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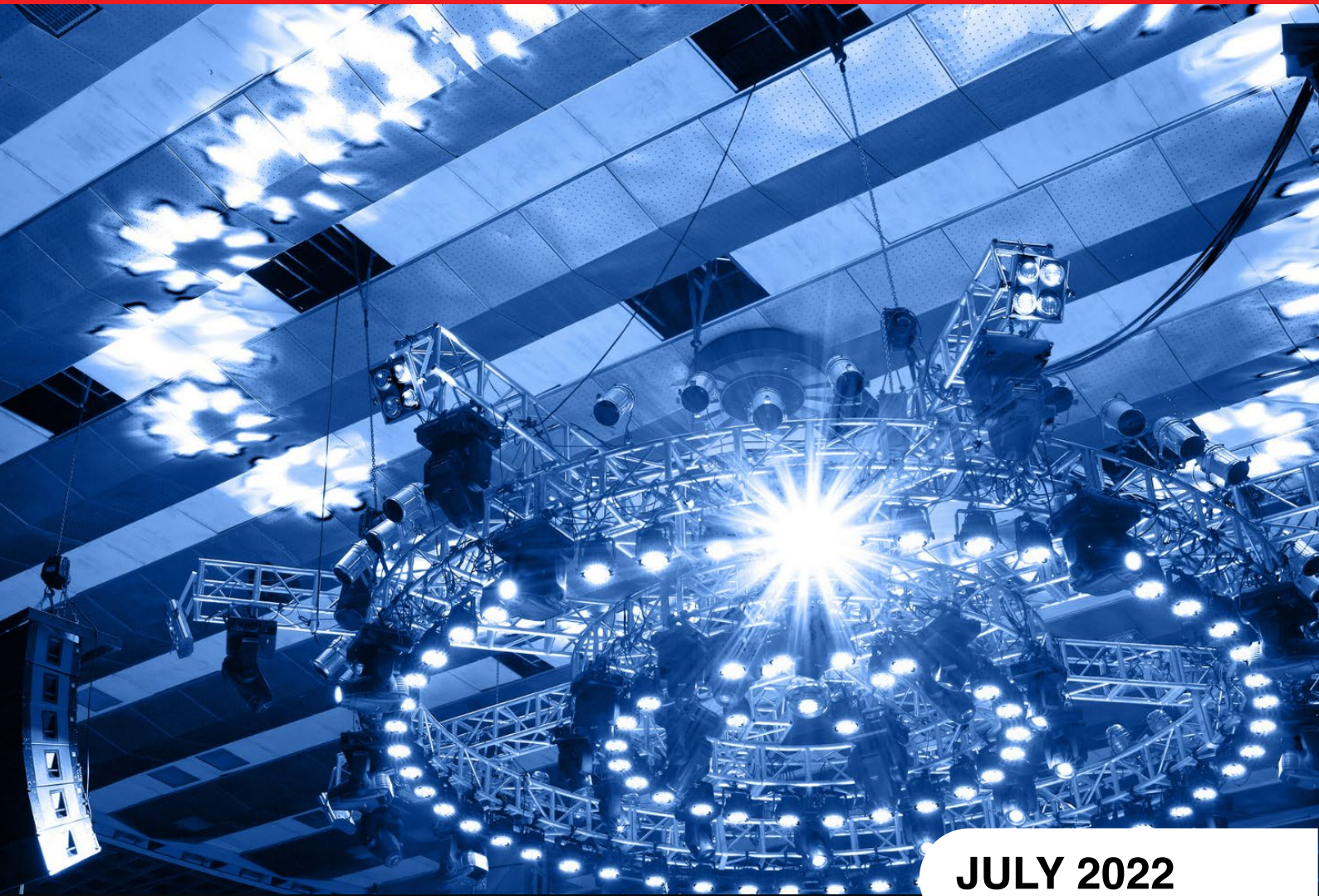## ENTERTAINMENT TECHNOLOGY ASIA

For The Technical And Production Professionals in Asia

JULY 2022

Meshing Exceptional Event Experiences

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DISGUISE METAVERSE SOLUTIONS DIVISION TAKES EXTENDED REALITY TO THE NEXT LEVEL

ENNOVATION:
CLAYPAKY TAMBORA LINEAR UNLEASHES CREATIVITY WITH PIXEL ART EFFECTS

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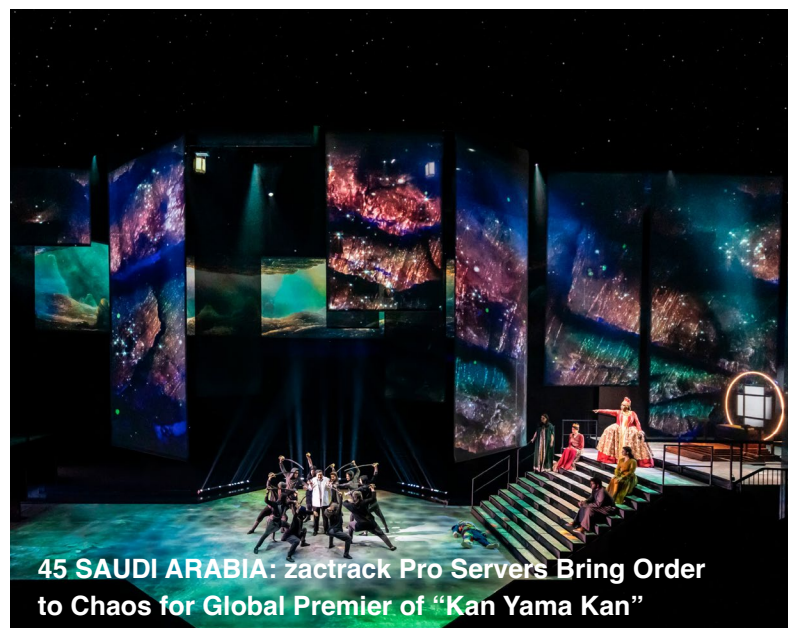
disguise has launched its Metaverse Solutions division to take Extended Reality to the next level. With Goldman Sachs identifying the metaverse as an $8 trillion opportunity, it is not surprising that disguise would take advantage of it. disguise Metaverse Solutions will expand on existing disguise solutions that empower live events, audiovisual, location-based experiences, and virtual production material, allowing companies to take advantage of the metaverse's unique opportunities. Alex Schloesser, our straight-talking contributor, steps away from his technical contribution to give his perspective on the industry exhibitions that proliferated from April to June. He feels that Prolight + Sound Frankfurt has lost its relevance.

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Elation Assists on FIFA World Cup Qatar 2022 Official Countdown Clock reveal

QATAR: FIFA World Cup, the world's most popular international football competition, kicks off in November in Qatar, and the countdown has been going on for quite some time. The FIFA World Cup Qatar 2022 Official Countdown Clock builds excitement as it counts down the hours, minutes, and seconds until the opening game on November 21, 2022, at Al Bayt Stadium. The Countdown Clock was revealed on November 21, 2021, one year before the big kickoff, at Doha's scenic Corniche Fishing Spot.

The Countdown Clock's elegant hourglass curves were inspired by the FIFA World Cup Qatar 2022 emblem's unbroken loop and the ancient timekeeping tool. The goal of the reveal event was to build excitement for the upcoming competition by using lighting and projection as the clock was unveiled.

ES:ME Entertainment Services, one of the leading event technology professionals in the Middle East, provided technical support, lighting, audio, and rigging for the reveal event, which included the hanging of a translucent screen, for client fischerAppelt Qatar. Lighting design was by visual design and technology company bright! studios of Germany.

ES:ME has worked on many of fischerAppelt's big events over the last 10 years and for the Countdown Clock reveal supplied a show lighting package of 22 x Elation Proteus Maximus, 28 x Proteus Hybrid and 31 x Rayzor 760 fixtures.

The Countdown Clock event isn't the only FIFA event that ES:ME has completed using their Elation gear. Last November, they incorporated Proteus Hybrids on an opening show of the FIFA Arab Cup. "I like to use Elation, especially the Proteus Maximus and Proteus Hybrid with their marine-grade specification because they work great in Qatar's harsh environment," stated CEO of ES:ME Entertainment Services, Alexander Wuerfel, who noted that they began investing in Elation lighting three years ago. "Although it's a hot and often humid climate that lies directly on the sea, I can rely on these products."

A stunning aerial drone display and digital fireworks accompanied the reveal, and several special guests took the stage as well. It was critical to both light the participants and fill the camera with beams and colour because the production was streamed live so that football fans all around the world could virtually observe the milestone. The Proteus Maximus were used to provide key light while beams from the Proteus Hybrid, some at ground positions behind the projection, filled the camera. The compact Rayzor 760 wash lights with their seven oversized front lenses, as well as other fixtures, provided ambient, eye-candy for the camera.

Elation/Proteus Maximus

Début of disguise Metaverse Solutions Division Takes Extended Reality to the Next Level

GLOBAL: With the recent increase of real-time 3D graphics rendering capabilities on game platforms, today's consumers are hungry for richer, more immersive metaverse experiences. While Goldman Sachs has identified the metaverse as an $8 trillion opportunity, organisations are still struggling to understand the technical elements required to begin developing metaverse experiences.

disguise Metaverse Solutions will expand on existing disguise solutions that empower live events, audiovisual, location-based experiences, and virtual production material, allowing companies to begin taking advantage of the metaverse's unique opportunities.

Over 600 productions in over 50 countries have been powered by disguise's market-leading extended reality (xR) workflow, which was launched just two years ago. These include delivering live metaverse events such as Kaskade's in Fortnite and Rocket League as part of its Llama-Rama event series, as well as supporting major brand launches such as Gucci and Ferrari.

disguise will expand on their extended reality solution by combining their workflows and expertise with Epic Games' suite of applications, including architectural visualisation tool Twinmotion, web 3D viewer Sketchfab, and 3D photogrammetry software Capturing Reality, as well as their partnerships with metaverse event enablers Surreal and advanced content creators Zoan. As a result, disguise will be able to provide virtual production workflows that are specifically tailored for the metaverse.

Live concerts have more appeal in the metaverse than any other event, with 45% of adults happy to listen to live music in a virtual world. We are on the brink of a virtual artist revolution, according to Rolling Stone magazine, with Ariana Grande, J.Balvin, and DJ Marshmello among the early adopters.

For over twenty years, disguise has powered spectacular experiences including music performances for the biggest artists in the world: Billie Eilish, Ed Sheeran, Camilla Cabello, Katy Perry, DJ Kaskade and J.Balvin, as well as for major shows like Coachella and

Glastonbury to name a few. Their solution has been used by brands like Nike, Underarmour, Volvo, Siemens and Walmart as well as to power spectacular augmented reality and projection mapping experiences in the 2020 Expo Al Wasl Plaza dome, the BTS 'Love Yourself, Speak Yourself' Tour and rapper Dave's Brit Awards performance.

The ability of disguise to enable infinitely scalable content has been used extensively in entertainment venues such as the Atlanta and Vegas-based Illuminariums, which allow visitors to experience being in another world without using any VR devices through cinematic scenes generated in real-time at a 240° native field of view. Led by disguise chief experience officer, Alex Wills, the new Metaverse Solutions division will be able to work with major and emerging Metaverse platforms, including Fortnite, Roblox, Sandbox, Niantic, and others, to deliver integrated solutions that will allow brands and performers to build metaverse experiences that resonate with their fans.

"Our mission is to help create experiences that challenge expectations. We believe in connecting the physical with the virtual worlds, to create Gateways to the Metaverse. Through this we will enable a world that fulfils essential human needs: to connect, to collaborate and to be

included. The promise of the Metaverse is to unleash a new wave of opportunities for every kind of creator, including partners, brands, and performers alike. We have always focused on simplifying complex technology to unlock creativity that empowers our users to create the most amazing experiences. The creation of our Metaverse Solutions division and the launch of disguise Labs, are a key part of this strategy", explained disguise CEO Fernando Küfer.

The Metaverse Solutions division will be powered by the creativity, technical consulting, and innovation of disguise's newly formed exploration unit, disguise Labs, which is led by Abi Bowman, disguise's Chief of Staff.

Worldwide, disguise Labs will be a global initiative that will provide one-of-a-kind venues for brands, creatives, and technologists to test and experiment with metaverse workflows. Founded by Sam Folkard, Head of Labs New Zealand, Labs will now expand - bringing together local partners in key locations such as Los Angeles, New York, South Korea, London and Montreal. Lara Bowen, disguise's global head of Labs, will be in charge of the Labs' global expansion. These Metaverse Experimentation Spaces, which were created in collaboration with professionals in virtual production, live shows, broadcast, and corporate communication, will spark creativity for future metaverse experiences. Brands and creatives interested in exploring the metaverse are encouraged to take advantage of the unique workflows, technology, and expertise available in these venues.

"There is a huge amount of interest and investment in this space right now and, what is most exciting about launching this new division is that we offer a tangible solution to help brands and creators develop the next generation of experiences. Our xR technology combines key metaverse building blocks including real-time 3D graphics, spatial technologies and advanced display interfaces – all to deliver a one-of-a-kind gateway to the metaverse," said Alex Wills.

disguise/Metaverse

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Creative Technology Takes Pride in Owning the Middle East's first DiGiCo Quantum338.

MIDDLE EAST: Creative Technology (CT) has recently extended its audio investment in **DiGiCo's** cutting-edge mixing consoles, becoming the first company in the Middle East to stock the new **Quantum338**, which has been added to its already wide collection of audio gear.

"From minor conferences to the most complex of shows, DiGiCo has been the industry's premium choice for many years now," commented Wissam Shaheen, head of audio. "As a long-time user myself, knowing what the British manufacturer represents in modern pro-audio, deciding to go with DiGiCo was easy. The Quantum338 now sits at the forefront of our new audio mixers inventory; this desk defines the future of sound mixing with features only a Quantum can deliver.

"SD12 consoles, the most versatile mixing console on the market today, have already joined our control fleet, along with S21 compact mixers, the ever so practical console that delivers every time. An extensive line-up of I/O options accompanies all our mixers from SD-Racks to SD-NANO Racks and everything in between. We have ensured that every available slot is filled with the mighty Stadius 32-bit Pre-Amp/ DAC cards, with every connectivity option available."

DiGiCo distributor, 7Hertz was thrilled to be a part of Creative Technology's historic achievement of being the first in the region to obtain the new DiGiCo Quantum338 console.

"We always meet at the common goal of better serving our end client by always offering the latest in the new technology at the highest standards," adds Chadi El Masri, CEO/Founder of 7Hertz. "With live events now back in full swing, CTME is well-positioned to continue serving the industry with what is at the front of modern audio technical requirements. The best in sound, interoperability, reliability and performance is what DiGiCo stands for, and that falls in line with what we continuously offer our clients."

"We are delighted to have the new equipment delivered to our region," said Andy Reardon, managing director of CTME. "Our audio team has the technical know-how and expertise to enhance every event and give the best experience using the latest technology in the market. We are dedicated to offering our clients the best solutions across the region and are proud to be stocking the latest DiGiCo equipment to ensure we can meet the needs of our clients in the GCC."

"I am delighted that CT has chosen to go the DiGiCo route and have bought such a comprehensive and

flexible system of consoles and racks," concluded Ian Staddon, VP sales, DiGiCo UK Ltd. "After meeting CT together with our distributor 7Hertz last September, we discussed their requirements in order to achieve their goal to expand to a full-service provider for the region. It was very important to work together to ensure the right products were provided. It is great to work with such a professional company as CT, and both DiGiCo and 7Hertz are looking forward to working together for many years to come."

Creative Technology

Avision Expands Adamson Inventory After Overwhelmingly Positive Feedback

"We have deployed our Adamson system in all types of conditions on a variety of applications with excellent results every time," commented Mahesh Martal of Avision. "The S10 is just perfect for our requirements! It delivers natural and impactful sound throughout the venue, all in a lightweight cabinet that's extremely easy to rig. What's more, is that it looks great, and we have received numerous compliments from across the board."

In response to the overwhelming favourable feedback, the company has already purchased four more S10 enclosures and 2 x S119 subs, as well as a Lab.Gruppen PLM20K44 amplifier.

"The response to Adamson's products in India has been immensely positive from the get-go, and it's just getting better," said Karan Nagpal of Adamson supplier, **Stagemix**. "Engineers and artists alike are adding Adamson speakers to their riders, and we're elated that more and more companies are joining the Adamson network and also expanding their Adamson inventory."

Adamson

INDIA: Avision is one of Mumbai's premier event production companies, with a long roster of high-profile clients. Avision added a set of S10 two-way full-range line array cabinets and S119 subwoofers in 2019, which have proven to be an excellent fit for the majority of their operations.

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SoundEffects By Uday Shah's Highlights Its Technical Prowess at PALM Expo 2022

Receipients of the PALM Sound & Light Awards including Uday Shah (front row in blue shirt).

INDIA: SoundEffects By Uday Shah, a Pune-based technical services provider, has been busy since the live event market reopened in December 2021. SoundEffects has delivered a comprehensive technical solution for crowd favourite music festivals like Sunburn, NH7 Weekender, and Trikaal Festival, as well as countless private and corporate events featuring music heavyweights like Guru Randhawa, Lucky Ali, Rahul Vaidya, among others.

After hours of hard work, passion, and commitment, the team's efforts paid off when SoundEffects By Uday Shah was honoured and recognised at PALM Expo 2022 with the prestigious PALM Sound & Light Award for Outstanding Sound Rental Company of 2021-2022.

Speaking about the monumental achievement, Uday Shah, founder of SoundEffects By Uday Shah, expressed a deep sense of gratitude, "Being appreciated is one of the simplest yet most meaningful experience ever; and I'm grateful to the PALM Expo team for the recognition

and for giving us another moment of deep gratitude. And I thank God almighty for the strength to keep moving forward; and for all the outpouring of love and appreciation that we continue to experience. None of this would've been possible without our wonderful team of technical and non-technical staff at SoundEffects

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Uday Shah wirh his SoundEffects team.

who have put in the highest level of dedication and commitment in making every single event a rousing success. Also, the long list of our wonderful clients and industry partners who have supported us throughout our journey. Two people I look up to the most i.e. Mr. K. Varathan Swamy of Cinetekk and Mr. Frederick Fernandes of Sound Source Systems (Taurus) have played a key role in all the success that our company has achieved today, and I'm ever so grateful to them for their invaluable support and kindness. And last, but definitely not the least, I'd also like to express my deepest gratitude to my family for the love and encouragement at every step along the way".

The PALM Expo 2022 was SoundEffects' chance to shine, as the company's efforts to highlight its technological expertise didn't stop with the PALM Sound & Light Award.

The SoundEffects team was entrusted with the Harman Live Arena to ensure that the 2022 edition of the feature produced the largest and most flawless audience experience yet. With some of the biggest names in live music, including Sivamani, Runa Rizvi, Dipesh Varma, and others, gracing the Harman Live Arena stage this year, the feature, as always, was equipped with an end-to-end technical infrastructure from industry leaders Harman Professional – with a stellar microphone inventory from AKG deployed for various vocal and instrumental exigencies, and an all JBL by Harman loudspeaker system wowing the artists and audiences in tow.

The front-of-house system included the all-new VTX-A12 line array system, G-28 subs with VTX V-20 modules deployed as centre-fills, and F15 modules with F18 subs deployed as side-fills. The on-stage artist monitoring system included multiple M20, M22, and VRX915 loudspeakers, all powered by Crown IT12000HD & Crown IT 4x3500HD power amplifiers (with VRack) and controlled by Soundcraft Vi3000 with the 9U Vi Stagebox deployed at FOH and Soundcraft Vi2000 with the 9U Vi Stagebox deployed at MON positions, respectively.

The technical solution was provided in part by Harman Professional, with the remainder coming from SoundEffects' inventory. The SoundEffects team collaborated closely with Harman Professional members to ensure flawless technical execution of the feature on all three days of the event, including system setup and de-rigging; renowned engineers Lakir Mehta and Zahid Khan represented SoundEffects on FOH and MON, respectively, and Sudarshan Srinivasan was in charge of systems engineering. In addition, the SoundEffects stage-tech crew was tasked with creating a completely seamless experience during performance/artist change-overs (i.e the transition between different artists per the performance schedule).

Summing SoundEffects' first year of direct association with the Harman Live Arena, Uday affirmed "This was such a fantastic experience for all of us, and I'd like to thank every member representing the SoundEffects team who put their heart and soul into making the Harman Live Arena an overwhelming success at the PALM Expo this year. Of course, my deepest gratitude to the entire team at Harman Professional...for their unwavering support and active involvement throughout the entire process... It is truly humbling to have so many people...sharing kind words of appreciation about their experience at the Harman Live Arena this year. Not only does this instil a great deal of confidence within every member of SoundEffects; but it's also got us all excited and looking forward to building on this synergistic association with Harman Professional, and pulling off bigger and better production experiences for future editions of the event!"

SoundEffects By Uday Shah

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Creative Technology Asia Pacific Increases Rental Inventory by Boosting Stock of Ayrton Diablo S

CT Asia Lighting HOD Kenz Woo with the new Ayrton Diablo.

SINGAPORE: Creative Technology Asia Pacific (CT Asia) has received a new shipment of Ayrton Diablo S profile fixtures to add to its rental inventory. The Singapore-based audio-visual company caters to a wide range of MICE events throughout the region, including keynotes, kick-off meetings, exhibits, and product launches. When Diablo was first released in 2019, it made its first investment in the ultra-compact, feature-packed profile luminaire, before boosting its stock levels in 2020 and again this year.

"Ayrton Diablo was one of the potential fixtures that we originally looked at when we were searching for a replacement within our rental inventory," said CT Asia's operations director, Juay Minghee. "We trialled it against other products and Diablo ticked all the right boxes for features, and impressed us above all with its performance. The framing system was a useful new feature that our lighting programmer appreciated most

compared to our previous rental stock. On top of that, the excellent service support we receive from our local distributor, Total Solution Marketing, cemented the decision."

Due to its many exceptional characteristics, such as a 7° - 53° beam spread and 100% framing shutters, the Diablo is proving to be one of Ayrton's most popular fixtures. Diablo weighs only 22kg and delivers 19,000 lumens from a 300W LED source.

The tech team at CT Asia are now very familiar with Diablo and confirms its performance is matched by its reliability: "Diablo is a very versatile package in a good form factor for our market segments," confirms CT Asia's head of lighting, Kenz Woo. "It requires no more than standard periodic cleaning and has given us hardly any problems at all. Our recent top-up of these fixtures is a statement of Diablo's proven performance and, if the demand continues to grow, we will definitely consider adding more to our inventory!"

The Ayrton Diablo fixtures were supplied and supported by Ayrton's exclusive distributor for the region, **Total Solution Marketing Pte Ltd.**

Ayrton

CT Asia

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StageMix Appointed as ChamSys Indian Dealer

INDIA: The PALM exhibition was a memorable occasion for ChamSys, not only because of the positive response to its award-winning lighting consoles but also because it represented the start of a new chapter for the company in India, as it collaborated with its newly appointed dealer, **StageMix**.

"We are extremely happy to welcome StageMix as our Indian dealer," said Aziz Adilkhodjaev, ChamSys' international business development manager. "Given the recent surge of interest in our products, we've been looking for a partner with the passion for growth that could help us seize the opportunities in front of us. We're confident we found that partner in StageMix.

Nitesh Narayan, sales manager of StageMix is equally optimistic about future growth. "This is a wonderful opportunity for our company," he said. "Chamsys has great products with a lot of features and functionality that are not readily found elsewhere. We got some very positive feedback from senior lighting designers who had used Chamsys abroad. Our team is committed to providing top-notch support to our customers, so we share this philosophy with Chamsys, which already has a great platform with online training videos, webinars, and

training sessions."

StageMix wasted no time in putting its customer service and training concept-driven philosophy into action. Leading up to the PALM expo, the company held seminars in Bangalore and Mumbai, attracting more than 60 lighting designers, programmers, and directors over three days.

"Many of the guests at our seminars were experiencing the Chamsys MagicQ and QuickQ consoles for the first time," said Narayan. "They were blown away with the powerful lighting control features, shape generators, full lighting visualisation, pixel mapping, HD media playback, and other features."

This enthusiasm was also plain to see at the PALM expo. "Our stand was very busy," said Adilkhodjaev. "Visitors were clearly impressed by how the MagicQ products are easy to learn, easy to use and very powerful."

StageMix, for one, is eager to highlight these characteristics in its market development efforts. "As part of our promotion plan we will be conducting regular in-person training for theatre and concert lighting professionals as well as sending out our demo boards on shows so that everyone can get their hands on the powerful features of Chamsys," said Narayan, adding that, lighting professionals who see the consoles "quickly fall in love with them".

With this kind of enthusiasm, it's easy to see why ChamSys and StageMix are both looking forward to a bright future in India.

ChamSys

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CHAUVET Professional Sets the Stage for 450 Million Basketball Aficionados on NBA Floating Court
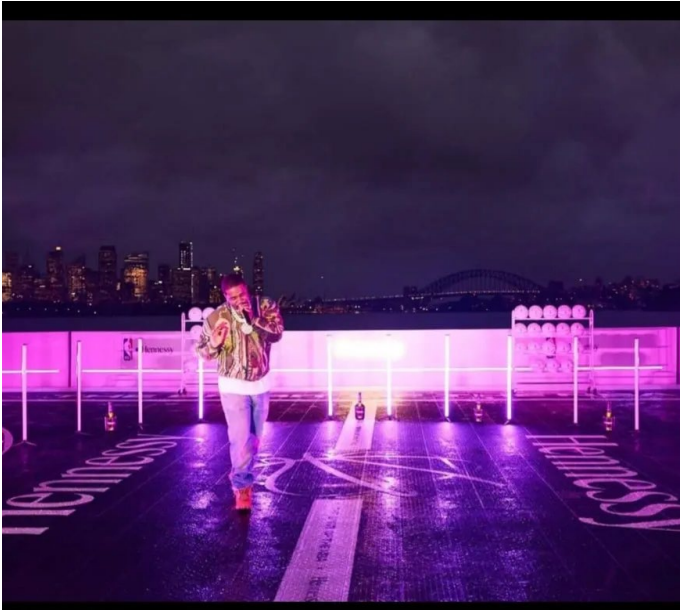
AUSTRALIA: According to the International Basketball Federation (FIBA), at least 450 million people play basketball every day. However, it's unlikely that any of them got to do so on a court as unique as the one that Australian tennis star Nick Kyrgios and other high-profile guests drained three-pointers and made layups in the middle of Sydney Harbour.

Their performance on Australia's first floating basketball court, which was overseen by rap legend FERG, was part of Hennessy's "Courts Beyond Limits," a programme commemorating the National Basketball Association's 75th season. Guests were aboard the Hennessy Superyacht for a courtside view of the event. In addition to the celebrity hoops display, they were treated to performances by FERG, as well as AIR Award-winning hip-hop musician B Wise and other celebrities.

A magnificent courtside lighting display by Jay Productions, which used 24 x CHAUVET Professional WELL STX 180 fixtures, purchased from Showtools International, set the tone for the event as it generated once-in-a-lifetime memories.

According to Showtools, the WELL STX 180 was added to its inventory because "it provides protection against

any weather conditions, [while] being battery operated, it can be placed anywhere and oriented in any position."

In Sydney Harbour, all of these qualities were put to good use. "The designers were looking for eye-candy effects for such an iconic location," said Jason Ghazal, managing director of Jay Productions. "The WELL STX provides that with wireless control of 16 zones of the RGWW LEDs for exceptional eye-candy effects with high CRI. With the floating court being on the water, the WELL STX 180 is IP65 providing protection for all weather conditions, which was ideal for the location."

Ghazal continued, "We placed the STX all around the court (oriented horizontally) as well as a backdrop to ASAP Ferg. The WELL STX matched the mood and atmosphere of the floating basketball court."

Inclement weather? It didn't matter to the lucky few among the 450 million basketball fans who attended the Courts Beyond Limits event, and it surely didn't matter to the IP65-rated fixtures that added to the fun.

CHAUVET Professional/WELL STX 180 fixtures

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Additional MA Lighting Consoles Purchased by Singapore's National Performing Arts Centre

© Esplanade - Theatres on the Bay.

SINGAPORE: Esplanade - Theatres on the Bay, Singapore's national performing arts centre and one of the busiest arts centres in the world, has purchased 12 new MA Lighting grandMA3 consoles. This is part of a technical improvement to keep the arts centre up to date with lighting control technology.

Instrumental in the decision to replace the older consoles with new grandMA3s – delivered by MA's Singaporean distributor, **Total Solution Marketing Pte Ltd** – were Heryadi Yusof (head of lighting) and Ismahadie Putra (technical manager). The lighting team underwent a thorough procurement process which included exploring the various industry consoles that could replace the ageing lighting desks.

"An open tender was conducted and grandMA3 ranked highest in our quality-to-cost assessment," explained Heryadi, "All consoles were vetted based on the criteria we set, which included having the flexibility to support the diverse range of productions across different genres that are presented at Esplanade," he explained. In tune

with the latest industry trends, they also took note of the new technologies that the various consoles could offer, as well as the after-sales and technical support expected from the local distributor."

The sale comprised 4 x grandMA3 lights, 4 x grandMA3 compact XTs, 2 x grandMA3 compacts and 2 x grandMA3 onPC command wing XTs.

Esplanade still retains its original grandMA1 and 10 x grandMA2s, however, they will be phased out once the grandMA3s are commissioned in the various venues. The Concert Hall, the Theatre, the Recital Studio, the Theatre Studio, and the Annexe Studio are all running on grandMA, and will all be moving to grandMA3 in the following months.

Heryadi and Ismahadie are currently in talks with the local MA training centre about scheduling grandMA3 training for all relevant lighting technicians and operators. They have been using and trying out various grandMA3 devices over the last year and, among other

features, have found several new ways to store and manage show data.

"We also like the additional display screens, dual encoders, themed screen looks, LED lined faders, executors and knobs of the grandMA3," reported Heryadi, who thinks the inbuilt version of MA 3D visualiser is useful and reckons there will be more features that they will be adopting once the consoles are in everyday use.

Heryadi, who has been the Esplanade's head of lighting since 2018 and has worked at the arts centre since its inception in 2002, added that MA Lighting consoles are versatile and can be used for a wide range of programmes, from simple presentations to complex stage performances.

With the easing of Covid-19 restrictions in late March, Esplanade is now able to operate at full capacity in the smaller performance venues including the 245-seat Recital Studio and 220-seat Theatre Studio. In the larger spaces, the new measures allow an increase in capacities to around 1,200 for the Concert Hall and 1,400 for the Theatre. It is expected that the new Singtel Waterfront Theatre will be able to operate at a full capacity of about 600 people when it opens later in 2022.

MA Lighting

Industry Professionals in Bangalore and New Delhi Familiarize Themselves with the New eMotion LV-1 Digital Mixer from Waves

INDIA: Pro audio technology solutions brand Waves and their official representatives for India – VMT, conducted a comprehensive preview session on the eMotion LV-1 Digital Mixer at the Institute of Audio Technology in New Delhi and the VMT Bangalore Store in Bangalore. Abraham Richard from Waves GCC flew in from UAE to conduct the sessions which were attended

by 35 engineers from the industry. After the session, the engineers were able to get some hands-on time with the board. According to Ravisankar Nadiyam, regional sales manager - India & SEA, Waves, the endeavour went a long way in helping users and engineers get better acquainted with the eMotion LV-1 and all that it is capable of; as he commented, "Waves eMotion LV1 has the potential to change the way people look at live mixing and the mixer in general. At the outset, the sound quality gets engineers hooked. Then they realise that the LV1 can do everything any mixer does with the added benefits of customised mixer lay out, the small footprint, minimal learning curve, etc."

The hands-on training was much appreciated by all the participants; with Jeff Mandot, director, Vardhaman, affirming that the company has received overwhelming support from the industry for similar sessions. And as part of VMT's ongoing commitment to academics, several thematic as well as hands on training Programmes are planned in the near future. "VMT actively works with our friends and peers in the Audio Industry. We are extremely excited with what waves has to offer and are looking to host more such events that could help develop a better understanding about not only our products, but also plugin processing & mixing in general. With the help of IAT in Delhi, we have made the mixer available for anyone who wants to spend more time with the board, on or off the show" informs Jeff.

VMT

Waves Audio

ADJ Encore LP5IP

The Encore LP5IP professional features an IP65-rated enclosure, the Encore LP5IP is specifically designed for temporary outdoor use as well as for temporary use or permanent installation indoors. Its sealed design means that its LEDs and internal electronics are safely protected from split drinks, dust/debris, and smoke/haze residue which makes it ideal for outdoor stages, outdoor event illumination, and indoor settings.

Vari-Lite VL1600 Profile
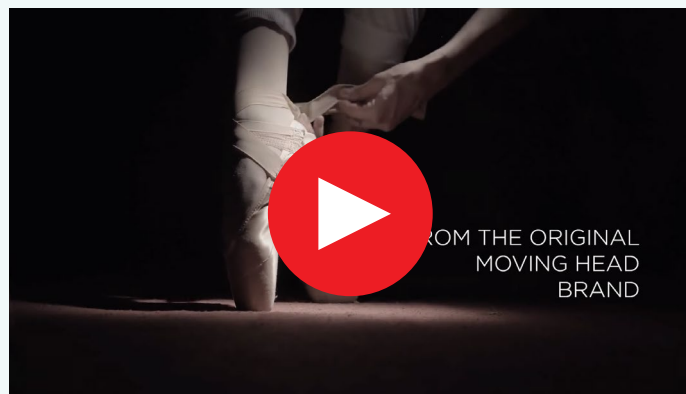
The advanced moving head profile luminaire brings the beauty of natural light to theatrical productions. With its exclusive Vari*frost system, the luminaire provides seamless graduated frost that diffuses the entire beam at once. An updated VL*FX wheel adds natural effect animations such as fire, water, and earth tones. Designed for theatre and tailored for creative effects, the VL1600 Profile addresses the specific needs of designers everywhere.

CODA Audio HOPS12T
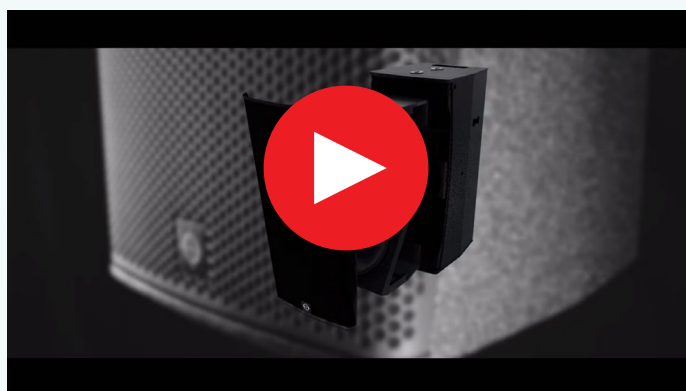
CODA Audio has expanded its HOPS (high output point source) series with the introduction of the HOPS12T, a mobile version of the HOPS12i installation model. The HOPS12T is a high-output three-way point source that features 12" neodymium cone drivers with 4" voice coils adapted from CODA's flagship line array, AiRAY. The HOPS12T incorporates CODA technologies such as Dynamic Airflow Cooling (DAC) and phase linearity.

Claypaky Tambora Linear 100
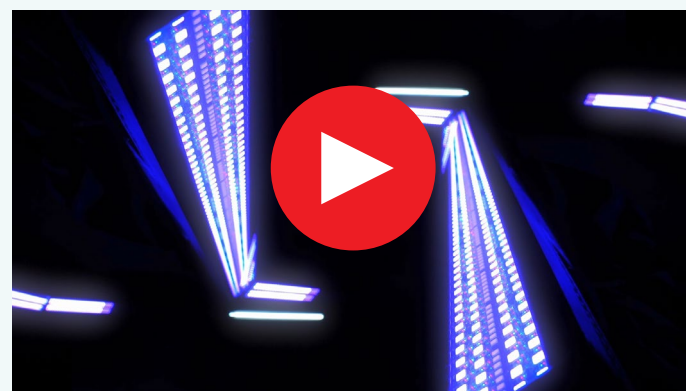
Tambora Linear 100, Claypaky's new adaptable hybrid LED bar, offers two-in-one versatility: an innovative RGB LED bar and a line of strong LEDs for a strobe effect. Tambora Linear 100 includes multiple built-in effects, allowing it to be used not just in advanced mode but also in simple mode when a media server isn't accessible or when a quick installation is required.

State of the Union, or So…

Please allow me to wish you all a steady return to normality after the long COVID 19 break. I wish for you all to be able to make a decent living from your skills and that, as a society, we will be able to appreciate all the talent from this great industry. I want to try an assessment here after seeing the first run of trade shows again. Overall, there have been quite a few comments about the lack of innovation over the past two years, which is both sad and expected. It takes money to be able to do all those new and exciting things. I anticipate that we will not see anything dramatically new in 2022. Still, I am very hopeful that 2023 will bring us a much larger number of new and exciting products to celebrate.

Besides the COVID-19 pause, we are now full throttle engulfed in the global supply chain bottlenecks, a lot of chipsets are rare, and anything rare drives the prices skywards, so things that would have cost 500 Dollars in the past can quickly go for double or more these days. And just because it would be too simple if this were all we had to deal with, raw material pricing is going through the roof, and steel and copper have also seen dramatic pricing increases. Too bad that we have not been able to develop this wireless thing further and avoid using wires altogether. And of course, the container shortage globally has allowed the entire freight industry to surcharge us, despite them being the ones who have caused the shortages by poor planning of resources. We are at their mercy with nothing to do about this at all.

From a talent perspective, I have been talking to people globally. Following the news cycles, I believe that we have lost a substantial portion of our industry talent for good since society did not care about the entertainment industry enough to keep it whole and alive during this period. Seeing all this talent gone for good is very sad and possibly problematic since they can't be easily replaced. On the bright side, this opens up enormous possibilities for those who decide to stay on and hang in.

You might get opportunities now that you would not have gotten otherwise in the next ten years, simply because talent is gone and needs to be replaced. There is a lot of hiring happening globally, and it is a bit odd to see that a lot of people have been fighting hard to survive and then there is this hiring spree towards the end of the pandemic.

When I write this, we have seen Prolight & Sound in Frankfurt happening, NAB in Las Vegas, ISE in Barcelona, NAMM in Anaheim, PALM in India and even INFOCOMM in Las Vegas. Full disclosure, I have not attended any of the above, and I have only been able to speak to numerous attendees of each event. The only reasonable conclusion is that as an industry, we do not need that many trade shows, and it will be interesting to see which ones survive and can become relevant again for us. My understanding is that Frankfurt has proven to be irrelevant already, and they will have an extra tough time coming back now. ISE in Barcelona served as much as a success message with half the visitors of the last Amsterdam event in 2020, and at the same time, ISE in Barcelona has proven to be a super spreader event for COVID-19 in this industry. We do not seem to learn much after all. However, ISE did gather some 42 k visitors, which is good to see and is an encouraging sign of returning to the new normal after this pandemic.

So, where do we go from here? I don't think that anyone reasonably feels that we will go back to what we had before since there is simply no way this would happen. With all the challenges and difficulties, those who can adapt the fastest and develop skills required for the changing working environment will be best equipped to manage and succeed. A lot of what most of you have done anyway, learning and acquiring new skills and knowledge is what will make all the difference in the future. I foresee a combined hybrid world where live events will always exist, but not everything has to be done in person, and there are jobs to be had and money to be earned in this environment as well. With this in mind, I wish all the very best for you out there.

Join the conversation and share your thoughts with Alex. Alex can be reached at alex@asaudio.de

CODA Audio Mobilises HOPS12i with High-Powered HOPS12T for Smaller Venues

With the debut of the HOPS12T, the mobile version of the HOPS12i installation model, CODA Audio has expanded its HOPS (high output point source) range. The HOPS12T was created in response to strong customer demand for a flexible solution in smaller live environments where high power is essential but reflective surfaces or constraints on space require flexibility. The HOPS12T is a high-output three-way point source that features 12" neodymium cone drivers with 4" voice coils that are adapted from CODA's flagship line array, AiRAY. CODA's technologies, including Dynamic Airflow Cooling (DAC) and phase linearity, are featured in the HOPS12T.

Versatility defines the HOPS12T enclosure by virtue of its exchangeable Instafit Magnetic Waveguides which provide various options for adjusting directivity. Broadband energy can be concentrated where it is needed and kept away from reflective surfaces, which is very useful in mobile applications. Both the 90° x 60° and 60° x 40° models are rotatable, and a quick-release grille eliminates the need for additional equipment for quick and easy setup changes. The HOPS12T has an integrated mobile suspension allowing quick attachment of a flying frame, as well as vertical and horizontal U-brackets for a fast setup.

CODA Audio/HOPS Series

PROLIGHTS Launches All-in-One Hybrid Moving Head

The Astra Hybrid420 is an all-in-one hybrid moving head from PROLIGHTS that may be used as a brilliant beam fixture, a flat field spotlight, or a wide wash projection. The Hybrid420 is aimed to be the ideal workhorse for any large-scale production.

The luminaire features a 420W long-life discharge lamp that produces a tremendous amount of light, aided by an Italian-designed optical system with a zoom range of 2.4° to 40°. In spot mode, the internal homogenizer eliminates any hotspots, resulting in an even, flat field projection.

Allowing designers to unleash their creativity, an animation wheel, two overlapping prisms, and a frost filter are included in the Astra Hybrid420. The fixture also has a linear CMY colour mixing system and three colour wheels with 15 dichroic filters with a set of 18 static gobos and nine interchangeable rotating gobos to create sharp and high-contrast in-air effects.

In addition to the traditional DMX/RDM control options, this fixture has Art-Net, sACN and Wireless DMX (CRMX and W-DMX).

Prolights/Astra Hybrid420

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Naostage Beaconless 3D Tracking System Syncs All Production Elements

Rental-staging and fixed-install specialists can now create immersive, interactive live events with Naostage's automatic beaconless 3D tracking system. Naostage's tracking solution, designed and engineered at the company's headquarters in France, seamlessly identifies and follows artists, performers, and visitors wherever they are in a defined tracking area, allowing for the real-time automation of an endless array of lighting, audio, video, and media effects in perfect sync with the show.

The potential applications for this one-of-a-kind technology are limited only by the imagination of the user: Not only can Naostage help with staging automation for concerts, tours and festivals, but it can also help create a fully automated show in a museum or an entertainment venue where sound, video, and lighting can be triggered by a visitor entering the room. A cruise ship might also embark on a multi-week excursion with a fully automated performance, cutting expenses and simplifying pre-production.

The product of four years of research and development, the easy-to-understand Naostage ecosystem comprises three products: Kapta, a lightweight (12kg) riggable 3D

sensor bar; Kore, a powerful AI processing server which uses AI to track up to 16 performers from a single box; and Kratos, the intuitive interaction-design software at the heart of the Naostage system.

As a beaconless solution, Naostage requires no additional hardware, such as sensors or tags, to be attached to performers. Once rigged, the plug-and-play Kapta sensor scans the space in 3D, feeding data to the Kore processing unit which automatically identifies each target in real-time 3D.

Kratos, like Naostage's hardware, is appropriate for venues and productions of all sizes. This sophisticated, user-friendly software solution includes target patching, stage zoning, and the creation of scenarios, interactions, and cues for automatic, synchronised effects, among other features. In under 20 seconds, each 3D space and Kapta sensor can be calibrated, and dedicated modules make controlling outputs to external AV equipment simple.

Naostage

Astera HydraPanel Wireless LED Lighting Panel Features Award-winning Titan LED Engine

The Astera HydraPanel stands out in a busy 'LED panel' marketplace offering many unique features such as a beam-shaper module, magnetic mounting, and the Titan LED engine's superior colour mixing, dimming characteristics and exceptional quality of light.

The six-pixel device weighs 600g and includes a built-in battery and wireless DMX module, making it extremely versatile and portable. It's also possible to run it completely wired. It can be used outdoors or in damp or otherwise tough atmospheric settings because it is IP65 rated in both wired and wireless scenarios.

Each HydraPanel produces 1300 Lumens of high-quality light, which produces 515 Lux at 1 metre (without filter) and has a high CRI and TLCI. A ConnectorPlate connects two HydraPanels together, and three Connector-Plates can be used to combine up to four panels to form a medium-sized panel that is compact, lightweight, and highly manoeuvrable.

Uses include key for lighting people as well as illumination of more substantial areas such as stages, scenery, and buildings. HydraPanels in larger arrays can be utilised as a low-resolution screen/video effect, and the results look fantastic on camera, either emphasising peo-

ple and objects or as cool back-of-camera fill. Like Astera's PixelBrick, power and data are delivered via PowerBox 2x86W devices, and for larger setups, 8 x HydraPanels can be connected to the PowerBox via Power/Data combination cables.

Once arrayed, IR communication between HydraPanels enables multiple units to be controlled from a single console or controller for continuity of parameters like colour, brightness, etc. The fixture's display includes dedicated colour and brightness buttons for swift, accurate adjustment, and new 'TouchSliders' for tweaking these vital settings.

The back side of the fixture is magnetic for quick and easy rigging, and it can be deployed without any further mounting attachments. When used as set 'practicals,' the units are unobtrusive, and six beam modifiers are available to adjust the HydraPanel's native 110° x 100° beam for scenic lighting. GelHolder secures a filter gel in place, and all these beam modifiers can all be attached quickly and painlessly as needed via the 4 small magnets on the top of the HydraPanel.

DiffusorSheet 100, for example, emits a gentle light with a 100° beam angle without increasing its height. When

WATCHOUT for Dataton's expansion of High-Performance Servers

mounted to a camera or on buildings and stages, a Soft-Frame 100 filter can be used to distance the filter from the HydraPanel unit, boosting smoothness and creating shadows. An Intensifier 80 creates a narrower 80° beam for longer throw applications and for those close-ups when a light boost is needed. The Intensifier 80 has 4 magnets allowing two Egg Crates to be attached – Egg-Crate 60 which eliminates light spill around the beam and avoids glare, resulting in a 60° beam, or EggCrate 40 which does the same, producing a 40° beam.

With flexibility in mind, a FlexBase accessory can be attached to the HydraPanel via the Cold Shoe and used as a floor stand. Once the FlexBase is in place, the HydraPanel can be titled via a hinge, and four threads allow for a variety of other installation methods, such as the attachment of hangers.

Astera offers specially designed cases for one HydraPanel that include a Titan Tube PSU, all six beam shaping modifiers, as well as a FlexBase, ConnectorPlate, and BabyPin double-ended spigot, while a four-unit charging case includes a Hyperion Tube PSU and the lights are recharged through contacts. The streamlined case design accommodates all 6 beam shapers plus FlexBase, ConnectorPlate and BabyPin accessories for all four lights. A DOP Choice SnapBag is also now available for purchase.

Astera/HydraPanel

Dataton's two new media servers have been designed for use with the company's award-winning WATCHOUT show composer. Over the past 22 years, WATCHOUT has earned a solid reputation for dependability and versatility, and it is widely utilised in events, broadcast applications, performance venues, and attractions across the world. The WATCHPAX 42 and WATCHPAX 62 media servers are powerful, portable units aimed for touring, temporary, or permanent installations.

The WATCHPAX 42 is a notebook-sized unit with 4 x 4K outputs, while WATCHPAX 62 is a 2U, four-model series with four to eight outputs. Each device is provided ready to use with little on-site setup, reducing deployment time. Both units come with EDID management and a smart restore/reset function to make life easier for rental and staging companies, as well as venues that host several productions. Multiple units, like other Dataton servers, can be used to power large-scale performances.

Dataton/WATCHOUT 62

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Sennheiser Promises a Big Leap in Performance Quality with XS Wireless IEM

Musicians know they need better gear to increase the overall quality of their performance. At some point in their career, musicians realize that they need better gear to improve the overall quality of their performance. An in-ear monitoring (IEM) system is a key component in taking audio quality to the next level. Therefore, Sennheiser has released the XS Wireless IEM, which has been designed for musicians who want to upgrade from floor wedges to wireless IEMs.

The XS Wireless IEM (or XSW IEM for short) is a complete personal monitoring starter kit that was created to set a new standard for simple, versatile, and dependable wireless in-ear monitoring. Users can quickly establish an easy-to-manage wireless connection in the professional UHF range with the system. The XSW IEM provides musicians with a consistent sound regardless of their location or position on stage. The detail and transparency they hear helps them fine-tune and improve their performance.

The UHF band is used by the XSW IEM to deliver a professional-grade wireless connection. Aligned and pre-calculated frequency presets get musicians up and running quickly. Transmission frequencies can also be manually set if required. Both the receiver bodypack and the rack-mount transmitter have backlit displays that make it easier to see settings in low-light situations. The system also includes a limiter to protect the user's hearing as well as a high-frequency boost to improve detail and intelligibility.

Users can choose between a mono mix (one mix with the pan control adjusting the level for the left and right ear) and a stereo mix for their monitor sound. The latter gives you two choices: The pan control changes the left/right volume while Focus mode is turned off; when Focus mode is turned on, it determines which of the two input signals is heard louder, providing a bespoke mono mix tailored to the musician's preferences.

Using one transmitter and any number of bodypack receivers to monitor a band's sound is a very cost-effective method to start out. The XSW IEM comes with a stereo bodypack receiver, in-ears, and batteries, as well as a stereo transmitter, antenna, rack-mount kit, and power supply with multiple country adapters. An infrared sensor helps to easily sync multiple bodypack receivers to one transmitter. At a later point, users can create more individual mixes by simply adding an additional IEM transmitter.

XSW IEM is available in five UHF frequency ranges which are aligned with the XSW family of wireless microphones and instrument transmitters. XS Wireless IEM systems are simple and quick to set up, regardless of your level of technical knowledge. They'll clear the stage of clutter and provide musicians more room in their rehearsal space.

Sennheiser/XSW IEM

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WebClip2Go Introduces Proprietary AI-based Voice Control Technology

WebClip2Go has announced the integration of its proprietary AI-based VCT (voice control technology) switching software, which integrates voice activation features and eliminates the need for a crew when producing live chat shows or interviews.

The VCP (Voice Controlled Production) feature has also been introduced, bolstering the WebClip2Go system's credibility as a fully integrated, crewless video system that makes professional-level production accessible to everyone. The original WebClip2Go format flips the video creation process on its head, simplifying editing and pushing it to the front of the workflow. This involves 'pre-creating' scenes in which all of the graphics, titles, effects, and transitions are already in place, allowing a presenter to deliver directly to the camera in one shot. These scenes — as well as the teleprompter script – may be generated entirely in PowerPoint, so no special skills are required.

However, for those who are seeking to create a more dynamic production – particularly in situations with more than one presenter speaking off-script – WebClip2Go has integrated a Live Switching unit, which allows for

users to set up their studio space for interviews and render their outputs on-the-fly to be streamed live as needed.

With the addition of the new AI component, creating webinars, chat shows, and interviews has never been easier. Its primary technology is voice-activated, which reacts to who is speaking and switches cameras or shot types as required. Users can pre-set any number of settings to manage the look and flow of their presentation, such as 'randomised' switching after a given amount of time to incorporate response shots, or 'impartiality' to ensure that no single speaker dominates the production during a debate or conversation. As needed, the programme will also introduce titles and transitions. By using AI to vary the length and order of the shots, a naturalistic production is achieved without any crew at all, and after 'opening' the show, the presenter can focus solely on the task of presenting.

WebClip2Go

Audio-Technica Launches Affordable, Durable In-Ear Monitor with Dependable RF

The 3000 Series Wireless In-Ear Monitor System from Audio-Technica was created to deliver professional sound quality and features to all levels of performers and performance spaces. The ATW-3255 3000 Series Wireless In-Ear Monitor System is an extraordinary performer in both value and operation for musicians, system integrators, HOW technical personnel, and owners of live-performance venues. The durable in-ear monitor system is simple to use and, more importantly, produces high-quality sound and dependable RF.

With design elements modelled after Audio Technica's acclaimed 3000 Series UHF Wireless Microphone Systems, the 3000 Series IEM system includes a rack-mount transmitter with front-panel controls, a large OLED display, a compact body-pack receiver, and ATH-E40 professional in-ear monitor headphones. The efficient headphone amp in the body-pack receiver and the proprietary dual-phase push-pull drivers in the ATH-E40 headphone combine to deliver clear, natural sound quality on any stage.

With 138 MHz of tuning range spanning 470 – 608 MHz in frequency band DF2, the 3000 Series Wireless IEM provides superb wide-band UHF coverage for optimum versatility in an increasingly congested RF environment.

Even in the most crowded RF settings, its diversity antennas ensure stable reception. Pan/personal mix controls, a cue mode that allows an audio engineer to monitor multiple IEM channels from a single receiver, a 3000 Link mode that allows compatibility with 3000 Series wireless microphone components, and network monitoring and control via the Audio-Technica Wireless Manager software are among the additional features.

Both the transmitter and receiver include OLED screens for optimal readout of key settings and alerts, especially in low lighting situations. The body-pack receiver operates continuously for up to seven hours when powered by NiMH batteries and charged in the optional ATW-CHG3 or ATW-CHG3N charging stations – for compatibility and convenience these are the same chargers used by 3000 Series microphone systems' UHF body-pack transmitters. The transmitter is equipped with balanced XLR inputs and loop output, plus a network port.

Audio-Technica/ATW-3255

Claypaky TAMBORA LINEAR Unleashes Creativity with Pixel Art Effects
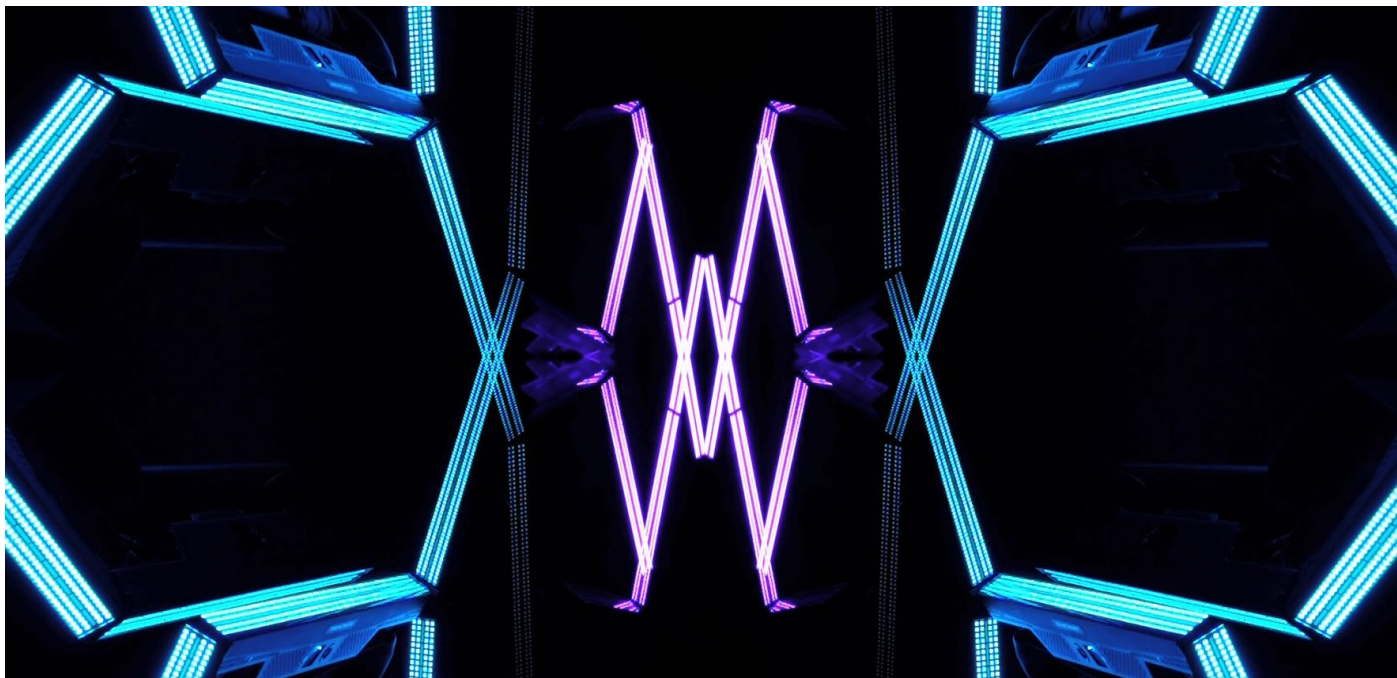
Claypaky has expanded the Tambora family with TAMBORA LINEAR, an upgraded line of static LED Pixel mapping bars designed for diverse lighting effects and artistic set decoration.

These are hybrid bars, which combine two complementary effects into a single fixture. The first effect is driven by a system of 400 RGB pixel LEDs, which produce a background light that looks remarkably similar to a high-definition LED wall. To produce high-quality motion graphics, this LED array may be controlled as 16 LEDs in 25 groups.

A central line of 200 extremely powerful white LEDs creates the second overwhelming strobe effect, which is capable of mimicking the behaviour of the most well-known strobe fixtures on the market. This effect can also be tweaked in 25 different areas, giving it unrivalled versatility.

All graphic content can be managed using Claypaky LED bars' Advanced Layers Management, an exclusive feature that allows you to use different levels of effects simultaneously, allowing you to express your creativity freely.

The Tambora Linear can be mechanically linked to multiple units and then controlled as a single fixture from the control software. TAMBORA LINEAR 60, a compact model, is also available for more compositional modularity. Tambora Linear 100 has a huge variety of built-in effects, allowing it to be utilised not only in advanced mode but also in simple mode when a media server isn't available or when a quick installation is required.

Claypaky also offers a wide range of easy-to-apply accessory filters. These can shape the beam of light with a frost effect or increase the readability of the pixels with the "neutral density" filter, which is particularly beneficial for television applications and significantly improves on-camera performance.

Sleek and lightweight, the Tambora Linear has been designed with a slim body, to adapt to a wide range of applications, from TV studios to touring, where pixel mapping light sets are increasing in demand. Tambora's "hybrid" nature gives it two-in-one versatility, making it a stand-out product in any lighting system.

Claypaky/Tambora Linear 100

Meshing Exceptional Event Experiences

An ever-increasing reliance on networking and network enabled technologies within the live event ecosphere has enhanced efficiency, capacity, scalability and interoperability for technical solutions providers in the field.

by Elton Noronha

Computer networks have been used for decades to interconnect multiple computers and other digital equipment; as they continue to provide an economical and efficient way for devices to share data and for users to communicate and share the same piece of equipment (for example: a printer or multiple network-capable storage and backup devices).

Within the live event ecosphere; networks and networking enabled technologies have witnessed a rapid change over the recent years. And as a result, the number of networks that are being implemented in the live event industry has been increasing constantly.

Almost every sound, video and lighting equipment used in the industry is network capable nowadays.

If your question is, why? The answer is quite simple.

Why Networked Systems are Better than Analog?

Networking allows the capability to send immense amounts of data / signal through one set of cabling. A single network cable can run tens, and in some cases, hundreds of channels of audio / video data completely transparently and at the speed of light. For example,

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digital snakes (boxes that sit on stage), allow for all of the microphones and instruments to be plugged into this box as usual (with XLR) and then run a single cable out from that box and to the mixing console using network technologies; and provides total access to all inputs. In addition to the dramatic reduction in cabling requirements, signal degradation is also eliminated, while offering an enhanced level of flexibility when it comes to system configuration. Outputs can be seamlessly routed to multiple destinations without loss, and without a doubt even more benefits accompany a digital network. Plus, the technologies are streamlined and ergonomic, and do not require specialized knowledge to use. In many cases, assembling a network is nearly plug-and-play simple. There is no more learning curve than when connecting, say, an audio interface, installing drivers, and configuring audio software for recording. And perhaps most crucial of all is the fact that networks are found to be cheaper than running all the cabling they replace; mainly because quality network equipment continues to decrease in price while increasing in features, options, and flexibility for upgrades and expansion.

Robert Turner, integrated networks technical manager at Creative Technology - one of the world's leading suppliers of specialist Audio Visual equipment to the sports, corporate, exhibition and entertainment industries – offers an experiential insight into the benefits of using networked technologies in the field, as he informs, "Creative Technology's (CT's) ability to combine different disciplines onto a single network can drastically reduce both setup time on site, as well as reducing multi-department copper/fibre runs. It also helps in data/audio/video transfer between departments, making it much easier to share resources between the team. Technology is advancing at a rapid pace allowing us to continually enhance the workflow and better our network systems. As an example, the majority of our jobs in the lighting field have now got a mainstay Network infrastructure. Using network technology to transport video around site allows us to utilise existing infrastructure in a venue,

eliminating the need for extra fibre runs and equipment. Setup time and control room space can be greatly reduced as we eliminate point to point fibre extenders, replacing with a Multicast network system. At CT we are always looking at new technology and advancement in networking capabilities to streamline processes for our clients and help reduce the infrastructure that is required on large sites to streamline and speed up the installation times."

As a part of the NEP Worldwide Network, Creative Technology's events staging services bring together advice, support and equipment of the highest quality, providing everything from large screen displays to content delivery systems. The company stocks an extensive inventory and with constant investment in the newest technology across all disciplines; which means that CT have a large amount of core equipment that all benefit from the use of networking protocols.

CTME's Networking solutions.

Robert elaborates, "The Lighting department mostly use GrandMA 3 Lighting consoles outputting SACN. This goes into Luminex Gigacore 10 Switches and outputs DMX from the Luminex Luminode 12 or Luminode 4. We use Lumisplit 2.1 as our splitters which give us multiple options. For Audio we deploy d&b audiotechnik loudspeakers and controlled amplifiers, L-Acoustics loudspeakers and controlled amplifiers, DiGiCo Mixing Consoles and I/O, Shure Wireless Microphones and IEMs. With regards to our communication department, we predominantly use Clearcom Helixnet with the LQ 4W8 units as our wired systems, and Riedel Bolero as

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our wireless option. We currently use Riedel Artist matrix frames and the 32 key Riedel smart panels. We also use Glensound Dark88 v2 units for audio transport alongside the APT IP CODEC units. On larger events we add in the Sonifex Grandmaster clocks onto VLANs requiring an external PTPv2 clock. CTMEs video department has a wide range of products to offer full flexibility for our clients and projects. Our Media Server offering consists of disguise, Watchout, Resolume, Pixera, Millumin and Playback Pro. For switching and screen management, we predominantly use Barco switchers. For signal distribution, we use Lightware, Blackmagic and Netgear with a mixture of video over fibre and video over IP products. For projection we mainly use Panasonic and Epson and our LED stock contains indoor, outdoor and LED floor products including ROE, InfiLED, Unilum, Esdlumin. We stock Sony and Panasonic cameras in both HD and 4K systems with Ross and Panasonic mixers".

Although different technologies have been created specifically for the live event industry, it must be noted that many have been borrowed from other industries such as the networking protocols and standards. And with the increasing technology developments on taking audio, video and lighting signals to network standards; it is important to understand what exactly is a network, what comprises a network, how they operate and how they are designed.

Network Fundamentals

A network is a set of two or more computers connected together to share information. And in the AV and IT communications industries, a network is a group of devices connected in a manner that allows communication among them.

The use of networks in entertainment applications has opened up the door to a world of possibilities in terms of working with multiple devices and equipment at one time; a fact that is especially true with regards to controlling media servers. Since all media servers are computer-based applications, the server's built-in networking capabilities can be utilized, making setup and control a bit simpler.

Beyond just media servers though, a network within the entertainment applications gamut comprises two main parts: nodes and connections; wherein two or more nodes are interconnected so that they can share meaningful data. Nodes are the devices that send and receive data.

In the early days of networking, a node was basically a computer. Today a node can be a computer, a mobile device, a video server, a projector, a control panel, or any other electronic system capable of sharing data. Each node might have a different operating system or hardware. But as long as each node follows a set of rules, or network protocol, it can communicate with the other nodes on the network. To communicate correctly, all nodes on a network must understand the same network protocol.

On the other hand, 'Connections' are the means by which data travels from one node to another. They can be any signal-transmission medium: radio frequency, copper cabling, light, and so on.

Network Types

Networks are generally categorized by the area they cover, or their scale; i.e. Local Area Network (LAN), Wide Area Network (WAN), Wireless Local Area Network (WLAN) and Virtual Local Area Network (VLAN).

A LAN covers a "small area", such as a single building or a small group of buildings; using physical addresses to communicate i.e. the Media Access Control (MAC) address, which is hard-coded into each network interface card (NIC). Data sent across a LAN is addressed to the MAC address of a device on that LAN. A node sends the packet. A network switch receives the packet and examines the MAC address to which it's addressed. The switch then forwards the packet to the device that matches the MAC address. Most shows networks are LANs based on Ethernet.

When data needs to be transported from one LAN to another, it travels over a wide area network (WAN), which essentially can be considered as a network that connects two or more LANs. WANs use logical addresses to communicate wherein the logical address

Format Data, Encryption

Start and Stop Sessions

TCP, UDP, Port Numbers

IP Addresses, Routers

MAC Addresses, Switches

The Media and Hardware

OSI vs TCPIP

is an Internet Protocol address (assigned to a device, either manually or automatically) and the WAN data travels in Internet Protocol (IP) packets rather than Ethernet frames. The nodes on a WAN are routers. If a LAN is connected to other networks via a WAN, a router sits at the top of its network hierarchy. Any data that needs to travel to a device outside the LAN gets forwarded to the router. This protects the devices on the LAN.

A WLAN is where either an Access Point (AP) or a wireless router is implemented on a LAN to provide wireless access to the resources on the LAN; thereby offering freedom of mobility to the users on the wireless LAN. Signals are transmitted wirelessly, with special devices on each end of the wireless signal to translate it back into wired Ethernet; and this wireless connection is known as Wi-Fi.

VLAN is typically used in multicast or broadcast scenarios where there might be need to isolate specific data traffic to certain designated ports. VLAN capability allows for a larger switch port to be divided into several smaller virtual switch ports that can easily be isolated from each other when needed.

Irrespective of the type of network scenario one might find themselves in; one thing is for certain – In order for the various equipment to be truly connected to a network and be able to share data (send and receive), they

must all 'speak the same language' i.e. follow the same protocol.

Protocol & Protocol Suites

A protocol is simply a rule, or a collection of rules and conventions, that a device follows in order to communicate with other devices around the world. And a collection of such rules comes together to form a protocol suite. Protocol suites allow complex applications on networking devices to communicate with billions of other devices around the world, through an assortment of networking equipment and media. Two protocol suites in particular have largely influenced the internet as we know it today: The Open Systems Interconnection (OSI) reference model The Transmission Control Protocol/Internet Protocol (TCP/IP) suite

The OSI model separates communication connectivity into seven different layers, each with a specific duty. This allows for a variety of connection types, as well as the development of specific hardware and software to optimize the network. The layers are processed in a specific, sequential manner. Data is sent across a network by applications. This means that when a computer sends a message, the message starts at Layer 7, the Application Layer, and moves down through the OSI model until it leaves the sending device on Layer 1, the Physical Layer. The data then travels to the receiving

device on Layer 1 and moves up through the OSI model until it can be interpreted by the receiving device at Layer 7. Layers 1–3, known as the media layers, define hardware-oriented functions such as routing, switching, and cable specifications. These are the areas that most concern AV professionals. Layer 4, the Transport layer, is also important to AV professionals because it is where the transition between gear and software occurs.

The TCP/IP stack is a specific set of protocols, developed by the Internet Engineering Task Force (IETF), divided into four categories (instead of the OSI's seven): Link, Internet, Transport, and Application. The Presentation and Session Layers of the OSI model have been absorbed into the Application Layer, while the Physical and Data Link Layers of the OSI model have been combined to form the Link Layer here. The Internet Layer corresponds to the Network Layer of the OSI model, while the Transport Layer remains unchanged. This simplified structure of TCP/IP was actually a key factor in its dominance over the OSI model. TCP/IP includes TCP, which uses a set of rules to exchange messages with other internet points at the information packet level; User Datagram Protocol (UDP) which acts as an alternative communication protocol to TCP and is used to establish low-latency and loss-tolerating connections between applications and the internet; IP which uses a set of rules to send and receive messages at the level of IP addresses; and finally, additional network protocols, including Hypertext Transfer Protocol (HTTP) and File Transfer Protocol (FTP), each of which has defined sets of rules to exchange and display information.

Whether OSI or TCP/IP – the point in common is the fact that both are a hierarchical series of layers that represent how different data communicates and is transferred where each layer is dependent on the layer below and serves the layer above.
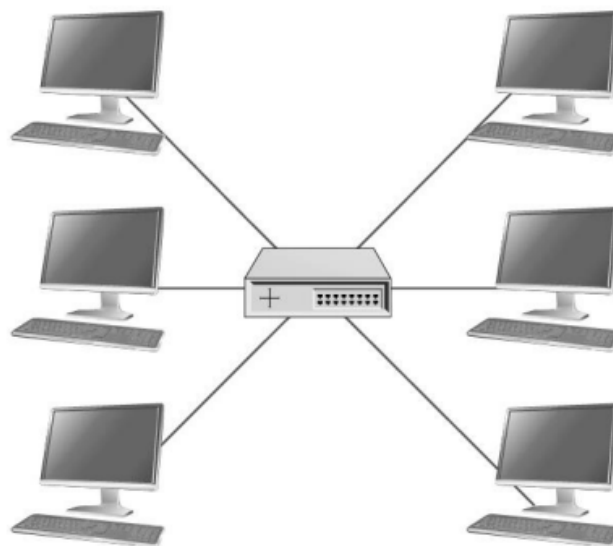
Network Topologies

A network topology is simply the orientation or the layout of objects that are interconnected for the purpose of communication or sharing resources. To put it simply, it's the network diagram displaying where devices are located, the type of media used to physically connect the

components, the interfaces or the physical ports used, and the IP addresses of each device.
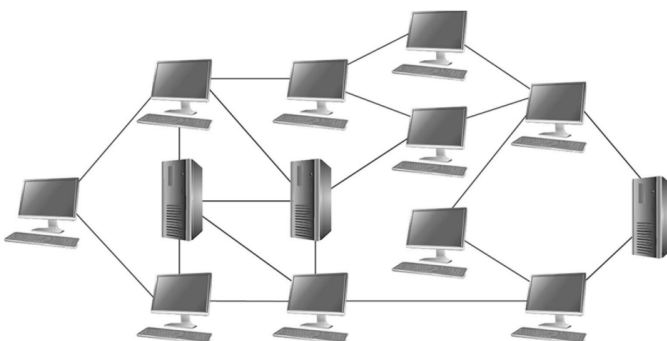
Mesh Network

In a mesh network, each node is connected via bridges, switches, or routers to at least one other node. This configuration allows the nodes to distribute data via many possible paths, providing high resilience to failure. Mesh topology is used for ad hoc wireless networks where wireless nodes may connect or disconnect at unpredictable intervals and where one node may act as a relay for other distant nodes.

Star Network Topology

In a star network topology, all nodes connect to a central point, which may be a router, switch, or hub. Star networks are hierarchical. Each node has access to the other nodes through the hub. If any node fails, information still flows. But the central device is a single

point of failure; if it fails, communication stops. Star topologies are often extended to include more than one layer of hierarchy (often called an extended star topology). If any device fails, access to devices below it 12 is cut off, but the rest of the network keeps operating. The central device, however, remains a single point of failure.

Wireless LAN (WLAN) topology is a type of physical topology whose size and shape aren't defined by cables because it uses radio frequency (RF) signals as a connection medium. That said, a wireless topology's size is not unlimited. Nodes access a wireless topology through a wireless access point (WAP) instead of a physical cable. WAPs connect to each node via RF signals. The signals emitted by a wireless device—a node or an access point—form transmission lobes, which must overlap for communication to occur. With that in mind, the range and placement of devices in a wireless topology are constrained by several factors, including antenna type, signal strength, and physical obstructions to wave propagation.

With the above topologies used in a variety of different scenarios, one must keep in mind that most modern enterprise networks can't be described by one topology type. Instead, their designs incorporate several different topologies. This is known as a hybrid topology, and this is more commonly noticed in larger scale event scenarios (for example a concert with performance stages at multiple locations, or a simulcast of entertainment from multiple locations).

Popular Network Technologies Within Live Events

Over the years, many types of digital networking technologies (especially within the audio domain!) have been developed; with a number of these being proprietary to a single manufacturer, such as QSC's Q-LAN, Aviom's A-Net, Behringer's ULTRANET, Harman Pro's HiQnet, Roland Pro's REAC, Allen & Heath's ACE, and more. These can be put to good use when primarily interfacing products from that particular manufacturer. However, when it comes to building a system that comprises gear from several manufacturers or when interfacing with a wider range of spaces and gear is required; technologies that offer an 'open' and / or

'generic' networking solution have come to dominate. Detailing this aspect, Robert comments, "From a Communications perspective, we sit across the departments when it comes to networking protocols, we feel the most used within Creative Technology Middle East (CTME) communications at this time would be NDI, DANTE, AVB, AES67, along with sACN for lighting connections. For Lighting we use sACN as our main network protocol, allowing us to connect all our nodes and GrandMA in one Session. For audio we use networking protocols for systems control as well as digital audio signal distribution using the likes of Dante, Optocore and AVB topologies"

NDI, Dante, AVB, Optocore, AES67, sACN, etc are the various technologies available to live event technical solutions providers to efficiently offer a synchronized solution for live events through a synchronized network. Network Device Interface (NDI) is a royalty-free software specification developed by NewTek that enables audio, video, and metadata signals to be sent over standard networks in real-time. NDI is bidirectional, low latency, and can transmit video up to 4K and beyond. At the same time, NDI is more than just a transport, in that it allows for control of devices like PTZ cameras, capturing video feeds directly from the network to use in editing, and defines a standard for encoding and decoding. NDI is friendly to software applications, delivering high quality video. While all NDI is compressed, there is also a high efficiency option called NDI|HX that includes an easy way for devices to find each other on a network.

Optocore is a technology system that allows audio and video signals to be transported synchronously via a synchronous network where the data and the clock are running together and all the devices connected to the network (Optocore and non Optocore) work with the same clock. One of the biggest advantages of this style is the extremely low latency of the network. From any input to any output (digital to digital) that amount is only 0,042 ms. This is a fixed figure, not dependant on the signals path, hops, the number of the channels used, the length of the fibres. The latency value includes also the time necessary for a complete matrix. Thanks to this design, the Word Clock is available at any node, from devices equipped with digital In & Out. The protocol used by Optocore is proprietary, known as SANE protocol (Synchronous Audio Network plus Ethernet).

This first was announced as being a fully-synchronous Cat5 network solution for streaming uninterrupted media in real time, and evolved from the company's new AD/DA X6R and V3R converters launched earlier in 2009. The 2 Gbit bandwidth allows the transmission of up to 1024 audio channels with sample frequency of 48 kHz (512 @ 96 kHz) by means of a single duplex fibre optic cable. That bandwidth can be shared and utilized for the transmission of other signals as well, such as video and data.

Developed by Audinate, Dante (Digital Audio Network Through Ethernet) is an uncompressed multichannel digital media networking technology that combines software, hardware, and network protocols. It uses standard Ethernet technology to allow for the transfer of large numbers of audio channels among multiple locations, over long distances, and with low latency. Dante's specs include up to 1,024 channels per network node with no limit on the number of nodes, a minimum latency of 150 microseconds, sample rates up to 192kHz, and resolution up to 32 bits. Use of Dante requires that manufacturers license the technology from Audinate, and as of early 2016, over 200 companies license and support Dante with their products. Because of this, products from multiple manufacturers can easily integrate and communicate, and thus, the systems are easy to design and implement. As a principle, Dante uses PTP for synchronization; and audio can be sent to and from as many devices as needed using a readily available Ethernet switch or multiple switches, and software apps allow for fast, easy system configuration and routing. Because Dante uses standard Ethernet, PCs and Macs can be integrated into a system with no need for additional hardware or adapters.

AVB (Audio Video Bridging) is a set of standards developed by the Institute of Electrical and Electronics Engineers and promoted by the AVnu Alliance. AVB is an "open" protocol and does not require manufacturers to license the technology. AVB works by reserving and dedicating a portion of the Ethernet bandwidth for AVB media use. The benefits are said to be precise synchronization, data management for media streams, "admission controls" (control over transmitters and receivers in the system), and identification of participating devices in the AVB network, which assures the quality of the audio system. All of the "nodes" in

the networked system share the same clock, and data is carefully managed to ensure low latency and to prevent "data collisions." There are no limitations on how small or large an AVB network can be. Minimum latency is 250 microseconds, with sampling rates up to 192kHz and resolution up to 32-bit floating point. One difference between Dante and AVB is that AVB requires a dedicated AVB network switch; whereas Dante can use any Ethernet-compatible network switch.

AES67 is an interoperability standard for professional, low latency audio over local area IP networks. The standard was developed by the Audio Engineering Society (AES), and was designed around existing protocols, which means it shares characteristics with both Dante, RAVENNA as well as other audio streaming technologies. Rather than invent something new, AES67 specifies how to use other well-established standards in cooperation for audio networking. AES67 uses the IEEE 1588 Precision Time Protocol (PTPv2) for synchronization, which ensures that all devices on the network create and reproduce audio samples at exactly the same rate and time. Also, in AES67, data packets are IP packets formatted according to the Real-time Transport Protocol (RTP), whose standards define packet formats for numerous types of audio and video. Although other parameters are supported, AES67 interoperability is focused on 24-bit uncompressed audio at 48-kHz sampling, with packets transmitted at 1-ms intervals. And finally, AES67 uses SDP and SIP for connection management. SIP identifies potential connections by a SIP URI which looks like an email address. SIP is a proven protocol that enjoys wide acceptance in internet telephony.

Streaming ACN (sACN) is a standard protocol developed by ESTA to efficiently transport DMX universes over the network. It is also the colloquial name for the ANSI E1.31-2016 standard. ANSI E1.31 - 2016, Entertainment Technology - Lightweight streaming protocol for transport of DMX512 using ACN, is a revision of the 2009 standard. It describes a mechanism to transfer DMX512-A packets over a TCP/IP network using a subset of the ACN protocol suite. It covers data format, data protocol, data addressing, and network management It also outlines a synchronization method to help ensure that multiple sinks can process this data concurrently when supervised by the same controller.

This revision includes DMX512 universe synchronization. sACN is primarily designed to move zero start code DMX data over a network in a way that is compatible with the full ACN standard (ANSI E1.17-2010). sACN is a popular protocol to control a large number of RGB LEDs; and a wide range of LED controllers these days feature sACN input: for example – the Advatek PixLite 16 and the very professional Enttec Pixelator.

The Present and Future Of Network Technologies in Live Events

According to CTME, the future of networking protocols within live event equipment and technologies is shaping up to be extremely promising, as Robert confirms, "I think within a very short amount of time, CTME will have a singular network, which all departments will be able to utilise on every event. With routers controlling IP addresses across multiple VLANs and departments having better knowledge of the many protocol settings within the individual VLANs, it will greatly decrease setup time and iron out any of the network issues onsite. Having network-based protocols has made information (monitoring) of equipment onsite a great deal easier, from a simple ping monitor to systems that give us full observability of the systems we rely on. It also gives the team to solve performance issues of the devices across ISPs, APIs and even 3rd party networks. I think for the future, a lot more of the video and audio recording systems on corporate events will be hosted remotely. The advent of companies such as the ATEN, Lightware or Birddogs newer units makes it a totally reliable and functional option to record off site. The likes of Clearcom Agent IC and Station IC make communications a breeze, clients and crew can interact with multiple events across multiple countries".

Manufacturers of technologies like Optocore and Dante have been quick to recognize the exponential increase in the adoption of networking capabilities by live event technical solution providers like CMTE across the world; and have therefore secured an edge when it comes to introducing novel systems and solutions that allow users the capacity to leverage and maximize the potential of networking while on field.


Optocore Festival Box

For example, Optocore – which is today known for its agile, open standard platform base that can support a number of third-party devices and protocols – launched the Festival Box system in 2018, which was specifically aimed at events featuring multiple acts with different mixing consoles running multiple different protocols to the stage box—necessitating fast turnaround times. Based on the Repeat48WDM media converter from sister company BroaMan, it offered many different conversion options all of which could be transported down just single duplex fiber. In fact Festival Box supports all fiber protocols—as well as Cat5 Ethernet-based standards, or even HDMI with an MSA compliant SFP—it doesn't need to 'know' the protocol, it will just pass it transparently.

Other heavily adopted innovations from Optocore include AutorRouter, an intelligent auto-patchbay, making it ideal for installations with multiple connection points and mobile stage boxes as well as live events. It creates a redundant star out of ring topology and closes the loop automatically between active devices and mobile stage boxes. Compatible with stand-alone Optocore networks and DiGiCo fibre loops, the same functionality is also available for Yamaha TWINLANe and AVID AVB network cards, allowing smarter theatre sound systems to be designed using their flagship consoles.

Additionally, Optocore also offers the M-series (M8 and M12) suite of products which provides an efficient and elegant solution for a host of different functions ranging from show recording to setting up virtual soundchecks. The M-Series allow for the use of high capacity, open standard MADI and Fast Ethernet on twisted pair cabling in standalone applications as well as a part of an Optocore network using high bandwidth optical uplink ports.

On the other hand, Audinate too has consistently endeavoured to improve on the technological capabilities available through Dante, much of which
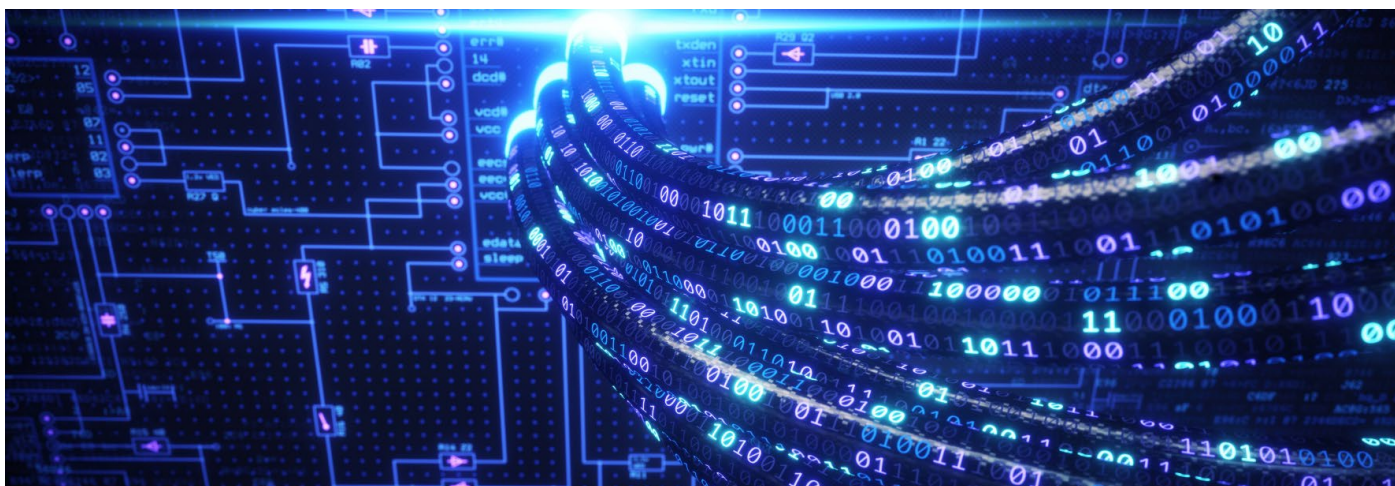
has happened over the course of as Josh Rush, CMO, Audinate explains, "We have evolved the offering to layer in video and that this is extremely valuable to the smaller tour operators who have been compelled to include video and streaming services in a post-Covid production environment but who are also limited in the number of staff they can send on tours. Our deployment of Dante AV makes video production services easier and more attainable to the touring community — especially those doing small scale gigs. I would add that software, in general, has become more important in touring and certainly at Audinate. The addition of new platforms like Dante Studio and tools like Dante RX make the independent touring professional more capable of offering more services — streaming, remote production. In addition, the number of audio channels needed in a post-covid world has skyrocketed. As operators are now responsible for having to deliver separate experiences for the live audience, a broadcast audience, recorded files and potentially even social media, each of those could have different mixes with different channels of audio and video being used. The more channels in play, the more important a networking solution like Dante makes things easier. The touring workflow — and arguably the touring business model — has been challenged by lockdown and has met the challenge with digital transformation. Audinate is supporting that transformation with new software and video tools to make touring professionals more effective".

Future Beckonings

The arrival of networking within the live entertainment gamut and its implementation on show control systems has allowed the entertainment industry to leverage the advantage of moving more data through simpler setups. With the increasing use of digital consoles, moving fixtures, media servers, etc., show control systems require more capacity and speed, and therefore the ability to transport more data quickly and efficiently in all areas of event production.

With networks, there is virtually no limit to the number of devices that can be connected. Extra nodes, switches and more cable may still be needed, but all the devices will be able to communicate to each other, while emphasizing networking's primary benefit i.e. its scalability. A network can be as small as two devices connected to each other or as large as a stadium concert or in some cases, even larger. The larger the setup gets, the more complicated it turns and more knowledge about the designing, setting it up and operating the networks is needed.

There is a bright future for networking in the live event industry. Networking has enabled a lot of things for live event technology and with the recent arrival of newer technologies and the development of new standards, this particular segment of the industry is poised to only grow in the near future.

That being said, the key factor of having a successful network system is ensuring that the team of technicians and engineers entrusted with the responsibility of efficiently operating such systems are well-equipped with comprehensive knowledge of how networks work; and most important, how to make it work.

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Novatech Creates 'Invisible' L-Acoustics Audio Design for Adelaide Fringe Sky Song

L-Acoustics' Syva, Syva Low, and SB28 added acoustic punch to a multi-media drone retelling of First Nations stories
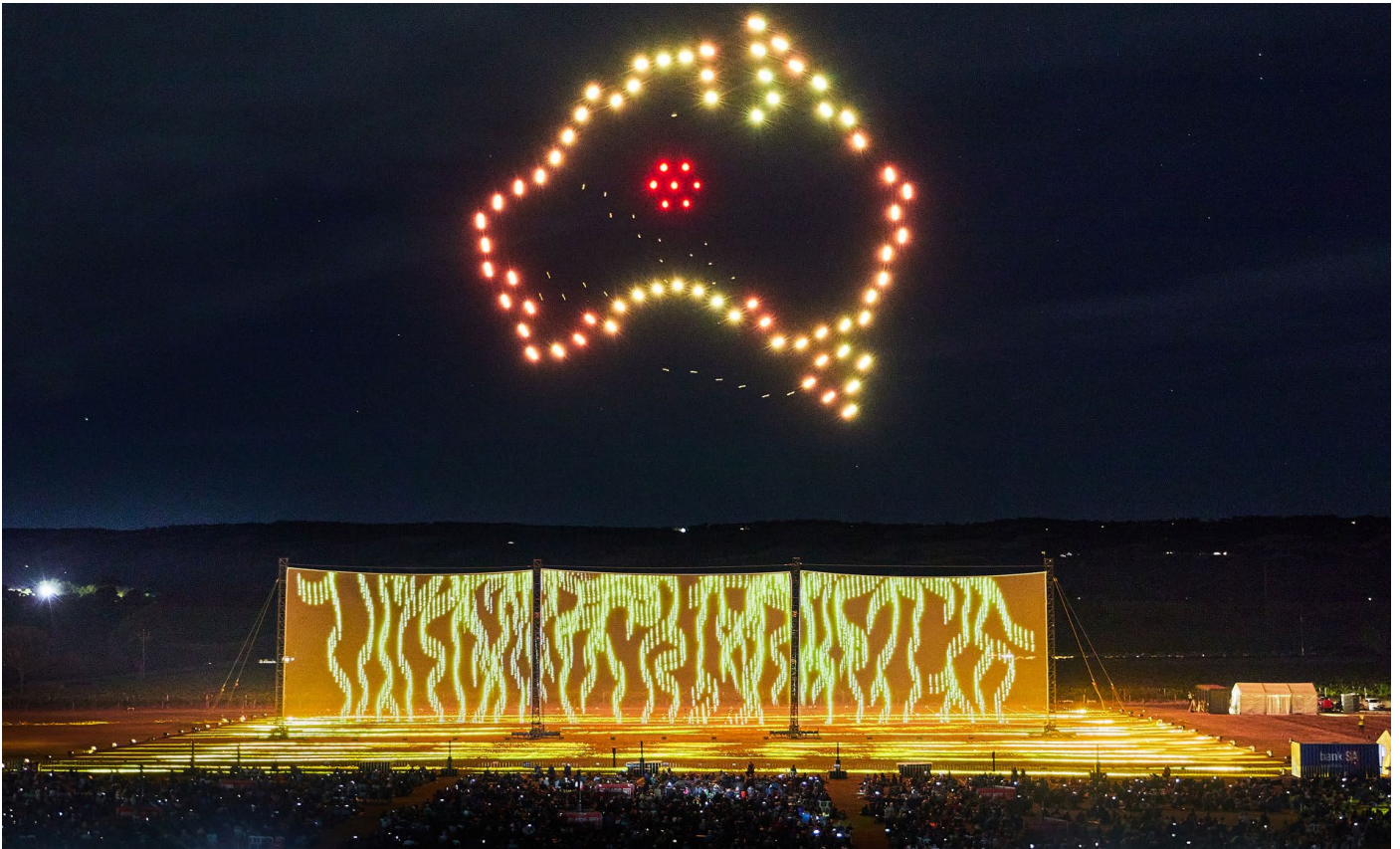

IMAGE Credit: ©David Solm

The Adelaide Fringe Festival's Sky Song was the world's first feature-length drone art display, and it took place on the rolling hills and plains surrounding a winery in South Australia. Set against a backdrop of breathtaking visual effects in the night sky, the multi-media experience featured music and stories from Australia's First Nations indigenous people.

A 72-metre-wide holographic screen projected visual projections of First Nations stories, with Celestial, a UK company, flying drones in the skies for added visual impact. Each of the drones was equipped with its own

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LED light and was digitally programmed to suit the indigenous Australians' distinct dot art style.

The producers of the Adelaide Fringe and partners providing technical, artistic, and hospitality support collaborated to create the colossal visual display, which was supported by the Australian government's RISE Fund project and the South Australian Tourism Commission.

The soundtrack for the performance consisted of a mix of speech, poetry, and music, which were the first elements created during the pre-production period. The collaborative teams knew the importance of a sound system that could reproduce speech clarity as well as provide enough power for music soundtracks like the bottom-end heavy finale track by Aboriginal Australian electronic music artiste Electric Fields.

Novatech, L-Acoustics Certified Rental Partner and official production partner for the Adelaide Fringe, was tasked with deploying a system for the show's 100m-wide by 80m-deep open grass audience area, where 6,000 people could come with their own picnics and seating to enjoy the visual spectacle. \

The team at Novatech faced a major problem in designing a system that could cover such a large audience without disturbing any of the visual elements. With the ground-based holographic screen measuring a massive 15m tall, stacked, or flown speaker arrays were not an option.

"With this project's unique challenges, Syva was the logical choice. We needed even coverage, exceptional quality, and the lowest possible visual impact to ensure clean sightlines. Syva's wide dispersion angle also allowed us to have fewer delays to cover the width of the site," explained Michael Roberts, account project manager at Novatech.

Before presenting it to Sky Song's production design team, the Novatech team worked on a system design internally using Soundvision 3D mapping software. Roberts revealed, "I think they were expecting us to propose a much larger system with more elements, so our design was initially met with considerable scepticism. However, I was confident with Syva and our calculations in Soundvision."
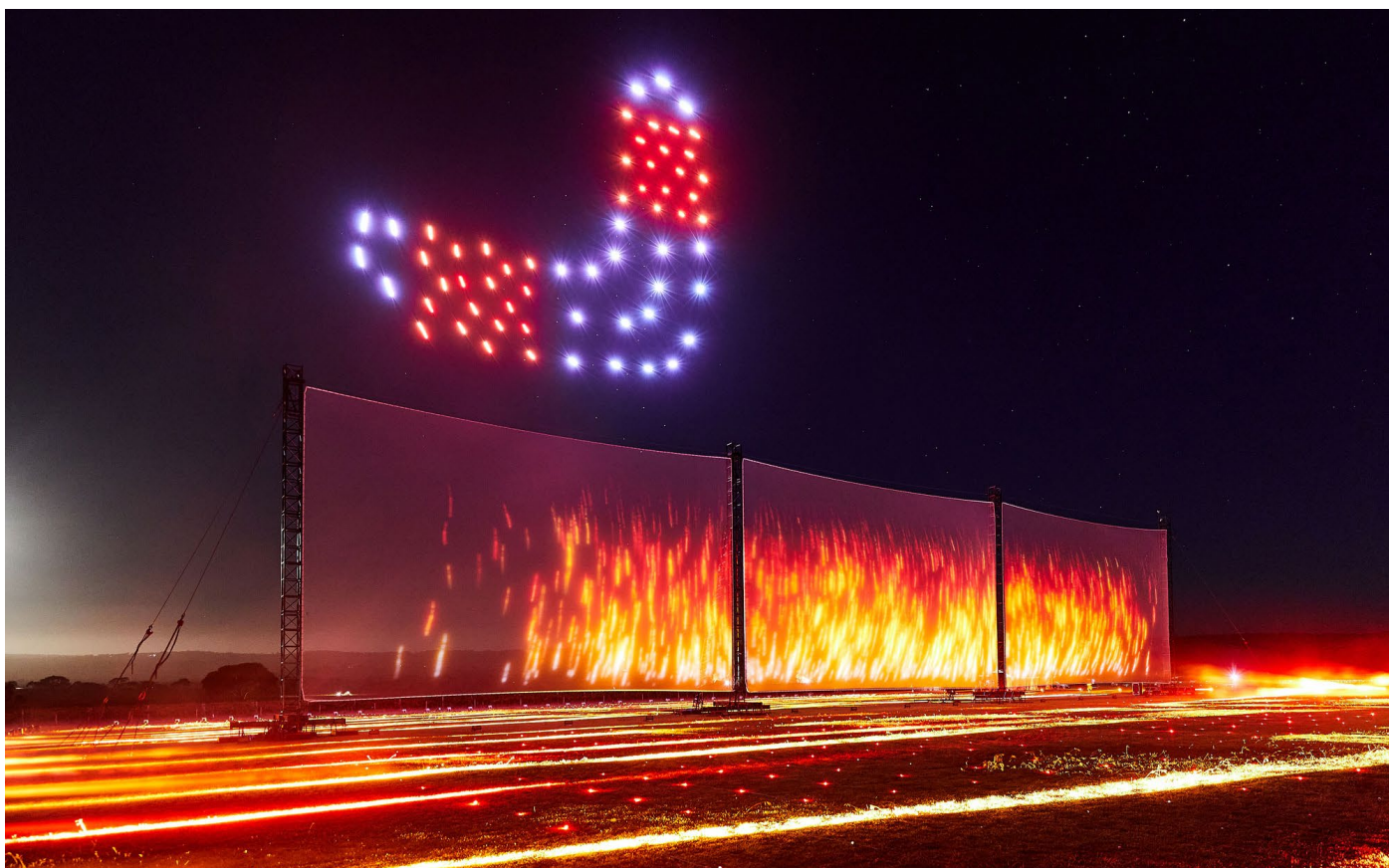
Novatech also used Soundvision to plan out the best spacing and height of the delay system and ensure that people sitting right underneath the delays received appropriate sound levels.

"There was a sense of excitement across the collaborative production teams on whether Novatech could deliver a system with minimal impact to the ground-based projection. Fast forward to the first dress rehearsal—everyone was impressed with the system's quality of sound and even coverage," Roberts added.

The deployment consisted of 5 sets of Syva and Syva Low sitting atop an SB28 subwoofer across the front of the audience area. Two delay lines consisted of three positions of a single Syva rigged on Novatech's custom mounting stands, placing the top of each Syva about 3-metres high. The overall system was driven by L-Acoustics LA4 and LA8 amplified controllers. Novatech's sound technician Marco Rab aligned and tuned the system.

"I was personally ecstatic with the results," Roberts concluded. "The clients' expectation was a world-class, high-quality sound experience, and we absolutely

provided that. The system had headroom to spare, the coverage was spot on, and the visual impact to the audience was kept to a minimum with the low-profile design of Syva. Everyone involved in the production had a great experience, and we received plenty of positive comments about the sound system from attendees."

L-Acoustics

SAUDI ARABIA

zactrack Pro Servers Bring Order to Chaos for Global Premier of "Kan Yama Kan"

*For the retelling of the beloved book, zactrack offered the perfect tracking system for a 360°
stage design, dancers, aerialists, and actors who all had to be lit from numerous perspectives*

IMAGE Credit: © Johan Persson

The global premiere of the spectacular theatre and dance show "Kan Yama Kan" was staged in Riyadh's BLVD RUH City entertainment complex's Global Theatre, with lighting designed by Natasha Chivers, direction and choreography by Will Tuckett, and auditorium, set, and video design by 59 Productions, who also served as technical coordinators for producers, Wonderjunkie and Anthology.

Featuring a vivid stage design, dynamic scenic elements, as well as various gauzes sliding in and out to enhance projections and other visual effects, Kan Yama Kan is a retelling of the 1001 Nights collection of folk tales. For the show, Chivers and, associate LD, Andy Purves had to monitor up to 15 primary performers,

fast-moving dancers, and aerialists throughout the performance area. At the same time, they also had to track the performers using several light sources positioned all over the overhead trusses.

Due to the stage layout, the cast had to be lit from all angles right across the stage and in the two entrance ways at each end of the traverse. To achieve the optimum experience for the nearly 360-degree audience, three or four light sources had to be meticulously deployed, while also avoiding washing out any floor portions used as dynamic projection surfaces, therefore tracking was included in the show from the start.

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The challenge was then sourcing the right tracking system for this high-profile production.

"We considered several options," explained Purves. "With the architecture and design of the show, zactrack with its Z vertical axis was the only viable way to achieve the precise results everyone wanted," he confirmed, and they needed a radio and sensor-based system that would not get confused by the show's action-packed technicals.

They chose two zactrack PRO servers which were working with 14 anchors and 27 active trackers (with full redundancy) in conjunction with 170 moving light fixtures as a solution. zactrack PRO uses a mathematical prediction model to deal with system and fixture latency and guarantees the flawless pinpoint tracking of actors, athletes, show cars or other fast-moving objects on and above a stage – in this case also flying aerial performers.

Another consideration was how straightforward the system would be to use. "Taking on a large multi-source tracking system is a challenge and a substantial amount of extra technology for a production's lighting department," noted Purves, highlighting that

additional elements – like the calibration process and programmer's time during tech rehearsals – must be factored into the equation when evaluating the tracking system options.

The zactrack PRO system used for the show was purchased from zactrack International GmbH by Saudi production partners, SELA. For the one-month production rehearsal and tech period at LH2 Studios in northwest London, a system was rented from Neg Earth.

zactrack's UK distributor Ambersphere was also "incredibly helpful" in assisting the project, revealed Purves. They had initially arranged a demonstration so both he and Chivers, who are UK based, could thoroughly understand how it worked and ensure it would be stable, reliable and the right choice for this scenario. Ambersphere also connected them with people from Neg Earth who had recently used zactrack products and hearing first-hand accounts from industry peers provided "great" information and valuable feedback to help them make their final decision.

It included advice on the fixtures that made the best tracking lights, which are ideally compact, lightweight,

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responsive, and therefore able to move swiftly and seamlessly. "Ambersphere stepped in, hosting several crucial unit trial sessions," said Purves.

During rehearsals, time was also dedicated to discovering the optimal positions for attaching tracker tags to costumes and artists which is also crucial to getting the best performance.

The time at LH2 enabled the lighting team to finesse the tracking and be prepped and ready for arriving on-site in Riyadh and switching to the purchased system. "It was a very collaborative and enjoyable way to work," commented Purves, "using this kit allowed us to achieve results that simply would not have been possible any other way!"

In London, the rehearsal zactrack system was used with Robe LEDBeam 150 moving lights, and in Riyadh, these changed to 80 x Claypaky Mini-Bs and 70 x Ayrton Diablos which were rigged across in the roof trusses and supplied by local lighting vendor, SLS. Performers could be picked up anywhere on the stage and tracked in real-time, ensuring they were always beautifully lit without unwanted light spillage anywhere.

During set up, zactrack's Alignment Algorithm calibrated the lights in 3D space without any pre-knowledge of stage geometry, so at the venue, the zactrack PRO

"alignment-puck" could be placed on the stage and the software did the rest of the calculations. The show's zactrack movement commands were integrated into the relevant lighting cues programmed by Marc Polimeni on an ETC EOS Ti console. He worked alongside Chivers as she developed the lighting scenes, looks and overall aesthetic while Purves focused on the follow spotting detail, and who needed to be picked up by which lights, where and when in the show.

The production's head of lighting was Corey Bennett, and tracker wrangler Charlie Rayner dealt with all aspects of the zactrack system including the 27 trackers (with some artists wearing more than one) on a day-to-day basis, in a slightly similar fashion to an audio radio mic tech. He was impressed with the battery life of the trackers as there were some long working days involved.

The brainchild of producer Zeina Ashour, Kan Yama Kan was a huge hit. The epic show re-interpreted essential tales from 1001 Nights in a fresh, fast-paced, and energising storyline, blurring the barriers between fantasy and reality.

zactrack

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AUSTRALIA

TDC's Projection Magic Uses Barco Technology to Power Vivid Sydney

TDC delivers largest deployment of laser projector technology for brightest ever projections that reveal the soul of the Sydney

After a three-year hiatus, the results of the hard work from the TDC crew of project managers, creative technologists, designers and engineers working behind the scenes at Vivid Sydney went live. Michael Hassett, founder and managing director at TDC – Technical Direction Company adds: "Each year, Vivid Sydney gets bigger, brighter and bolder!"

Millions of visitors flocked to the Festival's 50 installations and projection artworks, which will be linked by the longest ever continuous 8km Vivid Sydney Light Walk. TDC provided the manpower, knowledge and technology across curious surfaces and Heritage listed buildings along the 8km Vivid Light Walk at Vivid Sydney.

From the Sydney Opera House to Central Station, the Walk was packed with bright and glorious large-scale projection mapping, LED screens, wayfinding, and high-powered media server technology.

Festival Director Gill Minervini, who directed her first Vivid Sydney in 2022, said: "For 12 years we've relied on TDC working behind-the-scenes to deploy the brightest, most powerful technology on a grand scale helping to reinvent Sydney's urban landscape and using it as a unique and colourful canvas capturing the essence of Sydney's soul."

TDC had 30 video technical crew working on Vivid Sydney along with a deployment of 110 x Barco

© TDC - Technical Direction Company

projectors across 27 sites. "Making sure that each installation is perfect to the exact millimetre is what we do at TDC," explained Toby Waley, operations at TDC. "There's understandably a lot more detail and fewer last-minute changes that can be made working in a post-pandemic environment."

Barco UDX-4K high-brightness projectors were deployed for the 9,000 square meter sails for Sydney Opera House Lighting of the Sails to show Yarrkalpa – Hunting Ground, 2021 by Martu Artists and creative technologists Curiious revealing the Parnngurr community from the edge of the Great Sandy Desert in East Pilbara region, Western Australia.

On the exceptionally bright Barco laser projectors, Karl Johnstone, technical project manager at TDC, explained: "With the added brightness uniformity and design we can configure them in different ways that better serve the imagery on the buildings. They are more compact, more heat and energy efficient, can be positioned in any configuration and produce a much brighter, bolder colour."

Content was managed using 3D modelling and UV mapping features of the high-powered media servers, a key element of the project. "This year, we've revamped our media servers, automation and monitoring system," added Alex Rendell, technical project manager at TDC.

With the scale and inventory across over 27 locations, TDC uses an RFID inventory tracking system at its warehouse. "It helps with logistics and keeps track of all equipment," said Toby Waley. TDC LiveView gives remote monitoring of each projection site as well as visitor status and wayfinding updates around the city. "This year, we've upgraded the image resolution for monitoring of all sites to 4K resolution," said Drew Ferors, technical manager at TDC. TDC also controlled real-time information displayed at over 70 LED screens and display points to help with traffic flow and city operations.

City Wide Projection for the Vivid Sydney Light Walk

For the first time at Vivid Sydney, TDC provided expertise and projection technology onto all four 89m-high by 58m-wide concrete and granite pylons supporting the

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TDC provided expertise and projection technology onto all four 89m-high by 58m-wide concrete and granite pylons supporting the iconic Sydney Harbour Bridge.

iconic Sydney Harbour Bridge for Sharing the Same Life Essence by admired photographer, Wayne Quilliam in collaboration with Yakkazoo, Rhoda Roberts AO and Ignatious Jones. Sharing the Same Life Essence was shown nightly on screens across the Vivid Sydney footprint from 5:55pm to 6pm (preceding the Sydney Harbour Bridge's 90th birthday projections) as part of Vivid Sydney's screening of the edited highlights of the First Light opening 'Welcome To Country' and performance that acknowledges First Nations culture.

Wayne Quilliam shared his thoughts on the significance of using video technology: "We have the fortune to transition from isolated tribal knowledge of the world's oldest living culture to using video projection techniques as a way of sharing stories to a global audience. As an Australian Aboriginal photographer and storyteller, I'm immensely proud of what [was] shown."

The TDC crew worked with creative studio Spinifex Group at three locations.

• For Sydney Harbour Bridge's 90th Birthday: images from the Historical Archive and Digitisation Team at

ASN Co Building featuring 11-year-old Luca French's Ninget Universe.

Colourful ode to Sydney from painter Ken Done at the Customs House.

Temple by Leilia Jeffreys.

Transport NSW were shown on the entire surface of all four pylons of Sydney Harbour Bridge.

• Sydney With Love shows the colourful ode to Sydney from painter Ken Done across the 32 by 18m façade of Customs House.

• Ninget Universe is a metaphoric, colourful interpretation of diversity and inclusion by 11-year-old Luca French at the new location of ASN Co Building clock tower against a stunning city backdrop.

Jason French, creative director at Spinifex Group said: "We've worked with TDC for a decade and they are the very best in Australia. The team of experts always come up with trumps delivering first-class projections. At Vivid Sydney, we worked with TDC for the best possible scenario maximising the surface areas of the buildings for the artwork."

At Vivid House in Darling Quarter, TDC provided a fully immersive 14m by 5m LED wall and interactive floor projection to showcase the artworks of five featured artists. "We relied on TDC to showcase mesmerising artwork that is morphed across the 360-degree LED walls and video floor projection combined with an
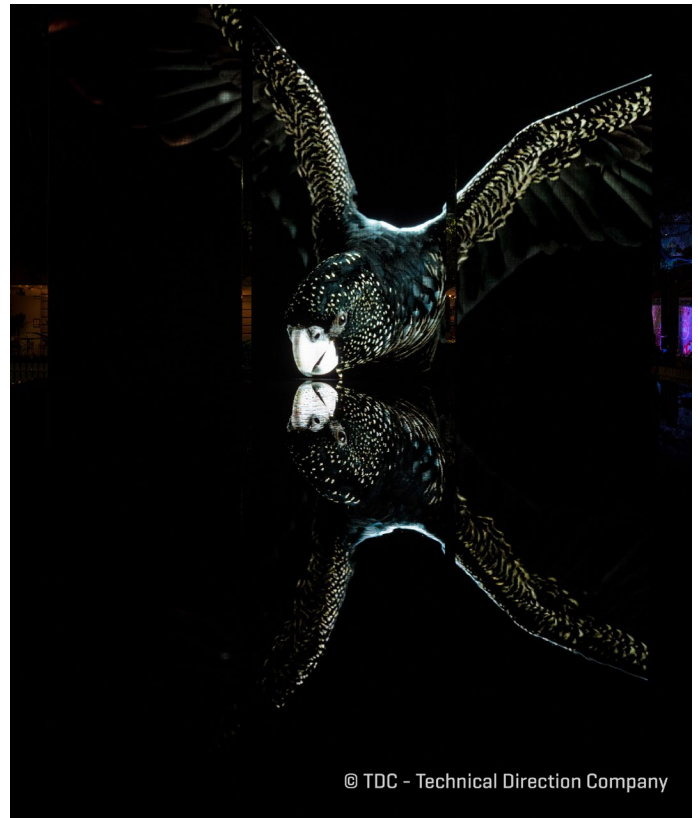
authentic IOSONO immersive sound system and lighting array ensuring Vivid House transports visitors to another realm," said Des O'Neil, ceo at AFX Global.

TDC transformed the whole façade of the Museum of Contemporary Art with Helen Eager's striking New York Sunday geometric 8-minute moving artwork. The Museum is a challenging project to work on because every year, the trees grow so the position of projectors needs to change.

Temple by Leilia Jeffreys was a monumental 3-channel film projected onto triptych using 7.4m by 3m wide TDC LED surfaces positioned over a reflective water pool that plays homage to native Australian cockatoos.

Alex Rendell concluded: "You don't visit once but it's recommended that several nights are needed to take in the wonder and spectacle that Vivid Sydney has become."

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