

B BROADCAST & FILM

GLOBAL MEDIA FOR BROADCAST,
FILM, POST & INFOTAINMENT
TECHNOLOGY & BUSINESS

Inaugural Issue



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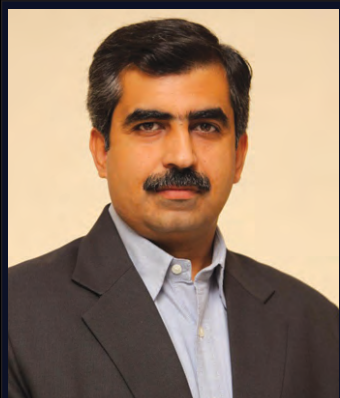


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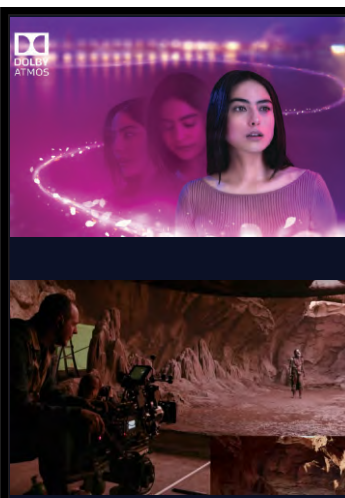
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MANOJ MADHAVAN
Editor

***The broadcast industry
has seen and learnt a
new slew of technologies
and workflow
implementation due to
the pandemic.***

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From the Editor's Desk

The Covid 19 pandemic has impacted the entertainment industry very badly and the industry is still trying to get its bearings. The first signs of opening up is visible in the form of some shooting schedules which have commenced with a great degree of emphasis on social distancing and other safety precautions. This is going to be the "New Normal" and the industry will have to get used to this.

While we at the Broadcast India Show are planning to go digital, it will be a new experience for the exhibitors and visitors. The Show will be packed with exciting demos and conference sessions. The industry will miss the physical feel of the event, but the virtual domain promises to provide an engaging experience to the broadcast domain.

The inaugural digital edition of Broadcast & Film comes packed with interesting features, technology trends, interviews and news.

The broadcast industry has seen and learnt a new slew of technologies and workflow implementation due to the pandemic. Capturing and distribution of news required the channels to get adept and agile while facing the significant challenges posed due to the pandemic.

Will VR production propel the broadcast industry? Normally new technologies which would take many years to get picked up, the pandemic has hastened the adoption process. The broadcast companies are looking at live VR broadcasts for delivering content. Esports could see the next exciting avenue for VR with loads of innovation.

This being our inaugural digital edition of Broadcast & Film, we request you to send us your feedback to me at manoj.madhavan@nm-india.com. Please keep me posted with all the news and developments at your end. Be it any latest news, sales project you have done, case studies of any high-profile customer you wish to feature in the magazine, I will be happy to hear from you. The purpose of the media is to help build a neutral and credible media for the industry.

Cheers!

Manoj Madhavan - Editor

BI2020

BROADCAST INDIA

29 - 31 October 2020

- ❖ Let's e-meet before we re-meet
- ❖ From 29th October, 2020, **BROADCAST INDIA 2020 - WE GO DIGITAL EDITION** will offer comprehensive presentation options and year-long networking opportunities
- ❖ Save the date: The next Broadcast India Show (BIS) will take place from 21-23 October, 2021



For more information on participation at
BI2020

- WE GO DIGITAL EDITION
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BROADCAST INDIA 2020 “WE GO DIGITAL EDITION”

Due to the global health crisis resulting from the CoVID-19 pandemic and the subsequent restrictions that have been imposed on travel and business operations, the Broadcast India Show will transition to a digital model for the year 2020.

As the region's leading event for television, film, radio, audio: from its content creation to its management and delivery, the event has witnessed considerable support from the Industry, while enjoying steady year on year growth. The event, now in its 30th year has been the epicenter of many conversations and interactions; the whole Film and Television community has converged in Mumbai year after year to meet their peers as also to get a sneak peek into the paradigm shifts in infotainment technology across the globe.

The decision to move the event into a digital space would ensure that this community remains connected amidst these unprecedented times, by creating online experiences which will redefine the way information is shared, while allowing the Stakeholders to engage in new and unique ways.

Along with BIS, co-located events- SCAT India & Content India, under the parent umbrella of A.B.I.S.- Asia Broadcasting and Infotainment Show, will also be digitally hosted, providing three days of seamless networking experience. The **BROADCAST INDIA 2020 - WE GO DIGITAL EDITION** - will be launched on 29th October, 2020, providing an innovative all year-round opportunity for exhibitors to remain connected with experts and decision-makers, thus enabling business continuity.

The platform is designed to engage the participants by offering access to an exclusive online forum featuring exhibitor product information, announcements and demos. Attendees will get an opportunity to interact with companies representing almost every vertical of the broadcast, entertainment and technology industries.

Delegates to the conference program can expect a good mix of live as well as pre-recorded sessions, interactive panel discussions via Q & A chat conversations, masterclass sessions, while exhibitors can showcase their products, build conversations and have one-to-one meetings with registered attendees; thus making this event the logical extension of the physical event.

Speaking on the occasion, Sonia Prashar, Chairperson of the Management Board & Managing Director, NürnbergMesse India said, “Direct, face to face networking still remains the most efficient way to connect and establish contacts, however extraordinary times such as these demand flexibility and innovation. By creating the **BROADCAST INDIA - WE GO DIGITAL EDITION**, NürnbergMesse India aims to bring Industry stakeholders together, allowing participants a unique opportunity to showcase their capabilities and engage with each other and through a new format. Join us this October to restart the conversations and discussions.”

She further adds, “Furthermore by presenting all the three leading shows on a single platform covering the domains of broadcast, cable, satellite, content, broadband, media and infotainment, we expect that this combination will benefit the Industry at large”.

BROADCAST INDIA 2020 - WE GO DIGITAL EDITION will feature a good mix of technical sessions, technology showcase & networking. The platform itself will offer numerous features including meeting scheduler, product spotlight, attendee profiling etc. thus enabling seamless connectivity.

BROADCAST INDIA 2021 will resume as a physical event from 21-23 October 2021 at the Bombay Exhibition Center, Mumbai, India. ■

Avid MediaCentral 2020 empowers news channels



Avid announced the immediate availability of MediaCentral® 2020, the comprehensive media workflow platform for TV news, sports and post production operations. Innovative new features in MediaCentral 2020 deliver on the needs of modern newsrooms, providing journalists with increased efficiency, faster search options and improved editing as well as an enhanced broadcast viewing experience for audiences.

MediaCentral 2020 accelerates production with a complete and scalable end-to-end media workflow platform, providing news teams with media access, workflow integration and remote collaboration to deliver breaking news as it happens. MediaCentral 2020 empowers global collaboration to connect disparate teams to share media and create better stories together, while leveraging broadcast content and incoming feeds to break news fast on digital channels. From information gathering that leverages powerful search capabilities to story creation, graphics integration and social media distribution, MediaCentral 2020 empowers teams with the tools and the workflow speed they need to break news first. Key new capabilities include:

Viewing and Editing Time-based Metadata More Easily—Increased

efficiency with a storyboard view to see metadata together with the thumbnails in one single view.

Finding Media Faster to Improve Collaboration—Includes more control and options to find the right media assets quickly, improve collaboration, ensure up-to-date results and improve the overall usability of the system.

Enhancing Storytelling with Maestro Graphic—Allows the use of full mix-down of graphics and video into a single file ready for publishing in MediaCentral and Media Composer or for publishing to social media and other digital outlets.

Sony launches 4K SXRD laser projector for large display applications

Sony Electronics has unveiled its newest professional projector, the VPL-GTZ380, which enhances the company's lineup of native 4K (4096×2160) SXRD models to include its highest brightness, 10,000-lumen model.



The new projector combines contrast, brightness, high dynamic range and resolution with a wide colour gamut to offer a visual experience in any distance and lighting condition, making it ideal for a wide range of corporate, entertainment and simulation applications. The flagship projector incorporates cutting-edge technology into a small form

factor that provides installation flexibility and enables quiet operation.

Featuring a newly developed 0.74" Native 4K SXRD panel, the VPL-GTZ380 provides detailed and radiant imagery with a high 16000:1 contrast ratio that delivers deep blacks. By adopting a new liquid crystal material for the panel, its light stability dramatically improves, enabling durability with 10,000 lumens brightness. This allows the projector to be used in both bright and dark environments, offering increased versatility and flexibility in installation.

The VPL-GTZ380's new laser light source, which incorporates a red laser diode in addition to the two different-wavelength blue laser diodes, enables a wide colour gamut of 100% DCI-P3 without any loss of brightness.

This includes new features such as Dynamic HDR Enhancer and object-based HDR Remaster to enhance dynamic range and achieve deeper blacks. The VPL-GTZ380 also supports HDR formats including HDR 10 and HLG for more natural colour reproduction.

From a design perspective, the VPL-GTZ380 has a compact body size (51kg) for its class, due to the adoption of the small-sized panel and patented phosphor wheel providing efficient heat release, which allows the model to seamlessly integrate into a variety of installation environments. The VPL-GTZ380 will be available in selected countries in the Asia Pacific from February 2021. ■

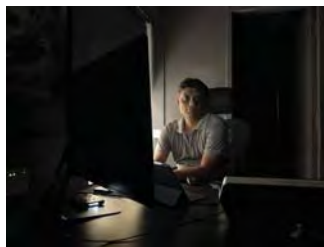


Prime Focus Technologies' AI platform, CLEAR™ Vision Cloud now combines Technology and Consulting to make AI work for you

Prime Focus Technologies (PFT), the technology arm of Prime Focus, announced new features in its AI platform that help solve real world business problems of TV Networks, Studios and Direct to Consumer businesses. A native media recognition AI platform, CLEAR Vision Cloud works because of its perfect combination of both technology and consulting to solve real use cases for clients.

Technology platform that combines best-of-breed third party AI (Microsoft, AWS, IBM Watson and Google engines) and PFT developed Vision Cloud AI models to provide both high quality data & actionable data Consulting to enable suitable learning to AI models for unique enterprise content, alter the Vision Cloud models to adjust specifics & sharpen the tools to make decisions that meet specific business needs of the client

AADAI and Andhaghaaram Graded with DaVinci Resolve Studio by G. Balaji



Blackmagic Design announced India based digital cinema designer and colorist G. Balaji used DaVinci Resolve Studio to grade the recent Indian hit film “AADAI” and the upcoming “Andhaghaaram.”

Working on dozens of Indian feature films and TV shows, Balaji started his career as a film editor before moving to DIT and colorist work. Since 2015 he has used DaVinci Resolve Studio on more than 30 films for both color correction in post-production and on set dailies work. “AADAI” is a hit thriller film that was released for theatrical distribution in India and across global streaming networks in 2019.

How LiveU Solo has become game-changing technology for Propixels India



Propixels started their ambitious journey a year before the 2019 Indian General Elections where they teamed up with two leading political parties of Maharashtra – NCP & BJP covering every political event, including outdoor rallies, indoor conferences, live interviews and more. They shot to fame when they managed to flawlessly live stream the Sharad Pawar ‘Satara ki Sabha’ event in heavy rain using the LiveU Solo+ wireless encoder.

“It was a crucial event, and we did not switch off the camera and Solo+ unit even for a second. It eventually changed the entire political scenario of Maharashtra state. The challenges were overwhelming – heavy rain, huge crowds, and a remote village with limited bandwidth – but we managed to overcome them all. The event stream was picked up by all the regional, as well as national, news channels. After that, there was no turning back.”

Cineom's turnkey deployment powers Shemaroo's post facility



Mumbai based Shemaroo is one of the largest content catalogue owners of Bollywood feature films and television programs. The content at Shemaroo is digitalized and repurposed for deliveries across major multi-platforms such as broadcast, OTT and direct-to-home (DTH). Since Shemaroo has been beaming its content across various digital platforms, the task of managing and storage of 3400+ titles was a huge challenge. Shemaroo wanted to opt for a robust and reliable solution to store and process the content and

they decided to tie-up with Cineom for this deployment. Cineom, a leading system integrator has been working very closely with Shemaroo since the last two decades.



Shah Rukh Khan's redchillies.vfx Garnering Critical Acclaim

Shah Rukh Khan is a perfectionist to the hilt. The decision to set-up redchillies.vfx was done with an intent to set-up a world class vfx facility, comparable to the best in Hollywood. Keitan Yadav & Harry Hingorani teamed up with Shah Rukh Khan in 2006 and setup redchillies.vfx. redchillies.vfx has established itself as a leading vfx studio and delivering high-end projects in the VFX arena for local and international markets. Keitan Yadav, COO & VFX Producer & Harry Hingorani, CCO & VFX Supervisor share their journey in an exclusive interaction with Broadcast & Film.

Q1. Tell us briefly about the birth of redchillies.vfx Studio. What motivated Shah Rukh Khan, Keitan Yadav and Haresh Hingorani to set up redchillies.vfx Studio?

Shah Rukh Khan wanted to establish a studio which could deliver on his vision of world-class vfx quality Hollywood-style sci-fi superhero movie in India. Since this project was very close to his heart, he felt the other vfx studios wouldn't do justice to his passion and thus, with the help of Keitan Yadav & Haresh Hingorani, he set up redchillies.vfx in 2006. He also wanted the entire industry to benefit from this world-class post-

production facility in India to create world-standard movies.

Q2. What are the latest technologies equipped at redchillies.vfx studio? Give us brief description of the VFX technology workflow pipeline implemented at redchillies.vfx.

redchillies.vfx

redchillies.vfx is equipped with technically advanced world's latest centralised storage technology with 1.2 petabytes of disk space for all our data flow needs which has the capacity to

work on multiple visual effects and colour grading on film, 4K digital platform like Netflix & Amazon, broadcast, OTT simultaneously.

The studio has a heterogeneous OS environment including Linux, Mac and Windows that are powered by high end workstations with superior NVIDIA Quadro GPUs. Our pipeline includes Houdini and Autodesk's Maya & Max, the industry standard for 3D design software for photorealistic vfx and Arnold for rendering along with other rendering tools. For compositing, we use Nuke studio which offers a cutting-edge toolkit for node-based



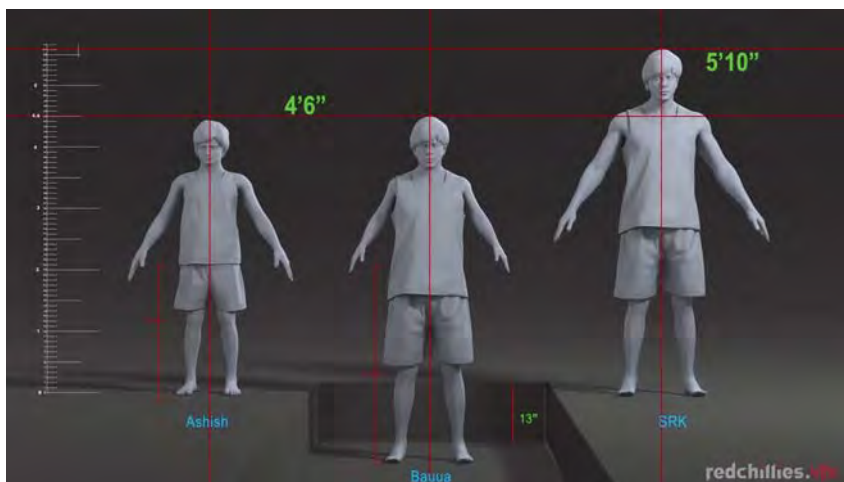
compositing and for editorial we have Final Cut Pro & Avid. We also have a state-of the art review suite using scratch and for Pipeline management we have Autodesk's Shotgun, for rendering needs we have around 8000 in-house cores & we scale our render capacity additionally by 10,000 cores, based on our needs for larger projects. The high capacity networking infrastructure includes Spine of 100GbE Fibre Switch, and the Leaf is 10G which carries a whopping switching capacity of 3.2Tb/s. In addition to the software, hardware and tools, we have developed proprietary new age weapons to beat all the cinematic limitations and deliver quality output as per the clients' post-production needs. We have an in-

house team of programmers who develop scripts and plug-ins ingeniously proprietary scripts & programmes to ease the functioning of the studio. With the help of our strong R&D team, we were able to create and conceptualise unique, never-been-done-before projects like FAN & Zero in a span of 6 months, with no material to refer to for these unique projects.

Q3. Please highlight some of your most creative and challenging VFX work. What were the major technical challenges the entire team faced for the VFX creation and how did the team overcome them?

Some of our creative/challenging projects so far are as follows:

'Zero' our latest project released in December 2018 was the 1st of its kind again. In this, never-been-done-before movie, we had to use special effects to shrink an actor of 5 ft 10 inches to 4 ft 6 inches for a duration of 130 minutes, a feat never achieved before in any movie globally. Apart from creating a dwarf effect for 130 minutes, the other challenges we faced were maintaining eye-level between the actor & co-actors throughout the movie, making sure creative vision of the Director is not compromised, and ensuring the interactions and body contact between the actors is seamless. The main challenge we foresaw was ensuring the eye-line between actors in the scenes where the actor would be interacting with his co-stars in different situations like fight sequences, dancing as well as showcasing emotions. We were quite clear that we didn't want to shoot the protagonist separately and then composite him in the scene later as this would be possible only for 1-2 minutes duration and not for the entire film. That's when we realised, we had to shoot all of them together in the same scene. This challenge was cracked by using Lego blocks. We created blocks (fake floor) with the depth directly proportional to the height of the actors we needed to reduce. These blocks would be removed where Shah Rukh Khan would be moving in the scene.





The actors would stand on these blocks and perform on them while the protagonist would stand in the pit 1.5 feet deep; surrounded by the blocks. For this very reason we ended up replacing the floor in the entire film. Also each shot required minimum 5 plates : first plate being a previsualisation shot, second being a regular plate with Shah Rukh Khan surrounded by the boxes at a level lower than his co-actor's, third being a shot which had Shah Rukh Khan and his co-stars act at the same ground-level (for his characteristics), fourth plate involving the co-stars repeating their moves but without Shah Rukh Khan in the frame (to capture their movements), and the fifth being the one in which

image. To show the accurate movement, we used CG trackers while shooting. By placing them on the actor's body we curated a matte image and then 3D image, from these scenes. Besides creative challenges, the vfx production pipeline had to be planned in detail. redchillies.vfx realized that they had 2,50,000 tasks spread across 2400 shots, and each shot had minimum 5 plates and around 16 odd tasks. Streamlining the vfx production process was critical. Once the rotoscoping & BG generation was completed, we had to start the dwarf creation process.

Mera Naam Tu was the most complex sequence in the entire film taking about 9 months to complete. A seemingly impossible amount of VFX technology and color-grading had to be employed. For instance, the rainwater in the movie was generated in CGI at 800 fps while the song was being shot at 48 fps. The two elements had to be merged into one scene. From coloured powder (gulaal) to the rain drops, all was CGI because the protagonist had to be

shrunk and we had to re-create the entire set. This included animating and matching the motion of all characters for the entire song and set extension. The original set needed to match pixel to pixel with the CGI set and for that we scanned the real set using Lidar Scan. The set creation was just one part, texture lighting was equally important as we needed to get the CG elements and interactions to look real.

The background extension was also CG, where we can see the movement of the plants and fluttering leaves. We had a lot of simulation done on the coloured powder(gulaal) and the interaction with the characters and photo-real light simulation on the gulaal.

800 servers, out of a total 2000 for the entire movie, were hired just for this song; given the exorbitant amount of processing power required. This was the most complex and took the longest to complete.

The New York Times Square sequence which is part of a song sequence, was originally shot on the streets of Alabama and then recreated to look like Times Square using plates from different angles, were shot separately in Times Square and then added into the song to give it the big apple feel.

Another challenging sequence for us was the Zero G sequence. We created the entire interior replication of the Zero-Gravity chamber in Autodesk Maya designing suite. It was shot in a studio in Film-City and we had to show them floating in zero-gravity. The entire set was designed in vfx & CGI. We also created an extensive walkway leading to the Zero G lab which had heavy-duty digital monitoring devices which was also created in CGI.

In the rocket launch sequence, the actor is escorted to the lift at the rocket launch site which leads to the AERO-BRIDGE. The Fx simulations for the smoke, fire and the rocket body particles was challenging. For this sequence we had





to be very specific for the scene scale, it had to look massive, so from the concept to modelling to animation to compositing, we concentrated on very minor details. Hi-dense, detailed smoke and fire simulation was the key factor for the sequence. From earth to space travel and the cloud bed interaction with the Rocket, this was a head-storming task and we achieved that successfully. Dynamic camera angles for some shots also made the visuals more impressive. We won Filmfare award for BEST VFX for our never-been-done before work in Zero in 2019. 'FAN' released in 2016 was a movie with digital body reshaping, here we changed facial features like eyes, nose, jawline, forehead, hairline, making the protagonist a completely different person by de-aging him to 28 years old and shrinking him not only by 2.5 inches, but also making his body leaner in 2400+ vfx shots. We didn't want to use a body double as Shah Rukh Khan and the vfx team were very certain that there would be no real challenge if he didn't play both the roles in the movie. Since the movie is about a die-hard fan of the actor, it was very important for us to retain the mannerism of SRK, which would be impossible for a body double to replicate. We had to reinvent a new pipeline as this feat wasn't achieved before ever for such a long duration. As for the timeline, redchillies.vfx had projected 18 months to complete this feat however, we were

given the timeline of 11 months, in which we achieved & released the movie on time. The major Visual Effects implemented to look SRK young are making his iconic nose sharp and small size CG nose, overall body shape shrink to show a thinner/leaner version of young Shah Rukh Khan lookalike with leaner shoulders, bigger eyes, straightened eyebrows, Lips changed in proportion of thin face, jawline sharpened and changed the overall skin tone.

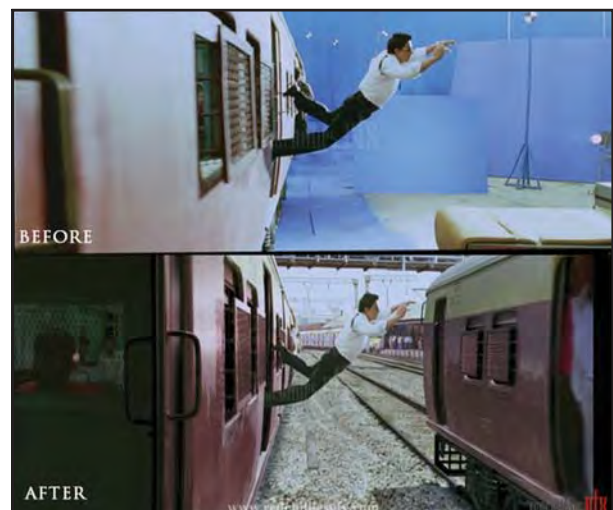
Besides the shrinking of the body, there were massive set-extensions which were created for the movie. For the end climax scene, we created the entire city of Delhi shown from the terrace, where both the actor & the fan are fighting each other. This sequence was also complex as it entailed a double-role shot with both the actor & the fan in hand-to-hand close combat. We even re-created the entire city of Dubrovnik in Croatia where the chase sequence takes place, where we can see them jumping from terrace to terrace, running in-between narrow streets. redchillies.vfx even created indoor set extensions for the song sequence which takes place in a ballroom. There are a lot of complex double role shots also executed in the film. We even created a dilapidated wall which has a very fast-paced chase sequence of the fan

escaping the police. All of it was created in CGI in an indoor studio after references taken of a house wall in Croatia

Another sequence was the airport sequence for which the Director decided we recreate Heathrow airport on the terrace of YRF studios, Mumbai. We won several VFX awards like FICCI BAF, IIFA and Filmfare in 2017 for our outstanding vfx work.

'Ra-one' released in 2011 a stunning superhero movie was the 1st of its kind in Bollywood and one of our benchmark projects with 3400 VFX shots which make 80% of running time amounting to 125 minutes. This volume of vfx was the first ever undertaken by any Indian studio. The team spent a good deal of time developing the pipelines for the cubic transformations in the film for the villain Ra.One. There were six or seven different algorithms required to facilitate all the on-screen action, and the development and testing of these pipelines had been the most challenging aspect.

In one of the sequences, we used a technique called 'Time Slice', where the same action is shot by multiple cameras from several angles to convey the powerful impact of being ejected skywards in one of the fight sequences. Over 60 still cameras were





used to create a sequence where the characters frozen, but the camera moved moving at about 220°.

The face of the villain was created by adding geometrical cubes to wires visualised for Ra.One's face. It took over a year-and-a-half for the entire film. Ra.One assumes several avatars from Akashi, played by Tom Wu, to Kareena Kapoor's Sonia till he finally takes the face of Arjun Rampal. Each mutation was meticulously planned and executed to the extent that every cube was prepared and created by computer technology to precisely match each player's physical attributes. Entire suit of Superhero G-One and R-one was replaced with digital suit done in VFX which is an exceptional feat to accomplish as the actual suits had deteriorated majorly.

For this movie we swept all the major awards received the including the 59th National Award in 2012 for Best VFX, Filmfare, IIFA, Zee Cine Awards to name a few. During the climax, G one absorbs the particles of Ra.One and his body becomes brittle & he disintegrates into

minute particles & his body collapses on the ground. This sequence was rendered using multiple layers and was composited keeping every minute detail in mind like his suit, cubes & his disintegrated particles. We even created a miniature of VT station which showed a train coming through the station which then, was then converted on the big screen to show a real-like train coming through the station in the climax.

'Krrish 3' released in 2013 was another benchmark project of ours which won numerous awards for Best VFX. First time in Indian cinema where large scale realistic building destruction & explosions were achieved by using extensive vfx simulation. This project had complex CGI creature transformation and realistic mid-air fighting sequences which totalled to 1800++ vfx shots. Mid-air fighting, glass effects breaking, flying shots, creature creation was all part of the work taken up by rcvfx. One of the most iconic shot was that of Hrithik Roshan standing on a construction crane which was 2000

meters above sea level. Superhero Krrish fought against the evil mutants created by KAAL where KAYA could morph into multiple avatars including the scary beast when she dies, which was generated in CGI. Another mutant had a lizard like long tongue, again generated in CGI, another was a very fast super-sonic mutant was also created in CGI.

Q4. There is a feeling that Indian Studios are not capable of delivering a vfx laden movie like Avataar, Interstellar, and Avengers..etc. Where do you think Indian studios falter when compared to the Hollywood VFX Studios? Do we lack technical and creative manpower when compared to the West?

Hollywood is an evolved and mature industry in comparison to Bollywood and they started using visual effects way earlier than us. Their genres are also very different from those of Bollywood. Their big budget movies from Abyss to Avatar to Jurassic Park or the DC/Marvel/Disney movies are primarily Vfx driven whilst in India, the industry is still evolving. Bollywood on the other hand has primarily focussed on musicals, dramas, comedy but now with the arrival of new generation of directors, producers, digital platforms like Netflix, Amazon etc, we are seeing a huge demand in visual effects and a change in genres like horror, sci-fi/ mythology, periodic dramas where the usage of vfx is extensive. Another challenge is that the directors &





producers are yet to fully imbibe and understand vfx and its usage. Indian filmmakers are still learning the art of using vfx effectively and economically which Hollywood has mastered. Bollywood is improving by the day and we are sure with the right kind of exposure & experience we will reach Hollywood standards one day. Having said that, the vfx driven movies are almost at par with international standards, considering our market & budgets compared to that of Hollywood.

Q5. redchillies.vfx has delivered quality vfx in some of the past movies. Is there a vfx movie in the making by the team which could prove to the West that Indian studios can deliver and Is Red Chillies focussing on international vfx job work or is it only focussed on the domestic Indian market?

We have proved with Zero, Ra.One, Krrish 3 and FAN that given the time and budget, redchillies.vfx has

delivered International quality visual effects. redchillies.vfx have also been actively involved in foreign projects from time to time. We have partially worked on projects like Sin City 2, Chinese movies like “Feng Sheng Bang & The Legend of Taimur (Genghis Khan)” as well as a film by a NY based Independent filmmaker “The Good Shepherd.” We are also working on outsourced work through other International various studios who are working on Hollywood projects.

Q6. What kind of services does rcvfx offer?

The state of the art facility in Goregaon West, Mumbai provides a full-fledged visual effects services right from conceptualisation to on-set supervision to visual effects final delivery with our Indian & International vfx divisions. Our redchillies. colour division has 2 film grading suites and one digital grading suite using Baselight. We even have a DIT division, DCP mastering division which



provides Digital Colour Grading Features, Trailers & TV Spots, Editorial & Conforming, ACES workflow, Digital Cinema Mastering & KDM Delivery, Digital Mastering for 4K UHD & OTT Content, On Set Services DIT & Dailies etc.

We are the only postproduction house in Asia which has bought the TechnoDolly- Motion Control rig, world's 1st telescopic crane designed for programmed repeatable moves, for live action and motion control. We are in the process of setting up Motion Capture which can be used for making previs, gaming & other film work. So, a full-fledged post-production set up is available here at redchillies Goregaon facility. ■



Covid 19 Lockdown Impact on the Entertainment Business

The corona virus lockdown crisis is causing major disruptions across the entertainment business. Companies are redrawing their business strategies and looking at ways to overcome the challenges during this period and adapt to the changing global scenario. Broadcast & Film had an opportunity to assess the ground reality through an exclusive chat with P Jayakumar, CEO of Toonz Media Group & Kireet Khurana, a leading Animator & Filmmaker.



PJAYAKUMAR
CEO, Toonz Media Group



KIREET KHURANA
Animator & Filmmaker

P Jayakumar – CEO of Toonz Media Group

Q 1. *The impact of the Corona Virus lockdown has been severe across the board. More so when we look at the implications on the animation and the entertainment business. How do you look at this whole scenario?*

Response: The Coronavirus pandemic has been the most unprecedented humanitarian situation that the world has ever witnessed. The lockdowns across the world, albeit a completely essential measure, has definitely impacted all industries, including the animation and entertainment business. Within the entertainment sector, the live-action film and TV industry has

taken the hardest hit but its ripple effects can be tangibly felt in the animation industry. Movies and TV series filming has come to an absolute halt across the world and nearly all producers have stalled their releases. The pandemic and lockdowns have created a strange Catch 22 situation for the entertainment industry in general. As people are confined to their homes, the demand for content has nearly doubled but our industry is not entirely equipped to meet this demand as the personnel involved in the industry are also confined and working out of their homes. For animation, we require

complex systems, data rooms and software, all of which is available in physical studios but it is very challenging to replicate the same model at homes on a large scale. On the good side of things, we've seen a trend wherein platforms are approaching content owners to license more of the content already produced. This will definitely see some increase in sales.

The financial impact has also been immense as advertising and merchandising revenues, which often finance the creation of content, have slumped in the past weeks. This is due

to the fact that the product industry is not investing in advertisements as before because the manufacturing units are closed and they are unable to meet the supply-chain requirements of products.

The whole scenario seems worrisome, but it is essential that we remain optimistic about what the future holds.

Q2. How soon do you think the business can bounce back from this impact and attempt to make a recovery?

Response: As the pandemic situation seems to be evolving every single day, it is quite difficult to predict when the business can bounce back. In fact, even governments and medical professionals are finding it tough to give us definitive timelines on the return of normalcy. However, realistically, it seems that by the second half of the year and particularly by the last quarter,

there will be some respite and all businesses can attempt to make a recovery. Having said that, it is essential that all businesses have their business continuity plans in place with reasonable foresight. While it is necessary that we remain hopeful, we must also be prepared for any contingency at any time. At our company, we've ensured that our business operates as normally as possible and our sales as well as content deliveries continue to happen without much hassle. We've been able to achieve this through a sound business continuity plan which was implemented across the board so that all our employees can operate out of the safety of their homes.

Q3. What is the other bottlenecks which hinder the growth in the entertainment and animation industry?

Response: There are of course other bottlenecks which hinder growth in the animation industry, regardless of the pandemic. The imbalance of demand for highly skilled creative personnel when compared to its availability is always a concern. This industry is constantly in need of highly skilled and talented professionals but as animation continues to be a niche field unlike many other fields, it is not easy to meet the number of such professionals required. One of the other key bottlenecks is the lack of tax credits, subsidies and incentives for this industry in territories like India. Animation costs are generally very high and securing financing from private investors and banks is a long-drawn process. Government aids such as tax credits and subsidies would greatly help in closing the funding requirements of projects.

Kireet Khurana, Animator & Filmmaker

Q1. The impact of the Corona Virus lockdown has been severe across the board. More so when we look at the implications on the animation and the entertainment business. How do you look at this whole scenario?

Response: As we know India has been experiencing an economic slump in 2019-20 with growth rates plummeting to sub 5%. To add to the country's woes, Covid19 has come as a big blow to not just our country, but to the entire world. When business goes down, the first casualty is usually advertising and marketing spends as the disposable income threshold is reduced significantly among consumers. This depletion has a cascading effect on the entertainment Industry of which the animation industry is a sub-set.

For the animation industry specifically there is a silver lining though. Most

live-action productions cannot shoot, hence are virtually shut. Some live-action productions which are in scripting/development and pre and post production phase are still going on remotely. In the case of animation, many studios have moved proactively and moved their entire operations online through remote desktop. Artists sitting in their homes can manage and control their machines and still produce animation and graphics. Hence whatever little bit of advertising that is happening is being executed in animation, which is a blessing in disguise.

Q2. How soon do you think the business can bounce back from this impact and attempt to make a recovery?

Response: There are many scenarios that are emerging and everyone is

dealing with it differently. I've seen some organisations have culled people the day the lockdown happened. This was primarily because they weren't doing well due to the unfavourable conditions before the virus struck. Covid19 was a huge blow which many companies clearly cannot wait out; hence they laid off people at the onset, which is tragic. Many Producers have backed out of contracts invoking the 'force majeure' (act of God) clause embedded in all contracts. Many organisations have given pay cuts to their employees and it's difficult to guess when their pay packets will be back to their original amount. This purely depends on the overall economic recovery of India, which is interlinked with the world's economic recovery. The third set of companies is willing to stick their neck out and stand by their employees, neither

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Rajkumar Hirani : Ace Filmmaker on Technology Trends in Cinema



Rajkumar Hirani was born in Nagpur. His parents wanted him to be a chartered accountant, but he was more keen on theatre and films.

In his college days he was involved with Hindi theatre and later did an editing course from Film & Television Institute of India, Pune. Hirani worked in advertising for many years before shifting to films as an editor and gradually established himself as a director and producer of films.

After doing fairly well in the advertisement industry he took a break from advertisement and started working with Vidhu Vinod Chopra. He worked on promos and trailers for 1942: A Love Story and later edited promotions for Kareeb in 1998. He also edited the film Mission Kashmir in 2000.

In 2003, Hirani made his directorial debut with the comedy film Munna Bhai M.B.B.S. starring Sanjay Dutt, Arshad Warsi, Boman Irani, Gracy Singh, Jimmy Sheirgill, and Sunil Dutt. In 2006, Hirani directed the second installment of the Munna Bhai franchise, titled Lage Raho Munna Bhai, which retained some of the original cast, including Sanjay Dutt, Warsi, and Boman Irani, and added Vidya Balan as the female lead in place of Gracy Singh. The feature received critical acclaim and proved to be Hirani's highest-grossing release to that point, thus attaining a blockbuster status and becoming the third highest-grossing film of that year.

Hirani's next directorial venture was the coming-of-age comedy-drama 3 Idiots (2009), which starred Aamir Khan, Kareena Kapoor Khan, R. Madhavan, Sharman Joshi, and Boman Irani. 3 Idiots received positive reviews from critics, and proved to be the highest-grossing Bollywood film up until then, earnings in global ticket sales.

Hirani won his third National Film Award for Best Popular Film Award for Wholesome Entertainment, Filmfare Best Film and Best Director Award, and Filmfare Best Screenplay and Best Story Award, for his direction. The film established Hirani as one of Hindi cinema's most prominent filmmakers.

In 2014, Hirani directed PK. He also directed Sanju in 2018. Both movies turned out to be major box office hits. In his illustrious career Rajkumar Hirani has won innumerable awards. In an interview to Broadcast & Film, Rajkumar Hirani gives his take on the technology trends in cinema.

Q.: You were one of the first editors to use Avid non-linear editing. Please tell us how was the experience of using non-linear based editing compared to the analogue editing

Nonlinear editing is actually bliss. When you compare the experience of editing on Steenbeck, it was so much of physical labour. If you wanted to add two frames to a shot you had to find the right can. Take out the roll and open the roll. And then add the two frames which you want to add. It could take minutes or hours sometimes to find the two frames if it was not catalogued properly. Non-linear editing made life so much easier. You could have so many versions of the edit. You could see the dissolves, wipes, optical effects in non-linear. In analogue it used to take days to see the optical effects. For editors non-linear editing is bliss. I remember when Avid was introduced there was so much resistance, that people used to say it did not have the feel of a film. I used to tell them to keep a strip of the film in your neck, feel the film there, but edit on Avid.

Q.: Tell us about the first major milestone in your remarkable career.

It's always your first film which is very special to you. Anybody who wants to make a film and comes to this city with the dream of making a film and when that film is done, that is the happiest moment. At that moment you never worry about how the film is going to fare or how much of business it will do. You are happy that the film is completed and your family and friends have seen the film and loved the film. So Munnabhai MMBS which was my

first film will always be my first milestone.

Q.: Film technology has undergone major changes, right from the Kodak & Fuji film to digital cameras now used for shooting. Your take on these changing trends?

Technology you cannot stop. You may like it or dislike it. Newer technologies will keep coming. It's best to adapt to new technologies. We can always debate that film is better or digital is better. The reality is digital is here to



stay. Digital has its advantages and disadvantages. With film you had a ten minute roll and you were doing a great take and at times film runs out. With digital you can take more shots and takes. Also in projection with digital there is no worry about whether the print will start having scratches. Digital projection stays the same even after many screenings. Digital has changed post-production in editing and sound recording. It has made things easier. Quality has improved. On the shooting front there could be differences. Some people feel 35mm looks better. Even I sometimes feel that 35 mm is better. I guess digital is here to stay and we have to accept it.

Q.: VFX is a major highlight in films nowadays. How do you look at VFX in Indian films? Would you look at making a VFX film?

I don't think one should make a film to say that I will make a VFX film. Films are about storytelling. And whatever story you want to tell, you have tell it through your film. If that story needs VFX then you have to use it. The advantage today is you can think of anything and you can achieve it through VFX. With VFX nowadays one can dream of anything and achieve it.

As far as doing some kind of a super hero film or a completely VFX driven film, I have not thought of it. My mind doesn't function like that. I think of a story. Unless I think of a story which comes to me and if there are characters which require VFX and if it's engaging and if it's got drama then I would love to do it. VFX has improved our lives and there is so much we can do. But somewhere down the

line we have lost the discipline in the film shoot. Lot of things that have been left in the frame, we have a tendency to say that we will correct it in the VFX. Earlier that discipline of taking a perfect shot during the shoot is somewhere lost now.

Q.: You have a very successful track record as a filmmaker. What is the major highlight that we can expect from you in the future?

I am working on a couple of scripts. Scripts are the most important part of any film making; they are the foundation of film making. So once the script is ready, I will then see how it shapes out. ■

Gamechanger in the M&E Industry: Real-Time Virtual Production

By PRIYAN PARAB



of new possibilities it brings within the production procedures of any film, ad-film, television, live events, theatre, etc. are sure to complement the industry with widespread flexibility.

Statistics

According to E&Y, the M&E sector in India had an upward growth chart by 9% in 2019 and reached a whopping figure of INR 1.82 trillion. Statistical research states these numbers would further rise up to INR 2.41 trillion by 2022. One cannot help but note here that the revenue-wise top 4 sectors are – Television, Digital Media (OTT), Filmed Entertainment and VFX respectively. Pre-production, production and post-production are critical elements in each of these 4 sectors.

What is Real-Time Virtual Production?

Imagine if the entire production of any of the 4 sectors mentioned above could be done indoors? Completely eliminating the need for outdoor shooting. All this while the final output of the shot is visible in real-time on your screen. Yes, this is absolutely possible! By stepping into the domain of Real-

After being intricately involved in the world of Real-Time Virtual Production for the past few months, I thought it would be a wise idea to give you all some insights about this blooming field. Being introduced to the world of a stage-like digital environment that optimizes the entire workflow of production and post-production pipelines can be of great benefit to individuals in the Media & Entertainment (M&E) sector.

This article focuses on explaining Virtual Production in a simplified

manner. Irrespective of whether you are from the industry or not, you should not face any difficulties in understanding this invention. In case you do, please do not hesitate to get in touch with me!

Introduction

The rise of these innovative technologies under the umbrella of Virtual Production will surely disrupt the market, while simultaneously keeping your current workflow intact with an added advantage to increase efficiency and productivity. The range





Time Virtual Production, you can not only have access to the final product of the scene in real-time but also save upon millions of dollars that would otherwise be invested in production and post-production costs.

Zero Density (ZD), a real-time virtual production equipment company, provides a solution known as Reality Virtual Studio platform. This is offered in India by Cineom, a leading system integrator company in the Indian M&E markets. The only two mandatory requirements are a studio with green/blue/black screen for keying and appropriate tracking devices. Once you have these along with a Reality Engine, trust me, there is no limit to executing your imagination.

This product amazingly not only keys the object of focus at an accuracy of 99.9% but also provides real-time 3D compositing. This means the manpower requirements are lowered as the high-tech system does the majority of the job. There's a lot more to this product – all the reflections, refractions and formulated shadows of the subjects and objects are recorded in real-time. What this aims to reward the user is with accurate photo-realistic effects.

Wondering how trustworthy and effective can it be? The news and sports broadcasting industry have successfully reaped maximum benefits from this product. Star Sports India is

currently using more than 10 Reality Engines to run their post-match analysis of IPL (Indian Premier League) and other events. Even the FIFA 2018 World Cup held in Russia used a similar concept of high-end Virtual Production for a top-notch viewing experience for their viewers. In my opinion, in the foreseeable future, this technology shall be adopted by the film & ad-film markets to revolutionize the way production works.



This must be a question lingering in your mind right now. My understanding from various projects I have seen & experienced has taught me how this product can simplify the tasks of directors and the DOP (Director of Photography). In films, this technology comes in as a time/money/effort saviour in Previz (Pre-Visualization). It gives the directors and DOP a vision of their final product

when they try to shoot something on a green screen. All the background sets, including lighting, shadows, attachments, etc. can be clearly accessible and visible to the film crew in real-time while they are shooting.

Can it be shot in 4K? Oh, absolutely! One can record in 4K UHD HDR, as the Reality Engine from ZD is compatible with all such crucial formats involved in the production. An immense focus is laid on the different kinds of data that can be recorded and stored while shooting real-time –

- Background data
- Foreground data
- Tracking data
- Mattes
- Alpha Channels
- Real-time final Compositing
- Keyed Output (with variations)

The whole purpose of providing the user with such vital data is so that they have hands-on access to several elements of their shoot. This data also gives them the flexibility to accomplish any additional VFX-related goals.

The functionality of Reality Engine in the case of ad-films allows systems to export the real-time output and use it directly for the project at hand. To put things into perspective, let's speak about an ad-film for a brand where the actor has to perform a stunt or walk on a world-renowned high rise building. In normal cases, this would be a herculean task due to permissions,

stuntman training, costs and safety involved. Making an individual walk on the Eiffel Tower or World Trade Centre for real-life production requires months of planning. Rather than going through the above-mentioned hassle, you must opt to create a virtual set. These virtual sets can be created on Maya, 3Ds-max or an unreal engine (it has to be an FBX file), and then directly imported onto the Reality Engine by ZD. Simply turn on the virtual production system & your cameras, and you are good to begin shooting.

My recent experience doing Virtual Production

There are no limits to the benefits of Virtual Production. Not too long ago, I attended an event (which I was a part of) at Famous Studios. Cineom and Centroid India focused on some of the most important advancements in the domain of Virtual Production that was displayed there. It was for the 1st time in the industry that Cineom, ZD and Centroid teams could integrate the output of motion capture. We could literally include a CG (Computer-

Generated) character into the Reality Engine via a live link. When viewed as an output, you could see the CG augmented character fighting with the real character, both being keyed at the same time! That too while both characters are present in the ongoing virtual set! Think about it, if we could achieve this in real-time, then what not is possible?

Centroid also provides some wondrous additional solutions that can be implemented during production and post-production:

Real-time performance capture

Virtual camera

VR-scouting

Real-time augmenting of CG elements in the real world

If you find yourself wondering which tracking devices, cameras or lenses to use, then I would love to tell you that any professional broadcast or film camera & lens can work just fine. Just make sure the lens used is capable of recording and storing lens data. I would suggest a few brands such as Arri,

Angenieux, BMD, Fujinon, Panasonic (4K PTZ camera as they have in-built tracking), Sony, etc. Speaking of tracking devices – I would suggest a highly economical and user-friendly model known as Stype Redspy.

To quickly summarize, here are the elements you would need to do Virtual Production:

Virtual Set (FBX file)

Reality Engine (by Zero Density)

Tracking System (Stype Redspy)

Cameras, lenses and lights

Cyclorama & other shooting accessories.

Here are some youtube links for your further understanding. 1- Virtual Production in Movies, 2- Virtual Production for TV & Broadcast, 3- Virtual Production for Ad-films & 4. Virtual Production for Live & Launch events.

Do you have any more technical questions or general queries? Please feel free to get in touch with me or approach Cineom team as they have a complete turnkey Virtual Production Solution. ■



Satish Aggarwal – The Broadcast Technocrat Par Excellence



Satish Aggarwal, the name evokes a lot of respect in the industry for his stellar contributions. Ever smiling and unflappable, Satish Aggarwal, Managing Director of Visual Technologies & President of the AIBMDA (All India Broadcast Manufacturers Distributors Association) has been in the industry for close to three decades. He shares the experience of his professional journey and career highlights in an exclusive interview to Broadcast & Film.

Q1. You have been in the broadcast industry for close to three decades and represents some of the leading broadcast brands. How do you look at your journey over the three decades?

Yes we have been working in this Industry for close to three decades, Visual Technologies India Pvt Ltd came into existence in 1996. We are representing Panasonic since then on an exclusive basis for the Indian broadcast market. Later we added many other brands to our portfolio like Ross Video, Azden, Libec, AVT, Riedel, Hitachi, Canare ... etc. Today we have a partnership with more than 40 leading brands in the field of Content Production and Post-production for TV, Film industry, Satellite and Terrestrial broadcasting and OTT/Web TV Channel. We are serving the industry as a system integrator and providing technology and systems to the Television news channels, TV Studios, TV & Film entertainment Industry,

Education, AV Industry, Enterprise solution and high-end security solutions.

I am fully satisfied and feel proud of the fact that we have successfully served the industry and the country for close to three decades.

Q2. How has the transition of the Indian broadcast industry been over the years? And how do you see the future of Indian broadcasting in the next 5 years?

Television Content Production and Broadcasting Technologies are evolving ever since its inception. Rapid development was seen after the adaptation and application of the digital technology. Digital technology brought the cost of equipment within the reach of the entrepreneurs, thereby accelerating the expansion of the broadcast industry which otherwise was mostly restricted to the Government broadcaster / Public Service Broadcasters. Digital

technology has made possible commercial viability of High Definition Television technology. Rapid rollout of HDTV (1080/50i/60i) started about 10-12 years ago and thereafter technological development in this field never looked back. We have seen announcements of a new technology or concept, almost every year at the NAB Show in Las Vegas. We have also witnessed the rollout of the progressive HDTV, 1080/50p/60p, 3D TV technology, 4K technology and now 8K Technology, coupled with Non Linear Editing, NLE, Server based recording, shifting from tape to tapeless recording media to Solid State Memory Media, Server Based Recording and Playback, induction of a lot many production and transmission codecs, OTT, fusion with IT industry etc. Digitalisation also brought a major change in the graphics, virtual technology also which has benefited the Film and Signage industry too.

From last few years, the most talked

technology is 4K / Ultra High Definition Technology, UHD, with High Dynamic Ratio, HDR and High Frame Rate, HFR. Besides these technologies other technologies which are drawing attentions of the broadcasters are as follows :

- a) Mostly with NHK efforts 8K/ UHDII technology with immersive sound, this year we seen many 8K Cameras and Camcorders displayed by major manufacturers in Trade Shows.
- b) Web TV Channels, linear and OTT, use of the social media for broadcasting.
- c) Media over IP/ Uncompressed SDI over IP which was going on from last so many years, seem to be getting worldwide popularity and acceptance in the form of SMPTE 2110.
- d) Audio over IP
- e) AI, artificial intelligence coupled with machine learning.
- f) Efforts for developing New Inter Operable format IMF, Interoperable Master Format by SMPTE, for the easy exchange of media content on all platforms which includes TV, Cinema, Social Media, and Cloud based media services etc.
- g) Development and acceptability of highly efficient Audio/Video codecs
- h) For the transmission & broadcasting ATSC 3.0 & 5G technologies are evolving and drawing the industry's attention. 5G technology is being looked as a replacement of "C" band satellite broadcasting.
- i) e- Sports, with possibility of remote sports production and auto production.

All the above is the gist of happenings on the technology front, but when we come to the ground realities in our country, not more than 15-18% of the

TV channels are broadcasting HD TV. Most of the TV Channels are still broadcasting in SD TV format.

Almost all the Camera manufacturers have stopped manufacturing SD TV Cameras/camcorders since long and have now shifted their focus from HD Cameras to 4K Cameras. Most of the TV channels, though they have HD Cameras in their TV Studios and field, but are still using the same in the SD TV mode only. Camera manufacturers are bringing newer models in 4K and 8K UHD domain.

Industry is getting ready for a big jump from SD TV to UHD TV in the near future. Upcoming Olympic Games scheduled to be held in Tokyo in 2020 likely to accelerate these phenomena.

Q3. Tell us something about the prestigious projects undertaken by VTI recently?

Last year was a comparatively a very busy year for VTI, we have completed more than thirty projects in the field of Television Broadcasting, Production & Satcom (RF), Education, High End Security Solutions and Enterprise.

Some of the Important Projects are as follows:

- a) **Supply of Nine Digital Satellite News Gathering Vans, DSNG Vans to Doordarshan on turnkey basis.** This state- of- the- art Vans were fabricated on Ashok Leyland Chassis in 1+1 Configuration. Vans were also equipped with a small live production facility also for the live field broadcast capabilities.
- b) **Two Earth Stations for unlinking multiple TV Channels to Satellite** for Doordarshan at two locations in Delhi.
- c) **ETV BHARAT PROJECT** - The most prestigious ETV Bharat TV set at Ramoji Film City Hyderabad. Project involved setting of twenty-four linear TV channels on OTT/ Web platform. Project is for the 24

TV (linear) channels on OTT platform with worldwide availability by using an App known as "One Nation –One App" through CDN service provider. Work involved setting up of twenty-four TV studios, equipped with NRCS, Production and Playout facility with automation. It is equipped with the Products from Panasonic, Ross Video, Harmonic, Octopus, Vizrt, Adobe and many more partners. Unique attraction of the setup is three supporting streams for each channel carrying live feeds from the field, total seventy-two live streams. Entire installation, configuring and commissioning work was completed in a record time of four months by the VTI team with support of the partners.

- d) **Satyajit Ray Film & Television Institute, SRFTI Kolkata TV Studios.** VTI completed the entire work of setting Studio and flyway kits for sports field coverage. Flyway kit was designed in such a way as to make it deployable in the field for sports coverages and as well in the SRFTI facility at Kolkata.
- e) **Dolby 7.2 Audio Mixing Studio facility at State University for Performing and Visual Art at Rohtak, Haryana.** It was a Dolby certified unique project of its own kind in the North India.
- f) **Interrogation, Control Room facility for the Jharkhand Police at Ranchi.** It was an interesting and small project of its own kind.

Q4. How is the broadcast business in India? And how is the system integration business in India? Is VTI looking at the markets other than India?

India is vibrant country of multiple cultures and languages, therefore I see

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These are strange times and the last few weeks have thrown the world into a tailspin.

BROADCAST INDUSTRY ENSURES BUSINESS CONTINUITY WITH CLOUD-BASED SOLUTIONS

These are strange times and the last few weeks have thrown the world into a tailspin. Globally, we were ill-prepared for the situation, however critical services quickly geared up to face the challenges.

As the print medium faced severe restrictions in many regions, it became imperative that the News Channels keep communication lines open for updates from around the world and for the Authorities to raise awareness, disseminate information and counteract the misinformation



being spread through unmoderated social media.

In these unprecedented times, with no template of best practices to handle a

problem of this magnitude, we are learning on the go. While most News setups in our country had traditional Disaster Recovery and Remote Workflow mechanisms, no one was prepared for an event of this scale. Cloud-based workflows that were considered as tools for the future have now become the need of the hour.

As Broadcast Technology Architects, Real Image- the Media Solutions team of Qube Cinema, has been



One of our clients, with a bouquet of news channels for both national and regional audiences, operating out of multiple facilities across India geared up for this scenario by ensuring that each of their facilities can operate as a DR site for the other. In the event of a temporary closure of a site, the Infrastructure of the other site can take over the additional load and continue operations efficiently. Workflows have been remotely set up by our team, for efficient sharing of both text and video between sites.





As a gesture to the Newsroom community in India and across the world, Avid has offered free extended software licenses for NRCS, Asset Management, Editing and Playout workflows. To the Editor community, Avid has recently extended its Media Composer trial license to 3 months (from 7 month) for those working from home. For editors who specifically generate content for New Media platforms, there is the Media Composer I First, a lighter version of the application that is always free, with no watermarking or time limit.

helping its clients analyze their preparedness and ensure business continuity with minimal dislocation of manpower.



Another client with operations in Noida and Mumbai has planned for complete off-site DR facilities at both locations. With our team's support, the entire newsroom database has been duplicated at the DR site and it can go fully operational without lag time.

Another method followed by a national client, was a planned lengthier 3-day long rundown so that most operations at their facility could be controlled remotely and with minimum staff. The regional players without a cloud-based workflow or VPN access, have opted for general IT remote access applications, such as Team Viewer, for business continuity.

During this period, our Media Services team has also been conducting online training sessions for our clients, to ensure that their staff across divisions and locations are updated on the new workflow practices.

While the customers are setting up new Business Continuity workflows, all our product partners have also chipped-in with cloud-based solutions.

Having introduced cloud-based Video Editing as early as 2012, Avid Technologies offers a bouquet of Production solutions for users who need not be geographically bound. Partnering with Microsoft Azure, Avid can today host an entire facility on the cloud. Nexis CloudSpaces can park projects on the cloud as well as sync with on-site Nexis workspaces for an off-site backup. Media Composer, Avid's flagship editing application offers 2 remote variants, Media Composer 1 Cloud as well as a Media Composer 1 VM. Other components for the Newsroom/GEE such as NRCS, Asset Management, On-Air Graphics, Archival, etc. are also available remotely with Avid's MediaCentral Cloud UX solutions. The MediaCentral Publisher option offers a SaaS-based portal to browse content from Production Management and trigger upload to the Publisher SaaS platform and subsequently to Social Media Platforms with a 'single click'. The technology that drives these solutions can be deployed via on-prem servers, VM or on the cloud. Besides ensuring business continuity, cloud solutions also offer advanced metadata mining benefits that AI offers, including Face Detection, OCR, Speech-to-Text, Phonetic Searches and more.

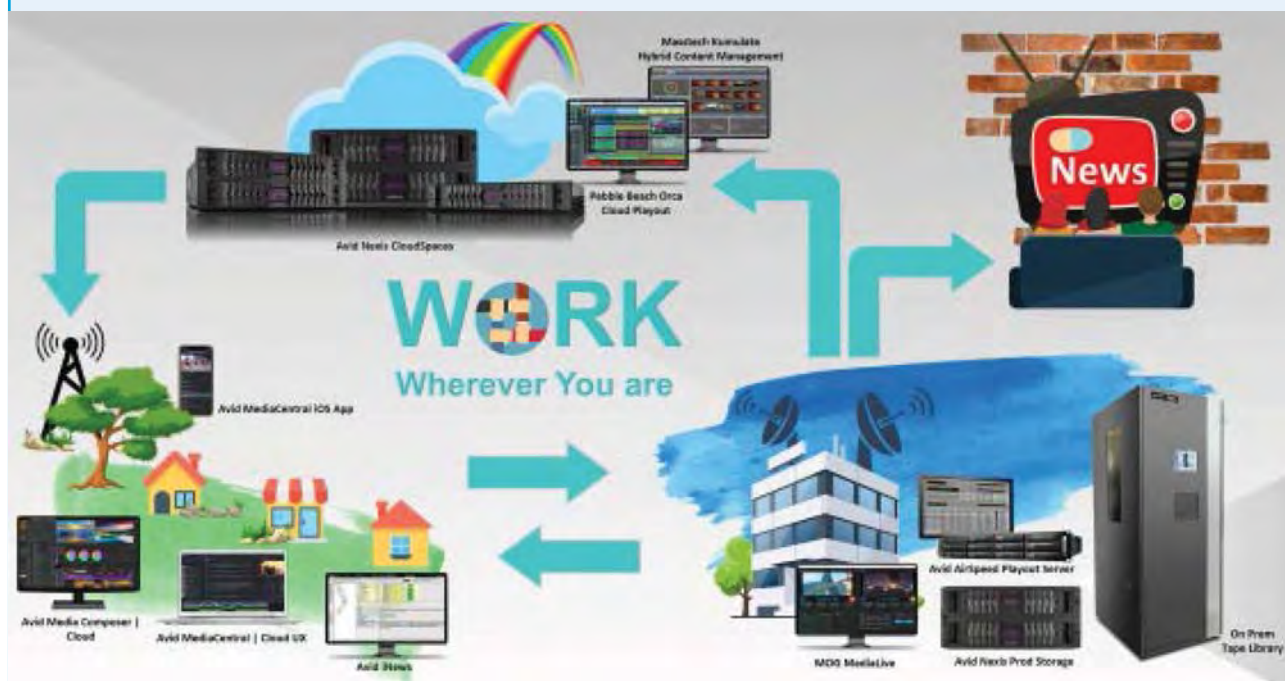


Most of the News broadcasters are equipped with bonded telecom solutions to transmit and receive ENG live video streams from the field. MOG Technologies, an established media gateway to newsroom systems with tight API-level integrations, has also enabled Ingest of live IP streams to make them seamlessly available to production users accessing content over remote through Avid Media Central 1 Cloud UX.



Pebble Beach offers a bouquet of Broadcast Automation and Playout solutions. Besides having an API-level integration with iNews and other NRCS systems, Pebble Beach offers advanced MCR workflows with deep integration to Production Assets, Traffic System and Archival. Pebble Beach 'Orca' a software-defined virtualized IP channel solution enables the deployment of IP-based channels almost instantly, without compromising production values. Orca delivers all the functionalities typically handled by discrete

While there are readily available products in the market that will benefit the broadcast workflows, each site is unique in terms of requirements. The Real Image Media Solution's team will be happy to collaborate with you to analyze your requirements and make recommendations for optimal and robust business continuity.



hardware servers, graphics, and captioning systems but within a pure software environment. It shares the same underlying architecture with Pebble Beach's Dolphin and operates under the Marina automation system.

Kumulate is Masstech's latest offering in intelligent storage, workflow and



can be public cloud, private cloud, on-prem disk, tape storage tiers or a hybrid of both and includes support for all major cloud providers such as AWS,

lifecycle management for archival of video assets.

Its deployment can be public cloud, private cloud, on-prem disk, tape storage tiers or a hybrid of both and includes support for all major cloud providers such as AWS,

Azure, Google, etc. Its tight integration with Avid and other Newsroom workflows ensures a quick turn-around so that users have fast access to browse and restore archival content directly from their NRCS tool. Kumulate also allows content to restore directly to playout servers such as Avid's AirSpeed for a fast turnaround. ■

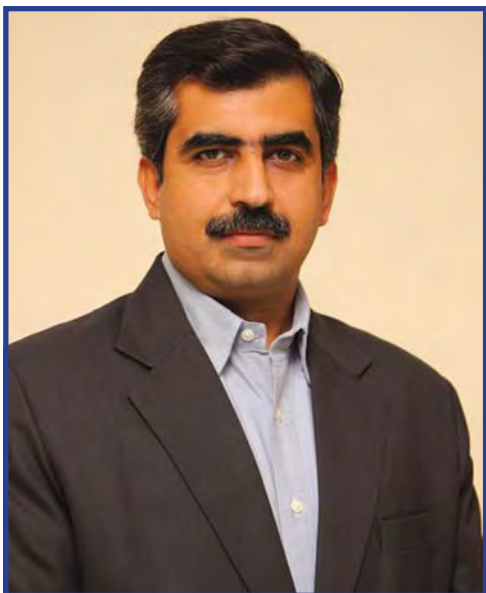


SHANKAR BHAT

Head - Domain (Broadcast and Pro Video)

The author, Shankar Bhat is Head - Domain (Broadcast & Pro Video), at Real Image, the Media Solutions division of Qube Cinema Technologies Pvt. Ltd. He completes 25 years in the Broadcast industry this year. Earlier he has worked as a Television Content producer for 8 years during which he handled many capacities from Script Writer, Show Director, Cameraman, Video Editor and Graphic Artist. Channels associated include Star Movies, BBC, MTV and Channel V.

In the past 16 years, at Real Image, he has helped design and commission Newsroom workflows for more than 70 channels in the country including NDTV, Times Global, Network18, India TV, Sun Network, N TV and more. More Than 4000 Newsroom / GEC users have been trained by him and his team.



Sushant Rai to Drive Growth for TVU Networks in the Broadcast Market

Sushant Rai is the Vice President, Sales – South Asia, Middle East and Africa for TVU Networks, a technology and market leader in cloud and IP-based live video solutions. Sushant will lead strategic sales efforts across all three major regions with sales and solutions teams consolidating under his leadership.

Prior to joining TVU, Sushant held multiple senior executive roles in well-respected technology and solutions providers in the broadcast industry. Sushant Rai reveals how he plans to drive growth for TVU Networks in the broadcast markets in an exclusive interview with Broadcast & Film.

Q. You have recently taken charge at TVU as Vice President Sales for South Asia, Middle East & Africa region and been in the industry for over two decades. How do you look at your new role and your journey over the last two+ decades?

In this exceptional period, our customers are facing business continuity challenges, which require them to rethink the way of operating and managing broadcast tasks. In order to provide the media content that audiences expect broadcasters must seek more cloud and IP based solutions to overcome the current constraints affecting the workflow of physical studios. TVU can help all broadcasters

to transit their workflows to cloud and IP based solutions, which will help minimize disruption and maximize the advantage of efficiency. TVU is in a good position; I will lead our team and show our ability to help our customers achieve IP transformation in the near future.

In my 24+ years in the media industry, I have focused on providing the best, cost-effective, value-for-money solutions to my clients. I have strived to offer better workflows and practical broadcast quality technologies keeping the client's budgets, and timelines clearly in focus. I am fortunate to have ridden a few technology waves – Analog to Digital; SD to HD; Mono to

Surround; Tape to Monetisation; CapEx to SaaS; On-Prem to Cloud; SDI to IP during these years and it is still fun.

Q. The Covid 19 lockdown has impacted the business worldwide. How do you see the impact of this on the business and how soon will the companies be able to get over this and bounce back?

The influence of COVID-19 on the media industry is very serious. Due to the isolation measures in India, many media companies are unable to operate with any business normalcy. Those companies that are unable to rapidly adjust their business model to the new

restrictions will not be able to compete and are at risk of closing down.

Although the whole industry is facing an unprecedented crisis, there are also many opportunities for those willing to move quickly to cloud and IP-based solutions such as At-Home production workflows, mobile live broadcasting, remote video conferencing collaboration and so on. With years of technology accumulation, TVU is a leader with rich experience in At-Home production and mobile live broadcasting. TVU has been providing professional and free production solutions to the larger broadcast community during the pandemic.

In the post-COVID era, I think the media industry will recover rapidly because people's consumption of media content is eternal, and with the increasing use of mobile devices, TV screens and small mobile screens will develop simultaneously. However, production methods will be changed forever because of the necessity to adapt to more remote production caused by the pandemic. This includes developing content for new modes of vertical screen programming for mobile live broadcasting.

Q. Tell us something about some of the prestigious projects undertaken by TVU in India recently?

We have many recent large-scale projects in India. One of the most well-known is for ANI. ANI is the only news agency in India and one of the biggest news agencies in ASIA. With ANI, we signed a long-term agreement where we will help in setting up their technology to distribute their video (24x7) to all their affiliates (nearly 100+) across the country. This includes all news channels and certain sports portals and print companies. We have started deployment of TVU equipment and will complete the entire project by July 2020. This is a major milestone for India's broadcasting industry in changing the

traditional workflow with TVU delivering tremendous value through lower cost, higher efficiency and simple convenience.

Q. How has the growth been for TVU in emerging markets like India? How do you compare the growth with markets in other parts of Asia?

TVU has been and continues to rapidly grow in emerging markets. A dozen TVU offices in the world are located in developing countries and regions. We have established strong partnerships with major media customers in these regions. India is a core strategic market for us. TVU entered the Indian market more than 10 years ago with TVUPack, our original portable cellular backpack device. Over the years, TVU has grown its customer base in the region and now work with ZEE, ANI, ABP News, ETV Bharat, Asianet and many others.

India and China are two of our fastest growing regions of business. TVU has been able to gain many new customers in these countries because we are able to help Indian and Chinese broadcasters increase the reuse of media content, reduce costs, improve production efficiency and expand distribution.

Q. Tell us briefly about some of the new products that TVU plans to launch and their USP?

TVU continues to introduce new solutions and add new customer requested features to existing solutions that are designed to empower the media supply chain for broadcasters. We have new product introductions or enhancement across our entire TVU ecosystem from media content acquisition to production to distribution and management.

TVU One with embedded 5G modems — Our 6th generation TVU One 1080p HDR and 4K HDR mobile IP video transmitter is now shipping with

embedded 5G modems. TVU One transmits simultaneously over multiple aggregated connections, including cellular 3G/4G/LTE/5G, microwave, satellite, BGAN, WiFi and Ethernet. Remote production enters a new phase with a TVU One solution that now delivers HEVC/H.265 efficient video compression, patented TVU Inverse StatMux Plus (IS+) algorithm for superior transmission reliability, true 60 FPS frame rate, 10-bit HDR support and the ability to send at 100Mbps over a 5G cellular infrastructure.

TVU Producer 3.0 — TVU Producer was designed to allow anyone to produce professional quality multi-camera live video regardless of their level of experience. It is a powerful Cloud-based video production solution that uses a web interface from any standard browser and requires no hardware or software. The new TVU Producer 3.0 introduces integrated TVU Partyline, a Real Time Interactive Layer which enables production crews, talent, and equipment to interact with each other in real-time, as if they are in the same physical location. We call this Social Production. In addition, TVU Producer 3.0 delivers robust features including patented zero-latency frame-accurate switching technology, professional graphics/overlay capabilities, instant replay, PIP/dual/quad multi-view and the ability to simultaneously output directly to social media platforms and CDNs as well as SDI through a TVU Receiver. It also has a separate audio mix interface with independent input channel level control, pan, mute and solo monitor functions.

TVU Partyline — TVU Partyline, a revolutionary development for Social Production, enables all members in a remote production environment to communicate seamlessly as if they were all in the same physical space. It enables production crews and talent to use production tools and collaborate remotely in real time with full HD video

quality, perfectly synchronized audio and video and mix minus one feedback. Collaboration within Partyline is made possible through the use of a Real Time Interactive Layer (RTIL). With a simple shared URL, participants can join Partyline to watch all program feeds live and interact, discuss, control and participate in a production in real-time with undetectable latency. TVU Partyline offers integration with the entire TVU ecosystem including TVU Producer and TVU Anywhere currently. TVU Anywhere - As reporters and anchors have had to report remotely from their homes due to lockdown restrictions, the TVU Anywhere mobile app has been the go-to choice globally for live reporting. TVU Anywhere turns your phone, tablet or laptop instantly into a transmitter capable of streaming high-quality live video and robust features often associated with professional live video equipment. It aggregates your device's cellular

wireless connection and available WiFi to transmit live video through a TVU receiver. Some of the features available in the TVU Anywhere mobile app is Picture-in-Picture, split screen, video return feed, metadata tagging, bi-directional VoIP and remote camera adjustment. With TVU's token system, any remote interview subject can go live instantly by scanning a QR code. It also features TVU's patented Inverse StatMux Plus (IS+) technology for outstanding picture quality and uses H.265 for efficient data usage. The TVU Anywhere app is available for iOS, OS and Android devices.

TVU Grid - TVU Grid has been used successfully in different parts of the world recently for broadcast pool feeds. Because of COVID-19 restrictions, local governments in countries such as the US are providing daily public updates on their efforts to combat the virus using TVU Grid for remote live video pool feed sharing with TV stations and

on their website. It was also used earlier as a part of a global pool feed for media organizations remotely covering the first manned commercial space launch in the US.

TVU Grid is a scalable point-to-multipoint switching, routing and distribution of live video distribution over IP. TVU Grid is used by news agencies and media organizations around the world to share and exchange reliable live broadcast quality video feeds with virtually no latency. It makes it possible for broadcasting stations to transition toward an entirely IP-based infrastructure by using a standard internet connection to deliver high-quality, low-latency video from one place to many others, resolving the need for traditional expensive fiber and satellite. TVU GridLink provides a video preview from hundreds of news agencies and has embedded rich metadata to help with live content search. ■

COVID IMPACT

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retrenching them, nor cutting their pay. They are perhaps more confident of their future and resilient in their financial outlook. There is still a great deal of uncertainty over how long Covid19 will be around for, but it seems it will be here for a few months at the least. Hence it's very difficult to predict the implications over the long period. My guess is that this pandemic has set us back by at least a year. Economically, we have regressed maybe by a few years.

Q3. What is the other bottlenecks which hinder the growth in the

entertainment and animation industry?

Response: Pre-Covid19, many of the larger animation studios which were catering to TV channels and OTT platforms were anyway struggling. Some had multiple shows on various channels and platforms, yet were unable to break even because margins are thin and there isn't enough to sustain downtimes for a large team. Many others have shut down. Channels and OTT platforms aren't willing to look at developing an ecosystem with win-win relationships. Eventually all stakeholders suffer. The

same for the VFX industry, where margins are under pressure and studios do well only over a period of time. Till the country isn't able to evolve a mature, IP driven model and a distribution / marketing ecosystem, animation will always remain a commodity where bottom lines will always be under pressure. This doesn't however negate the fact that the Indian animation has grown by leaps and bounds in the past 2 decades and is among the leading animation service providers for the world and our local film and TV industry. ■

Enabling Spectacular Experiences in Broadcasting through Sound Technologies



*-Attributed to
Pankaj Kedia
Managing Director,
Emerging Markets – Dolby*

Entertainment – An Indian Unifier

Remember the times when Indian households had one television in the living room and everyone would come together to watch their favourite soap on Doordarshan? Sounds like ages ago, but it actually hasn't been that long. Times have surely and rapidly evolved from then, with families now having a television in multiple rooms in the house, customised subscription packs for every TV and in fact, and most importantly, every family member having a personal screen with a growing preference for entertainment consumption on their smartphones.

However, what hasn't changed in all these years is India's connection with entertainment. As Indians, we love our entertainment and cannot get enough of it. Indians love their entertainment in all forms and sizes – be it on the big screen, on the radio, on their television sets, and now, on their mobile personal

screens. Over the past decade, the entertainment industry in India has seen unprecedented growth and is constantly evolving – content is being created and consumed in newer formats and in more diverse languages than ever before; entertainment is being consumed on-the-go, be it movies or shows on various OTT platforms or music. In fact, increased smartphone adoption and internet penetration have contributed significantly to this increased demand for entertainment.

The Growing Broadcast Industry in India

Synonymous to entertainment is the broadcasting industry in India, and in the backdrop of the ongoing trends, one thing is clear – the broadcast segment continues to grow. According to BARC India, India had 197 million TV homes in 2018, up from 183 million in 2016. TV penetration is at an all-time high, with the number of individuals with access to television going up to

835 million; more than the entire population of Europe.

With the industry growing at an unprecedented rate and entertainment consumption patterns evolving, the needs of the Indian audience for a superior audio and visual experience while consuming content has also evolved.

The Revolutionised Entertainment Experience

Through our breakthrough research in science and engineering, Dolby transforms sights and sounds into spectacular experiences. We bring our innovations to people through collaborative partnerships that span artists, businesses and consumers worldwide. And with our partners we deliver incredibly vivid experiences in the cinema, at home and on the go — experiences so lifelike that people feel as if they've been transported into a cinematic story or into a pulsing sphere of music, or an action-packed game. In

entertainment, both through audio and imaging, we give everyone the power to see more and hear more; and feel the spectacular.

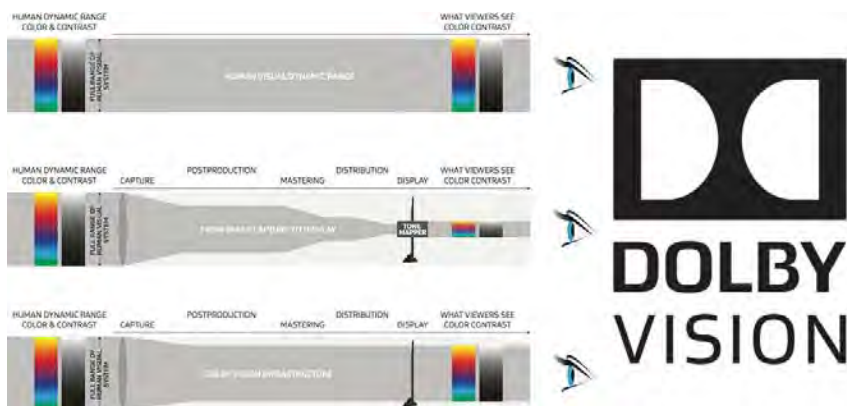
The Contribution of Sound Technologies

Technology has permeated into more and more aspects of lives. In the current era of digital transformation, several technological disruptions have come together to create powerful tools that are reshaping industries across the globe. As the ecosystem is evolving, innovations in audio and visual technology play a vital role to elevate the overall experience.

Sound is an extremely important element of the overall experience, one that can make or break your entire experience. With evolving content consumption patterns amongst the Indian consumers today, they are increasingly focussing on an enhanced sound experience. That is exactly where Dolby comes in. Our unique audio technologies – Dolby Audio and Dolby Atmos have completely transformed the way sound is being created and consumed today and has grown to be widely popular and accepted by creators and audiences alike.

Dolby brings innovations to people through collaborations with artists, the film industry, A/V companies, businesses and others worldwide. We have collaborated successfully with several OEMs, content services and content creators to deliver the ultimate entertainment experience to our audience. In fact, content creators as a community have always been extremely important to us. We work very closely with several stakeholders in the content creation chain, right from directors, to sound mixers, and others to build strong collaboration.

In the Indian context, we also have a large presence on the consumer entertainment side in HD broadcast, live sports production and also now with



streaming services and content. Dolby's technology is very widely adopted across devices, including televisions, Set-Top-Boxes, DMAs, A/V Receivers, Home Theatres, Soundbars, Mobile Phones, Tablets, PCs etc. Dolby as a brand consciously works on making the experience seamless across all screens.

Right from the introduction of HD in India, we have been deeply engaged in and working with the Broadcast ecosystem especially HD broadcast. Our work over the last several years has resulted in Dolby Audio Surround Sound being used in over 75 HD channels out of the 90 plus HD channels in the market. We collaborated with Star India to enable their HD channels in Dolby Audio when then launched in 2011. We also see the growth of HD in regional language channels and we have been working with Sun Networks, Asianet, Maa Television, among others to enable their HD channels and their content with our technology.

4K is an interesting opportunity and globally 4K is being very closely associated with HDR, Dolby Vision and Dolby Atmos. We can see a large amount of 4K content - television drama, OTT originals and live sports, being made available with Dolby Vision and Dolby Atmos. Netflix recently announced that it is bringing studio-quality audio feeds to the service, which is expected to make the audio

across all its shows sound better on a majority of the television devices that support 5.1 or Dolby Atmos.

Furthermore, in a mobile-first market like India, the mobile device is increasingly becoming an entertainment hub. Understanding this landscape, we are also very actively working with a number of OTT service providers and we have a number of services which are now streaming content with the technology. We are working very closely with leading local OTT video streaming services including Voot, YuppTV and Sun NXT to enable their service and content with our technologies. We expect to see even more interplay of the device, content and services in the coming times and our mobile technologies (Dolby Atmos and Dolby Audio) are available on all three.

Need of The Hour – A Seamless Experience

The overall understanding is that the audience of today is seeking memorable and spectacular experiences wherever they go. So, the need of the hour is to offer them immersive experience which stays with them long after they have turned the screen off. In the coming times, the landscape across industries and sectors will change rapidly but in these dynamic environments, our goal will continue to offer experiences that bring entertainment to life while redefining the sound landscape in India.

Delivering Audio Innovation



Sennheiser is one of the world's leading manufacturers of headphones, loudspeakers, microphones and wireless transmission systems and has been shaping the future of audio and creating unique sound experiences for customers.

Vipin Pungalia, Director, Professional Segment, Sennheiser Electronics, India shares his insights in an interview with Broadcast & Film

Q1. Please tell us briefly about your journey in Sennheiser. What has been your contribution in the professional segment of the brand?

Being a technology and music lover myself, working with Sennheiser has been the perfect fit for me. Like Sennheiser, my focus has always been to bring perfect and delightful sound experience to our consumers. Having been an integral part of Sennheiser since its entrance into the Indian market, Sennheiser has emerged as one of India's most successful audio brands which has witnessed a 30% Y-o-Y growth in the professional segment. My passion toward music and technology is what drives me every single day and ensure that Sennheiser continues to deliver innovation that has a great impact on the audio industry in India.

Q2. Sennheiser has a historic legacy and offers a complete range of headphones and microphones. Which is the segment which gives the largest business/sales in India. What are your priority markets in India currently?

Over the past few months we have launched clutter breaking audio solutions across segments for all kinds of industry professionals. If we look at segment wise growth rate, our Business Communication is growing the highest at 45% followed by Broadcast and Media 24% and Live performance- music segment which is growing at 16%, and audio recording at 13%. However, amongst these, the Broadcast and Media, and Integrated Systems have seen the maximum growth as compared to last year.

Additionally, we are focusing on non-metro cities from where we

are expecting 50% contribution. Sennheiser has always been at the forefront on providing latest technologies and innovations to our customers, bringing them at par with their international counterparts.

Q3. Tell us briefly about the new products launched by Sennheiser and their USP and how do you think it will have an impact on the market?

Currently, the Broadcast Industry is in a whirl of movement with the evolving demands of customers and equally innovative offerings from manufacturers. The boom in the smartphone industry along with the exposure to global music has further given it a boost. Hence, there is an emerging trend of integrating audio and video services.

Smartphones these days are becoming the epicentre of consumption. Therefore, we have

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introduced Memory Mic this year. The portable microphone is lightweight and offers excellent sound and works at any distance from the smartphone. When recording with the Memory Mic, the smartphone's in-built microphone is active and picks up the ambient sound. The wireless Sennheiser Memory Mic lasts up to four hours on a single charge and can be charged via the USB port and can charge up-to 70% in an hour. The main USP of the product is that it is wireless. The wiring in the usual mics often hinder with the influencers' activities. This Memory Mic allows our customers to move around freely and share their experience without having to worry about the wires, which we personally feel is sure to change the way content creators produce their videos.

We have also introduced TeamConnect Ceiling 2. This ceiling microphone is designed to improve audio quality for voice and video conferences with automatic adaptive beamforming technology. This technology is patented by Sennheiser and it automatically focuses on the active speaker and follows their voice no matter where they move in the room. This product sets the telephone and video conferences free, making them simpler and more productive while ensuring optimum audio quality. It's an ideal choice for medium-sized to large meeting rooms, where it is unobtrusively mounted to the ceiling and powered via Ethernet. For larger or oddly shaped rooms, several ceiling microphones can be combined to ensure best coverage.

Q4. How has the growth been for Sennheiser in emerging markets like India?

India is currently the largest and the fastest growing regions for installed sounds leading the way. Our consumers in India are more and more evolving and hence there is a lot of potential here given that there is a rapid increase in the corporate environment. When it comes to product wise market share, amplifiers are currently dominating the Indian market with 65% share whereas microphones are contributing to 25% of the market. The balance is being constituted by speakers, headphones, and headsets, mixers, consoles, converters, digital recorders, intelligent solutions, and conference systems. ■

BROADCAST INTERVIEW

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a bright future for this industry in India which is having more than 800 TV Channels at present. With the upcoming technology advancement, I foresee a bright future for the Industry. We are gearing up to spread our wings and looking beyond India also. Let's see how it turns out.

Q5. Which are other segments that VTI is targeting apart from the broadcast industry?

Visual Technologies India Pvt. Ltd. which is working and established in the country from last more than Twenty - Two years in the field of TV Production, Broadcasting & Satellite Communication & RF, spreads itself in the other verticals of the similar fields of Education & AV Industry, High End

Security Solutions, and Solutions for the Enterprise & Corporates.

Q6. Tell us about the AIBMDA and the role of AIBMDA in the Indian broadcast industry.

The All India Broadcast Manufacturers and Distributors Association, AIBMDA, is the voice of the Broadcast Equipment and Broadcast Software Industry in India.

Established under Section 25 of the Companies Act 1956, the objectives of the association are as follow:

Take up issues affecting the growth of the Broadcast Equipment and Broadcast Software Industry with Government and other regulatory authorities.

Find ways of resolving problems faced by the industry from time to time through discussion with its members.

Monitor developments in the broadcast sector and share it with its members on a continuous basis.

Encourage and promote technological innovation among engineers and scientists working in the broadcast sector through financial and other help.

Apprise engineers and other broadcast professionals of the latest developments in the broadcasting sector through a concerted program of conferences, seminars, exhibitions and road shows. ■

Satish Aggarwal – The Broadcast Technocrat Par Excellence

The State of the NLE in Indian Film and TV

This is my first of what is planned as a regular column on trending technologies in post, NLE, VFX and so forth. So, to start with, a look at the state of Non-Linear Editing systems.



By NEIL SADWELKAR

Avid Media Composer

Avid Media Composer is by far the favourite among editing systems for mainstream theatrically released films. Avid's media handling particularly for long timelines, large amounts of media, and organisational capabilities, is unparalleled.

Over the years, Avid has changed drastically. It's not a system any more, but just a software, and users add their own system, monitors, speakers, and hard drives. Avid software is available

as subscription, so one pays monthly or annually. Of course, resellers also sell complete systems, and Avid also provides information on 'ideal' systems, that expert users can buy and configure.

One huge change that has happened to Avid is, in 2019, for the first time in 30 years (yes, since 1989) the interface underwent a complete overhaul in June this year. The new Avid no longer looks and feels like Avid one has known for decades. This is a good and refreshing change as long as one spends time

studying new features. Some call it Avid's 'FCP X moment', but time will tell how this change goes down.

Avid is also the strongest in collaborative editing. Where more than one editor can work simultaneously on the same project and share assets like

bins and clips. This is still being explored in India, and in the coming year, it could become a streamlining factor in the growing web series industry.

Avid Media Composer has Windows and Mac versions with the same feature set.

Final Cut Pro 7

In conventional TV editing, FCP 7, or Final Cut Pro 7 is still going strong and is very popular. FCP was developed as versions 1 to 7 over 2001-2009 with the last update to FCP 7 happening in 2010 and the software officially discontinued since 2011. FCP 7 has not been available as a product since the past eight years, but it still continues to be used in large numbers in India.

Large pool of familiar editors, easy to learn and start basic editing, rapid timeline work, easy bin and project management, uncomplicated import and export, compatibility with tape sources, and ProRes, make it the mainstay of TV in India, even today. But FCP 7 needs an older Mac system to run and since about two years, no new Mac can run FCP 7, so it's a matter of time before it will be difficult to find a system to run FCP 7.





Its age is rapidly getting apparent. FCP 7 cannot use memory over 4 GB, cannot directly import many new camera formats, has sketchy support for 4k resolution workflows, and in later versions of macOS, has uncertain handling of colour spaces. 2020 may be the last year for the widespread use of FCP 7.

FCP 7 is Mac only and has no Windows version.

Adobe Premiere Pro

With the discontinuance of FCP 7 in 2011, Adobe Premiere Pro, the most similar editing software to FCP 7, has rapidly gained popularity in TV and other genres of films in India. It has been used in a few feature films, many a TV series and will likely completely replace FCP 7 unless some other

month. Premiere Pro can be subscribed to on its own, or as a complete Adobe Creative Cloud subscription where one gets to use Photoshop, After Effects, Media Encoder and other Adobe software. Each subscription can be used on 2 systems, and you can even load it in multiple systems and sign in and out as you like.

Premiere handles many new camera formats natively, without conversion, but by caching. It can handle proxy making on its own. With built-in colour correction, advanced audio editing with Audition, and effects using After Effects and Photoshop, means you can edit and finish in the same suite without having to import/export EDLs or XMLs. Advanced finishing and effects within Premiere/After

software gains acceptance in the coming months.

Adobe Premiere Pro is available as Mac and Windows versions. And it's available as a subscription for a little over a thousand rupees per

Effects needs a rather well specced computer system, and older systems may struggle to complete long projects. Premiere's support for exporting to other software like ProTools for audio or colour correction on Baselight or Resolve, is not as reliable as Avid's unless care is taken with metadata, but this changes with every new release. Another great new feature in recent versions is the support for collaborative editing where multiple editors can work within the same project.

Premiere Pro has Windows and Mac versions with the same feature set.

Blackmagic Resolve

After DaVinci's takeover by Blackmagic, this became Blackmagic DaVinci Resolve some years ago. With newer versions 14 through 16, Blackmagic added other 'modules' to Resolve, and it isn't just a colour correction system any more.

In the last two versions of Resolve, many new editing-friendly features have been added, and it is now a worthy successor to FCP 7 for those who are still on the fence. Resolve supports most camera formats natively, and has an in-built proxy and optimised file generation process for those file formats that don't permit easy real-time playback.

Resolve has an integrated approach for activities beyond editing, like colour correction, VFX, and audio. It does this by having built-in modules called Fusion for VFX, Fairlight for audio editing/mixing, and of course, Resolve colour correction.

So, if one has acquired the skills to master Fairlight, Fusion and colour correction in Resolve, then one can edit and finish an entire film within Resolve itself. Alternately, a team of an editor, a sound engineer, a colourist, and a VFX artist can work alternately and within the same project without having to



bother going back and forth via EDLs/XMLs as edit changes.

For larger or episodic projects, collaborative editing via a shared databases and shared media is another feature which works reliably and is easy to setup.

The best 'feature' of Resolve is that it has a full-featured (almost) free version, and even the full or Studio version is available for a reasonable one-time fee. Resolve has Windows and Mac versions with the same feature set.

FCP X

FCP X, launched by Apple in a controversial manner in 2011, has, according to some sources sold nearly 3 million copies, and yet, is considered by many professional editors in India has having 'flopped' in the pro market. It's true that not too many feature films or web series in India, are being cut on FCP X, but in the one-man band YouTuber and online video and Vlogger circle, FCP X is very popular.

Built around a database-based project (called Library), FCP X changes the usual terms for Project, Bin, Sequence, and has an innovative 'magnetic' timeline which novices find very easy to understand, and professionals find equally frustrating. Leading to its low acceptance amongst established editors.

FCP X is the most 'different' system from the others in many ways, and it takes a while to get used to its method. But, having gotten used to FCP X, it's difficult to go back to any other system. Its support for many prosumer camera



formats, seamless proxy handling, media and project management make it suitable for a variety of editing tasks even long form documentary.

Among currently available editing systems, FCP X is the one with the least



requirements of the system, and even an older MacBook Air can run FCP X with ease.

FCP X is Mac only and has no Windows version.

Conclusion and Outlook

The choice of editing software (NLE) for editing a feature, documentary, ad, episodic, web, corporate etc, is wide

and varied. And software evolves rapidly, adding features and capabilities. So fast that editors are often left behind and don't use many new features that have been available for years. Systems to edit off - Windows and Mac - also evolve rapidly and get cheaper at the same time, and what used to cost millions, now costs tens of thousands. The capabilities of even portable systems of today rivals large desktop systems of just a decade ago.

The lines between editing or what used to be called 'offline' editing, and sound mixing, visual effects, colour correction, and 'online' editing gets thinner and thinner, and its left to the capabilities of the human more than what the system can do. Today, an exceptionally talented editor who invests time in learning, can edit, colour correct, mix sound, and do visual effects, and can even create a DCP for theatrical release, or upload for online release - all in one small affordable editing system. ■

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Neil Sadwelkar, based in Mumbai spends most of his waking hours working as a consultant on data and workflows for movies and Television and is an occasional editor, teacher and writer. At present, he runs a small Data and Workflow Services company called 'Digital Dada' which is a trusted name in data and workflow for feature names by some of the largest film companies - Yash Raj Films, Dharma Productions, Red Chillies, Excel Entertainment, Bhansali Productions and many others

2020
Media Kit

BROADCAST & FILM
GLOBAL MEDIA FOR BROADCAST,
FILM, POST & INFOTAINMENT
TECHNOLOGY & BUSINESS

BROADCAST & FILM

- Your #1 Resource to Reach

Broadcast, Film, Post & Infotainment Technology Markets in India



Broadcast & Film – www.broadcastandfilm.com – is a leading online publication serving the broadcast, film, post and infotainment technology markets globally. From being published since 1991, to its shift to the online platform in 2013, the magazine has established itself as a credible source for industry news, analysis and technology trends in the broadcast and entertainment technology industry. We cover the emerging new technologies and trends, including the transition to the digital phase of the ever-evolving media and entertainment sector.

Helping You Stay A Step Ahead of the Competition

If your company wants MAXIMUM visibility in the broadcast, post-production market, then Broadcast & Film is your #1 Resource. Broadcast & Film will provide your company with an effective package of advertising via our industry leading online digital media, E-newsletter, broadcast e-mail service, mailing lists, and website to

reach the broadcast markets.

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