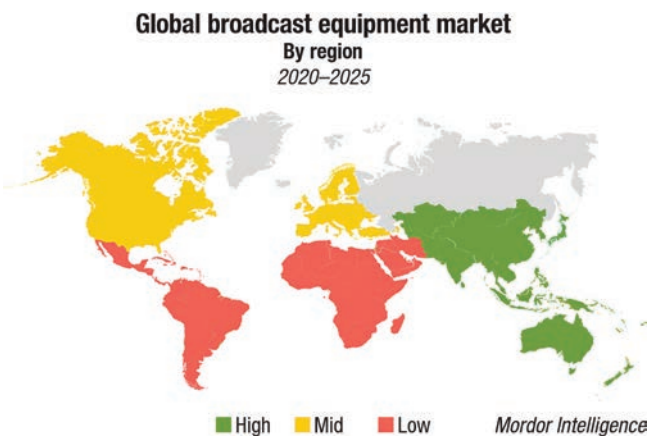
The global broadcast equipment market has been primarily influenced by the major shift of consumers to smartphones and other portable devices. Growing adoption of IoT has also boosted the adoption of smart connected devices that use ultra-high-definition (USD) screen. An increasing number of viewers are using their smartphones and connected devices to watch live broadcasts of sports or concert events. This is resulting in a positive impact.

The advancement in technology has further encouraged broadcasters to provide UHD output to its upgraded users, thereby fueling market growth. Increase in the number of digital channels, and growing adoption of advanced broadcasting equipment like video recorders and broadcasting cameras with up to 8K video quality in sports coverage and about 4K in news coverage, is providing impetus. High investment in digital platforms and hardware solutions across different countries has also propelled the market.

The sports genre has been the biggest draw for TV viewers across the globe, finding ways to deliver the video content at scale, and a rapidly increasing number of devices and formats present multiple challenges for broadcasters, service providers, content owners, and rights holders. Rental sports broadcast equipment market has been another major revenue generator for the broadcast equipment market. The increasing number of international sports tournaments across the globe has been a game changer for the rental market of the broadcast equipment. Moreover, increasing need for the preciseness in the decision review system is another factor that is propelling the need for the inclusion of hi-tech cameras in majority of the sports.

The North American broadcasting equipment market is estimated to hold a significant share and is increasing at a notable pace. The Asia-Pacific region is expected to grow at a significant CAGR on the back of increasing investments by market players to boost the adoption and upscale the development of enhanced equipment.

The equipment market is highly competitive, consisting of the presence of many small and large players operating in domestic as well as in the international market. The market appears to be moderately concentrated, with major players adopting strategies as product innovation, strategic partnerships, and mergers and acquisitions primarily to broaden their product portfolio and expand their geographic reach in order to achieve competitive advantage in the market. Major players operating in the broadcast and digital media sectors are increasingly innovating new technologies and generating new content to increase their revenue in their online platforms that offer hours of media-related content like music and films.



Some of the leading players include Grass Valley, Ericsson, Cisco, Evertz Microsystems,

Harmonic, EVS Broadcast, Sencore Clyde Broadcast (SA), AvL Technologies, Acorde Technologies, Global Invacom Ltd., and ETL Systems Ltd.

The COVID-19 outbreak is having a critical impact on the broadcaster's revenues as firms across the globe have been reluctant to spend on ads. The brands are to use their limited cash reserves, especially when in an economy shutdown, demand is surppressed.

The IP revolution

The broadcasters seeking to offer live news, sports, and other live content, which makes the scope of live programming is at the peak. As live programming supports broadcasters in contrast to the intrusion of OTT services, the demand for live IP is soaring. Continuous investment in R&D for the development of future technologies, like a new production system, is anticipated to provide ample growth opportunities to the players operating in the live IP broadcasting equipment market.

For nearly 80 years, the broadcast industry relied on expensive, inflexible infrastructure comprised of bulky and disparate hardware systems and long-term vendor agreements that were ripe to be disrupted. But now, an industry that was slow to change has awoken to the possibilities of a more flexible, dynamic future and today the adoption of IP for live and live linear video delivery is increasing across the media industry. It is one of the most rapid and significant industry transformations in history and IP is a huge enabler of this movement.

The media industry is migrating quickly to hybrid IP networks to transport broadcast-quality live and live linear video through and across its workflows. IP networks can be the internet, fiber, cellular (4G, 5G), or IP over satellite, and with the right video platform it can consist of combinations of hybrid networks with bonded or sequential hitless networks for 99.99 percent-plus reliability.

There are a number of factors driving this change, including the rise of consumer cord-cutting affecting how and where content is consumed; a rapid move to cloud virtualization for more cost-effective, flexible broadcast infrastructures; mega-merger integration of companies in the media space; relentless pressure to cut costs; and the impending localization of 5G and its impact on how much C-Band will be available for broadcast and the interference factor.

Make no mistake, views are changing on how broadly to use IP networks as the backbone of media workflows, especially the open internet. Yet despite the prevalence of this IP-adoption trend, there remain some industry hold outs who still need to be persuaded that IP networks can be as, or even more, reliable than satellite and fiber when architected correctly.

Satellite market undergoes radical transformation

Growing population base shifting from cable TV to satellite TV is a key driver of the global broadcasting equipment market. Satellite TVs provide better, customizable plans, and enhanced picture quality, which a cable TV cannot provide due to the constraints in the coaxial cable it is sent over. The satellite TV segment captured the largest share of 43.22 percent based on revenue in 2019 on the back of a growing trend amongst users toward subscription for bundled packages that offer both pay-TV and OTT services.

The provision to offer UHD picture quality with relative ease as compared to other transmission systems continues to provide high adoption rates. Additionally, the provision to set up and run satellite transmission in diverse locations to witness broadcast of live events like sporting events and live news, is contributing to market growth.

Satellite TV providers like DISH and DIRECTV are taking initiatives and making investments in order to provide up to 4K quality, and increase the number of their subscribers. These factors are increasing the demand for better and technologically advanced broadcasting equipment, thus positively impacting the overall market growth.

A factor not helping the conventional satellite-based TV market is the downward pressure on pricing. This is good for the consumer and business end-user but not so appealing to the infrastructure owners. Satellite operators are discovering that their well-established businesses are now being commoditized. The only premium for transponder rentals, for example, is the fact that millions of dishes are pointed toward a particular satellite. Moving them to another operator's orbital location would be massively expensive.

Nevertheless, the satellite market will experience a radical transformation in the quantity, value, and mass of the satellites to be built and launched with a four-fold increase in the number of satellites at a yearly average of 990 satellites to be launched, compared to a yearly average

of 230 satellites in the previous decade. This market value will reach USD 292 billion over the next decade. This reflects a 28-percent increase over the previous decade, which totaled USD 228 billion in revenues.

The global fixed satellite services market size reached USD 20.9 billion in 2019. These services use ground equipment at predetermined locations to receive and transmit signals. The stations use very-small-aperture-terminal (VSAT) technology for providing high-speed communication, and are used for various services, including TV signals for broadcasting. Fixed satellite service (FSS) has a low power output and comprises large dish-style antennas for improved reception. These services provide high-speed internet services and offer reliable and affordable connectivity to meet the requirements of the users, especially while traveling. These advantages associated with FSS are increasingly replacing direct broadcasting satellites (DBS) across the globe.

The global space ground station equipment market is projected to grow at a significant CAGR of 4.32 percent and 3.81 percent, in terms of value and volume, respectively, by 2024. By value, the market is anticipated to reach USD 119.78 billion by 2024. Countries like the US, the UK, and China are the most prominent ones in the space ground station equipment market. The Asia-Pacific is anticipated to grow at the highest rate due to an increasing requirement of satellite-connecting infrastructure to attain sustainability. With the huge growth in small satellites, there has been an emergence of new companies that are increasingly investing in the development of ground station network for small satellites.

Space ground station is equipped with a number of equipment, broadly classified into consumer and network segment. Consumer is the dominant segment in the market and includes dish antenna, satellite radios, and mobile satellite terminals, among others. Space ground station equipment serve base for satellite communication services like fixed and mobile satellite services. Fixed satellite service is the dominant segment in the market due to high penetration of dish TVs, globally.

Video storage

Video-processing solutions offer end-to-end video solutions like IP conversion, streaming, video storage, and an analytical approach for better video output. Increasing technological advancements have transformed the broadcasting industry as content providers, and TV broadcasters are effectively using internet accessibility and the cross-device compatibility video functionality that helps them to grow subscriber base.

Advances in broadband services have increased access to data for real-time video broadcasting, which provides better video quality to viewers. Increased spending on digital advertising is also expected to create profitable opportunities for content providers and network operators in the global market for video processing solutions.

The market will be driven by growing customer demand for high-quality video. Improved infrastructure to deliver high-quality video, increasing need for multi-device compatible video, increased spending on digital video advertising, and increased internet accessibility in developing countries. However, the complexity of video processing can be a limiting factor that can have a negative effect on the market growth.

Data sustainability will trend in 2020. The tidal wave of data is growing with each click. Over the next decade, companies will be tasked with finding an environment-friendly way to store and transport it. Several organizations are looking to go green by cooling their video servers with fresh-air-based systems and even leveraging the heat emitted from server facilities as a source of renewable energy.

Transmitters

The number of coronavirus cases is increasing rapidly, which has not only taken a number of lives but has also affected the global economic structure. The COVID-19 pandemic has affected all parts of the world. The virus has changed all the market conditions and is hampering the growth of various sectors of the global FM broadcast transmitters market.

Manufacturers are facing continued downward pressure on demand, production, and revenues as the COVID-19 pandemic strengthens. They are preparing for major global supply chain disruptions. And, some of the key players are mainly focusing on R&D to provide innovative products to clients.

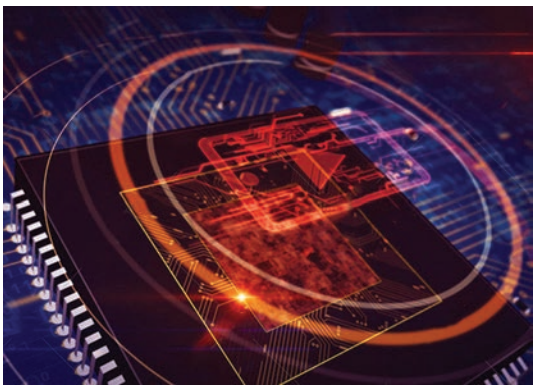
Radio. The FM broadcast radio transmitter market has been garnering remarkable momentum in the recent years. The steadily escalating demand due to improving purchasing power is projected to bode well for the market. The industry is relatively concentrated; manufacturers are mostly in the US and Europe. The worldwide market for radio transmitters is expected to reach USD 720 million by 2024.

TV. Television is undergoing a huge transformation with the rise of the internet and digital technologies. The

global TV transmitters market is expected to reach USD 680 million by the end of 2024. The changing consumer demographics in developing countries and the rising trend for online TV are propelling the growth of the market.

Geographically, Europe accounts for the largest share in TV transmitters market. The Asia-Pacific region is also growing at a good pace due to the increasing disposable income in countries like India and China. However, the bandwidth issues associated with TV transmitters and the range of the transmitters are expected to curtail the growth of the market. On the other hand, the broadcasters require transmission systems that operate more efficiently in order to address the increasing demand for lower operating costs and an eco-friendlier method.

Successful transitions from moving analog to digital transmission, and the installation of mobile TV and other multimedia networks, may further need scores of transmitters in significantly varying sizes and power levels, thereby challenging the support logistics and expanding the costs of installation and maintenance of the transmitters. Currently, there are mainly three types of TV transmitters–low-power, medium-power, and high-power TV transmitters.



OTA. The global over-the-air (OTA) transmission platform market size is expected to reach USD 124.3 million by 2025, rising at a market growth of 4.5 percent CAGR. The worldwide demand for OTA transmission platforms is growing among broadcasters and display devices manufacturers, as various manufacturers of television and streaming devices have launched ATSC 3.0-capable televisions on the OTA transmission platform market. The growing need for better channel visibility and operational flexibility is expected to drive the market for the OTA transmission platform in the coming years.

The OTA transmission platform is helping broadcasters to send 4K video over wireless transmission platforms along with improved quality of picture. In the OTA application would be incorporated the higher audio quality called 3D multichannel sound, which helps broadcasters provide high-quality audio to consumers. The hybrid combination of OTA and OTT combination is expected to generate opportunities for the OTA transmission platform market because it enables the users to access content from any platform.

Growing R&D expenditure in the broadcasting industry and growing on-demand content adoption are expected to drive the market. Rising IT investments in the broadcasting industry are expected to provide growth opportunities for the vendors worldwide, particularly in North America.

The key factor driving market growth is the increased demand for better image quality and wireless transmission platforms. The extensive need for improved channel presentation and quality of operations is also expected to fuel the market growth. The shortage of sufficient OTA infrastructure, however, is projected to hinder market growth. Increasing R&D spending and IT investment in the broadcasting sector is also expected to provide the industry with significant growth opportunities in the coming years.

Switchers market expands steadily

The global broadcast switchers market will reach USD 2.3 billion by 2027, growing at a CAGR of 4.7 percent. The HD segment is projected to grow at a 4.9 percent CAGR to reach USD 1.9 billion. After an early analysis of the business implications of the pandemic and its induced economic crisis, growth in the SD segment is readjusted to a revised 4.3-percent CAGR. This segment currently accounts for a 11.4-percent share of the global broadcast switchers market.

The US market is estimated at USD 483.6 million in the year 2020. The country currently accounts for a 29.47-percent share in the global market. China is forecast to reach an estimated market size of USD 402.4 million in 2027, trailing a CAGR of 4.5 percent through 2027. Among the other noteworthy geographic markets are Japan and Canada, each forecast to grow at 4.4 percent and 4 percent, respectively. Within Europe, Germany is forecast to grow at approximately 4.5 percent CAGR while rest of European market will reach USD 402.4 million.

In the global 4K segment, USA, Canada, Japan, China, and Europe will drive the 3.4-percent CAGR. These regional markets accounting for a combined market size of USD 99.1 million in 2020, will reach a projected size of USD 125.3 million by the end of 2027. China will remain among the fastest growing in this cluster of regional markets. Led by countries, such as Australia, India, and South Korea, the market in Asia-Pacific is forecast to reach USD 253.5 million by 2027.

Countries around the world are progressively shifting from analog to digital broadcasting, and particularly in developed countries, this transition has been rather significant. To achieve this transition, countries are investing in infrastructure, which has resulted in an

increased demand for broadcast switchers, as such, positively contributing to the growth of the global broadcast switchers market.

Broadcasters are increasingly focusing on product innovation so as to replace conventional SDI-based environment with live production systems that offer system control with high efficiency. These efforts are helping to shape the further evolution of the broadcast switchers market.

Rapidly progressing technology that has paved the way for better audio and video quality has led to the ready availability of HD and 4K resolutions, on the back of viewers' and producers' requirements for the same. HD broadcast switchers that support HD video broadcasting, which is better than SD resolution, is expected to increase at a value CAGR of ~5 percent. However, growing faster is the 4K resolution broadcast switchers segment and is expected to double by the end of 2027. The rapid growth of 4K broadcast switchers that support 4K UHD can be attributed to the popularity of 4K technology.

North America, among the earliest adopters of new technology, including HD and 4K UHD, is expected to remain lucrative for players, as it will continue to hold its place at the top of the table, and reach ~415 thousand units by the end of 2027. The growth in the region is likely to be driven by the increased use of broadcast switchers in the non-broadcast segment in the foreseeable future.

However, increase in the adoption of these broadcast switchers in developed and developing countries in APAC has led to this region growing rapidly in the global broadcast switchers market. By revenue, APAC is anticipated to expand by a CAGR of 5.5 percent and hit the ~USD 550 million market by 2027.

The global broadcast switchers market is witnessing rise in the adoption of content delivery through multi-screens. This trend is expected to have a high impact on the global market, especially the markets in developed economies, wherein consumers are demanding simpler access to television content. This has transformed several broadcasters, who currently offer content through the cloud. Cloud-based delivery enables broadcasters to offer content via web video platforms, with access though IPTV, mobile applications, and other online portals.

For instance, the rise of streaming media service providers, such as Netflix, Apple TV, Amazon, Hulu, Boxee, and Roku is challenging the traditionally maintained supremacy of television as the key entertainment hub.

Moreover, subscription-based digital content providers and OTT service providers have also acted as a catalyst for the growth of audio/video data streaming. The need for less maintenance and technological upgrades for multi-screen content distribution have encouraged various production houses to switch to these new omni platforms.

Thus, the number of devices used to access digital content has greatly increased in recent years. This has expanded the array of platforms by which a user can access streamed audio and video content.

However, the impact of high cost is higher for small- and medium-scale companies operating in the TV broadcasting sector. Digital migration policies have put added pressure on consumers to buy a digital set-top-box and/or upgrade to digital TV sets. This is a major factor reducing digitization in sub-Saharan countries, and restraining the broadcast switchers market in developing economies.

The switchers market remains strong and broad; hence, there are still various models available for purchase, from IP to SDI and hardware to software. Although IP is gaining serious momentum in the industry, a lot of customers are still looking for solutions that are both SDI- and IP-friendly, signifying that there is no one-size-fits-all switcher.

There is a lot of interest from smaller productions, such as those run by houses of worship or corporate markets, so there is a need for broadcast-standard switchers at entry-level budgets that fit into smaller production environments. For the same reasons, there will also be more solutions that combine switching with other core production functionality.

Crunch time for codecs

Video encoders are the devices or circuits used for conversion of analog video signals into video stream by connecting them with analog video cameras. The signals are being carried by various IP networks like LAN, intranet, and internet. Some of the major video codecs are H.264, VP8, and RV40 with different compression standards. The global video encoders market is estimated to reach USD 2.69 billion by 2025, registering a CAGR of 5.8 percent by 2025.

The benefits associated with video codecs like stability, reliability, and accuracy are the prominent factors fueling the market demand. Growing demand for diagnostic

information and measurement data is further fueling the market growth. Expanding the high-tech and media sector, coupled with the rising demand for UHD video content, is also projected to augment the market growth.

The rise in the adoption of cloud services has also fueled the growth of the market. As cloud provides a large amount of storage space for the data, it is convenient for users to store data on the cloud rather than on hard disks or any physical storage devices; this helps in reducing costs.

The growing popularity of high-efficiency video coding (HEVC) standard is also propelling the growth of the market across the globe. Moreover, the introduction of multi-channel video encoders has allowed the user to generate multiple different streams resulting in a reduction of hardware.

HEVC has been around since 2013, offering a lot of promise but resulting in very low acceptance until recently. HEVC can deliver up to 50 percent better data compression than AVC/H.264 at the same video quality or, alternatively, substantially improved video quality at the same bit rate. This ability opens the door for the delivery of 4K and HDR video over existing delivery networks to the growing universe of viewing platforms. While the required processing power of HEVC is about 10 percent greater than that of AVC, there is also a reduction in storage requirements–a fair tradeoff for many content creators and programmers.

In 2019 Global Media Formats Report by Encoding.com, 12 percent of all video produced in 2018 utilized HEVC. In 2017, the vast majority of HEVC usage was strictly for testing and development, but in 2018 and 2019 many more production workflows began employing the standard.

Some of this growth can be attributed to growing adoption of high-resolution formats, such as Dolby Vision and HDR+, both of which are compatible with HEVC.

Another factor is the ability to integrate HEVC within HLS streams, today's de facto standard for adaptive bitrate streaming. HEVC's time looks to have finally come. Producers are deploying HEVC to deliver upgraded formats to new devices, but not to harvest the bandwidth savings or reduce OpEx.

Entering the second half of 2020, there are a raft of developments, giving media streamers, device manufacturers, and chipset vendors a multitude of options to trade operational performance with price. Key developments include two new standards, MPEG-5 EVC and MPEG LCEVC. VVC, another MPEG standard, is also on course for standardization by the year-end.

Meanwhile, AV1, which is being promoted as an alternative to MPEG schemes, is having to battle a patent pool challenge for AV1 implementation–contrary to a key reason for setting AV1 up in the first place, which was to be royalty free.

Since the COVID-19 outbreak in December 2019, the disease has spread to almost 100 countries around the globe. The global impacts of the disease are already starting to be felt, and will significantly affect the video codecs market in 2020.

Way forward

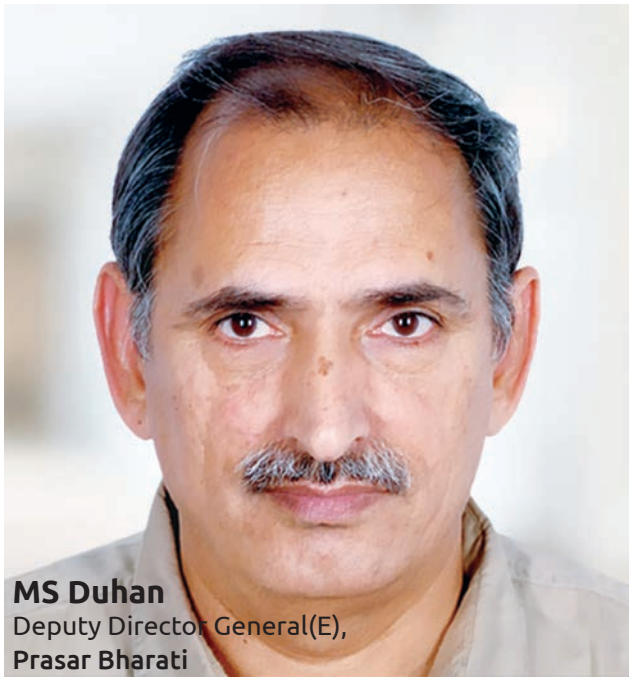
After the COVID-19 pandemic upended thousands of businesses and market shares globally, the global broadcast equipment market 2020 is looking firm and streamlining with higher shares by the end of 2023. The global market for high-speed cameras might reposition and expand at a growth rate of ~6 percent during the same year frame, with the value of USD 6 million.

The primary drivers boosting the broadcast equipment market include a fast surge in demand for UHD content production. Its effective transmission and drastic inclination from hardware-oriented systems to software and open-architecture-based systems have influenced the product to be adopted at a higher rate. The rising demand for D2C (direct-to-consumer) offerings through OTT services and multi-channel networks in developed economies is expected to help boost the broadcast equipment market globally.

Investments in high-speed broadband infrastructure continue to surge globally, which propels the market more. However, as there extends to be a perpetual gap in the speed, but with efficient video compression technology, the lowest speeds are good enough for multi-screen video consumption.

Thus, on this parameter, the growth in digitization, rise in IT spending, and growing IT infrastructure and emerging economies form lucrative ways for various broadcast equipment vendors, especially for OTT services to invest hugely to gain profits. These factors are highly favoring the market, especially in the lockdown period led by the COVID-19 pandemic. ●

Oddity of video quality: Tapestry of artifacts and assessments



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Video content constitutes a dominant fraction of broadcast and internet traffic. The user expectation for high quality video is constantly increasing in all forms of screens. The increased demand has posed challenge to content creator and broadcaster. The broadcaster thrives to balance the economics of data bits and viewer's engagements on a given platform. Though the codecs have improved these days, but the issue of quality is gaining increased importance as it helps to understand to better invest their network and codec resources toward optimizing the quality metrics that really matter.

Therefore, broadcasters are under stress to deliver video data with reduced bitrates without sacrificing quality. Companies have struggled to fine-tune additional parameters in video codecs and the improvements in core video codec tools have led to spectacular reduction in bitrate savings. One may achieve the same quality with an HEVC encoder (H.265), while using just a fraction (about 25-30%) of the bits required by MPEG-2. The other efficient codecs in vogue includes MPEG's AVC.H264, Google's VP 9, AOMedia Video 1 (AV1), etc.

Video artifacts. The whole purpose of video encoding is to compress visual information in a way that data rate is reduced and still makes it pleasing to the human eye. Video compression artifacts are categorized by whether they are time-based (temporal) or location-based (spatial). The spatial artifacts includes blurring, blocking, ringing, pattern effect, and color bleeding. The temporal artifacts are further classified as flickering, jerkiness, and floating etc.

Blurring causes reduction in sharpness of edges. Blockiness is the false discontinuities across block boundaries and is caused by course quantization. Ringing is halo surrounding objects and edges and does not move around frame to frame, unlike mosquito noise. The basic pattern effect usually occurs in the regions that have texture like waves, trees, field of grass, etc.

When the edges of one color extends in the image or overlaps into another color, it is called color bleeding. Its effect is worse in images with high color detail. It is caused by chroma sub sampling.

Video assessments. The various methods are employed to judge the quality of video, but ultimately eyes are best meters. The engineering gamut of video quality have large number of parameters to define it. Generally, the video quality is ranked from bad, poor, fair, good to excellent. Video quality can be assessed subjectively (by human eye) or objectively (by machine). Mean opinion score and differential mean opinion score are the form of subjective assessments.

The subjective measurements may be carried out using *Golden Eye* or *Multiple Viewer* methods. The eye measurement need some training for accurate results. The peak signal-to-noise ratio (PSNR) metric is widely used in the field of signal processing because it is a maximum ratio of power between signals to noise. Besides this, structural similarity index (SSIM), video multi-method assessment fusion (VMAF) falls under objective assessments.

Objective assessment may be carried out using full reference, reduced reference, or no reference to raw picture with test picture. Absolute quality estimator score can be measured comparing the reference image with distorted image. The average PSNR over all frames can be considered a video quality metric.

PSNR does not consider the different evaluation of the human eye to the same amount of noise in different images structures but SSIM metric is a perceptual metric and it provides a better assessment taking into account luminance, contrast, and structural information, which has better simulation for the human eye observations. ●

Impact of COVID-19 on the broadcast and cable industry, and strategy for the remaining 2020

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The COVID-19 pandemic has had a substantial impact on the television industry around the globe. A string of trade shows in various choreographies have been cancelled to safeguard the safety of the potential participants. The broadcast and media industry, like any other sector, has felt the negative impact of the virus, particularly when it comes to events, advertising revenues, and media technology investment.

Several correspondents, engineers, and camera persons have been diagnosed with coronavirus. The production of many scripted, unscripted television series have been affected by the pandemic. This is not a good time for disruption as many media technology suppliers are in the middle of a transition to as-a-service models. Issues that the industry needs to face in the upcoming months, as the virus continue to spread worldwide. However, this is a dynamic and resilient industry that has the strength to adapt to these changing dynamics.

TV audiences have increased dramatically due to the need for information. We are currently in a very primary need that concerns the survival of the individual. These needs encourage us to inform ourselves to increase our chances of survival. The news media were, therefore, the first beneficiaries of this legitimate interest, which quickly spilt over into other content.

If we follow the different stages of the broadcaster's value chain, we can see that the confinement has caused many changes and that has accelerated the digital transition of broadcasters. Regardless of the status of the broadcaster (public or private), IT infrastructure will become the core priority in 2020-2021. The move to the cloud will generate a lot of hidden costs that will need to be kept under control through capacity management.

The whole industry needs to temporarily adapt to this moment of disruption and go virtual. Fortunately, there are a lot of conferencing tools like Zoom, Microsoft Meetings, Skype etc., to conduct virtual business meetings in an effective way. We do not see virtual as a substitute for trade shows but rather as a powerful complement to them. More reliance on virtual should help suppliers have more continuous relationships with their customers as well. The industry is more reliant on software than it has ever been, which makes this a good time for making a temporary move to virtual.

Depending on the length of the pandemic and the uncertainty of an upfront, perhaps all of broadcast television will be sold in the scatter marketplace in 2020-21. Broadcast and cable television are the only media that have advertising upfront. Local television and digital media sell ad time closer to when the ads are scheduled to run.

Media and entertainment companies must prepare for the continued growth of digital media in post COVID-19 strategies. The increased use of digital media will require careful consideration of all requirements to protect their own intellectual property as well as avoiding claims for infringement on the intellectual property of others. These companies must also take all necessary steps to minimize risks associated with live events, productions, employee relations, and vendor relationships.

However, on the bright side, the demand for home consumption mediums, including digital streaming services, which are hugely popular since even before the pandemic, is likely to increase even further. In the long run, this may in fact benefit subscription-based services which may be able to penetrate even further amongst viewers.

In this period of uncertainty, the industry would do well to utilize the reach and availability of cable television to communicate with their audiences, and stay engaged, while we all do the best we can to remain socially responsible, as we claw our way out of this immediate crisis. ●

360° video-viewing all around

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The photography and videography world continues to evolve. The latest 360° video, also known as spherical video or immersive video, is a revolutionary video technology, providing unlimited opportunity to user and content creators. 360° video technology, has opened up new horizon in the media industry because of already existing network bandwidth and non-traditional delivery methods, which made it possible for end-user, not only to enjoy 360° video content but to live-stream their own video on social media platforms. Affordability of 360° cameras and widespread availability of smart mobile phone devices further helped this technology to gain momentum.

360° video cameras give a spherical video. The camera uses two or more super wide lenses to see in every direction at once, and then stitches the video captured by each lens together to make a seamless video.

Here, a scene is captured not as a rectangle but on the inside of a sphere. When we are viewing a 360° image or video, we are effectively positioned in the middle of this sphere, can navigate either by physically moving our smart device, by dragging across a touchscreen, or moving a window in our browser.

The main benefit of 360° cameras is the ability for the devices to provide up to 100 percent coverage of a scene with no blind spots. The lens is mounted in a fixed position and does not need to move or rotate to capture an entire scene. Everything is visible all the time, both on live and playback.

How 360° camera works

360° camera usually has two wide-angle lenses mounted back-to-back, and each captures a 180° half sphere: everything from behind the camera to the camera's front and, everything from above the camera to below the camera. Two hemispheres of sensor data are combined and stitched into one data that is updated 30 or 60 times per second. This process is done either by the camera itself, or using specialized software that can analyze common visuals and audio to synchronize and link the different feeds together.

A more advanced camera would have more than two sensors, the more sensors the better. The best 360° cameras include functions like automatic stitching, image stabilization, live-streaming, and higher resolution up to 8K. Expensive camera rigs were required earlier and lot of time was consumed for editing, but new breeds of camera are having in camera stitching software, light in weight, and portable design making these devices attractive for masses. Mostly 360° camera models can be connected to a smartphone through an app that allows users to easily control and adjust the camera's settings.

As the 360° camera captured the whole surroundings, we have to be even more careful not to make any slip-ups or have unwanted objects or people in the scene. This can sometimes present a real challenge for filming.

360° videos can be viewed on PC, smartphones, or dedicated head-mounted displays. Users can pan around the video by clicking and dragging. On smartphones, internal sensors such as the gyroscope can be used to pan the video based on the orientation of the device.

Recording and editing aspects-360° video

As 360° camera records everything around us, including tripod, so we need to go for a travel tripod, especially

the compact one, typically with a ball head that we can adjust with a knob instead of an extended arm. Not only the tripod needs to be out of shot, keeping oneself out of the shot is another worry sometimes. Thankfully, we have got various 360° cameras available that can be connected to a mobile app and can be remotely recorded and paused.

Since two cameras strapped back to back are used, there is a parallax effect, where the images may not look perfectly aligned with each other. The software that comes with these cameras mostly mitigates the parallax effect by making it barely noticeable glitch. Another issue that one needs to take care while editing 360° video is that stitch lines should look less noticeable by making sure that it does not pass through any object or visually interesting areas.

When it comes to edit and add titles it is difficult in 360° video than traditional video. The final output of 360° cameras is a sphere instead of a flat image. Therefore, we need to distort title image or text to match the spherical video's curvature so that it looks flat, professional-looking.

These 360° cameras utilize fisheye lenses. These ultra-wide angle lenses substantially distort the image, especially at the periphery. This visual distortion effect that is created when using ultra-wide angle lenses is commonly referred to as a *fisheye* effect. It means to keep some optimum space between the camera and the subject, not too much to lose clarity, may be 3-5 ft from the subject.

Software based digital manipulation can also be applied on the image to dewrap the area of the original wrapped fisheye, to be converted to have the look and feel of a more traditional video stream.

360° video vs 3D video vs virtual reality

Many people use 360° video, 3D video and virtual reality interchangeably, which may lead to confusion. In 360° video, image is captured from every angle, thus allowing the viewers to explore the image in all directions. To view 360° video a viewer does not always need to wear goggles, although in some cases, they may.

3D video gives you depth of field but it is unidirectional. Capturing 3D in one direction can only happen with at least two lenses, as we reproduce what human eyes can do in stereo. To consume 3D video, you will need a 3D headset and a good cellphone. Thus, 3D video has depth of field, but the viewpoint is limited, whereas 360° video is full 360°, but no depth of field. As technology becomes cheaper, all the 360° videos might become 360 3D videos.

Virtual reality (VR) can be defined as an artificial, computer-generated simulation or recreation of a real-life situation. In VR, artificial 3D environment is created, 360° video, however is a live action capture of a real world event without the need for a pre-rendered digital environment.

Audio portion

With immersive 360° video experience, the audio production is as important as the visuals. It is absolutely vital that the sounds we hear are coming from the right direction in sync with video.

Most of the 360° cameras in the market offer an in-built microphone to capture ambisonics audio, however we may use separate audio recording device also to get the best results. While using an external recording device to capture audio, we will need to synchronize the audio and video in our video editing software.

360° video delivery

Delivering 360° video streams is a challenge, which requires robust network bandwidth and latest coding technology. To overcome the challenges, tiled a 360° video delivery method is used. With this approach, content is split so the highest resolution video is delivered for the content in the user's field of view, while the rest of the video stream is delivered in lower resolution. It results in significant reduction in the total size of the stream, with comparatively minimal loss of perceptible quality.

Modern compression standards like HEVC/H.265 and the future VVC/H.266 help make these new applications possible, because they deliver video of the same or superior resolution in fewer bits. 360° live video streaming option is currently available on many popular platforms, such as YouTube, and Facebook.

Conclusion

360° video is emerging as a new way of offering immersive visual experience. Apart from entertainment, 360° video technology is widely utilized in the field of training, education, medical, journalism, gaming, e-learning, and security industry.

There are many different kinds of 360° cameras currently available in the market. GoPro Fusion, Garmin VIRB 360, 360Fly 4K, Insta360 ONE X, Rich Theta V, etc., are few of the good names. ●

Time for broadcast, cable, and satellite industry to evaluate its resilience

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The impact of the COVID-19 pandemic has been felt across every industry, and the media and entertainment market has not gone unscathed either. Where conventional wisdom would make you assume that the market would do better than most, since more people are consuming content as they spend more time at home–the reality is far from it. To understand what the broadcast, cable, and satellite market is looking to invest in to cope with the pandemic, we first need to understand the challenges they face today. Let us start by unpacking some of these challenges:

Reduced advertising revenue. This first challenge is a no-brainer and based on basic economics. Due to the lockdown and impact on various sectors, the economy has taken a battering. There is a broad consensus among economists that the Indian economy will contract by approximately 4 percent in 2020. With production down and sluggish demand in many sectors, most companies have reduced revenues, resulting in a decline in advertising spending. This reduced spending is impacting several channels, including broadcast, cable, and satellite.

Reduced subscriber revenue. With the brakes being slammed down on the economy, many able and willing workers have found themselves either out of a job or seeing their income slashed. Though unemployment rates in India have fallen from their peak in May, they are still hovering around approximately 9 percent, and that does not count those that find themselves underemployed or working at a reduced income than before. This has put a strain on a typical family's expenses, and discretionary spending is, therefore, under tremendous scrutiny. With other ad-supported alternatives like FTA (free-to-air) broadcast and ad-supported streaming available, subscriber churn for pay-TV services is expected to be high.

The nonexistent sports calendar. At the start of the year, there was a lot of excitement about live sports as this was supposed to be an Olympics year, which would see a lot of media companies investing in equipment upgrades. Typically, many nations and media companies would use the Olympics to highlight moving to HD or UHD transmission/delivery or other enhancements. The Indian market has been seen as an especially vibrant market for media technology purchasing because of cricket. Frost & Sullivan's deep research in this domain has shown that almost all vendors for these technologies (video processing, nonlinear editing, video servers, switchers, middleware, etc.) are expecting negative growth this year because their pipelines have evaporated. Expectations for 2021 are much better as many purchasing decisions have been pushed to next year, but that does not erase the fact that 2020 is a disaster for these companies. Sports are also responsible for attracting a massive amount of eyeballs to various screens, which, in turn, also leads to a lot of advertising revenue and subscription revenue–all of which have evaporated this year.

Availability of alternate platforms. If things were not bad enough, competition from OTT streaming platforms have further complicated business planning for the broadcast, cable, and satellite market. With consumers cutting and shaving the cord in larger numbers and trying out ad-supported or cheaper streaming options, there is no guarantee they will come back to traditional broadcast and pay-TV once the pandemic is over and the economy stabilizes.

Building a cetter mouse trap. We have just scratched the surface of some of the challenges facing the market today, but how is the industry responding? Most media companies are in survival mode as even the cost of original content production has suddenly gone up with COVID-19 emphasizing the need for crew and cast safety. Most media companies are focusing on and investing in three aspects with urgency:

Media Management. Today, most commercial solutions focus on repository services that enable indexing, archival, and discovery. These solutions either focus on upstream workflows during the production process or further downstream as a staging ground for content delivery. Rarely is there any purpose-built integration across the workflow, and managing content across the ecosystem is still manually driven and expensive.

In the world of TV, there are upward of 100,000 content items available within a 7-day window, where content moves constantly and new content keeps getting added. Keeping up with these new content items using manual classification or external services is not only cumbersome but can lead to inconsistency, ambiguity, and missed viewing opportunities for consumers, especially for content that is either big-budget or destined for primetime. Organizing content by basic genre, actor, or director categories is simply not detailed enough to understand what the content is all about.

In today's content-rich world, consumers are overwhelmed by the choices available to them on TV, VoD, etc. Initially, this is exciting for a new consumer, but it rapidly becomes an irritating experience as, each time, they have to click through multiple channels or wander through the electronic program guide (EPG). Based on Frost & Sullivan's research, 73 percent of audiences reported that they are extremely or quite frustrated when they cannot find anything to watch on their video service. A typical subscriber will only look at about 10 to 20 titles on a couple of rows of recommendations before switching to another entertainment option. In such a scenario, having a robust media asset management capability that uses contextual intelligence to enable better content discovery for the consumer is a must.

Subscriber Management. Viewers today have more choices than ever, which intensifies audience fragmentation and adversely impacts subscriber numbers and revenue forecasts. Additionally, the growth of connected devices and the proliferation of high-speed broadband have given rise to many OTT subscription and VoD and vMVPD (virtual multichannel video programming distributors) offerings and skinny bundles. These developments have made reaching audiences more complex.

Every operator is focused on acquiring new customers. Successful marketing and capturing a user's attention today requires sophisticated targeting and message personalization. Operators need to have a deep understanding of their different customer segments, including loyal viewers, lost subscribers, stalled trialists, transients, freemium subscribers, at-risk subscribers, etc., so that they can target the right lookalikes and drive efficient customer acquisition marketing campaigns. Personalization reduces acquisition costs as much as 50 percent and lifts revenues by 5 percent-15 percent.

The money operators spend on acquiring users would not matter if the users churn quickly after trying out a service. In addition to providing the most immersive service, to become a leader, organizations need to embrace churn-reduction analytics and optimize subscriber-retention practices. Operators need to distinguish between voluntary and involuntary churn as well as identify the underlying root cause for voluntary churn so that they can activate relevant strategies to combat it.

By understanding the current use cases and requirements, as well as existing techniques and strategies associated with viewer and subscriber acquisition, upsell, engagement and retention, cable and satellite operators can identify the gaps in their capabilities that are prohibiting them from successfully targeting, attracting, engaging, and retaining viewers and subscribers.

Monetization. The lines demarcating content owners, aggregators, syndicators, and distributors have become blurred, further driving the complexity in their business models. Industry consolidation has hastened the need for media companies to quickly monetize content across new and unfamiliar channels. At one end of the ecosystem, media companies need to ensure that they are managing revenue streams across the contribution network through effective content pricing, license and carriage agreement management, as well as royalty tracking. At the other end of the value chain across the distribution network, media companies need to ensure there is minimum revenue leakage and there is a robust and agile billing system in place for subscribers while also optimizing CPMs (cost per mile) for ad-supported content.

As there are so many different moving parts to enable content monetization today, media companies need to take into account pure advertising, pure subscription, and hybrid models while also ensuring there is no revenue leakage upstream across the contribution network or downstream across the distribution network to the consumer.

The bottom line. The broadcast, cable, and satellite industry has had a rude awakening and its flaws have been laid bare by the pandemic. In many ways, it is also a blessing in disguise as these media companies evaluate how they can become more resilient in a post-pandemic world. There is going to be a new normal as we come out of the other side of the tunnel. If the industry has not pivoted to provide a more targeted user experience, taken concrete action to arrest subscriber churn, and, try to minimize the revenue leakage, the industry is going to continue the downward spiral as it constantly loses ground to competition from OTT streaming. As the industry stands at a crossroads, there has never been a better time to transform. ●

The world of video is changing

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The arrival of the internet has had a profound impact on video and the way of engagement. The ability to deliver content over both wired and wireless telecoms networks has opened the door for innovative online services like YouTube, Vimeo, Twitch, Netflix, Hulu, Amazon Video, and many others.

But it has also changed the way we view content. We can now watch a program whenever we want, by streaming them live or downloading them for time-shifted viewing later on. The catch-all term for this new generation of entertainment is VoD. We now get our content when we want, not when a broadcaster/content owner decides to deliver it.

Going over-the-top (OTT)

The other term you might have heard is OTT, which refers to material that is distributed directly to viewers over the internet. OTT is a subset of VoD, which also includes cable and satellite services. The increasing gravitation toward OTT content simultaneously frees us from cables, geographic restrictions and broadcast schedules, and fundamentally changes the way video is sold, produced, and consumed. For the end-user, it is all fairly seamless and invisible, but beneath the technology there are a range of business models that control our access to content. The common acronyms used to describe these different business models applied to online services are SVoD, AVoD, and TVoD.

Subscription video on demand

SVoD is similar to traditional TV packages, allowing users to consume as much content as they desire at a flat rate per month. Major services include Sky (plus its subsidiary Now TV), Netflix, Amazon Prime video, and Hulu, with new services coming from the likes of Apple, HBO, and Disney. With SVoD, there is far greater freedom to opt out, as consumers are not tied into a long-term contract. This offers greater flexibility to users, and providers of SVoD are continually challenged with retaining consumers, by providing exclusive new content, aggressive pricing schemes–and probably both.

Transactional video on demand

TVoD is the opposite of subscription video, where consumers purchase content on a pay-per-view basis. There are two sub-categories, known as electronic sell-through (EST), where you pay once to gain permanent access to a piece of content; and download to rent (DTR), where customers access a piece of content for a limited time for a smaller fee. TVoD services tend to offer more recent releases, providing rights holders with higher revenues and giving consumers timely access to new content. TVoD services typically retain customers by offering attractive price incentives, so they continue to return in the future. Examples of TVoD services include: Apple's iTunes, Sky Box Office and Amazon's video store. Imagen can provide both subscription and pay-per-view models for your hosted video.

Advertising-based video on demand

Unlike SVoD and TVoD services, AVoD is free to consumers. However, much like broadcast television, consumers need to sit through advertisements. You can see AVoD in action when watching DailyMotion, YouTube, and 4OD, where ad revenue is used to offset production and hosting costs. Premium content owners rarely use AVoD as it generates lower amounts of revenue than SVoD and TVoD. It is interesting to note that YouTube has started to move its subscription-based premium content to an ad-based model, with reports that the service was slow to catch on with users.

Multiple business models

In practice, there are services that operate with multiple business models. Take Amazon Video and Sky for example: audiences pay a fixed subscription per month for access to a library of content, but brand new movie releases and specific sporting events command an additional fee. With the popularity of OTT content soaring, it is likely that business models will change as technology and consumption habits continue to evolve. Crucially, businesses can develop their own VoD delivery systems by using enterprise video platforms. ●

Confused entertainment

Hem Singh
Sr Manager–CAS,
DEN Networks

Entertainment is an important part of life, every human needs entertainment and consume it in some form or the other. Technology plays important part in entertainment in this modern age. Both entertainment and technology are undergoing major changes and majority of entertainment has now become technology based in the last few months around the globe, where complete world is fighting against COVID-19. Let us not talk about core technology, but let us throw some light on changing trend during COVID-19 that how it will affect the media and entertainment industry, according to me. It is true that most of the time people are indoors and are trying to keep themselves isolated, so there is no chance of social gathering and other non-technical forms of entertainment but still some people whose taste is non-technical entertainment always remain confused and try to find ways for their type of entertainment.

When we talk of entertainment with the help of technology, then we will have to say a lot has happened/happening in this field. Entertainment providers are in total dilemma on how to serve entertainment to people and so is the entertainment. Entertainment providers are facing three challenges:

- How to create fresh content;
- Platform on which they have to serve it so that it reaches maximum audiences; and
- Last but not the least, how to earn profit out of it.

When we talk of how to create fresh content. Entertainment providers are already exhausted of new content and to create fresh content they are facing many challenges like availability of people to make content, following social distancing norms, availability of funds, and security of employees/people involved in making of content.

Content makers are in total dilemma these days on how to proceed and create what they actually want to create and serve the people with content of their choice, and consumers are bosses who actually decide the performance and remuneration.

Platform on which content is to be served and making money out of it is big question as most of the multiplexes, live theaters, and other gathering spots are closed and serving new content on TV may not earn that much profit. And all these hurdles are creating hell lot of confusion in the entertainment industry. Amid all these confusions, everyone (customers, entertainment providers) are finding only one way in form of OTT where they can release content and customers can enjoy it indoors. But the entertainment industry is also undergoing some other changes as well in terms of technology, this COVID-19 situation is giving birth to one more trend of moving servers to cloud instead of maintaining physical data centers, which will actually give rise to more opportunities for engineers in future. Cloud servers are easy to maintain remotely and when one has to maintain all stuff remotely then either he/she sits in office or do work from home it is one and same thing. Hence, the work-from-home trend is developing round the globe and many employers are really appreciating it, as it will further help in saving various maintenance costs in an office. Thus, we can say 2020 is year of big transformations for the media industry.

To conclude, we can say from the last few years, we are only talking of OTT and it was gradually becoming loved form of entertainment, especially among youth. But in the last few months OTT has taken over many forms of entertainment like multiplex and live theaters and has become popular among people of all age groups.

OTT is a portable form of entertainment, which moves with us and is also available with us in form at one fixed place. We do not have to wait for entertainment when we talk of OTT, it is readily available with us in the form of OTT applications, the only thing which we need is internet connection and entertainment is available with us anytime.

Thus, we can say that in all this confusion, a lot has changed in the entertainment industry and this is the era of *entertainment everywhere.* Entertainment providers have to ensure their presence in each and every form of entertainment to be in race. ●

Impact of the COVID-19 crisis made digital volcano to erupt

Tapabrata Ghoshal
Business Head,
HT Media

The future of India's newspapers has to be digital– and it has to be done now.

Publications need to find out strategies that will allow them to be sustainable online. Years of continuous growth and expansion in printed newspapers in India are about to come to an end. Failing to develop more compelling digital offers may lead to media houses shrinking to irrelevance, closing down, or losing what independence they have.

At a time when human contact and touch points are being minimized, digital technology is proving to be a key asset in tackling these practical challenges and supporting new ways of doing business. Digital platforms have become integral for business continuity. For the print media, digital presence is now more critical and could translate into greater monetization opportunities.

The COVID-19 pandemic has resulted in loss in advertising expenditures across all media. However, people being home bound has resulted in an increase in consumption of the digital media and hence this sector has seen a considerable growth.

News websites and e-papers have become a staple way of life for the newspaper players and the regional newspaper companies have taken to the digital medium quite enthusiastically. However, there are some steep challenges to surmount before they can make the most of the digital domain. According to industrial trends, the English news sites dominate the digital platform, giving less space and importance to the regional language papers. However, many newspapers are getting into the domain of health and education and competing with the more established players.

A very common format like education fair/exhibition has been turned into education expo on digital platform. A venture of www.livehindustan.com delivered expected responses to the institutions and connected the target audience effectively. So much so, non-education companies came up to share the platform within education institutions to attract the eyeballs of similar target audience. Innumerable webinars and E-expos happening every hour across the globe through various digital platforms, that are getting hosted by either own or common domains. These were hardly there when we stepped into the year 2020.

Another intriguing development is the move to real time stories, where reporters file directly from the field especially for the web. Digital revenue in India is growing at a rate of 40 percent. To attract a part of this revenue to the newspaper industry, the product and the reach of this product has to be formatted well. A strong product with good reach is enough to earn robust revenue for the newspaper houses.

A study by the Reuters Institute for the Study of Journalism at the University of Oxford shows that display advertising alone cannot cover the cost of producing quality content and definitely not earn a profit. In reality that premium content is expensive to produce and combined with a cluttered advertisement experience that drives readers away, this has forced publishers to think of a different approach to advertising.

Newspaper houses are now trying to use a number of revenue streams beyond advertising, with subscriptions among the most popular to boost the bottom line.

But even the best content will drive away audiences if it is presented poorly. Users who are turned off by pop-ups, overlays, auto play video or just too many advertisements are likely to head for other sites. Hence monetizing news remains a challenge.

Despite the shadow over the current advertising downturn, there is still hope for the future. The newspaper industry is gearing up for whatever that comes, from acquiring assets and expertise in other

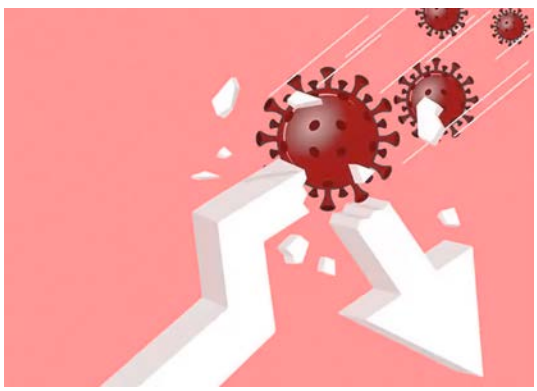
media and mobilizing their vast networks of reporters to produce content for print, TV, online, and other media.

Content is King. Journalists are warriors. Battlefield is evolving.

Journalism saw changing face of challenges over the years, decades and centuries. Our ardent reader audiences wait with curiosity to know the *real story* from a chosen section of people, who fight all odds to bring it on–the journalists!

Journalists have one thing in common–their passion, to challenge the status quo and to ensure the best possible coverage. All these are done for their readers. They are unstoppable–be it of any genre.

2020 brought in a new terminology in front of the mass–COVID-19, something that was in the medical books but never treated. Journalists also did not have this topic covered before. In almost no time, this became a global pandemic, dominating the news and changing everyone's day-to-day life.



This again challenged journalism and entire world got glued on media to know what the journalists have to report–every hour, every day, and over months. For once, some things in particular became overtly important in making work life run smoothly, which were never on priority list–the digital platform of delivery.

With heavy workloads to consider, entire focus came on to the usage of virtual medium for journalists. Conducting video interviews, taking bytes of news from ground level, testimonials from experts, and opinions of administrative authorities–all these became highly regarded in a time when the ardent readers started getting habituated on digital devices, while confined at home with restricted exposure to non-virtual media options.

Social media algorithms are the newest technology impacting journalism today. A modern age journalist is competing with the social media content flow, while juggling their other interests, such as reporting facts as well as seeking to increase readership, viewership, and engagement of the readers and viewers.

The pandemic has brought to light the importance of media and access of the masses to verified information. Authentic and independent media serve as key source of credible and life-dependent information they also help people by detecting misinformation.

Professional journalism–publishing verified facts and informed opinion–has given people an alternative to disinformation and misinformation. Reliability and credibility are strong words that get branded with news sharing platforms with consistent delivery of genuine reporting. Very difficult it is to be authentic all the time–but that is the only way to remain dependable among all. Media websites dropped their paywalls and provided coverage of COVID-19 pandemic without any charge, in the name of public interest–keeping in mind the present exigency.

Fernando de Yarza López-Madrazo, President of WAN-IFRA said and I quote, "Under these circumstances, our responsibility as publishers and journalists is more important than ever. It is probably the greatest challenge we have faced in the past 100 years. The citizens of all countries now have a greater need for our journalistic work… Never have we been so necessary. Never has our role of social cohesion, of defending the democratic values, of stimulating solidarity and public awareness been so obvious. Never before has our desire to do the best journalism been so great. Never has our commitment to the truth been so laudable. It is an indispensable social and ethical duty."

People feel that during this period, reporters have a great life, maybe even a better one than before, for now there is plenty of scope for journalism. But people do not understand how torturous it is, to stand in front of an affected person and take down details of his or her plight. It is horrible, to visit a room fully exposed to the life threatening virus, simply to gather information from the ailing, of details they would gladly forget, but cannot bring themselves to, it gives one the clear sense of being like a criminal–it hurts, but that is the job to deliver newsworthiness.

The threats to press freedom and safety of journalists come at a time when the economic crisis is pushing many media organizations to the brink of extinction, at exactly the moment they are most needed. The economic fallout from the pandemic has led the International Monetary Fund to predict that 2020 will see the worst economic recession since the Great Depression in the 1930s. The International Labor Organization expects loss of equivalent of 195 million full-time jobs. It is a survival of the fittest to fight the virus and survival of the strongest for the organizations–sustenance ability only counts.

This war may be controlled by taming the virus and getting enough antidotes for the world. The damage created will take long enough to get back on track. But this phase taught the mankind–better be safe than sorry, in any sphere of life. ●

The impact of COVID-19 on live sports and how the industry is transforming as live sports resume through 2H20

Chiranjeev Singh
Director Marketing, APAC,
MediaKind

The possibilities of innovation and adoption for live sports across the broadcast and media industry this year were unparalleled, that is until COVID-19 hit. We have seen it shake up the media industry in so many different ways, but it has caused particularly sizeable tremors in the area of live sports production.

The impact on live sports has been significant; with fans turning to a wide range of on-demand content, broadcasters have been left reeling from a spring/summer period with considerably reduced amount of sports. Sports media revenues in the Asia-Pacific region were forecast to take a USD 2 billion hit in 2020 as a result of the coronavirus outbreak, according to projections from Media Partners Asia in late March.

The long-term impact of the crisis remains unknown with major sports events, such as the Formula One Grand Prix in Vietnam, the Tour de France, the Indian Premier League, and the 2020 Summer Olympic Games postponed.

Global viewing figures were expected to at least match–if not exceed–those of previous Summer Olympics (Beijing 2008 peaked at 4.4 billion viewers). New innovations were set to be introduced–both NHK and RAI were due to broadcast the Games in 8K UHD–while NBC universal executives expected to surpass the USD 1.2 billion ad dollars generated during the 2016 Olympics in Rio. However, the industry and supply chain is resilient and has adapted to a new normal with sporting matches resuming in empty stadiums and production and delivery back on track as lockdowns ease.

Harnessing remote production

With little to no live sport for fans to watch since March this year, the South Korean K-League and KBO League returned with no crowds in May to many fans' relief.

But the question remains: How can sports broadcasters continue to engage fans and mitigate the problem of empty stadiums whilst delivering high quality and engaging coverage?

According to the IABM June 2020 Buying Trends Report, during the COVID-19 outbreak, streaming consumption skyrocketed globally and despite media companies' revenue from traditional broadcast operations declining, among all end-users, OTT and streaming services have become increasingly important as a new source of revenue. As such, the power of remote production and live streaming capabilities is critical for broadcasters to meet consumer demand. But what is next for live sports production for the remainder of 2020?

It is likely that production budgets will come under scrutiny after broadcasters and streaming services successfully delivered compelling content during the pandemic in a bid to slow down subscriber churn and are on a fast track to a slimmed down workforce.

The new normal could see fewer staff employed behind the scenes with remote production the lynchpin for ongoing success. Notwithstanding the technical challenges from latency, synchronization, and transmission bandwidth that could cause issues, the future of remote production for live sports in limitless. However, if sufficient bandwidth is not available or the cost of the bandwidth is deemed too high for the use of light compression, a higher performance video codec is required. MPEG-4 AVC has been used, but today this increasingly means the use of HEVC.

Thanks to the development of SMPTE ST 2110-22 Compressed Video Essence, which defines how to carry

JPEG 2000 or JPEG-XS, the problem of synchronizing all the different video audio and metadata streams or essences is made easier.

Changing habits

Watching live content typically relies on dedicated broadcast chains leveraging high quality dedicated infrastructure from broadcast, cable, and satellite.

However, ever changing user behaviors and their expectation of broadcast quality live streams rely upon operators that leverage internet based adaptive bitrate (ABR) streaming. The delivery of this content allows broadcasters to reach an extended number of device types both in and out of the home.

ABR also reduces the barriers to entry, enabling new entrants to offer live services. For example, sports streamer, Twitch has dedicated APAC channels for live tournaments while China's Baidu announced plans to invest USD 70.3 million into the live-streaming sector in May this year.

The key is optimization at every step of the video pipeline, from encoding, packaging, delivery, and decoding. In order to address these needs, close support for standards and interoperability testing are necessary with an ecosystem approach to be leveraged based on industry standards.

One example of this approach is the MediaKind Universe Alliance, which was announced in 2019. This innovative technology partnership program enables content providers, service providers, and operators to access complete media delivery workflow solutions that combine technologies and services from MediaKind with leading industry partners in cloud and other offerings.

Above all else, the future of video streaming must recognize that consumers want the same, high quality live and on-demand experiences on whatever service they use. As user behaviors evolve, an OTT viewing experience must be at least on-par with that of a broadcast channel. *Just good enough* simply does not cut it anymore!

Converting to cloud

As the world resumes to the new normal and sports broadcasting will boom once again the aftermath effects of COVID-19 will likely cause operators to halt on large CapEx investments and instead invest in OpEx shifting to more flexible distribution models.

Enriching the fan experience in the era of uncertainty is fundamental and whilst legacy hardware equipment once dictated how broadcasters worked, today the same cannot be said. Flexibility and new technologies across the supply chain will drive growth and enable opportunities greater than ever before.

Service providers can no longer afford to tie themselves exclusively to satellite or fiber operations. Although satellite currently plays a fundamental role in today's contribution and distribution space, it is expensive and takes a considerable amount of time to set up. By decentralizing existing workflows, operators of all levels can utilize cloud networks and the internet both as a backup or even as a primary link.

Indeed, there are even question marks that surround the long-term viability of satellite as an exclusive means of content distribution and acquisition. 5G auctions are reducing the amount of available spectrum for satellite, which in turn is causing these providers to shift away from C-band. Virtualizing the management of linear, VoD and SVoD services also offers better opportunities to manage resources. Broadcasters and operators can optimize the usage of their infrastructure, tap into quicker and seamless production applications, and dynamically increase the quality of their live channels to enable the best possible viewing experience.

Normalizing change

Even during this uncertain period, the constraints have proven to be a catalyst for innovation and creativity. It has placed the spotlight on the reality of production-grade solutions and how the move to the cloud can ease some of the challenges around the need for on-site operations.

The majority of today's video applications are capable of running in the cloud, whether it is non-linear editing, quality control, archiving, or scheduling. There are more challenges to overcome in terms of how broadcasters adapt to live and remote production, playout, and control room operations, but the transitional periods that once took years are now being rolled out within months.

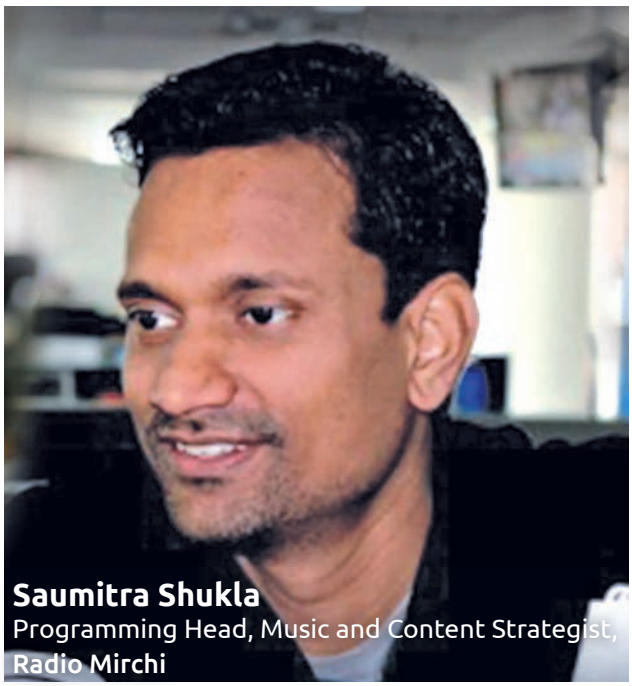
By the end of 2020, the prevalence of SaaS models in the media will see a stark rise in DevOps processes. This will enable the automation of processes ranging from development to production, providing premium reactive and advanced proactive monitoring support.

The second half of 2020 is also an opportunity for broadcasters and service providers to experiment and for new innovations to emerge. Live 360-degree content could be one area to help differentiate services and generate new revenue streams.

There are a number of live sports and esports competitions that are well suited to act as desirable use cases and applications for this technology. In the UK, BT Sport has rolled out a 360-degree app, which enables an array of unique viewpoints and camera angles to watch highlights and replays alongside its live coverage.

Looking ahead to the future of live sports, it is clear that innovation and the seamless adoption of new technologies will drive success for broadcasters and operators alike. As the industry looks toward its short and long-term future, the components are in place to deliver more affordable, flexible, and scalable sports services to consumers. ●

Vocal for local



Saumitra Shukla
Programming Head, Music and Content Strategist, Radio Mirchi

Lockdown period? Thinking about it gives us goosebumps and we can silently pat our back for being patient and dealing with it with utmost care and caution. The Prime Minister gave the mantra of going *Vocal for Local*, and this mantra fits perfectly and smoothly for the radio as a medium, which echoes voices of the city.

During the lockdown, we all had been subject to problems and daily life struggles. It impacted directly to small and big businesses. Work-from-home became the new normal for everyone. During this time, radio content was normal as it was earlier, and it emerged to be the most powerful and trustworthy medium. Being local is key for FM radio industry and this worked wonders for the medium and advertisers having radio as a part of their media plan. When audience required smooth and reliable content, which was credible and entertaining, radio stood with them as their best friend.

This phase gave us a key takeaway that radio is relevant and most essential medium when it comes to going vocal for local. All the radio stations were giving updated information of COVID-19, local information, emergency assistance, and echoed voices of the city administration, public representatives, which kept the audience informed. The thorough broadcast of such information reduced the state of chaos, lowered the hearsay becoming news, and cleared myths floating around.

This need-of-the-hour radio programming has shown remarkable growth in radio listenership. As per the AROI report, radio home listenership jumped by 22 percent to 86 percent from 64 percent. According to the study done by AZ research across a sample size of 3300 people, 82 percent people have been tuning in to radio during COVID-19, with FM channels emerging as the second most credible source of information for the masses.

Apart from being local and giving local updates to listeners, radio became more responsible than ever. Remember the time when we were flooded with fake news, myths, and misconceptions related to COVID-19, radio content was bursting all such false information. Got a forward on the family group that vaccine was found? Or drinking some home remedies is the cure for coronavirus? Or some noted public figure being positive? Radio content stood there and cleared the mist for people.

Another major role radio played in this lockdown was of your best friend and a person you can rely upon. Lockdown resulted in unwanted stress and psychological issues among people. Radio jockeys, who normally carry friendly relationship with their listeners, were the support system for many people. Radio came out with live sessions of interactions with psychologists, therapists, and healers so that people can gather strength to handle tough times with convenience.

With cancelled shoot scenes and productions coming at halt, TV GECs were completely dependent on the old content. Remember the epic rebroadcasts at 9 am? Radio served fresh entertainment, which has been the main reason people switched back to radio again and again, and was very much visible in the AROI report and respective surveys being conducted.

When Unlock–1 approached, local market associations got an opportunity to connect with consumer through radio only. Post-lockdown time radio stations like Radio Mirchi came up with the campaign on jobs to help people in this tough time.

Radio dealt this situation with utmost responsibility and ensured that listeners continue to get the *Khushi* advantage. Making people smile, when everything was blue was a tough task, but thanks to modified programming, establishing real time connection, and our prolonged bond with the listeners, the RJs did their radio shows and used their social media handles pretty efficiently to bring in live sessions with influencers, artists, singers, and the experts, which hosted informative and entertaining sessions. ●

COVID-pivot or perish!

Sanjeev Mulchandani
Vice President,
TV9 News Network

COVID-19's impact on media has been mixed so far. While we saw some consolidation happening in print, TV, and digital, we also saw new opportunities emerging and newer ways to mitigate risks.

In terms of opportunity, the glimpse of it was seen on March 24, in the Prime Minister Narendra Modi's address to the nation, announcing the 21-day lockdown was the biggest single event on TV so far. 197 million people saw the telecast on TV, this is higher than the most viewed IPL match (137 million viewers). Challenge was to ensure how to monetize such a proposition.

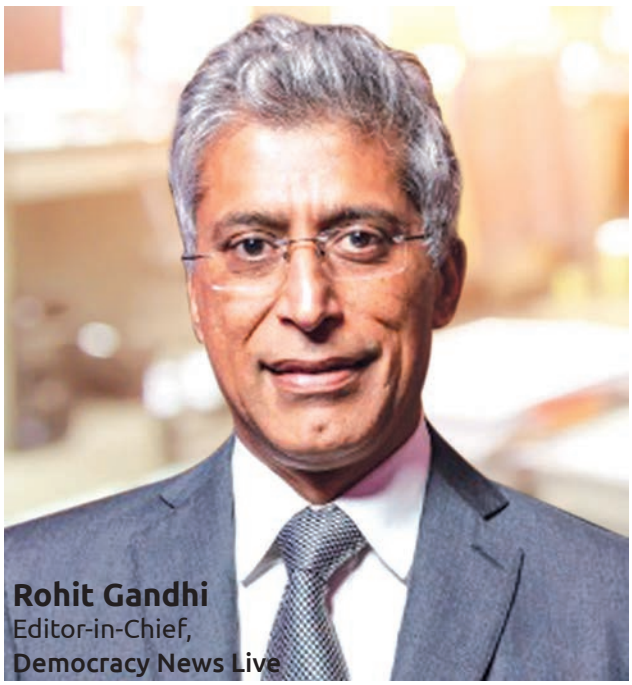
A recent research report highlights, online will continue to grow faster than ever due to supply chain leverage, which is going to be next big thing when it comes to the M&E sector driving subscription revenues. Linear media will continue to be the biggest beneficiary from advertising revenue, OTT is already a new star in making. OTT opportunity is bigger, but challenge remains in terms of monetizing the same. Another big trend is going to be more of convergence, which is a mix of linear and digital.

The current crisis has lead to decline in AdEx, not only in print, but also TV and digital. Though broadcasters have done their bit in terms of recalibrating the deals to suit to advertisers, but the entire growth in viewership has gone unmonetized leading to loss of opportunity. We need to rebuild our business on robust models, which are shock-proof to such risks by looking out for alternative revenue models. We learn from all challenges, so we shall come out of this much stronger than ever.

SWOT, which is my perspective when COVID-19 resurfaced–strength: only form of entertainment, so growth in viewership in both linear and digital; news programming critical to keep citizens appraised; and low-cost of subscription in Indian market versus western market, helps in easy access to premium content. Weakness: subdued advertising impacted smooth operations due to low business sentiments; content unavailability due to lockdown; loss of revenues due to no sports activity; and monetization issues from sales perspective due to immobility. Opportunities: consolidation in operations, in fact we saw couple of big names coming together to consolidate their position due to current market scenario, leading to synergies in future; work-from-home leads to saving of expensive real estate and rationalizing the manpower also adds as opportunity; and strong rise in OTT/digital platforms, creating newer shorter supply chain, leading to more margins for content creators, example here is Bollywood selling titles to OTT, which helps them saving on money spent on distribution. Threat: dependency on ad revenues; cost structures of standalone networks leads to financial crunch and operations breakdown, leading to job losses; and loss of revenues from certain categories due to COVID-19, leads to disrupting overall trajectory.

Throughout the existence of business, threat of piracy continued to harm the business profitability, be it movie business piracy, under reporting of subscribers base, etc. The impact of COVID-19 is seen across businesses, some have managed to mitigate that risk, like in case of Bollywood we saw OTT direct releases helped them salvage the situation but in cases like print digital versions going beyond paywalls, the verdict is yet to come out in terms of how well readers take it. A business needs to be agile enough to either pivot or else it will perish during tough times. Want to share one of the nice articles I read: *The Bridge on The River Choluteca*, which is one of the longest and strongest bridges constructed in Central America to withstand any powerful forces of nature. It was so powerful that when flooding happened in late 90s, the flood water after rising to certain level changed its course due to strength of the bridge and it permanently changed the course of the river and now it has became a bridge over nothing. Choluteca Bridge is used as metaphor for focussing too much on problem and finding the best solution, forgetting at times that there is possibility that problem itself might change. So crux of this is, in these challenging time, we need to be agile enough to pivot our course to rise and shine. ●

Artificial intelligence and the future of broadcast industry



Rohit Gandhi
Editor-in-Chief,
Democracy News Live

Content and artificial intelligence is so intricately married today, that it is difficult to even try and think about them separately. For a long time, our predecessors tried to hold on to the age-old practices, but the next journey is about keeping abreast of changes, rather than trying to stall.

The picture of a journalist with a typewriter will always stay embedded in our heads. The newsroom culture is vastly different at present with greater exposure to global media, whereby a journalist needs to be multi-skilled and aware of current developments within the industry.

In fact, the more up-to-date the journalist, the more impact his news has and, therefore, the more relevant his work.

It has now become paramount to embrace these changes, as frequent as they may be, because like news and information, the world is transforming at an equally frantic pace.

What is artificial intelligence?

The crux of AI is to lessen human intervention by developing computer systems that can perform tasks. The program mimics human cognitive functions like learning and problem-solving.

Whether it be answering direct questions or smarter systems that map users' habits, artificial intelligence has far reaching effects because of its evolving nature.

At present, AI is being integrated into not only in our professions, but in our everyday lives as well. Take for instance, our commonplace interactions with Siri or Alexa, scheduling our calendar or even Google maps. There are more complex systems that were originally coded by humans, but its algorithms change as it learns and updates.

How is AI integrated in newsrooms across the world?

The use of artificial intelligence in newsrooms across the world have been adopted in diverse ways–whether it is in natural language processing or collating data–in order to gather, generate, process, and distribute content.

The New York Times used machine learning to take its archive of recipes and create the NYT Cooking app, and hopes to use automation to digitally archive its photo collection.

Dataminr is used widely to track tweets as well as geomap it as a form of news generation. In China, news app Toutiao has 120 million users with individual engagement.

Newsfeeds are updated based on the reader's preferences, time spent on an article, and location.

In the UK, a service called James is being developed by The Times and Sunday Times, which will help learn about individual preferences and automatically personalize each edition in terms of format, time, and frequency.

The Swiss newspaper Neue Zürcher Zeitung (NZZ) is developing AI algorithms that are not optimized for clicks but to uphold journalistic standards.

AI helps journalists pre-empt the answers to questions

You may be the biggest icon in the industry but you will have to continue to turn your attention to the story that is being told from places that may be difficult to access. So, when I hear things like machines will take over writing, I know for a fact it is not possible.

One of the biggest challenges of journalists on the field is contextualizing the stories, so teams sitting on the backend in a newsroom even though may have more access to resources will sometimes miss the big story because they were not seeing what the reporter was seeing on the ground.

But artificial intelligence helps solve that gap. It helps both the newsroom managers and reporters on the ground. AI takes a story, its context and takes references to other articles and analyzes what is missing in the story. Millions who search for the story or anything related to it leave a trace on the web, indicating what people are seeking.

Video and artificial intelligence

Storytelling through video has become an integral part of our discipline. Although textual stories still manage to hold their own, giving us perspective that a 1-minute video cannot, yet in this fast-paced world where everyone is crunched for time, videos are the need of the hour.

They are informative and attractive, presenting facts that would have otherwise been dubbed boring. In a nutshell, videos have a greater impact on the human mind than a mere text piece.

Almost all news media houses have realized and accepted the shift of audience toward video for news consumption. But there is a whole lot of process behind making videos, including skill-based expertise.

The nuances of a language and the twists and turns of story that a human being is able to provide, a machine will not be able to do that ever. Similarly handling video is even more complex. The subtle juxtaposition of images, sound mixing and structure of the video will always be a complex process determined by the aesthetics of the human mind.

But there are also multiple repetitive tasks that need to be outsourced to machines. The machines can do it faster and better and deliver it back for review. The review helps the machine learn what it needs to fix and over a period of time the machine learns not to make the same mistakes again.

Let us say that a text story has been written and a video around that story has already arrived in your system. The artificial intelligence platform is capable of delivering a script based on your text story, along with images that will go with the script of your story.

It is also able to identify interview clips aligned with the text quotes you may have included in your text story. The task of getting them all in line is now done and this is where the human comes in to review the work of the algorithm.

The review process of the AI now is resting on a learn mode, learning how the humans make changes on the system. After enough usage of the system, the machine begins to get better at its task.

It also learns how to handle audio levels like when the natural sound needs to be higher and when it needs to be lower. It also puts on name supers, location bugs, and information crawlers on the story. If each of these tasks had to be done manually it would take a video editor much longer.

Conclusion

Artificial intelligence and machine learning together have the ability to make the job of journalists easier and empowering. At the moment, in order to compete on multiple mediums, one is getting burnt out, struggling to stay relevant within a small space and span of time. But artificial intelligence should be able to bring a cohesiveness and ease of doing a comprehensive story without going crazy on a manual treadmill.

The purpose of AI is to understand your mechanical actions over a period of time and become better at implementing those actions. What technology brings to journalists is empowerment with less dependence on sound recordists, editor, assistant, producer, and others.

AI empowers you to stitch your story together faster with least technical knowledge. It is important to understand that the aim of the technical people is to build advanced technologies to empower non-technical people. For using hi-tech or AI, you do not need to have a technical degree.

As we all restructure our lives to integrate AI, such questions and dilemmas are bound to arise, and it may take a while to solve it. But one must realize that AI is here for good, and we must look forward, use safeguards, and embrace the changing tides. ●

Impact of COVID-19 on broadcast, cable, and satellite

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The COVID-19 pandemic has affected every industry and the way of working has also changed. Many organizations have adopted work-from-home mode, keeping the safety of their employees at priority. Education institutions like schools and colleges have been continuing with online classes. Hence, majority of things have now switched to the virtual world.

In the broadcast industry, in pre-COVID scenario remote desktop work was less as all the employees were working in the office. But due to this pandemic, in the broadcast and media industry, most of the employees are working from home, and companies are providing high speed broadband connection. Online is clearly the new norm as companies are focusing on remote work and rapidly digitizing operations in order to ensure business continuity. However, many still struggle to operationalize work-from-home initiatives because of technical requirements.

For the meeting, broadcast organizations are using many digital platforms to connect with video and audio, on which they can give presentations share files, everything on a high-speed internet connection.

Hence, there is a huge demand of broadband connection and high-speed data. Some employees in the news and media entertainment section were going to office as physical presence was must for device accessibility and support to colleagues, who were working from home. But COVID-19 has impacted the way of working in the broadcast and media industry, which was looking difficult at that time and organizations were also not ready for this transformation.

Employees are now working remotely, accessing the system and monitoring like how they were doing physically in the office. Major broadcasters were facing internet traffic issues, because they have to transfer heavy video files so they had to opt working traditionally as earlier.

There is a big surge in the OTT and Netflix subscription as the sports events were called off, which led to viewers turning to OTT platforms. TRP of general entertainment channels and news channels was very high as people were keen to get updated about the pandemic around the world. During the lockdown, there was also a surge in the demand of previously existing content and religious programs, which were liked by many people around the country.

For 2 weeks, such channels became the most viewed in the world. The trouble, of course, is that advertising has declined as companies providing channels revenue are facing troubles themselves. There is also a threat that post-lockdown channels could face increased competition from digital platforms.

In the broadcast industry, we have witnessed the transformation from baseband to IP and optics for remote connectivity and accessibility of broadcast systems to run the business smoothly and for the safety of the employees with the presence of less employees at the broadcast center. For this change, the industry has to change the infrastructure and provide content on digital platforms as OTT and streaming apps viewership has increased tremendously during lockdown caused by COVID-19.

Many users who had not switched to OTT are also making the shift and exploring the platforms. In case of OTT platforms, they do not have to stick to TV sets, they can pause and play the content as per their convenience, or they can even watch it later. They do not have to wait for the next program to begin after break or advertisement as they can see all the episodes in one day on these platforms. Movies are releasing on digital platforms; advertisers are also likely to focus on the internet.

However, among other things, this trend has emphasized the permanence of digitization. So, with the linear TV and cable TV, the broadcast industry also has to focus on incorporating and huge investments on the digital platforms to fulfil the demand of new audience. ●

COVID-19 and its impact on entertainment industry

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COVID-19 affected everyone's life, people, small to big business, industries and no one knows if everything will go to the pre-COVID situation or we have to accept this new normal. The cable and satellite industry also got very much affected because of this pandemic.

People were stuck at home due to lockdown, but there was no fresh content, and no live TV; viewers at home were searching for fresh content. There are, however, several strategies available at these operators' disposal, which many Indian operators are already putting into action.

As soon as Ramayan re-run began, Doordarshan's viewership rose exponentially. From nine million in the second half of January, it went up to 545 million in the last week of March. "These were the highest numbers we had seen in the past 5 years," said Romil Ramgarhia, COO, Broadcast Audience Research Centre (BARC), the official TRP measuring agency in India. "Not even a sporting event [like IPL] comes close."

During lockdown between Mach 25 and June 8, OTT consumption went through the roof. Amazon Prime and Netflix witnessed 67 percent and 65 percent surge in subscriptions, respectively, during the lockdown period. Zee Network's ZEE5 registered an 80 percent rise in subscriptions during the same time, while ALTBalaji witnessed a 60 percent uptick in its user base.

"Normally consumers complete a series in five to seven sittings, they are now consuming in two sessions because the time for entertainment has increased," Ferzad Palia, head of production firm Viacom18's video streaming platform, Voot Select, said. "A lot more content is getting consumed at a quicker pace."

As stepwise unlock started in India in the month of May, everyone knew it will take time to resume work in the entertainment industry because of two major reasons as it is not a necessary service and another big reason was most of the shooting and production work happens in Mumbai area and the number of COVID-19 cases was highest in the country. But filmmakers, actors, and office bearers of the Broadcasting Foundation in Mumbai met Chief Minister Uddhav Thackeray. They stated that the lockdown enforced due to COVID-19 has halted filmmaking and requested for permission to resume the shooting.

In June, Maharashtra started allowing film and TV shoots in non-containment zones. However, only 33 percent of the crew is allowed at a set, social distancing, and sanitization efforts need to be made, and everyone at the site needs to have the Arogya Setu app installed. Additionally, ambulance, doctors, and nurses are compulsory inclusions on the set, and actors aged over 65 years of age are not allowed to work.

Despite the permissions, some players remain cautious. It is still a waiting game for digital entertainment company Pocket Aces. "In terms of timelines, we will wait for others to go on the floor and see how the situation pans out and then probably take a decision," founder Ashwin Suresh said. "We do not want to be the first in line to do any of these things since there is no capital constraint or urgency to go on the floor until everything is extremely safe."

The company is evaluating which shoots need to start first when restrictions ease up. "Even for these shoots, all of the pre-production that can be done remotely will continue the same way, minimizing any physical contact on sets and reducing travel as much as we can to uncontrolled locations," he said.

Experts say that the larger outdoor shoots may be riskier, and content creators may need to adapt to different kinds and styles of content.

COVID-19 will end sooner or later, however, search for newer content will continue, even increase further. The service providers have an opportunity to provide good content and attract new customers. ●

OTT and its future in India

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Dangal TV

Over-the-top (OTT) media service covers a wide range of online content providers that provide streaming media as a product. OTT usually refers to video-on-demand (VoD) platforms. The OTT service does not require the traditional media distribution channels like cable TV providers and telecommunications networks. This service can be accessed as long as you have access to internet connectivity.

India, one of the largest video and other content consuming markets in the world, the digital and smartphone revolutions have played their roles in giving a huge boost to this segment in the past few years. The future of OTT is also promising in the country with the largest number of young people in the world.

OTT growth story

OTT players now realize that offering different consumption options is beneficial in this market. This includes options like unlimited usage in certain areas, different payment tiers for different services in lesser development markets, and the affordability game in some areas.

Content creators are coming up with new and innovative ways to attract consumers. Marketers are looking for new ways to touch consumers at the point of consumption. They are also seeking ways to point consumers immediately toward purchase. Many players are leveraging the capabilities of AI in understanding consumer interests and consumption habits to create content that appeals to individual users. These OTT players are relying on consumer data like streaming music and news, and products they purchase to present them with content they will most likely consume.

Television subscription

TV subscription is expected to grow by a CAGR of 11.85 percent by 2023 to reach ₹1.23 lakh crore. The state broadcaster's DD Free Dish (direct-to-home platform) has played a big role in the rural local's continual dependence on television.

Future of OTT in India

If we talk about the future of OTT in India, there is a huge market for the OTT industry platforms like Hotstar, SonyLiv, Amazon Prime Video, Voot, MX TV, etc. India is the only country where more than 50 percent of its population is below the age of 25 and more than 65 percent below the age of 35.

And, nowadays everyone owns a smartphone and this COVID-19 pandemic situation followed by a nationwide lockdown has provided an impetus to OTT platforms and given a new rise to the OTT industry. Even producers and filmmakers are showcasing their films on these platforms.

Hence, it is likely that in future we will consume all movies on OTT platforms. First day first show is everyone's dream, which will now come true through OTT platforms.

Currently, the OTT market is mostly dominated by advertising-based platforms. However, subscription-based services are growing at a much faster rate. From an overall growth perspective, the OTT segment is extremely bullish as far as India is concerned. Original content is likely to be the key growth driver for the OTT industry in the coming years

Telecom companies boost OTT platforms

The launch of 4G services at affordable prices is claimed to have played the biggest role in changing the entire OTT landscape in the country. The industry seems to be growing at almost an exponential rate in this market. Given the sheer size of the Indian consumer market, it is fair to think that it will be some time before the OTT sector will reach a saturation point here.

In summary

The Indian movie and entertainment industry is undergoing a revolution that is specifically spurred by the boom in OTT services. ●

Catching up with the audio arts

Rather than changes to workflows, the lockdown period has prompted a review of business strategies–which is fairly universal in the post-world. But if there has been one particular area in which all vendors have taken action over the last few months it is in terms of supporting increased remote working.

In the age of next generation audio (NGA), broadcasters are seeking solutions that can remain responsive to the still-evolving expectations surrounding immersive audio production. The amount of interest in immersive audio has been growing for some time. A lot of people are giving very careful thought to how they might deliver immersive audio, and for what types of content.

It is probable that many broadcasters will be taking at least some of their cues in response to the popularity of Olympic Games coverage to be held in 2021. In late 2019, it was confirmed that all audio at the Games would be produced using 16 audio channels, with broadcasters able to subscribe to channel layouts from stereo up to 5.1.4 with extra audio objects. Olympic Broadcast Services has underlined the need to be format-agnostic, so broadcasters will have the opportunity to deliver immersive services using the two dominant formats: Dolby Atmos and MPEG-H 3D audio.

No doubt the consumer interest in experiencing the Olympics in immersive sound–either via a multi-channel speaker set-up or, more likely, a solitary soundbar–will be monitored closely. In the meantime, vendors are continuing to focus on providing NGA solutions that can, as much as possible, be integrated into existing workflows, and allow engineers to deliver immersive audio mixes without adding unduly to their workloads.

Trends driving pro audio market

A sea of additional publisher content in the audio format is emerging and driving the industry. News publications and other producers of written content are now embracing audio as a major addition to better serve their readers in our mobile society. This is not just podcasts, but a more comprehensive move to incorporate spoken word content into everyday communications. Audio offers greater opportunities for anyone to reach larger and more diverse audiences. Digital audio will continue to grow as a major trend with a vast range of users.

Broadcasters have traditionally been slow to improve their audio. But streaming has changed that by improving streamed audio across the board. Today's immersive audio

tools and different mixing environments allow audio pros to dramatically alter how they tell stories and evoke emotions through sonic elements.

Streaming audio is not limited to feature films, but is now available on every type of programming. Atmos, higher bitrates and an increase in the number of projects produced in surround sound lead the way. The immersive theatrical audio experience has evolved to not only the living room and headphones, but to personal computers including laptops.

The technology for immersive sound production has been getting easier in 2020. Audio pros will continue to transition from pure technicians to a new realization that telling stories through sound is what is most important. Foley, an almost ancient technology, has emerged as a sophisticated new storytelling medium itself. 2020 has become about broadcast television trying to catch up with streaming media in the audio arts.

Immersive sound is exploding into new areas. It may have begun by being targeted to virtual and augmented reality, but those experimenting with it have found new applications. Immersive audio can evoke emotional reactions beyond visual communication. It is a good bet that 360-degree audio will soon become the norm on all devices and channels from headphones, stereos, and smart speakers to laptops, theaters, and cinemas.

Music is also being impacted by immersive sound. Music is now expanding the lines between musical elements and sound effects. Experimenters have learned it can be interchangeable. Audio professionals are trying to better understand the story-telling element completely and sort out the technical aspects from the creative.

On the technical side, cloud technology is continuing to develop in pro audio. This includes storage, backup, archive, and collaboration. Users still want all their files on a secure server that can be accessed anywhere. In 2020, A/V networking is continuing to grow. Eventually, everything will be connected on converged data and media networks. Networking with an interoperable backbone is the enabling technology. A key goal is to refine an audio and video networking solution that can scale and evolve to meet future needs.

Early in January 2020, the Bluetooth Special Interest Group announced a standard called LE (Low Energy) Audio, designed for Bluetooth audio. This new standard, different from Bluetooth 5.0, includes a broadcast audio feature, which is essentially universal audio sharing.

As 2020 began, Bluetooth audio finally came of age. Pro audio manufacturers are now touting their Bluetooth gear as meeting professional standards. This includes headphones for professional audio monitoring. The new standard offers better quality, lower battery life and multiple streams. LE Audio includes a new high-quality, but low-power audio codec called Low Complexity Communications Codec (LC3).

The Bluetooth LE audio standard creates a universal system for audio, expanding it to a wide range of headphones and devices. And, in case one loses their hearing, LE Audio adds support for hearing aids.

In the box mixing workflows

OTT services are now adding significantly to interest in, and demand for, immersive mixing. Major streaming services like Netflix and Amazon are now requiring Dolby Atmos deliverables from content creators. In general, re-recording mixing engineers have a lot more to think about and deliver when they are mixing for an immersive experience. It puts more pressure on the audio production teams to make sure the audio deliverables are mixed for a variety of mediums. To this end, audio vendors are continuing to focus on the further streamlining of workflows so they can accommodate NGA productions seamlessly.

Different broadcasters, different approaches

The current position of broadcast on the trajectory of NGA adoption can be difficult to assess. It varies quite a bit with some broadcasters still evaluating how to achieve it, and others who have already declared which format to support. Over time, it has become evident that a range of productions can be accommodated with microphone configurations based around surround sound microphone products, classic spot microphones (wireless), and HRTF (head-related transfer function), or double MS (mid-side) set-ups that succeed in achieving clear speech recognition with an immersive feel.

Deeper into different platforms

As far as widespread adoption across different market sectors goes, there is little doubt that Dolby Atmos remains at the head of the pack for now. Accordingly, Dolby continues to see great opportunities to make the use of NGA easier by going deeper and deeper into different platforms. Like many other observers, the Olympics is expected to be a good way to gauge the extent of consumer

adoption, and is enthusiastic about OBS' format-agnostic approach.

The changing face of audio monitoring

In today's IT-dominated world, with its increasing reliance on virtualization, it would be easy to assume that the physical audio monitoring unit (AMU) is becoming as archaic as the cathode ray tube. But while there is greater reliance on software, hardware is not completely out of the picture.

Although over the longer term, a gradual change from hardware to software solutions is envisaged, currently the two go hand-in-hand and remain totally complementary to each other. A general mix of the two is still preferable. These are significantly more software reliant than the older products with representational state transfer [REST] infrastructure technology and APIs facilitating remote access and control.

The whole industry has been undergoing a gradual shift from purely hardware solutions toward hardware and software and most recently to software only. Using software presents opportunities for us to measure audio levels and visualize them in a variety of new ways. Sound engineers can now freely select different audio scales and set the appropriate audio reference level with ease.

The main draw is that there is not really a practical way to measure loudness faster than real time using hardware. Loudness is measured over time and small changes to a mix result in a full re-measure, which can take an hour. Software-based solutions have time-saving features like real-time loudness measurement and the history function.

Work to improve loudness measurement is constantly ongoing. This is shown by loudness featuring heavily in the ATSC Recommended Practice document Conversion of ATSC 3.0 Services for Redistribution and the revised version of the EBU R128 standard. Loudness standards are being updated so they can be more effective for high definition and streaming services. New software-oriented AMUs can be easily upgraded to accommodate new algorithms.

Audio over IP

It would be fair to say that another example of this approach is how AMU companies have handled the increasing use of audio over IP (AoIP) in broadcasting for networking and connectivity. It is the latest standard within audio and video over IP and the industry expects it to replace SDI solutions over time.

Compared to ST 2022-6 and ST 2110, AoIP technologies are well established, giving the opportunity of being able to create an audio network rather than relying on point-to-point system architectures. But until AoIP becomes dominant for transporting audio, AES3, and MADI will continue to have a future.

AoIP now accounts for a significant proportion of AMU sales, but points out that only a very small percentage of orders do not feature other signal formats. Analog is in heavy decline but most of the products continue to be ordered with a mix of AES3, MADI, or SDI.

New reality for production

Another aspect of AoIP that is adding a new dimension to audio monitoring is the ability to network and interconnect over distances. This allows for remote working, which has become a necessity during the coronavirus crisis.

With COVID-19, a great many customers have been forced to adopt different workflows, especially those involved in the live production of sporting events. While remote

production is nothing new for many broadcasters, many of them have now accelerated their plans to adopt remote production as their new normal going forward.

As for the future of audio monitoring in a broadcast world of ever more channels and platforms, the main manufacturers are keeping an eye on new or emerging standards and technologies. There may not be any demand yet for ATSC 3.0 as a transmission standard but there are products in the market to monitor MPEG-2/4 and Dolby Atmos. ATSC 3.0 is enabling more consumers to experience object-based audio formats like Dolby Atmos over the air.

From its humble roots as a moving coil meter, audio monitoring looks certain to carry on evolving and play a major role in ensuring that new broadcast formats work properly.

Outlook

Across the media industry, audio companies are leaders in innovation. Revisiting time-tested strategies for improving performance and increase collaboration, and education of brands and agency partners is now being the need of the hour.

Increased support for next generation audio and making complex remote working scenarios more practical during lockdown are among the headline trends. As audio post headed into lockdown in March, it was certainly no bad thing that the previous 12–18 months had been fairly strong throughout the business. More diverse workloads and rising levels of production fueled by the streaming revolution have contributed to a post sector that is both robust and responsive to change.

As an emerging platform with strong growth, the audio industry may be better positioned to weather the current condition than other legacy media. As the audience for podcasting and online audio grows, and new devices like smart speakers make it easier to access content, advertisers have been increasing their investment in audio. However, in this devastating economic downturn, no one is immune and audio companies are bracing for losses.

Inevitably, the extent to which activity levels have been affected by coronavirus varies–sometimes considerably–from company to company. But the often solitary nature of core audio post tasks like mixing and dubbing has meant the sector appears to have been less heavily impacted than some others. Moreover, where operators have had more downtime, there has been a not entirely unwelcome opportunity to review infrastructure and priorities in a rapidly changing market.

Rather than changes to workflows, the lockdown period has prompted a review of business strategies–which is fairly universal in the post-world. But if there has been one particular area in which all vendors have taken action over the last few months, it is in terms of supporting increased remote working.

Looking forward, more platforms are being supported as well as extra tools are becoming available that make it easier to produce audio in Dolby Atmos. More generally in terms of NGA production, further developments are anticipated that allow broadcasters to maintain loudness control across the new formats.

Loudness continues to be a notable topic and there will be developments that seek to make loudness compliance as easy in the new formats as it now is in 5.1. Of course, that took a while to get right in stereo, never mind the higher quality formats, but it will come over the coming years and could be another important step in taking NGA to the next level of awareness. ●

Media industry embraces streaming transformation

DTC streaming services are creating tremendous opportunities for legacy media companies while, at the same time, transforming the industry and driving new finance, tax, marketing, regulatory, and operational requirements, concludes a KPMG report.

Media companies with rich content libraries are well-positioned for streaming success but launching a direct-to-consumer (DTC) streaming service is not just a simple change in their distribution model—it is a fundamental shift in the way their business works.

To compete successfully, these historically business-to-business (B2B) companies need to build and scale a business-to-consumer (B2C) operating model in which the economics are vastly different. The rapid move to streaming resonates throughout the content ecosystem—legacy media companies launching services, as well as producers licensing content to streaming providers—but under a different business paradigm.

Entertainment giants have long relied on a linear model with well-defined release windows and licensing structures to license and distribute their film, television, and home entertainment content. But in the streaming ecosystem, many are struggling to drive revenue and capture a bigger share of consumers' wallets.

Subscribers have embraced new streaming services from top brands, with more expected to emerge throughout 2021. With the increasing number of streaming options, price wars, and the cost of high-quality content, there is no direct line of sight to profits.

Layer in differences in production and content valuation, profit participations, deal structures and changes to the value chain, and charting the path to profitability becomes even more complex. There is also the analytics piece to determine the number of total streams, who is watching, what they are watching and for how long, and to incorporate that data into the revenue model.

The audience potential for streaming services extends far beyond the US, and the international market is a key battlefield. There is tremendous opportunity for subscriber growth, but international is also more challenging to navigate with varying regulations, language and local-content considerations, and tax regimes.

For streaming video providers, the value chain extends from creation through delivery and customer experience. This requires new skills and introduces a variety of operating and business considerations that media companies have historically entrusted to their business

and distribution partners. Even studios and content producers that are not launching streaming services of their own are seeing their business models transform by the growing number of streaming platforms.

All content producers are adjusting to streaming impacts. While most attention focuses on content producers launching streaming services, the transformative shift toward streaming is upending the business models of all content providers—whether or not they are launching streaming services of their own. For example, executing contracts in which content reaches the consumer directly through a streaming platform creates new challenges. As these arrangements cross borders, there is complexity with regulatory compliance that has historically been managed by third-party distribution companies. To accommodate the implications of streaming contracts, studios, and content producers may need to adjust their legal entity reporting structure to allow for the relevant information to be captured as content is moved, domestically and internationally, through the organization. Specifically, the allocation of streaming revenue by jurisdiction is important for the determination of local and VAT taxes, foreign currency translation and exchange, and statutory reporting requirements. This information has historically been captured and reported by third-party distributors under the B2B. That structure likely would not accommodate the organization's financial reporting and regulatory compliance needs under a DTC streaming arrangement.

Winning the customer

Market drivers. As the streaming market evolves, the question of *who our customer is* may seem simple, but the answer is complex and subscriber data only tells part of the story. Providers have to identify: who actually influences the purchasing decision; what is the right metric for customer engagement; and do traditional measures like monthly active users (MAUs) or daily active users (DAUs) have value in the streaming ecosystem?

There are equally weighty questions about how content creators build and maintain their relationship with customers and the larger viewing audience. Marketing, billing, customer service, and customer retention are all critical capabilities, as is having strong analytics to understand consumer preferences and behaviors.

Data about consumer viewing habits and the popularity of specific titles can provide compelling opportunities for DTC providers agile enough to understand the data and generate insights quickly. Knowing which content resonates with specific customers and demographic groups will help influence future content decisions and can improve customer attraction and retention. But balancing data collection and data privacy can be tricky.

Keys to success. The interrelationship between the value chain, operational model, and customer engagement must be balanced delicately. Providers must define the customer, and the data used to understand success metrics, keeping these questions in mind: how do you engage with the customer and protect customer data; how do you provide and maintain customer support and service channels; and how do you drive more profit per customer?

Actionable insights. Customer data and payment processing requires new skill sets, and introduces data privacy risk issues. Advanced analytics can help providers maximize the value of their customer behavior data, but also requires being a good steward of the vast amounts of data they collect. Providers must avoid issues common to cable companies, such as churn. Personalizing content and recommendation engines offers tremendous opportunities in optimizing the customer experience.

Optimizing the DTC-ready operating

Market drivers. Reaching consumers directly—rather than through third-party distributors—represents a major operational change for content providers that includes establishing new technology infrastructures, billing relationships, customer service functions, and stronger data governance, and compliance frameworks.

Streaming requires an operating model that allows providers to serve domestic and international audiences efficiently and cost-effectively. The dramatic shift from a B2B to a B2C orientation depends on a DTC operation that is frictionless, integrated, and well controlled.

Content providers also need to blend previously independent entities like production, distribution, and other business units, which were traditionally siloed in a B2B environment or performed by external partners.

Keys to success. Meeting these goals requires providers to master a variety of new skills including: technology to support content delivery through a mobile-first customer experience; direct marketing to consumers; customer service, communications, and problem resolution; billing procedures to support a DTC subscription model; capturing detailed viewing data, and having the deep analytic capabilities to create value from the data; and

understanding the return on content—how much a given title contributes to the value of a subscription; differentiating oneself from the competition with a distinctive content proposition.

Another critical challenge is determining the metrics that help providers evaluate the performance of their operations and the value of their content in a streaming environment. This varies for different providers, with some using content to attract customers to drive revenue in other business units.

Actionable insights. Regardless of the business model, deciding what to measure—and how to measure it—is a key operational issue. Future key indicators might include return on content and an ecosystem multiplier. Consumers expect a frictionless environment with the ability to watch content anytime, on any device, at a price they consider reasonable. Providers should place a high priority on the accuracy of data for reporting, maintaining the integrity of information for billing and customer service, and strict adherence to regulatory expectations. Operations must be well controlled to ensure accuracy, integrity, and compliance.

Managing international complexities

Market drivers. International distribution presents a number of operational and reporting challenges. Some early considerations include operating structures, rights ownership, taxes and transfer pricing, the amount of US versus non-US content, and where that content will be produced.

As content providers explore new business models, jurisdictions are introducing new taxes on digital services and trying to extend taxes on wireless data services to video streaming.

Providers need to create an operating structure (either regional, local, or a blend depending on market size) and identify which entity is going to engage with the customer. This will largely be a business or operating decision, based in part on how much local content a streaming service will offer.

Additionally, for large territories that have a significant amount of local content produced or available in that jurisdiction, there may be different considerations around ownership of the content or licensing agreements.

Keys to success. International taxation is a critical success factor that is complicated, in part, by the fact that DTC business models are still early in their development and unproven. Providers need to plan for international taxation and transfer pricing while maintaining enough flexibility to adjust as new laws are enacted and others evolve. One potential advantage for providers is that, depending on where the entity is domiciled or located, considerations regarding tax reporting will likely be more straightforward internationally, where VAT plays a larger role, than it does in the US.

Actionable insights. Flexibility is key. Because streaming deals cross borders, regulatory and compliance controls need to be carefully considered. Providers are basing decisions on what current tax regimes look like. These are changing, especially as it relates to digital services. The streaming business has not reached full market maturity. Because many of the current competitors are pouring billions into ramping up, ultimate success can only be achieved on a global scale.

Dynamic revenue models

Market drivers. Some consumers prefer lower-cost ad-supported services, while others will pay more for ad-free premium offerings. Viewer data can help providers optimize the content mix for various segments and price points. SVoD is the most prevalent option, but price sensitivity is making ad-supported options much more appealing to consumers: AVoD, a no-cost, advertising-supported model; subsidized subscription; ad-deferred, reduced subscription rate, in exchange for agreement to watch some ads; tiered subscription model with various ad options; and free ad-based services.

Consumers, especially younger consumers (18-24—prefer an ad-free streaming offering, but are often willing to sit through ads to reduce subscription costs, according to KPMG customer streaming survey.

Most new providers view their streaming services initially as loss leaders as they try to attract consumers. Providers with other revenue sources may be able to sustain DTC losses longer if they can use their consumer relationships, and the data those services generate, to drive revenue in other divisions. Some providers will also need to consider the channel and partnership economics as the apps for DTC offerings are served up on different platforms for a price, as well as the big partnerships that have been struck between wireless providers and streaming services.

As providers begin to bundle multiple offerings, the economics surrounding bundles add another layer of complexity.

Keys to success. Ultimately, pricing is a function of market capture, and therefore, it is a race to vein the consumer. Striking the right balance between content, pricing, and ease of use is the sweet spot for most streaming services. The lack of sophistication in the way ads are served on streaming platforms is a major frustration for consumers who tire of seeing the same ads repeated over and over again. More effective analytics can address this challenge and, as a benefit, increase each ad's value to brands while also reducing consumer frustration.

Actionable insights. Data capture and quality can have a significant impact because the ability to identify true, validated, unique viewers would give the advertiser greater confidence on the reach of their ads and spend. Cobbling together the right mix of content at the right price is increasingly challenging; however, introductory promotions for free or discounted streaming subscriptions offer incentives to consumers to test drive newly launched services without adding to their monthly send.

The resurgence of bundle

The number of streaming services has exploded. For consumers, managing content offerings across multiple services can become tedious and expensive. Curation and aggregation are increasingly important. There may be a return of the intermediate bundlers in the form of highly accurate recommendation engines, curation across platforms, specialty brands, or even fractionalized membership streaming models.

As pricing for streaming services moves toward sustainable models, niche operators may welcome the return of the bundlers. One option is a bundler that makes arrangements with one of the streaming titans for premier content at a premium price per view. There may also be the advent of super bundles that encompass more than just video streaming, including music, audio books, and other forms of digital entertainment. Bundlers could not only help provide recommendations but also support superior targeted advertising for the streaming services that allow it.

Intelligent finance transformation

Market drivers. The streaming business has upended long-established models, including content licensing and release windows, ultimates calculations, distribution costs and fees, and revenue models. The economics of a particular title and its influence from a revenue perspective is also unclear and hard to measure.

The economics are vastly different in the streaming business, and most providers are still struggling with a path to profitability. Building a dynamic and automated finance organization that is more responsive and analytically oriented is essential. For example, traditional content licensing deals and corresponding commissions or royalties reported on a lag have given way to a much different revenue model with subscriber additions and losses reported hourly, resulting in millions of transactions. The finance function must be very creative in determining title profitability, and predictive, with an increased focus on automation and analytics.

Keys to success. As studios distribute their content directly to the consumer, they have to address a variety of nuanced considerations: aligning content production and distribution under the DTC operation, which owns licensing and marketing promotions for all titles and content; creating success metrics that measure growth, progress, and chum accurately in a dynamic operating environment; updating and automating the financial reporting model and adding data and analytics capabilities; and measuring growth, progress, and churn. And with customers likely to add and drop subscriptions based on the seasonal availability of high-profile original programs, is churn a relevant metric for streaming providers?

Actionable insights. Pricing analysis is much more difficult in a streaming environment. Focusing on competitive pricing, scalability, and smooth customer relationships to reduce churn will help streaming providers sustain profitability and evolve with their customer base, but that's a complicated proposition.

Providers need to build systems that can bill, collect, and report each individual transaction with millions of consumers spread around the country. Having access to real-time data can facilitate more predictive analysis around revenue and pricing.

DTC providers also face the business imperative of understanding their financial obligations as they create a service and establish pricing models that impact state and local sales tax, and other indirect tax returns that these entities did not have to concern themselves with in the past. Failing to anticipate or account for tax payments in the jurisdictions in which they serve customers, for instance, can create revenue leakage through costs that were not budgeted when the service was established.

DTC providers will need a full awareness of their operating costs under a streaming model before they engage with consumers.

Based on Media Industry Embraces Streaming Transformation, a KPMG report. ●

Streaming in the 2020s—an industry comes of age

There will be a diverse, competitive, and dynamic streaming industry, closely integrated with the wider media and entertainment market. Streaming services will routinely complement and provide additional optionality for TV and film companies, in terms of windowing and monetization.

During the last decade, video streaming services have come of age. Media and entertainment companies around the world have made rapid progress in developing and launching high-quality services in their domestic markets, and many are now launching services internationally. The 2020s will be the streaming decade, marked by a steady shift toward on-demand, app-based multiscreen viewing—with profound implications for the future of the industry. Despite their rapid growth and development, streaming services remain a relatively new part of the industry.

It was only in the mid-2000s that broadband speeds and costs had improved sufficiently to support the launch of a service like YouTube, and Netflix only launched its streaming service in the USA in 2007. Moreover, the underlying technologies and infrastructure supporting streaming services have evolved rapidly during the last decade, with new standards and streaming media formats, new devices and operating systems, a shift from browsers on PCs to smartphones and apps on connected TVs, and the growing adoption of public cloud and microservices architectures.

The dawn of the new decade—streaming comes of age

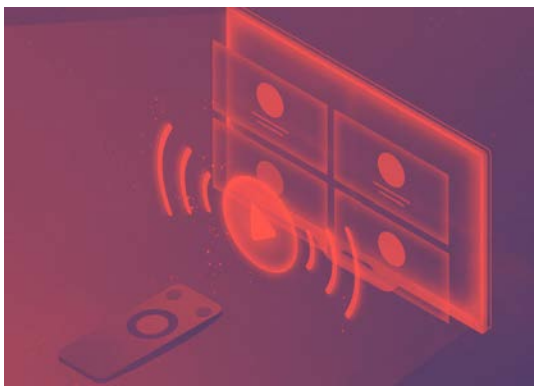
Nearly 20 years since the first broadband internet services began to roll out, the media and entertainment industries have embraced streaming. Around the world, major media conglomerates, commercial broadcasters, pay-TV providers, rights holders, and a wide range of video start-ups have launched streaming services, with notable recent launches including NBC Universal's Peacock, WarnerMedia's HBO Max, and Quibi. Although the growth and development of streaming has undoubtedly been one of the most important developments of the last decade, it is easy to forget how relatively new streaming is, in its current guise.

In 2002, Flash-based video players began to proliferate, and streaming media began to take off, with the launch of YouTube, Netflix, and the first streaming TV services

in the mid- to late-2000s. However, it was the launch of internet standards like HTML5 and HTTP-based adaptive streaming, which quickly became the formats of choice for premium streaming services and live-streamed events, that saw streaming TV truly come of age. MPEG-DASH (dynamic adaptive streaming over HTTP), the foundation of today's streaming industry, was formally ratified as a standard only in 2011, supporting the delivery of on-demand video, live streaming and time-shifted services, either multiplexed or as independent streams, over existing internet infrastructure, with the support of CDNs.

Since then, streaming has developed rapidly, supported by the growth of connected TVs, ongoing improvements in fixed and mobile broadband availability and speed, and by the rapid development of cloud services. Equally importantly, the widespread adoption of codecs like H.264 to support better video compression have made a huge difference during the last decade. Taken together, these developments have made it far easier to set up and rapidly deploy streaming TV services over the internet.

Current approaches—how are companies managing their TV streaming services?



As the market has evolved, so too have the approaches adopted by media and entertainment companies to managing and operating their streaming services. It is a long journey to operational stability, although there is still much work to be done. Today, TV industry operating models for streaming services fall into three broad categories, varying roughly in line with the scale, complexity, and maturity of the offering: Small-scale providers, relying on outsourcing models, self-serve streaming platforms, and cloud-based service tools to monetize their video content libraries; mid-scale companies, typically operating streaming services with a mix of internal and external; and large media and entertainment companies, with large internal technology and operations teams, typically numbering several hundred staff.

Operational scale—investments correspond to operational complexity

Why do approaches vary so much between these different tiers of service? In general, the simplest streaming services tend to operate on a standalone basis, separate from any broadcast channel, offering smaller catalogs of library material or pre-existing content. In addition to scale, there are four important use cases that drive operational complexity, resulting in a need for larger teams and increased investment:

- In many countries, larger commercial networks are often running streaming services that are closely aligned to their broadcast channels, providing live simulcasts, catch-up content, and library or archive material;
- Delivering live services like sports and news, is another challenge, especially for services that can attract a large number of concurrent viewers;
- Virtual MVPD (vMVPD) offerings, incorporating channels from multiple suppliers, is also highly complex, especially when the vMVPD service includes a combination of live and non-live content; and
- The cultural and operational challenges of agile development at internet speed within an incumbent broadcasting business.

Converging on best practice—common themes

After nearly of decade of operating their services, what does best practice look like? Many Tier-I providers are converging on common approaches and best practices:

- All of the top tier providers have established well-resourced internal teams to support their streaming services, working hand-in-hand with expert suppliers and service providers;
- A steady transition toward microservices architectures over the course of the last decade;
- A concerted effort to run multiple streaming services applications from the same back-end platforms; and
- Many providers refer to a common challenge, relating to the resources required to develop and maintain streaming applications across multiple devices and platforms.

In many cases, providers use specialist developers to build applications for certain platforms. They use third-party developers to build apps on certain platforms, outsourcing development of iOS and Android to specialists. It does not make sense to have in-house specialists for every platform. Others are experimenting with solutions like React Native, which supports cross-platform app development for iOS and Android, as an alternative to fully native app development.

The next 5 years

How do executives believe the streaming market will develop over the coming years? Perhaps unsurprisingly, there are widespread expectations that a decade of

further change and disruption lies ahead, as the ongoing growth of streaming continues to drive changes to TV consumption and business models—creating a growing need for business transformation across the media and entertainment industries. Four key developments informing their thinking about the future:

The growth of streaming will continue to drive transformation. Up until recently, streaming services were undervalued and, in some cases, underinvested. Apps were poorly aligned with broadcast channels and were often used to house a collection of random library content, with poor usability and limited marketing support. That mindset has changed. Inevitably, there is a growth of in-home media consumption driven by the COVID-19 pandemic and the shelter-at-home mandates in force in many countries.

Consumption of TV and streaming services is up, generally by around 30 percent or more year-on-year, versus previous months, with providers expecting to see consumption continue to grow, as audiences become more familiar with what is available. How will the growth of streaming services change the market? The most important consequence expected is a significant increase in competition, for audiences and subscribers.

Smaller networks can survive and play in the niches. Companies anticipate an exciting future for niche channels, with a far greater diversity of distribution options. The costs of running channels are also expected to come down.

Ad-funding will drive the next wave of streaming services. As streaming services grow, providers expect to see advertiser investment in OTT grow steadily, as advertisers can take advantage of better targeting and better measurement than on traditional over the air, cable, or satellite networks. Magna Global recently predicted, before the current crisis, 31 percennt year-on-year growth in OTT ad revenues in 2020, reaching around USD5 billion. Hybrid models are seen as the way forward for many networks, with some viewers paying more for an ad-free version, and others paying less for an ad-lite offering. Many networks see the growth of streaming as a compelling opportunity for growing advertising revenues.

The re-aggregation opportunity. Re-aggregation will be an important theme in the next decade, as streaming platforms, device manufacturers, vMVPDs, and MVPDs create their own bundles of various OTT services and channels. Recommendations and discovery are seen as a potential driver.

The road ahead—transformation priorities for the 2020s

Clearly, priorities vary across the different categories of streaming service provider. For smaller providers, transformation from current approaches is widely seen as challenging. For Tier-I providers, the major commercial networks, and MVPDS, four main priorities for digital transformation have emerged:

- Priority 1: Building delivery models to reliably support high-quality streaming experiences and rapid growth;
- Priority 2: Completing the digital transformation of broadcasting operations;
- Priority 3: Harnessing the opportunities afforded by machine learning and automation; and
- Priority 4: Developing integrated solutions for advanced TV and video advertising.

A vision for 2025

Looking ahead, if everything comes together, how will leading media and entertainment companies be running their streaming services in 2025? The industry foresees a diverse, competitive, and dynamic streaming industry, closely integrated with the wider media and entertainment market. Streaming services will routinely complement and provide additional optionality for TV and film companies, in terms of windowing and monetization.

The market will include distinctive tiers of provider, including light-touch services delivering content predominantly via third-party streaming platforms and channel marketplaces (a self-service model) at one end and fully featured, high-end streaming services at the other.

By 2025, the best TV streaming services will benefit from:

- An optimized delivery environment that supports the delivery of streaming services, live and on demand, at scale—to major markets around the world;
- A more integrated approach to advertising, end-to-end, that allows TV and streaming services, linear and non-linear, to be transacted at scale, seamlessly;
- An AI-powered industry, making extensive use of machine learning and automation to improve workflows, customer experience, content curation, and monetization; and
- Transformed broadcasting operations, more agile and running on cloud, supporting a much faster pace of innovation.

Based on The TV 2025 Initiative: Streaming in the 2020s—an industry comes of age, an MTM-Comcast Technology Solutions report. ●

Satellite–A key position in the future of broadcast

Satellite is constantly developing and evolving, as we sit on the cusp of the 5G era, making it the perfect solution to provide streaming services, and ultimately remains critical in the age of OTT, whether we are challenged by a global pandemic or not.

The last few years have heralded a significant change in the media and broadcast sector. Applications and technology are evolving, on a variety of different levels. The way in which individuals consume content has changed, markedly. The digitization of the sector has meant that the use of IP is overtaking more traditional means of broadcasting.

The rise of the internet and availability of mobile and personal devices has sparked a revolution in streaming services. This is a market in transformation, and it is an exciting time as more and more becomes possible–more choice, more content, more personalization.

The effect of COVID-19 has also had an impact on the current broadcasting landscape in positive and negative ways. The requirement for people to stay at home has resulted in a huge rise in subscriptions for and overall usage of streaming services. This demand is creating congested networks and a struggle to serve customers on overloaded terrestrial networks.

On the other hand, the pandemic has negatively impacted outside broadcasting (OB), especially owing to the lack of live sports broadcasts and newsgathering, as SNG trucks are parked up waiting for some sort of normality to return.

The role of satellite in this transformation is going to be significant owing to its innate and unique ability to deliver content to a large geographical area, anywhere on the planet, and far beyond the reach of any terrestrial network.

Let us take a look at two key areas where satellite forms a critical part of the broadcast connectivity jigsaw and the reasons why satellite is now more relevant than ever for mass market, premium content.

How satellite remains critical in the age of OTT

As millions of subscribers continue to indulge in streaming sites, over-the-top (OTT) services are expected to replace traditional viewing behavior. The demand for streaming services is skyrocketing, as people binge on applications to watch the latest and most-talked-about shows on various devices.

The question for broadcasters is how they can meet this demand, both in the short and long term. Previously, satellite was not thought to be compatible with OTT services–but it actually has a critical role to play as we move toward the future of content delivery–the OTT era.

Satellite transmission is the ideal solution for keeping costs under control, which is something operators and service providers have historically struggled with. Satellite's ability to multicast is unrivalled and it is integral to successful content distribution.

The attractive price point of satellite transmission is just one advantage it brings, with the capability to multicast as one of the main drivers. Another benefit is that technology can also deliver content efficiently over a vast geographical area. It can be cost-effectively scaled to a growing population of receivers and can be easily scaled to address more content.

Satellite is constantly developing and evolving, as we sit on the cusp of the 5G era, making it the perfect solution to provide streaming services, and ultimately remains critical in the age of OTT, whether we are challenged by a global pandemic or not.

All-IP newsgathering

Another major trend with satellite at its core is all-IP newsgathering. At the moment, live broadcasts are suspended, but sports and events will come back. The OB or SNG truck has become increasingly sophisticated as time has moved on, enabling broadcasters and news agencies to get to the scene rapidly to set up and start broadcasting within minutes, and to deliver their broadcast back to the studio via a contribution link.

A mix of technologies is employed to cover live events over a multiservice communications link. Today, a simple contribution link to relay the OB pictures back to headquarters is not enough. OB operators also require access to phone lines, the internet, email and file-transfer services. However, installation of these essential services is normally provided by fixed-line operators, and is very costly. Once the installation is completed, the services are often used on a one-time basis and very rarely used again. Installation of these critical services on board OB trucks eliminates the need for one-off installations and means that the services travel with the trucks wherever they are required.

Broadcasters need a flexible and adaptable satellite bandwidth management system, which can send IP traffic over satellite as efficiently as possible.

All-IP newsgathering provides a very flexible solution that enables reliable broadcasts and reduces overall costs. Scalability in geography and volume is also enabled by the IP-based transmission, creating endless options for content distribution across the globe.

Time to bust the myths

Satellite is too often overlooked in the broadcast world, as many still consider it an expensive option and perhaps even consider it latent, but it is time to start busting some of these myths. Satellite is a huge asset to any broadcaster's portfolio, and it has an enormously bright future in the sector.

Where terrestrial networks become congested, satellite steps in. Where terrestrial networks cannot reach, satellite can. Where the ability to multicast is not available, satellite prevails. Where terrestrial connectivity is not available, satellite provides the infrastructure, no matter where it is needed.

The media landscape may be evolving, but satellite has the agility to move with it–anywhere.

The author is Hans Massart, head media and broadcast, ST Engineering iDirect. ●

Framework for OTT communication services

India is a lucrative market for OTT platforms. The digital and smartphone revolutions have played their roles in giving a huge boost to this segment in the past few years. With the content on OTT platforms being published without any effective central regulation, the need for dedicated rules for the video streaming players has come to the forefront as the content disseminated by OTT platforms does not go through the same regulations that content aired on televisions or released in theaters or published in print, which does not create a level playing field for all the stakeholders. Many content creators, therefore, take the OTT route to release their content to bypass these regulations.

The Department of Telecommunications (DoT), in a March 2016 reference letter, sought the recommendations of the Telecom Regulatory Authority of India (TRAI) on net neutrality and other related aspects like economic, security, and privacy issues, and regulatory framework for OTT services similar to services provided by Telecom Service Providers (TSPs), etc. Considering the complexity of the issuesa and other interrelated issues, the authority dealt with specific issues through distinct consultation processes.

Consultation process and responses of the stakeholders

On November 12, 2018, TRAI issued a consultation paper on the residual issue, i.e., regulatory framework for OTT communication services, and raised various issues for comments and counter-comments from stakeholders. Key responses received from the stakeholders on the issues raised in the consultation paper are:

- *Framework for OTT communication services*

Substitutability primary criterion for comparison of regulatory or licensing norms and lists of such services. Some stakeholders suggested lists of services based on functional substitutability such as voice telephony (VoIP), messages (SMS), video calls, and instant messaging service. Functional substitutability may be the primary criterion for comparison of regulatory or licensing norms. However, other stakeholders highlighted that OTTs and TSPs operate in different layers, and OTTs are not substitutable but dependent on TSPs for network access. TSPs have exclusive rights like spectrum, interconnect with PSTN, network infrastructure, and obtain numbering resources.

Issue of non-level playing field between OTT providers and TSPs, impact on infusion of investments in the telecom networks and regulatory approach for OTT communication service providers. Some stakeholders agree that the issue of non-level playing field exists, and they proposed that OTT regulatory regime should mandate compliance to requirements like various regulatory requirements. While some stakeholders commented that no such issue exists as OTT operates in an extremely competitive market, OTT providers do not control infrastructure, and TSPs can directly use spectrum. Most of the stakeholders proposed that reducing the legacy regulatory barriers on TSPs, especially license fees, spectrum usage charges, other levies, and taxes, may improve the business case for TSPs. Some stakeholders suggested that regulatory or licensing imbalance is impacting infusion of investments. Some stakeholders suggested that OTT service providers may participate in infusing investment in the telecom networks by working out commercial arrangements with TSPs and allowing TSPs to offer OTT packs to consumers. However, some stakeholders commented that licensing imbalance is not impacting any infusion of investments, and OTT providers have increased the investment of TSPs by building physical facilities like data centers, fiber networks, servers, and routers. TSPs charge customers a regular direct subscription fee, and OTT works on zero pricing. TSPs benefited due to

increased data usage by consumers with the use of OTT services.

Issues related to Interoperability, lawful interception of OTT communication and accessibility of emergency services. Majority of the stakeholders highlighted that interoperability may not be mandated among OTTs and should be left for market forces. Regarding interception of OTT communication services, some stakeholders commented in favor and submitted that OTT service providers collect and store personal information of the end users in their data servers located abroad, in turn leading to issues and dangers relating to data protection and national security. They have argued that it becomes difficult to retrieve the data due to jurisdictional issues. While some stakeholders suggested that the issue related to interception of OTT service providers whose data reside outside India may be resolved via the Clarifying Lawful Overseas Use of Data (CLOUD) Act1 of USA and the Budapest Convention arguing that these are effective solutions for cross-border data transfers. Other stakeholders proposed that data should be accessible in India-based servers. A few stakeholders mentioned that The Code of Criminal Procedure, 1973, (CrPC), and The Information Technology Act 20004 have sufficient rules that apply to OTT providers and other intermediaries. With regards to emergency services, some stakeholders representing consumers, and media services, agreed with the requirement of provisions for emergency services to be made accessible via OTT platforms. While most of the stakeholders opposed any measure for provisioning of emergency services.

Approaches adopted in other jurisdictions

Different approaches are being adopted in other jurisdictions for regulating OTT service providers like services provided by TSPs. Various countries have attempted to take measures regarding this issue. Jurisdictions like the European Union (EU) and Australia have enacted laws for electronic services, but they are still in the nascent stage of implementation. Indonesia has drafted some regulatory provisions but the final status of these is pending or in the proposal state. Few countries have specific laws and policies for regulating VoIP services, like the USA and Qatar. Countries like Russia, China, UAE, and Iran are using restrictive approaches by banning the OTT services using other national laws or court orders. Brazil is debating whether OTT services should be regulated. Countries like Argentina, Chile, Israel, South Korea, South Africa, Kenya, Ghana, Thailand, Sri Lanka, and Japan have not adopted any formal regulatory approach for OTT services. Some of them have provided apps like KakaoTalk17, Line18, and WeChat,19, respectively, as an alternative to foreign OTT services. Singapore and Malaysia have made regulatory licensing provisions for OTT Media services.

TRAI recommends

Economic aspects. Over the last few years, telecom has witnessed exponential growth in data traffic and service providers have launched tariff plans with unlimited voice usage as a part of data plans. It shows that with the increase in the usage of OTT, traffic of telecom services providers has also grown. Various studies on appropriate business models are already under consideration in various jurisdictions and it is emerging. Therefore, any regulatory prescription in haste may leave adverse impact on industry as a whole. Accordingly, the authority is of the opinion that market forces may be allowed to respond to the situation without prescribing any regulatory intervention. However, developments shall be monitored and intervention as felt necessary shall be done at appropriate time.

Security and privacy issues. Architecture of OTT communication services is evolving to protect the end users and encryption technology deployed in a manner, which prevents intermediaries from getting the communication in a clear text or in an intelligible form. Imposition of any requirements to cater to get the details of communication in an intelligible form or clear text would either lead to change in the entire architecture of such OTT services, which might not provide same level of protection as offered today or would require to introduce provisions that may make the agents involved in the communication vulnerable to unlawful actors. This matter is under examination of various international jurisdictions and no satisfactory solution has emerged as yet. As such, TRAI is of the view that no regulatory interventions are required at the moment.

Regulatory framework for OTT services. Regulation of OTT services is a widely debated topic in many jurisdictions as well as in ITU. While few jurisdictions have started exploring possibilities to regulate some aspects of a few OTT services through legal and technical measures, but these efforts are yet in nascent stage and the overwhelming majority of jurisdictions and the ITU are still studying various aspects of OTTs. Since, ITU deliberations are also at study level, therefore, conclusions may not be drawn regarding the regulatory framework of OTT services. However, in future, a framework may emerge regarding cooperation between OTT providers and telecom operators. DoT and TRAI are also actively participating in the ongoing deliberations in ITU on this issue. Based on the outcome of ITU deliberations, DoT and TRAI may take appropriate consultations in future. Hence, TRAI recommends that it is not an opportune moment to recommend a comprehensive regulatory framework for various aspects of services referred to as OTT services, beyond the extant laws and regulations prescribed presently. The matter may be looked into afresh when more clarity emerges in international jurisdictions particularly the study undertaken by ITU. ●

Blackmagic Design approves Delkin Juggler USB 3.2 SSD with URSA Mini Pro 12K

Delkin Devices' JUGGLER USB 3.2 Type-C solid-state drive has been officially approved by Blackmagic Design to work in the company's USB-C supported professional cinema cameras. This includes the anticipated Blackmagic Design URSA Mini Pro 12K, Pocket Cinema Camera 4K and 6K, as well as the URSA Mini Pro 4.6K G2. The JUGGLER is also approved to work in the Sigma fp mirrorless digital camera.

Jenn Sherry
Retail Sales and Marketing Manager, **Delkin Devices**

"We are proud and thankful to be included in Blackmagic Design's list of approved memory vendors. Blackmagic has become one of the premier manufacturers of professional cinema cameras and we are excited to offer products that are able to utilize the full capabilities of their high-end cameras. Serving the photo and video industry for over three decades, Delkin has built up a reputation of trust and reliability and we strive to maintain that, first and foremost through what we supply our valued customers."

North America

- *Blackmagic Design approves Delkin Juggler USB 3.2 SSD with URSA Mini Pro 12K*
- *Grass Valley launches next-generation in editing software with EDIUS X*

Europe

- *Aveco App accelerates news story production for Avid MediaCentral*

Grass Valley launches next-generation in editing software with EDIUS X

Grass Valley has launched EDIUS X and marks the start into a new era of nonlinear editing. The next generation of the multiformat software comes with a completely redesigned core engine along with a modular concept allowing even more performance for fully customizable workflows. EDIUS X features background rendering and background export making the workflow a smooth, uninterrupted experience. The enhanced Layouter motion tracking allows the user to easily attach a label, animation, or video clip to a tracked object, and when combined with anchor mode reframes a shot with reference to the tracked object. EDIUS X supports the newest codecs and camera releases natively like no other NLE. The software also includes enhanced GPU acceleration. This includes an ultrafast H.265 export, which is also available with the new background rendering options. EDIUS X comes bundled with three new modules for optimizing audio, title creation, and video effects, including all new seamless transitions.

Aveco App accelerates news story production for Avid MediaCentral

Aveco's Story Designer app for Avid's MediaCentral | Cloud UX media workflow platform has been certified by Avid to integrate Aveco's ASTRA Studio News Production Automation with Avid MediaCentral | Newsroom Management. Story Designer allows journalists to insert production cues to define the style of a story, together with technical parameters such as cameras and graphics. The story is then produced live under control of Aveco's ASTRA Studio based on those journalist-provided production cues.

The app provides journalists more control of how their story is produced on air. The company's story templates—once defined, radically simplify news operations—specifying every detail of story timing, camera positions, graphics, clips, backdrop videos, even virtual rooms. However, Story Designer is a strong tool allowing changes or updates to the template to give an individual story a unique look and feel. ●

Edited, Published & Printed by Anju Arora on behalf of ADI Media Pvt. Ltd. B-102, Queens Court, E Block, GK-II, New Delhi-110048.

RNI No. DELENG/2001/04584

ANNUAL EDITION

October-December 2020 edition of *Broadcast & CableSat*

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