



NEWS

SIX TO TOUR

The British musical SIX to tour Australia with Chameleon Rig

INTEGRATION / AUDIO / LIGHTING / VIDEO

THEATRE

MUSIC OF THE NIGHT

Handa Opera on Sydney Harbour

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- / THE P.A. PEOPLE AT NATIONAL DAY 50 UAE
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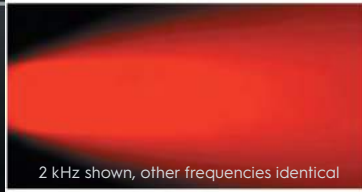
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PREMIAIR RACING CHOOSES COMMS SOLUTION FROM D2N TECHNOLOGY SOLUTIONS

When Peter Xiberras purchased Tekno Autosports he also acquired a company with a long and successful history of using D2N Technology Solutions. Thus, when PremiAir Racing required a custom comms solution for their new team the decision to use D2N was a no brainer, according to Tim Newton, Engineer for Garry Jacobson on Car #76.

Newton said, "There really was little reason to look elsewhere. Jason Owen at D2N has road-mapped an exciting and cutting-edge suite of bespoke updates for the team. He also understood our priorities around reliability and the highest quality two-way communication between engineer and car. We also need, and they provide, on-race service and support as our events are predominantly conducted over the weekends."

For PremiAir Racing, D2N has implemented a Kenwood NX3300 handheld solution for interaction between car, engineer, crew, and Supercars own production feed for track and car solutions.

D2N is also developing a closed-door intercom

solution to allow open channel feed for driver and engineer, layered with specific options for digital feeds, whether that be data engineers, tire engineers, or even fans interacting on their smartphones.

Newton added, "D2N supplied and

programmed all the handsets for the 2022 season and supported the engineering group from a technical perspective to create bespoke solutions for each of the team members. The crew have quickly got to terms with their handset settings, the car controller has had

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clear comms with both cars, and the D2N solution has integrated seamlessly, allowing us time to spend elsewhere improving performance. The drivers report clear comms and the team remains calm due to good information flow. In short, the D2N comms solution is the best type of comms solution."

PremiAir Racing typically uses the D2N comms solution for its car to crew communications and as an intercom. A typical signal path goes from engineer to TV repeater to car to TV repeater to crew to engineer and back to crew.

It's clear Newton and the entire PremiAir team are very impressed with the D2N solution as Newton added, "The D2N solution gives us a clarity of comms, and gives the engineers the flexibility to create bespoke programming solutions for individuals. This is further enabled by the extremely high-level service at D2N. D2N is a Tier 1 supplier and its support and service are without comparison. We literally wouldn't use any other comms solution from any other supplier."

Newton also remarks that while other suppliers may have some of the same hardware, it's the

D2N service and support that gives PremiAir Racing a competitive advantage.

Tim Newton concluded, "D2N and their excellent comms solution give us confidence, clarity and engineering capacity to chase performance on the track. They also give us the confidence to go straight to performance-orientated tasks during the race weekend and not get bogged down in maintenance and cumbersome radio issues. Basically, I'm delighted to say that D2N and their comms solution are an integral and invaluable part of the success of the PremiAir Racing team."





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ENTOURAGE PRO FULLY OPEN!

Entourage Pro (EP), the world's first verified crewing platform, is pleased to announce the full opening of its highly anticipated, and free to use (and join) freelance production crew resource.

Partnered by some of the biggest manufacturers of production technology including Robe, Avolites, Yamaha, d&b audiotechnik, MDG, Chainmaster and Marshall, Entourage Pro is a bespoke online network of verified crew that has already secured thousands of members from over 60 countries around the world.

The service connects and sources freelance production crew and underpins traditional word-of-mouth methods for finding work and sourcing crew.

Initial uptake has been exceptional and is being extended by EP's partnership with Showcase

Music, with the platform being promoted to over 350,000 rental companies, artists, labels, management, venues, and production and tour managers from across the globe.

Searches by role, experience, availability, credentials, visas, rates, languages, qualifications and much more, gives the whole industry access to an unrivalled source of professional freelance crew from over 150 industry roles.

"The non-return rates of freelancers who had to leave the industry to find other work during the pandemic are frightening," says EP director Joel Perry. "We know the number of crew

lost has reached into the thousands globally. Consequently, the opportunities presenting themselves for skilled video techs, riggers, staging, audio and lighting practitioners, are vast. EP can plug the gap quickly, efficiently and comprehensively."

"Entourage Pro was conceived well before the pandemic, and was able to act swiftly during lockdown," adds fellow EP director James Stanbridge. "The industry has often spoken about an alternative, verified platform to facilitate connections and source crew - particularly at short notice. Something which was hard pre-COVID, let alone, post. Continuous testing on tour and the constant threat to productions of crew having to self-isolate, means EP is providing a real option to source alternative staff quickly and efficiently, and help keep shows on the road both now and well into the future."

Beyond this service for the established production crew community, EP has also been laying the foundations for a new initiative; Entourage Pro: Learns.

Developed in conjunction with some of the most prestigious education institutes from up and down the country (and soon to expand into the US and EU), EP will provide students and newcomers with a passion for the industry better access pathways into the various segments of event production.

The ultimate aim for Entourage Pro: Learns is to facilitate newcomers to shadow pros out on the road to gain invaluable experience.

For manufacturers, crew, artists, rental companies and the wider community, this means EP will become a genuine resource for engaging and connecting the industry at large, and for the next generation of crew embarking on their careers.

www.entouragepro.com

JBL announce surprise, retroactive 7-year warranty



Harman-owned JBL issued a surprise announcement in early April, declaring the immediate warranty extension of select JBL Professional Portable PA Loudspeakers.

The leader in professional sound for more than 75 years is now backing several products with

an unprecedented 7-year warranty, effective from the original receipt date of purchase.

This industry-leading warranty is a product of JBL's continuous dedication to quality components and testing that includes a standard 100-hour acoustic stress test, a battery of aging and drop tests, and a wide range of stringent, global electronic testing and certification procedures.

Products covered include EON ONE Compact,

EON700 Series, EON ONE MK2 and PRX ONE.

Note: The extended warranty program applies to all product components except batteries, which continue to include a robust three-year warranty.

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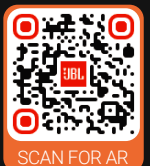
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OMEGATECH DELIVER STABILITY AND REASSURANCE

TO REMOTE AUSTRALIAN PRODUCTIONS

Founded in 2007, the award-winning team at PCC Productions have been delivering the highest quality and best value production to the Pilbara region for over ten years, boasting one of the largest audio, lighting, backline and visual equipment inventories in the whole region.

Working in such a remote area of Australia, PCC can't afford to have anything go wrong on an event as backup could be hundreds of kilometres away. Fortunately, they have discovered OmegaTech's range of products including rackmount distros, powerCON 8-way power drop boxes, powerCON cables, Socapex cables and tails, and DMX cables. Despite the harsh conditions and rough terrain of the area, all of PCC's OmegaTech gear has

performed incredibly well and none of it has ever failed.

Five years ago, PCC's Director Brad Holder met Craig Beatson of OmegaTech when Craig decided to sell off the last of his hire stock. Brad decided to take a look at it, and see if he wanted to purchase any of it.

"We drove down to Perth (1800km away from us) in our old van, and did just that," said Brad. "We ended up purchasing loads of his old equipment. When I asked him why he was closing down his hire department, he said that he was more interested in manufacturing new products for the AV industry. After some more digging, we ended up purchasing some of his early stock of distros and powerCON drop boxes, a purchase that I'm very glad we made!"

"The biggest thing we've noticed over the past five years of using our OmegaTech gear is that everything manufactured by OmegaTech is incredibly well made and the utmost care and perfectionism is applied from design to build," commented Brad. "The quality of their

products is second to none and the care taken to hand build and assemble every component is next level."

PCC has a few rackmount distros in stock from OmegaTech, each slightly newer than the last. Brad notes that it's amazing to see how the product has improved from version to version. "Craig has taken user feedback on board and improved them, time and time again," observed Brad. "Even simple things such as labelling have improved and in the latest model, the internal multimeter now turns on before breakers are switched on, which is a fantastic way to ensure a power check happens before any damage is caused."

"I love their powerCON drop boxes!" continued Brad. "They're one of my favourite products in our inventory, and so many touring crews have been impressed by them. They're super flexible and, like their rackmount distros, have been improved from version to version. The latest version now comes with a power switch protector to stop it from getting knocked and



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has loads more mounting points so that you can attach hook clamps and hang them from truss to power lighting fixtures. Super flexible and a neat tidy way to get a lot of power somewhere quickly."

The powerCON drop boxes are also 20 amp boxes, so if you use them with the Omegatech distros that have powerCON outputs, you get double the power output per cable compared to a normal 10A GPO, which makes powering lighting a breeze and easier for larger drawing fixtures. They are also brilliant for stage and backline power, as you can drop them in place and link them across with powerCON connectors, meaning no air gaps and a super solid connection that can't be easily knocked out by bands stumbling around a dark stage.

"We recently needed to open up one of the

powerCON drop boxes to fault-find after an event and we were blown away with the build quality," remarked Brad. "We quickly disqualified the box as the problem, as every single wire was labelled, properly terminated and overall the build was so incredibly tidy. It was easy to see it couldn't possibly be the issue. It was also surprisingly clean inside considering we operate throughout the Pilbara, where a large portion of our events happen directly on red dirt. So much of our equipment suffers from constantly being used in 48-degree heat with plenty of red iron ore dust, yet despite the harsh environment, the internals of this powerCON drop box were as clean as brand new."

Brad also states that all of the cables he has purchased from Omegatech use high-quality cable and connectors, none of the cheap

knock-off connectors, just quality Neutrik and Amphenol connectors.

Omegatech is also a real-world manufacturer, meaning that they've actually been there and done that. The team has worked in the hire industry themselves, and they understand the challenges of being on the road. This means they are forever building new products to make our life easier.

"Omegatech's gear is reliable. We trust it from our smallest to largest events," said Brad. "Craig and the team at Omegatech are amazing. Not only do we use their products, but we trust Craig so much that he now handles a lot of our repairs even for non-Omegatech equipment."

www.omegatech.com.au

International Code of Practice for Entertainment Rigging 2.0 Now Available

ESTA and PLASA announce the release of an updated Version 2.0 of the International Code of Practice for Entertainment Rigging (ICOPER), which is available as a free download at www.esta.org/icoper or www.plasa.org/icoper.

Submissions from the international rigging community were received in response to a call for comments in late 2021. The document's authors, Nick Barnfield (New Zealand), Tiny Good (Australia), Chris Higgs (United Kingdom), Ed Kish (United States), Bill Sapsis (United States), and Roy Schilderman (The Netherlands) praised the commentators for their thoughtful consideration and the obvious expertise they brought to the task.

Chris Higgs noted, "Each comment was discussed at length in our Zoom calls, which were facilitated by Lori Rubinstein from ESTA. Some comments acted as a catalyst, causing us to rethink and rewrite the language in the code, while in other cases, comments led us to closely examine and reaffirm the existing statements. In my view the industry is aware of our lead, and I believe ICOPER is already influencing other codes/working practice so now is the opportunity to get it spot on."

Tiny Good commented on the process, "Four years down the road from the creation of the original document it was great to come back to it with fresh eyes and re-evaluate the work we had done. It was enjoyable to get back together as a group again, and we quickly found the old working rhythm we developed while crafting the original document. It was nice to see that much of our original content held up over time. All of us were grateful to have input from those who provided comments. Their input was invaluable in reviewing and updating the code."

Ed Kish commented on the changes to the document, "The comments we received gave us a welcome fresh perspective and inspired us to dig deeper to clarify the language in the code. The original content has been largely preserved, but this revision is sharper and reflects increased knowledge within the rigging community and changes in rigging practice."

Revisions have been provided to the organisations that had previously created translations of the original document and updated versions will be released as they are completed.

Lori Rubinstein stated, "There were a number of translations in progress when the pandemic caused work on those to come to a halt. All the organisations involved have expressed their intention to resume work

soon. In the pipeline are translations into Norwegian, Italian, Korean, Romanian, and Russian, as well as the previously published Traditional Chinese and Polish versions."

The practices described in the Code are intended to provide a universal foundation for those engaged in planning, managing and executing entertainment rigging. ICOPER also provides guidelines for those who wish to develop policy, design training content or help establish certification criteria.

Key areas covered in ICOPER include Pre-Installation, Planning and Engineering; Drawing Conventions; Equipment Selection; Onsite Rigging Work, Lifting Operations, Show Rigging Operations, De-Rigging Work; and Post Production. Also included are a glossary, an appendix covering determinate and indeterminate rigging systems, and a regional comparison of terms pertaining to Standards.

The authors believe that acceptance of this universal code will help promote regulatory harmony and reduce potential conflicts in practice between regions around the world. They hope the resulting improvements in communications and relations with regional and local regulators will be particularly beneficial to those professionals involved in international production. The original version of ICOPER has been downloaded by individuals in over 50 countries.

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BIAMP WINS FOUR 2022 RED DOT AWARDS

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Biamp has been awarded four prestigious Red Dot Awards for its Desono EX Loudspeakers, NPX Network Paging Stations, Vidi 250 4K Video Conferencing Camera, and the industrial design for both the TesiraFORTÉ X and Devio SCX Digital Signal Processors. The Red Dot Design Awards is one of the world's largest and most renowned design competitions, with roughly 20,000 submissions from 60 countries for the 2022 awards.

"We are thrilled to announce that for the first time in Biamp history, we've taken home not one but four Red Dot Awards," said Joe Andrulis, Executive Vice President of Corporate Development at Biamp. "The products entered in the Red Dot Awards are the best of the best in terms of design, innovation, and craftsmanship. Congratulations to the product, design, manufacturing, and engineering teams. I'm so proud of their deep and continuous commitment to building exceptional AV solutions that deliver extraordinary user experiences."

The Red Dot Design Award is an internationally recognized seal of excellence in product design that dates back to 1955. Each year, the competition goes in search of outstanding design achievements and product innovations. The awards are determined by the Red Dot Jury, an independent panel of experts comprising 48 judges from 23 countries, who assessed each product for outstanding design quality.

"This year, I have been particularly struck by the exceptional creativity shown by the award-winning products. It is really impressive and praise-worthy that there are still designs

out there that can surprise us with their form and functionality. This makes it clear that design cannot be restricted or brought to a standstill by unfavourable circumstances. On the contrary: more and more new ideas and creations emerge, and futuristic techniques are developed. The fact that the quality of these products equals their level of innovation makes them well-deserved winners in the Red Dot Award: Product Design 2022," said Professor Dr. Peter Zec, Founder, and CEO of Red Dot.

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SIX

TO TOUR WITH CHAMELEON RIG



SIX Australian 2021 Cast

The British musical SIX, with book and music by Toby Marlow and Lucy Moss, is a vibrant, modern retelling of the story of Henry VIII's six wives, presented as a pop singing contest.

The show's signature style is very much that of a rock concert, utilising an abundance of beam effects to take the place of set changes, which simultaneously give a different look and identity to each of the queens.

Tim Deiling's lighting design is looked after in Australia by Jason Frupp, with gear supplied

by Chameleon Touring Systems. The show has had an incredible sold-out season at the Sydney Opera House's The Studio and is about to embark on a nationwide tour.

The Studio production is significantly different to the remainder of the tour due to the square box design of the venue.

"Tim came out to do the initial setup and to teach me what he wanted as a designer," said Jason. "It's a small stage. Even when we play in large theatres it's compact and punchy. It's a really fun show and almost impossible to get tickets for!"

A key element to the lighting design is the nine vertical towers of lights upstage that provide

the whizz-bang accents to the music. Each tower houses two Ayrton MagicDots and as the towers are narrow with not much real estate, the compact size of the MagicDot made them the ideal fixture.

"The MagicDots do the frou-frou work and pretty it all up," explained Jason. "LED pixel tape is all over the towers and allows us to create pictures such as a crown shape and letters, so it's fun. There are also ETC Source Fours built into the towers for effects and punches on music beats. It's a very vibey show and great fun."

Also on the floor are ten ShowPRO Collider strobes, whilst Six Claypaky Sharpy spots



Kiana Daniele



Phoenix Jackson Mendoza



SIX Australian 2021 Cast - Loren Hunter, Chelsea Dawson, Phoenix Jackson Mendoza, Kala Gare, Kiana Daniele and Vidya Makan.

shoot from underneath the stairs through grilled facades.

Above, there are four trusses; two rear curved trusses and two straight trusses towards the downstage. The upstage curved truss houses eight SGM P10 strobes for a rear stage wash and nine Claypaky Washes providing backlight. Also on this truss are 20 ETC Source PAR MFL 575W.

The smaller curved truss holds five Martin MAC Quantum Spots for overhead specials and a little bit of punch, as well as six more Claypaky Sharpy Washes.

The LX2 bar houses four Martin MAC Auras, two at each end for sidelight, six ETC Source Four, and four Chauvet Slimbank 18 Blacklights.

LX1 holds six Martin Quantum Spots as well as seven ShowPRO Collider strobes.

Front of House it's primarily conventionals, such as ETC Lustrs and Source Fours, with four Martin Encore Performance CLDs that are used to shutter-off set pieces.

A Robe BMFL Long Throw is used as a followspot and controlled from the console, except for the pan and tilt. The operator can override dimmer control if required.

Control is by an ETC EOS using the internal media server to bitmap the LED pixel tape. The 70-minute show has approximately 900 cues, mostly time-coded, with only a couple of dozen manual called cues.

The tour will start in Canberra with a larger rig including two larger towers reaching the front truss to create a false proscenium and another two packed with more lights and effects behind them.

Chameleon Touring Systems will supply the entire tour as it visits Canberra, Adelaide, Melbourne and Brisbane.

Production Electrician: [Scott Opie](#)

Head of LX: [Kate Taylor](#)

www.chameleon-touring.com.au



ELITE MEGAPOINTE INVESTMENT

Canberra-based Elite Event Technology have made a new investment in 16 Robe MegaPointe moving lights for general stock, which join the sixteen that they already owned, purchased when the product was launched in 2018.

"MegaPointe is a go-to lighting fixture for so many entertainment and corporate event scenarios," commented EET's Darren Russell. "It is highly versatile, so we knew it was a solid investment with a good ROI, and that the kit will be busy all the time," he stated, adding "it's a great all-purpose fixture with an amazing output for the size and weight!"

EET has several other Robe products in its rental inventory, including Spiiders, Pointes, BMFL Spots and BMFL WashBeams, Spikies, LEDBeam 100s, LEDWash 600s and LEDWash 300+s, MiniMe's, MMX Spots, DLX Spots and 600E Spots. Darren was an early adopter and started purchasing Robe products around 15 years ago when the brand was still emerging. Since then, Robe has become a market leader and all these products have proved to be reliable workhorses.

MegaPointe is one of Robe's all-time best selling moving lights. Apart from being one of the first truly multi-purpose moving lights, it came to redefine the concept of the all-in-one fixture. With super-bright and sharp parallel beams, excellent gobo projection, precise movement, smooth CMY colour mixing and

dimming plus a multitude of beam splitting, wash and shaping effects, the cutting-edge optical system design provides a crystal clear, razor-edged beam, which is adjustable via the zoom, from a tight 1.8-degree beam to a wide 42-degree wash.

Static and rotating (glass) gobos produce precision in-air effects as well as outstanding projected images with a high-contrast flat field. The MegaPointe's effects engine has several beam and 'flower' effects, and the beam can also be shaped using innovative shutter emulation, unleashing a whole new blend of content and creativity.

EET's new MegaPointes immediately went out on several music events including the

2022 SummerSalt Festival at Stage 88 in Commonwealth Park, Canberra, where they were used by multiple lighting designers including Kait Hall and Steve Granville.

They were also in action on the Red Hot Summer Tour, which played the same venue as part of the Unfinished Business tour, complete with an impressive line-up of Australian artists plus multiple LDs, like the semi-legendary Jeff Pavey!

The entire lighting rig (apart from blinders) was Robe for both these events, underlining Darren and Elite Event Technology's commitment to the best production values and the brand that they have been supporting since near the beginning of its journey.



"Robe's MegaPointe came to redefine the concept of the all-in-one fixture."



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Incorporating an all-new laser array light source, next-generation image enhancement and processing algorithms, expanded HDR10+ and HDMI 2.1 support and real-time scene adaptive correction, the EH-LS12000B produces incredible brightness, colour accuracy and image detail for stunning 4K viewing experiences and immersive gaming. The laser engine's long lifespan of up to 20,000 hours provides worry-free operation. To make installation simple you can precisely shift the lens up to +/- 96% vertically and up to +/- 47% horizontally without any loss in picture distortion or clarity thanks to the EH-LS12000B's 3-axis motorised lens. A front exhaust enables the projector to be installed on a shelf at the back of any room.

Australia: Epson www.epson.com.au or (02) 8899 3666

New Zealand: Epson www.epson.co.nz or (09) 366 6855

UAD Spark Plug-Ins and Subscription Service



Universal Audio is proud to introduce UAD Spark, a new subscription service that puts pro audio industry standard UAD plug-ins and exciting new instruments into the hands of music creators worldwide. This evolving collection runs natively on Mac (\$19.99/month), with Windows coming later in 2022. UAD Spark features UA's most popular plug-in emulations of legendary recording studio hardware, running natively for the first time. Studio gear includes the Neve 1073 Preamp & EQ, UA 1176 Compressor Collection, Teletronix LA-2A Compressor Collection, Studer A800 Tape Recorder, and API Vision Channel Strip.

UAD Spark also introduces exclusive new UAD instruments, benefiting from UA's expertise in modelling, sampling, and synthesis. Instruments include Opal Morphing Synthesizer (exclusive to Spark), Moog Minimoog, Waterfall B3 Organ, and Ravel Grand Piano.

Australia: CMI Music & Audio cmi.com.au or (03) 9315 2244

New Zealand: Music Link www.musiclinknz.co.nz or (09) 250 0068

Elation Fuze MAX

The Fuze MAX has been designed for precision lighting applications such as theatre, broadcast and Houses of Worship where a wider chromatic spectrum (including dynamic whites), a full feature set and outstanding quality is required. The Fuze MAX Spot and Fuze MAX Profile, both automated LED moving heads, offer full-spectrum performance from a 92 CRI engine that utilises an 800W 5-colour homogenised LED array of Red, Green, Blue, Mint, and Amber sources. The Fuze MAX uses advanced, high-quality optics, and dimming is smooth and stepless with variable 16-bit dimming curve modes available. Both the Fuze MAX Spot and Fuze MAX Profile house a motorised zoom that can adjust the beam angle from a tight 7 degrees to 53 degrees wide and ship with an included snoot attachment to position the beam even more precisely. The Fuze MAX Profile houses a full blackout framing system with four rotating blades and +/- 60 degree indexing for full control of the beam shape when required.

Australia and New Zealand: ULA Group www.ulagroup.com
or AU 1300 852 476 / NZ +64 9 218 6532





Ayrton Zonda 9 Wash and Zonda 9 FX

Zonda 9 Wash and Zonda 9 FX share the same proprietary optical system which consists of a wide, 384mm diameter dial of 37 lenses in PMMA combined with 37 glass light guides with an output surface made of an optical micro-structure. This LED and optical system combination can produce an output of 25,000 lumens and a mixture of pastel and saturated colours, regardless of the colour mix chosen, with a CRI of <86. Endowed with a 50mm truncated transmitting lens with an optical surface equivalent to that of a 70mm round lens, Zonda 9 Wash and Zonda 9 FX can create an intensive beam with a zoom ratio of 14:1 and a wide zoom range of 4° to 56°.

Australia: Show Technology Australia
www.showtech.com.au (02) 9748 1122
New Zealand: Show Technology New Zealand
www.showtech.nz (09) 869 3293

Zonda 9 FX

Zonda 9 Wash

LumenRadio Stardust

Capable of delivering eight DMX/RDM universes and expanding the function of Cognitive-Coexistence with the new Fleet Alliance, Stardust's enhanced radio design allows for record breaking ranges on all eight universes simultaneously. The onboard Wi-Fi and Ethernet provides both configuration via web portal and transmission of sACN and Art-Net, while the Bluetooth interface enables configuration via the CRMX Toolbox App. With the intuitive color screen it's easier than ever to configure, using operation profiles to quickly change settings on the fly while the built-in backup battery makes sure the show will go on.

Australia: ULA Group www.ulagroup.com or 1300 852 476
New Zealand: Kenderdine Electrical kelpls.co.nz or (09) 302 4100



Blustream HEX70HDUK-KIT and CEX4K-KIT

Blustream have announced two new additions to its extender line: the HEX70HDUK-KIT and the CEX4K-KIT. The Blustream HEX70HDUK-KIT supports 4K 60Hz 4:4:4 UHD video up to 40 metres and extends HDMI 1080p up to 70 metres over a single Cat cable. The unit's enhanced flexibility includes support for multiple video formats, including HDMI, DisplayPort, and USB. Further advanced features include USB 2.0 extension (KVM), local HDMI input on the HDBaseT receiver, a web GUI for control and configuration, auto display control, audio breakout, and bi-directional IR pass-through. The HEX70HDUK-KIT has an optional tabletop enclosure designed to provide a secure solution for mounting the HEX70HDUK transmitter into a tabletop or desk.

The CEX4K-KIT HDMI extender set enables HDMI distribution over a single 75-ohm coaxial cable. The extender set delivers HDMI plus bi-directional IR up to 100 metres at 4K 60Hz 4:4:4. The HDCP 2.2-compliant unit offers smart EDID management and PCM 2.0 channel audio.

Australia: Jands www.jands.com.au or 02 9582 0909. **New Zealand:** Sound Group soundgroup.co.nz or (09) 415 6680



NEW GEAR

Introducing NST Audio

Established in the UK in 2014, NST Audio now appear across the globe from Prague to Vietnam, their distinctive approach to sonic definition and clarity making them major considerations in many high-end integrations, as Dan Cartman, NST Audio's Managing Director, explains: "Where we diverge from other major install brands is our approach to sound quality. This focus has opened doors for us that might not have been available to those only manufacturing corporate-oriented hardware. NST gear is finding its way into installs where high quality audio is a must. Some spaces, such as top-tier cinema setups, require truly high-end audio, and this is where NST's strengths really become apparent. We continue to develop in this direction, with audio quality as our primary focus."



D48X / ID48X Matrix Signal Processor

The third generation of NST's matrix signal processor, the D48X is a 4-input/8-output matrix system with DSP and digital I/O. Featuring audiophile-grade AD/DA converter chipsets, and available in both a standard and installation (ID48X) version, the D48X offers a comprehensive mix of quality and flexibility. With inputs and outputs switchable in channel pairs between analogue or AES/EBU, USB-C front panel connectivity with Ethernet bridging, and a dual Ethernet port switch in every unit, the D48X offers a myriad of flexible connection options for system integration.

VMX88 Audio Installation Processor

The VMX88 is an audio installation processor that combines an analogue 8-in/8-out installation system with 8-in/8-out Dante capabilities. Crafted using the latest generation of NST DSP technology, the VMX88 brings no-compromise audio performance to Dante-networked audio installations, offering all the benefits of NST's live sound filters and dynamics algorithms in an installation product.



VM016 Audio Installation Processor

The VM016 is an audio installation processor featuring 16 Dante network inputs, a 16x16 matrix mixer and 16 analogue outputs. This configuration enables any Dante networked inputs to be routed to any analogue output channel. Designed using NST second-generation DSP architecture, the VM016 marries excellent sonic performance with agile control over Dante networked audio setups.

VR1 PoE Remote Control Panel

NST Audio's VR1 wall panel units allow for intuitive remote control of NST system parameters. The VR1 can be easily set-up to allow control of one or more NST Audio processors connected to the same network as the wall panel. The VR1 allows multiple pages of custom remote access, including channel and matrix gains, preset recall and routing and channel mutes. The VR1 features a customisable full colour 128 x 128 pixel LCD display, which allows all pages to be labelled by the installer, providing users with a clear and easy to use wall control. Multiple VR1s can be used on the same network to control multiple processors.



D-Net Software

D-Net is NST Audio's feature-rich DSP control software, compatible with PC, Mac and iPad. D-Net provides full control over signal processing, routing and configuration of multiple NST devices, giving installers and engineers complete control of NST systems over Ethernet or Wi-Fi. D-Net includes the ability to set up systems offline and store/load presets and preset libraries, and includes many advanced tools for device linking, storing/loading of system snapshots, selective locking of device control panels, and much more.

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FIVE FOR TWENTY-TWO

There are so many things to consider during a song production that it's almost impossible to get everything sounding just right. Perfection is a myth anyway when it comes to art, but that doesn't mean you shouldn't still try to capture something great. With that in mind, here are five things to consider avoiding or improving upon before the year's out, so you can get excited about your next music release.

Let me just preface what follows here by saying that most of the music that's penetrated the inner sanctum of your high-rotation playlist has likely done so thanks to the inventive musicianship of some highly skilled artists working in concert with some equally dedicated craftspeople, to create an amazing product that's managed to appeal to you on multiple levels.

These musicians haven't pulled off this minor miracle by half-arsing their work, settling for second best or leaving most things to chance. They've understood that getting things sounding right from the get-go takes work, dedication and a determination to never settle for second-rate songs or performances. If nothing else, let this aspect of their work have the most influence upon yours, rather than their musical style or outward appearance.

1: That'll Do

This is probably the worst mistake every single one of us makes at some point. It's a very hard decision to resist at times, although the real problem occurs when you start getting into the habit of it. Once in a while is okay, but 10 times a day quickly turns your work into slop.

Saying 'That'll do' to a group of musicians you're recording, for example, is usually the moment when mediocrity waltzes right through the door. If you don't guard against it your recording session can quickly find itself on a slippery slope to nowhere. To avoid reaching this juncture, try pre-empting it. Don't wait 'til you're suddenly confronted with the dilemma of whether to push a musician harder or call stumps on their recording. If you leave it 'til then your tendency will be to let both of you off the hook, but this is often the wrong decision. (I include you in this fishing metaphor because it's easier for you to move on in this situation too – and who specifically are you letting off the hook here, anyway?)

If you're uncertain whether you've captured 'enough' of a certain performance for the purposes of a convoluted editing job, you probably haven't – well, not one that's great at least.

Try discussing this issue with the artist or band you're working with beforehand. Tell them you never want to get to the point where you have to say 'That'll do' to any of them during

a recording session, so that everyone knows you're determined to capture only their best performances. It will also subconsciously prime them to deliver their best right from the get-go.

The same applies when you're recording yourself at home. Don't think you're exempt here from the same rules that apply to others. Twenty mediocre performances can be made into one track in the wee small hours of the morning via a million crafty edits, that's true. You might even manage to compile a 'competent-sounding take,' but will it be great? Probably not.

2: Great Song, Minimal Arrangement

Directly related to the concept of 'That'll do' is the production problem of adding more tracks to cover up, support or bolster average performances – there are several issues at play here too. Less than remarkable performances tend to sound exposed rather than awesome when pushed forward in a mix, which means they tend to be pushed back and thus require supporting tracks to bolster their effectiveness. This approach can lead you off course rapidly, and the results are often (so-called) 'performances' that lack flair, clarity and definition. Too many mediocre tracks masquerading as one only tend to blur and abrade the detail and impact of one another. One amazing performance meanwhile, is better sounding, easier to mix and vastly more satisfying to a listening audience. We know all this of course, and yet still we try to fudge our way around the problem when confronted by it.

So don't get attached to a bunch of mediocre takes and think that lumping them together will somehow get you out of the mess you've made. Do you really think these parts will sound awesome as a group? Occasionally they might, that's true. But far more often than not, they won't. Try to stick to your original Plan A of capturing that one awesome performance that can shine in your mix like a beacon. Productions that feature fewer tracks, brilliantly played, will always sound vastly superior to ones that have 150 tracks of performances that combine to form a six-piece band arrangement. These are much harder to mix, nowhere near as detailed sounding, and will sometimes sound smaller and quieter overall.

3: Learn To Arrange Your Music

This is a difficult thing to discuss in one or two paragraphs, but in short, great arrangements will typically sound far more interesting, entertaining and intriguing than convoluted or bloated ones.

Many song recordings these days have the advantage (and distinct disadvantage) of being tracked in a private studio at low cost, often with little preparation done on a song's arrangement. The problem with this approach is often (but not always) that once committed to tape (or hard drive) it's human nature to try to find merit in the recorded performances. The longer each one is kept the more attached to them you become, for good or ill. If individual overdubs clash with one another, or too many are played for the full length of the track as an aural fishing exercise, you may end up with a song that lacks shape and dynamic, reveals its hand too early, and bores the pants off you ninety seconds in.

Try avoiding those additional overdubs that start on bar one wherever possible. Chances are most of them need to start elsewhere, and if you can determine that now, you should limit where you play them to only those areas where they're required.

Even when you're not sure where the song is headed, just remember, being ruthless and decisive about the arrangement at various points during the production can be far more beneficial to the song than simply capturing everything – good, bad or indifferent – and never editing, culling or limiting the parts to specific sections of the song.

In a nutshell, don't just record a bunch of performances that straddle the entire track and expect your song to have much in the way of merit or intrigue.

4: Mixing Out Of Your Depth

When you're an experienced mix engineer, all the issues mentioned thus far are quickly exposed as problems that need resolving. For the unsuspecting 'mixing enthusiast' however, these problems can fly under the radar altogether, or be misconstrued as unresolvable.

In many cases, it's not until mixdown that a piece of music is even tested to determine whether all the parts even go together! This is particularly true of songs that have 'evolved' during tracking or where too many musical decisions have been left until the mix. Indeed, sometimes overdubs are only kept with the strict proviso that they may or may not be used in the final mix, but unfortunately, this fact is often the one thing that later gets forgotten!

Mixing is as much about learning what to omit, edit, prioritise and transform, as it is about fancy EQ curves, compression ratios and automation passes. There are very few occasions indeed where mixing a piece of music is simply about representing everything on a timeline in a relatively non-judgemental, democratic fashion. Frankly, I can't remember when I last did that, or indeed if I ever have!

Mixing is, in some ways at least, a bit like building a 1000-piece jigsaw puzzle that you bought from the Op Shop; you can't assume all the bits are there in the first place, some of the pieces have been chewed by a two-year old and other bits are from different puzzles altogether. The trick is identifying these strays early on so you don't waste 10 hours trying to make them fit.

If you're too close to a production or you're relatively inexperienced as a mix engineer, you may find yourself tied up in knots determining any of this before you've got very far.

If you're primarily a musician, and that's your obvious strength, consider allowing a professional mix engineer whom you trust to mix at least some of the more complicated songs. The same logic applies if you're the producer. In the end, just because you 'love music' and know how to 'listen deeply,' that doesn't automatically make you a mix engineer. That's a fallacy. It's like saying that because you love driving cars, you know how to build one.

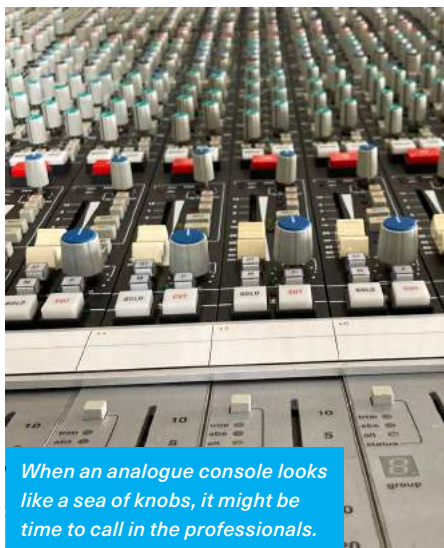
5: Behold, The Source!

If you can't say "Wow!" about an instrument you're recording, no matter who's playing it or what its context may be, it needs more work before you commit it to the music. All sounds start at the source (we all know this too, don't we?) and if you don't put the work in here to make a sound the best it can possibly be, your production will be the worse for it. The better suited to the music a source is, and the more amazing it seems in your specific context, the better it will inevitably be.

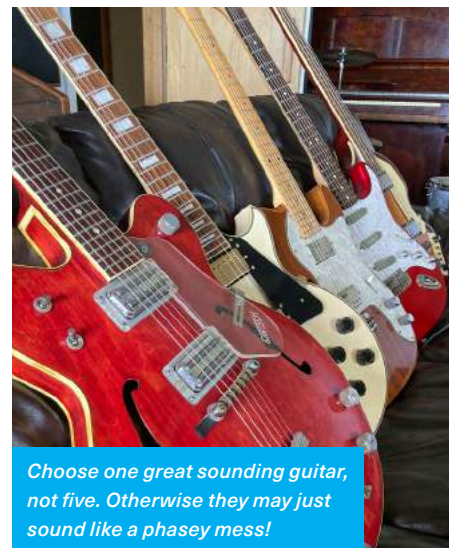
On the flipside, if you're already shrugging your shoulders, admitting that "Yeah, it sounds okay, I guess..." you're singing yourself to shipwreck. You don't want a Capital L for 'Lazy' tattooed on your forehead, do you? Then don't do this. Stop what you're doing and make some changes (that may involve doing some work). Search for something better that excites, inspires or convinces you. You wanna be saying: "Now, that is an awesome sound!" not, "Yeah, that should be okay." Who on earth is going to be excited about the song when it



Some mix projects are so big you can quickly get lost in them... don't feel obliged to DIY! If you think this console looks big, just remember, your 100-channel DAW mix is twice the size of this console!



When an analogue console looks like a sea of knobs, it might be time to call in the professionals.



Choose one great sounding guitar, not five. Otherwise they may just sound like a phasey mess!

comes out if you couldn't even muster up some excitement about it in the studio?

There are so many things you could do to improve a source... literally. Change the player, the mic, the amp, the strings, the venue, the lighting, the lyrics, the chord structure, the attitude... whatever it takes. Just don't do nothing.

That's the beauty of working with music and audio; there are limitless possibilities.

Why choose one that's boring? So you can bore your listeners? I doubt that's your aim.

Andy Stewart owns and operates The Mill studio in Victoria, a world-class production, mixing and mastering facility. He's happy to respond to any pleas for pro audio help... contact him at: andy@themill.net.au or visit: www.themillstudio.com.au

TE PAE CHRISTCHURCH

OFFICIALLY OPEN AND READY TO IMPRESS



by Jenny Barrett

New Zealand's first international-standard convention centre, Te Pae Christchurch, was officially opened in December 2021. With approximately 100 events confirmed for 2022, the centre is busy recruiting and in the midst of planning an open day for the public to experience this breathtaking facility.

"Many convention centres look and feel like small boxes, with no natural light. Here you have expansive views over the Avon River and the greenery of Victoria Square. Over three million labour-hours have gone into the construction, and I think everyone involved in creating this iconic facility should be very proud," says John Bridgman, Chief Executive of Ōtākaro Limited, a crown company that has managed the design and construction and will own the facility.

TenFour, the audio-visual integrators, share that pride, "This was a massive undertaking that started way back in 2018. We are stoked with the end product and proud to have contributed to achieving Christchurch's vision of what an international convention centre should be in terms of scale and technology. There is nothing else like it in New Zealand and it is a wonderful asset for the city," shares Nathan Roche, TenFour's Sales and Marketing Director.

Working alongside CPB Contractors and consultants WSP, TenFour delivered the complete audio-visual fit out of three separate

buildings, an outdoor advertising screen, and full building digital signage and background music systems (BGM) with an Emergency Warning & Intercommunication System (EWIS) and evacuation integration.

State-Of-The-Art Control Systems

Aiming for ease of use and reliability TenFour opted for a Crestron and QSC certified design, "Crestron are lightyears ahead of the rest of the market, especially around network AV streaming," continues Nathan. "We have a twelve-year partnership which we put to good use in commissioning the solution for Te Pae." TenFour used a Crestron enterprise-class control system with 3 series processors that support Crestron Fusion. "The Crestron Fusion system gives us full visibility of a room status at any time," confirms Nathan. "In the event of a power failure or a device going offline, the Fusion server will let us know." The system emails a warning notification to both the TenFour helpdesk as well as turning

notification icons red to indicate an error on the onsite dashboard. TenFour can remote access to fault find and fix, as well as being able to use Crestron X Panel software to assist and resolve issues during meetings by remotely taking control of devices in the room, including access to the in-room touch panel.

Meanwhile the audio backbone, the QSC QSYS Core 510 Audio processor, supports the entire networked based audio distribution and amplification across the venue.

Tripleplay ITPV System Features to Support Client Content Sharing

TenFour selected the Tripleplay IPTV system to meet the client's priorities. "They wanted to cast what was happening in different spaces across the venue, promote future events, run Freeview TV and push signage," explains Nathan, "This was the largest roll out we've done in New Zealand with over forty IPTV/digital signage and wayfinding screens installed across the site." With the Tripleplay system, an operator can easily record or stream content from the Auditorium venue-wide, just by initiating it on the touch panels in the Auditorium spaces. Content is stored on the Tripleplay servers to be edited and distributed as required.



wall panels arranged in a twenty metre square that can be configured to provide a large single or multiple images. To keep things simple for the end users and in line with the software being used inside the Auditorium, TenFour used the tvONE CORIOmaster micro videowall processing solution. Using a professional videowall production style processor the operator will easily be able to set and schedule all types of layouts and content.

Movie Standard Projection and Audio in Meeting Rooms and Banquet Halls

Fourteen event spaces and two banquet halls can be reconfigured for total flexibility, supported by the Crestron system, meaning when combined the audio and video all join seamlessly at the control panel.

Each of the meeting rooms are equipped with high performance 7000 lumens 4K UHD Christie laser data projectors with customised Ultralift lifters that can drop to 1.5m above ground for ease of maintenance. Panasonic 4K PTZ cameras fitted to the bottom of the lifter are available and the user can preview the camera image on the custom designed Podion Global lectern monitor. In-room audio is provided by two JBL speakers mounted horizontally with six EV high ceiling speakers also provided as part of the BGM and EWIS/

The Star of the Show – The Auditorium/Plenary Building

The 1400 seat Auditorium/Plenary building encompasses the Auditorium pre-function space and the main Auditorium that can be broken into two or used as one large space. When the Auditorium spaces are separated by the operable wall system, each side has a Samsung VMR-I P3.9 Indoor Touring LED screen, measuring nine by five metres with full high definition 1920 x 1080 resolution and 16:9 ratio. When the Auditorium is used as one large space, these touring screens can be joined to make a 32:9 resolution. A Roland vision mixer feeds into the CORIOmaster micro videowall

processor to allow for the dual outputs to the dual screen images, and to resolve the layout to suit the 32:9 resolution when joined. Each screen has a 4K Samsung S videowall controller to manage the scaling of images to the screens.

TenFour partnered with Bartons Sound NZ for the audio design and testing for the Auditorium. Bartons completed an electro-acoustic assessment of the Auditorium sound reinforcement system and opted for the high-end Martin Audio Multi-Cellular Line-Array loudspeaker system.

On the outside of the Plenary Building on Armagh St, Nathan’s team installed an outdoor LED video wall comprising eighty LED video

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WAY AHEAD





paging system and used to fill the room, accompanied by an AKG dual receiver microphone unit.

Samsung LED screens add to the flexibility. TenFour used Samsung 200 inch LED screens with 2.5MM pixel pitch 4800 x 2700 (12.96m²) 16:9, designed and supplied flat to wall mount by Samsung NZ, with JBL DSX180 Intellivox digitally steered line array speakers beside the LED screens. As the control system joins the rooms, the orientation of the room changes to naturally face the LED screen and use the JBL Intellivox speakers for sound reinforcement. The Intellivox speakers are tuned to suit the length and width of the rooms and as the

rooms are joined, a single JBL ceiling mount subwoofer is engaged to provide the lower end reinforcement to the audio performance.

The Banquet Halls, two spaces that seat two hundred and fifty that can be joined, are fitted out with similar gear to the meeting spaces but with the projection going next level. Two powerful Christie 4k10HS 10000 ANSI lumen laser projectors are supplemented by another with the same specs, fixed to a custom-designed ninety degree rotatable projector lifter. Each side of the Banquet Hall also has thirty JBL Control 67HC high ceiling pendant speakers to improve quality and coverage.

Accessibility and Ambience Covered

Every space has a ceiling mounted Williams Sound IR-based hearing assistance unit installed, and volumes in pre-function areas are set to a default level, which will automatically raise and lower based on the ambient noise level in the area, picked up by a noise sensing mic. EV ceiling speakers deliver the background music and paging announcements and are programmed to be 'on' and 'off' based on the same schedule times as the local LED screen.





Reflecting on the End Result

It has been a huge task and collaboration has been key, "We built really close relationships with WSP and with the client Ōtākaro," says Nathan. "We focused on achieving the best outcomes for the convention centre, at times instigating brave conversations to ensure that decisions were made in the best interests of the end user."

The challenge lay, as is often the case on a live construction site, in coordinating the

AV installation with all the enabling works happening across the site. "We dedicated staff to liaising with other service providers," relates Nathan. "Our technicians supported the network integration to ensure that everything was compatible, testing and commissioning sometimes more than once as changes were made to systems. At times during the project, TenFour had six full-time staff and three contractors working out of the Christchurch office with an additional twelve staff providing technical resource and project support around

technical documentation, commissioning, testing, programming, project management, and health and safety from across our other New Zealand offices."

"Now we are at the end and I can see what we have all achieved, I am blown away," concludes Nathan. "As the country opens up again, Te Pae Christchurch will hold its own globally as a destination for international events. I am incredibly proud of our team at TenFour and their resilience and hard work."

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Handa Opera on Sydney Harbour stages
Opera Australia's *The Phantom of the Opera*



THE MUSIC OF THE NIGHT

The world's most successful musical, Andrew Lloyd Webber's *The Phantom of the Opera*, sees not one, but two productions staged in Australia this year. Opera Australia are mounting both; an elaborate new production opens at Sydney Opera House in August before moving to Arts Centre Melbourne in October. Another *Phantom* has also just run 25 March to 24 April 2022 in the incomparable setting of Handa Opera on Sydney Harbour, with the House and the Bridge as the spectacular backdrop. As every resident of Sydney knows, doing anything outside in the first part of 2022 has proven challenging...



Sound designer Shelly Lee has a long association with Phantom, working on her first production of the mega-hit in the 1990s. Shelly is also an Australian representative for Andrew Lloyd Webber's Really Useful Group, the company that oversees all licensing and production of his works, so was a natural fit to handle the sound design for the ambitious outdoor staging. NW Group are the incumbent tech provider, and delivered and installed the full system Shelly designed for the show, project managed by NW Group's George Blackley.

"We've been providing audio production for Handa Opera on Sydney Harbour since its inaugural year in 2012," says NW Group's founder Chris Kennedy. "There's a huge amount of technical expertise involved in producing an outdoor opera on a working harbour and we're thrilled to be a part of that. Our team are delighted to be working with Opera Australia for The Phantom of the Opera, and to be involved in such an iconic Sydney event".

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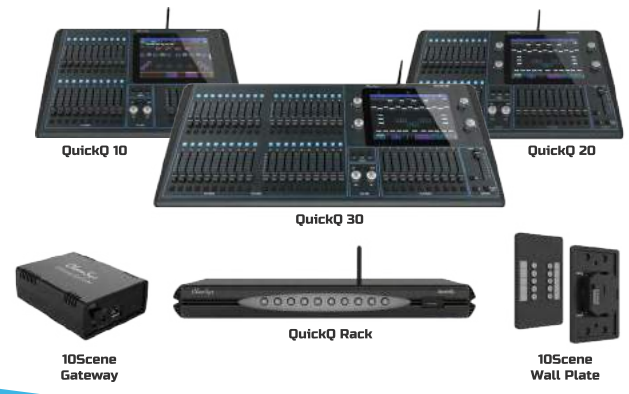
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The FOH tower, with L-Acoustics KIVA II as delays



Naomi Johns as Carlotta Guidicelli.
Photo Credit Prudence Upton

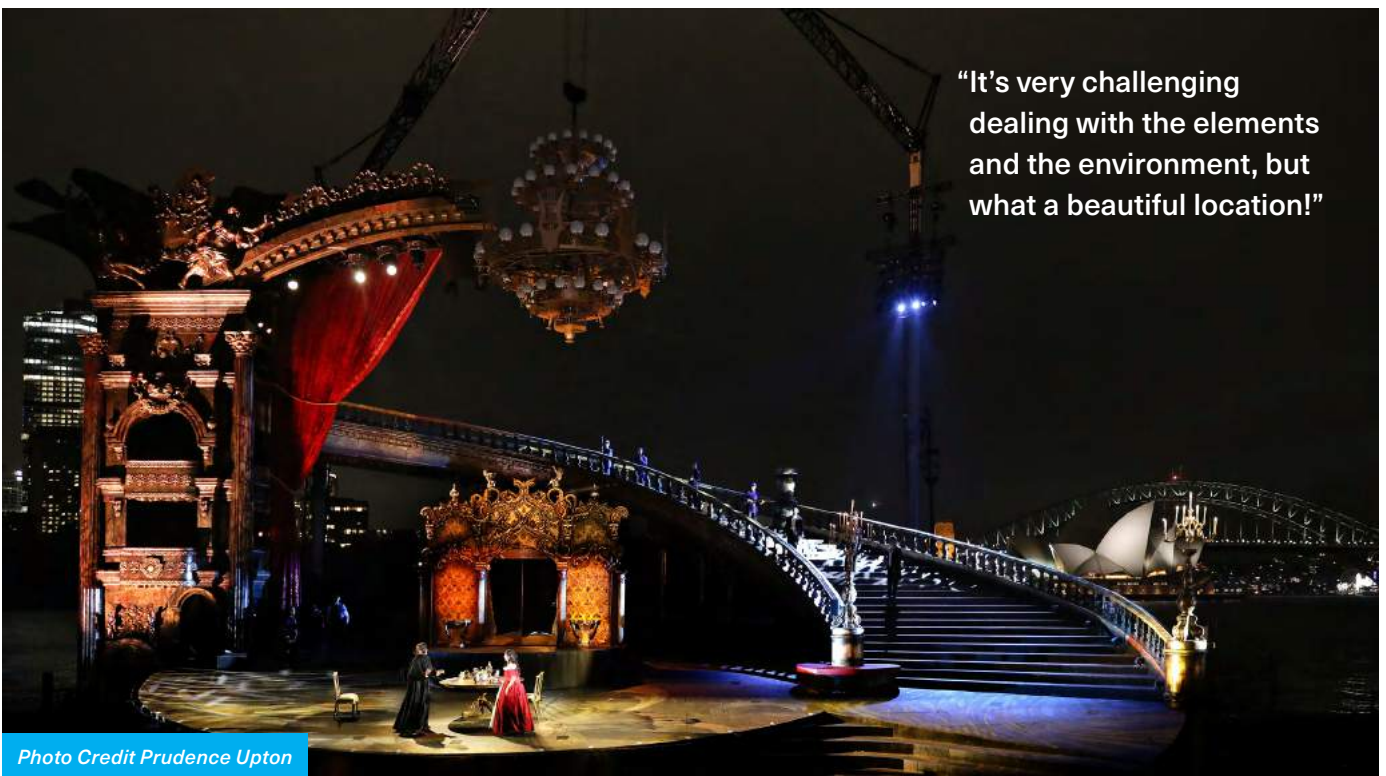


Photo Credit Prudence Upton

“It’s very challenging dealing with the elements and the environment, but what a beautiful location!”

Sydney’s total annual rainfall being shoehorned into the first three months of the year did not help with the bump-in or pre-production period. “I’d say the two biggest challenges we faced at Handa Opera on Sydney Harbour was the weather, and not being able to hang any loudspeakers on a proscenium of any kind,” says Shelly. “It is very unusual to have a sound design situation where there is nowhere to rig speakers to obtain even coverage. The first and fundamental step I take in any design is to try to ensure that the experience is the same in every single seat.”

The ongoing “rain event” slowed down every aspect of the workflow. “We had a couple of big days early on, and then the load-in got very much behind,” states Shelly. “After that, the situation cleared a little and the crew kept working, but when lightning and wind made it dangerous to keep going, they had to pull

the pin. Phantom is challenging at the best of times, and the weather really did not help. This in turn impacted creative time with the cast on stage, by greatly reducing the normal duration of stage rehearsals.”

The show, of course, must go on, and despite a thorough drenching, the production took shape. The main way Shelly’s design differs from iterations of Handa Opera on Sydney Harbour I’ve attended in the past is in the way the FOH PA is deployed. As the production design lacked anywhere to hang the large left-right line arrays used for La Boheme or Aida for example, Shelly deployed two ground-stacks of 12 L-Acoustics K2 elements per side, augmented by six ground-stacked L-Acoustics KS28 subs per side, all sitting on the extreme downstage edges of the stage.

To pull the image back to centre and ensure even coverage, four small stacks of four

L-Acoustics KIVA II and two L-Acoustics SB-15M subs each ran across the front of the stage, hiding under the stage lip. “Phantom is very dynamic, going from almost nothing to quite big,” relates Shelly. “Because we had to ground stack at the front, I was worried how we would achieve the levels we needed while maintaining an even coverage. I didn’t want to reduce the dynamic of the show. In conjunction with Damien Juhasz from L-Acoustics and my Associate Ricky Gallagher, we mapped out many versions of the coverage in L-Acoustics’ Soundvision software, finally adding in extra front and side fill speakers to keep the image more contained and improving the coverage so we could run the dynamic we wanted.”

Another noticeable difference between Phantom and previous designs for Handa Opera on Sydney Harbour is what Shelly and the crew jokingly refer to as ‘The T-Rex Arms’.

These six truss structures extending over the rear of the seating area are seven-metre long truss outriggers, counterweighted and fixed off to the seating bank. Hanging off the end are three L-Acoustics KIVA II elements each, part of the broader delay system which is running 24 KIVA II in total.

Surround is an integral part of this production, and 12 surround arrays hidden in the trees around the site utilise 16 L-Acoustics ARCS FOCUS, 10 L-Acoustics ARCS WIDE and 10 L-Acoustics SB18m subs in total. "Due to the extremely wide seating area, I split the surround into two zones, the left audience and right audience zones," explains Shelly. "Phantom's voice moves around, and in the gala scene, the orchestral image starts onstage and comes into the surround, making the audience feel like they've suddenly been transformed from watching a rehearsal to a

surrounding performance. The show really lends itself to surround, as it's a requirement that Phantom's voice has to be displaced at various points in the show."

A wonderfully excessive eight units of TC Electronic's flagship TC6000 reverbs help create surround effects and space in the show. "There's vocal, Phantom, string, orchestral, and FX reverbs, then the surround components of those," outlines Shelly. "I use reverbs without early reflections in the surround as an extension of the reverbs that are in the FOH PA. For example, there's a moment in the last scene when the ensemble is tracking Phantom down; they have their FX and distant reverbs. Meanwhile, Christine and Raoul are off-stage singing in the distance with their vocal reverb. At the same time, Phantom has his own reverb. There are so many reverbs because there are many points in the show when characters are

in different spaces, so we need more units to make that happen."

A DiGiCo SD7 with the latest SD7T software sits at the heart of the audio system, powered by two Quantum 7 Stealth Digital Engines and operated by the very talented Emily Adams. A QLab system is used to fire cues to the desk. There are dedicated SD Racks for RF and the Orchestra, with an additional SD-MiNi Rack for the orchestra. Two radio mic technicians, Monique Orton and Emma Davies, meticulously fit all performer microphones for each performance. The principals use Shure Axient Digital wireless transmitters fitted with DPA 4066/61 microphones, and the rest of the cast are on Sennheiser SK5212-II transmitters fitted with DPA mics, reporting back to Sennheiser EM 3732-II receivers. Orchestral microphones include a mix of DPA, Schoeps, Royer, and Neumann.



Georgina Hopson as Christine Daaé.
Photo Credit Prudence Upton



Joshua Robson as The Phantom. Photo Credit Prudence Upton



Georgina Hopson as Christine Daaé. Photo Credit Prudence Upton



Joshua Robson as The Phantom.
Photo Credit Prudence Upton



The Cast of The Phantom of the Opera. Photo Credit Prudence Upton

“We ended up putting Glad Wrap between the speaker grille and the stage surface to stop water going in, which was relatively successful.”

BACKSTAGE

NW Group Audio Team

- Project Manager: George Blackley
- Associate Designer / Senior Systems Engineer: Ricky Gallagher
- Comms and Systems Engineer: Roo Smith

L-Acoustics products deployed

- 4 x 6 K2 ground stacked, main L/R inner and outer
- 4 x 3 cardioid KS28 stacks
- 6 x KS28 effect subs under grandstand
- 3 x 4 KIVA and 2 x SB15 as front fill
- 6 x 4 KIVA as delay hangs
- 10 x 1 SB18 with 2 or 3 ARCS WIFO (dependent on throw distance)
- 8 x 12XTs various fill/fold back
- 4 x X8s, 2 as foldback, 2 as desk fill
- Amplification: 8 x LA-RAK II, 6 x LA-RAK, 10 x LA4X



L-Acoustics K2 and KS28 ground stacked downstage

After consulting with the performers at length, Shelly decided against using IEMs, and built all foldback and monitoring into the stage. This included 124 Quest loudspeakers mounted in almost every conceivable position, and eight L-Acoustics speakers for ambience and fill. “Mounting floor speakers like this has had its challenges because of the rain,” concedes Shelly. “But music theatre performers prefer not to wear IEMs in general. We tried to create an acoustic environment that was like performing inside a theatre. The stage and ambient speakers were fed with reverb and reflective vocal to give the performers that sense. For the most part, they loved it, except when wind became a challenge. There’s no perfect solution in an environment like

Handa Opera on Sydney Harbour. We had waterproof speakers, but they were sitting upside down, and can and did fill up with water. We ended up putting Glad Wrap between the speaker grille and the stage surface to stop water going in, which was relatively successful.”

“Handa Opera on Sydney Harbour is such an amazing concept,” concludes Shelly. “It’s very challenging dealing with the elements and the environment, but what a beautiful location! I take my hat off to Opera Australia for putting on such a challenging production. The Phantom of the Opera is a very detailed show and has a lot of complexity about it, which makes it even more extraordinary when you consider it was first staged in the 1980s.”

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These are mature, profitable family businesses, each with a similar profile. Both owners seek to retire due to age, and both remain committed to supporting a new owner and contributing valuable service as required. Both firms have broad expansion potential - and this can be spelled out in a report as part of sale.

Covid has been kind to these firms.

With concerts and shows cancelled, both focussed on installation and enjoyed ongoing profitability. The momentum of installations could and should be maintained BUT/AND both firms are now smashed with resuming live production work. So much so, that additional inventory has been acquired - video at North Coast, and a new JBL line array out west.

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FREQUENCY COORDINATION & FREQUENCY MANAGEMENT

AROUND THE GROUNDS WITH PRM

Optus Stadium in Perth, Western Australia, is known as the world's most beautiful sporting facility. The locals are very proud of its reputation, and it has attracted some of Australia's largest sporting and entertainment events to the city since its opening in 2017.

However, over the last twelve months, users in the stadium were experiencing RF interference issues that were beginning to have adverse effects on live entertainment and broadcasts from the stadium. The stadium had a spectrum plan that they had been using, but it hadn't been updated since 2019.

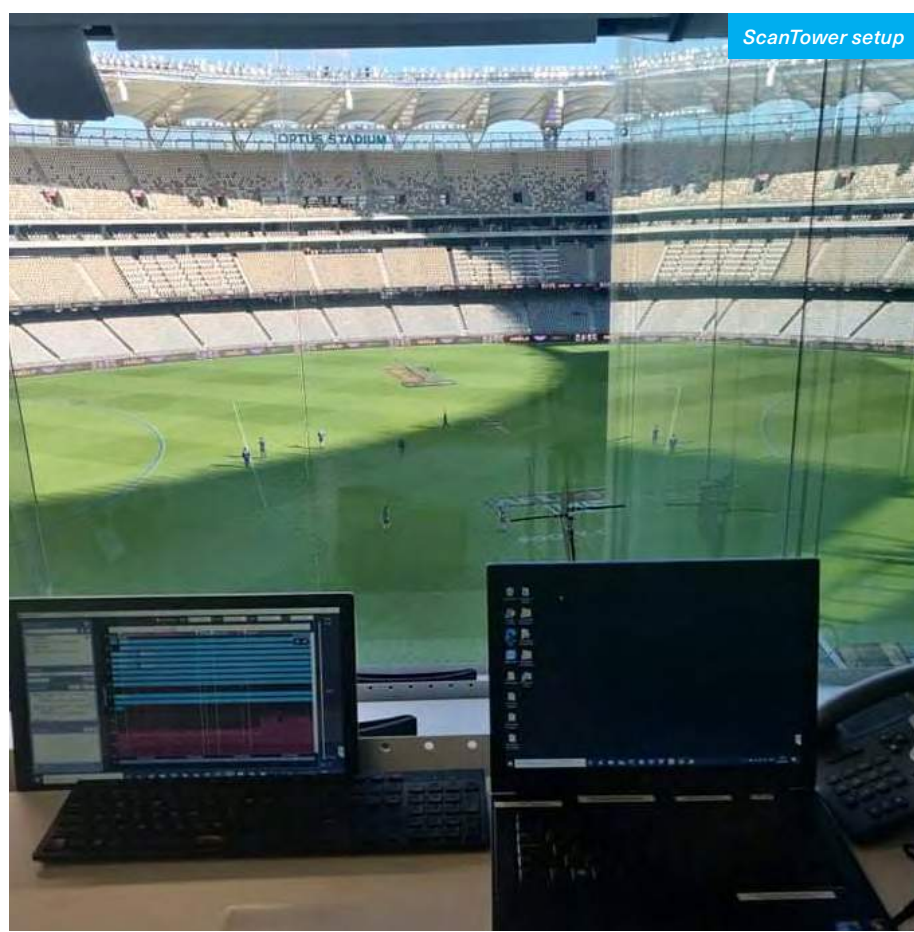
Kim Wisniewski, ICT Manager at the stadium, contacted Profiles Resource Management

(PRM) for some advice and assistance to establish an updated spectrum management plan. PRM has over 20 years' experience in RF spectrum management here in Australia and overseas. Peter Twartz from PRM had previously prepared spectrum plans for the NRL State of Origin Game 2 in 2019 and the test cricket matches in 2019 and 2020 at Optus Stadium, so was quite familiar with the spectral environment.

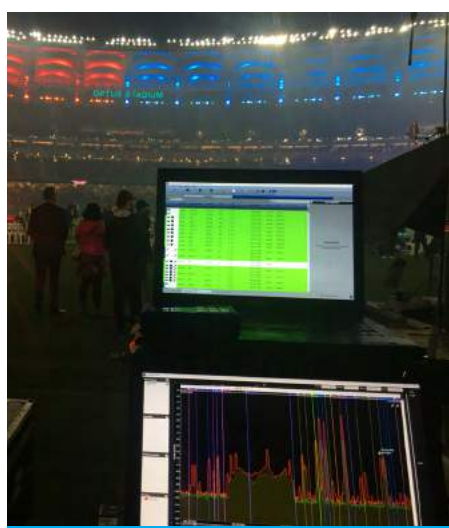
PRM sent three of their ScanTower Spectrum Monitoring Stations to Perth which were set-up at different locations around the stadium. Once connected they automatically commenced scanning and uploading spectrum data. PRM worked concurrently with all the major stakeholders at the stadium; radio and television broadcasters, in-house AV suppliers, security radio providers, and more, to verify exactly what equipment was



Peter Twartz



ScanTower setup



NRL State of Origin 2019 onsite monitoring

in use and on which frequencies. This information was all collated and calculations were conducted to avoid intermodulations and prevent interference. Once completed, PRM distributed a master registry listing all frequencies to be used on the site on a normal event day.

Having successfully completed the frequency coordination part of the project, PRM remotely monitored frequencies for an AFL preliminary final. There were minimal issues during that event proving that the base level spectrum plan was indeed operable and robust.

Frequency coordination is only half the story though. Even though known users had been identified and allocated frequencies suitable for them, large events will attract more public interest which is usually generated by radio and television news crews. They come, they set-up, they do their live crosses with their wireless products and then move on to the next news story. To ensure all stakeholders get to use clean spectrum, PRM staff actively walk the stadium precinct looking for previously unidentified transmitters. These are added to the event spectrum plan. Sometimes this involves getting users to change frequencies and other times just check they are actually using frequencies already assigned to them when the information has been made available by their networks. This strategy was successfully deployed for the Bledisloe Cup match which was played at the stadium in early September.

But the Bledisloe was only a rehearsal for what was to come. With about two weeks' notice, the AFL Grand Final was moved from its home ground at the Melbourne Cricket Ground (MCG) to Optus Stadium, Perth. It was the biggest event the stadium has ever seen in terms of complexity, and one of the reasons the stadium was granted the match was because they had an active arrangement with a spectrum manager. Once again, all stakeholders were contacted, and their requirements added to the data. A plan was created, disseminated to all stakeholders in time for rehearsals and updated as required. PRM crew were on hand for rehearsals with Peter Twartz monitoring all activity from the east coast. On match day, two crew members patrolled the stadium precinct with handheld spectrum analysers looking for rogue transmitters, assisting with any issues that came up while Peter took phone calls and monitored the spectrum. PRM brought together the requirements of the live event featuring Baker Boy and Birds of Tokyo, the broadcasts, the venue, and even the Match Officials.

A few issues did come up on the day but overall, the feedback was that the running of the event was helped by having a workable and responsive spectrum plan in place.

The scope of the event included over 130 two-way radio frequencies, 267 wireless audio frequencies, plus microwave RF camera and broadcast links.

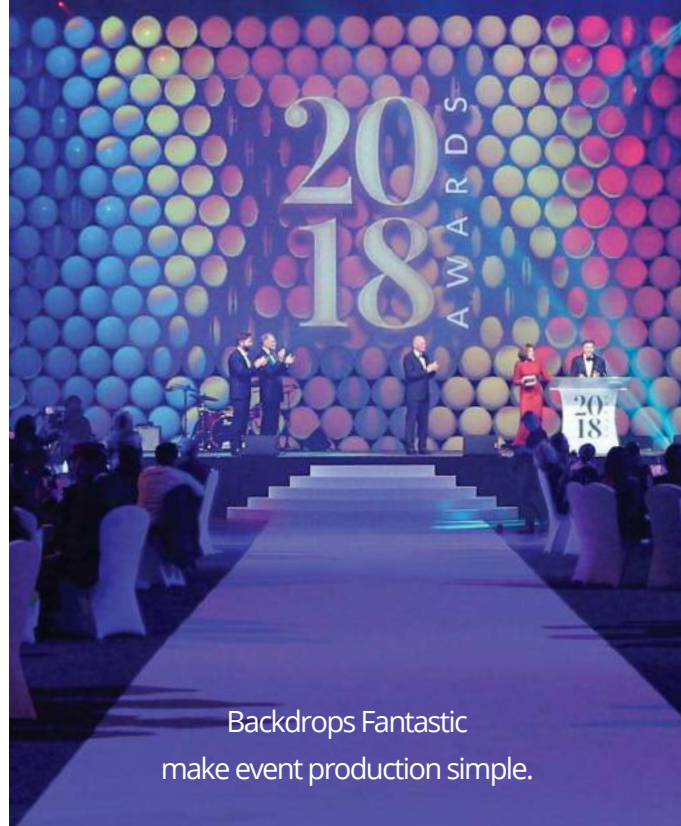
What's the difference between Frequency Coordination and Spectrum Management?

"This is a question that we are often asked," says PRM's Peter Twartz. "At events we often come across users who tell us that they have sorted out the frequencies they are using to make sure they don't clash with their other devices, and maybe some devices used by the venue. If you are controlling 80% of the wireless devices at an event, this is good practice and is what we call frequency coordination. At Optus Stadium the spectrum plan we built for them allows the stadium users to coordinate frequencies for day-to-day events."

"But this approach is less efficient and more prone to interference if there are multiple stakeholders at an event, and no one is controlling more than 40% of the wireless devices. Who is standing in the middle to determine who should be using what frequency?"

That is what a spectrum manager does. Essentially the spectrum manager is an independent party working with all event stakeholders to ensure that they can all operate with as little interference as possible. The spectrum manager is also actively monitoring and patrolling the environment to make sure that any issues are dealt with before they become a problem for the event or broadcast.

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What tools are commonly used for Frequency Coordination and Spectrum Management?

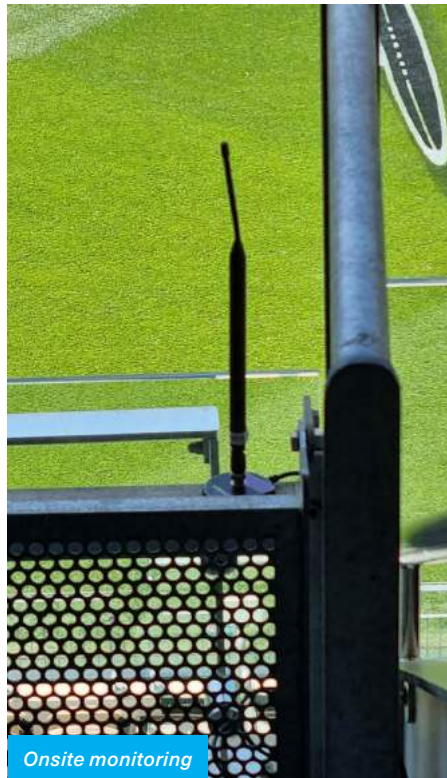
The major wireless audio brands all have devices and software that are great for coordinating frequencies at a system level. But when you are managing over 300 frequencies across two-ways, microwave RF camera and broadcast links as well as wireless audio devices, you need to deploy some more tools.

For frequency coordination and calculations, PRM use a cloud-based tool called FreqCoord. FreqCoord was developed by SRF Swiss Radio and Television and is a mobile-optimised, multi-user web app which makes frequency coordination for events easy. Not only does the app calculate interference, but frequency managers can invite stakeholders to register their equipment for an event or venue from within the app. Communicating with all the stakeholders is one of the most time-consuming parts of the process, so containing it within the app makes it easier to manage.

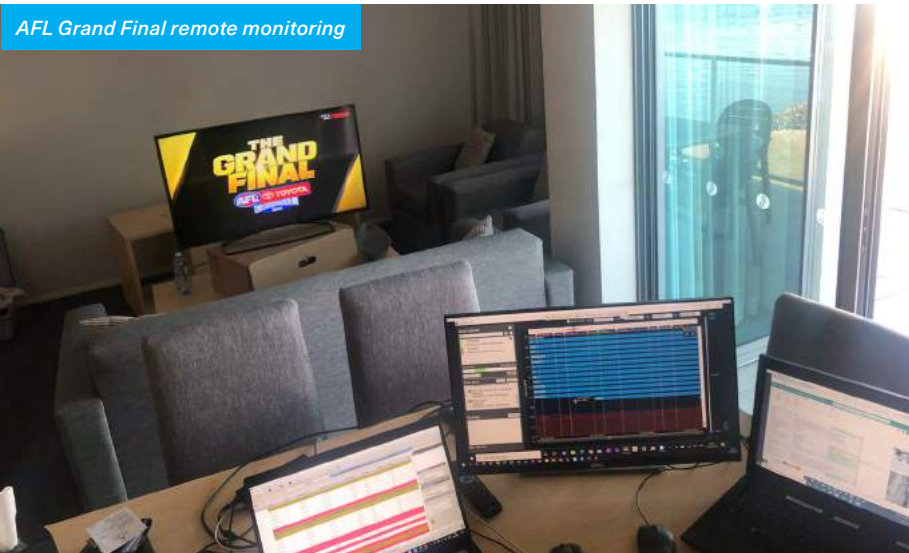
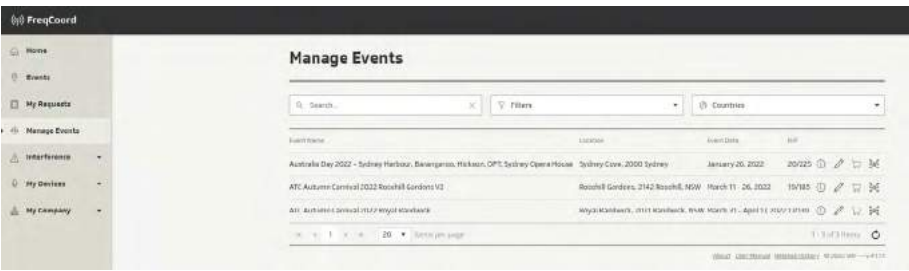
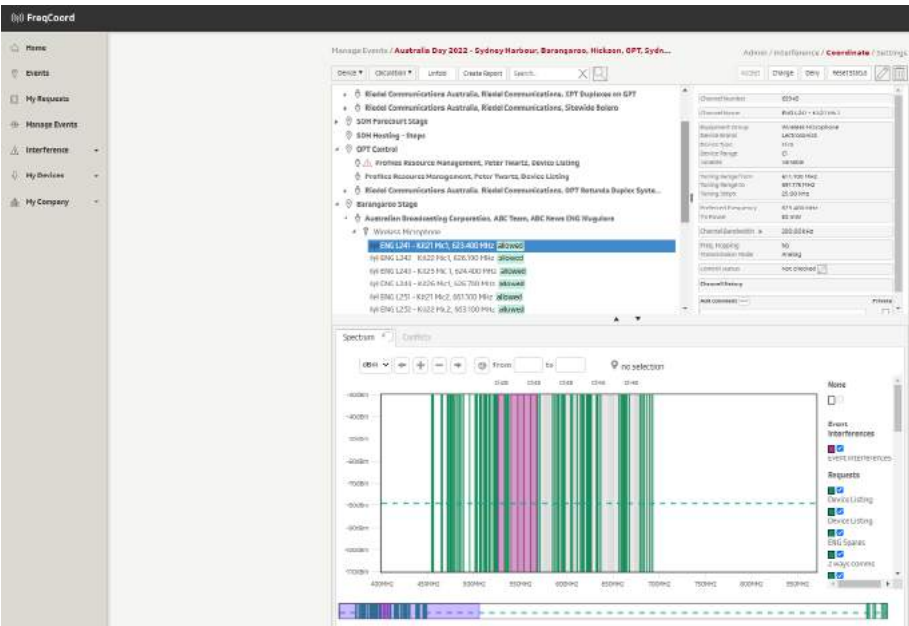
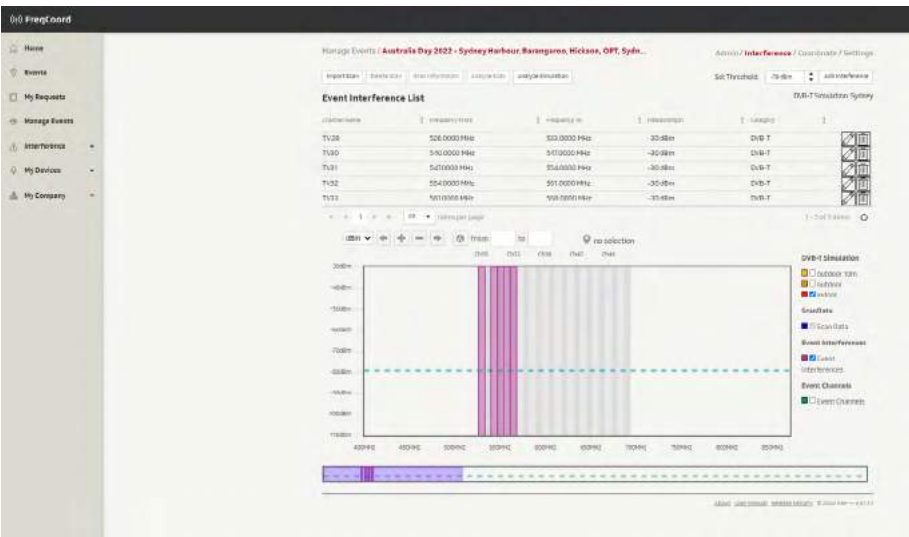
Monitoring spectrum is done using PRM designed ScanTowers. Depending on the size and topography of the venue, three or more ScanTowers are placed at appropriate locations to gather monitoring data. This is analysed either onsite or remotely, depending on the client's requirements. The idea here is to triangulate and localise the data to get an indication of where rogue frequencies may be coming from. If PRM are onsite when an issue is identified, then a crew member is deployed with a Rhode and Schwarz analyser to pinpoint the issue and resolve it.

www.prm.com.au

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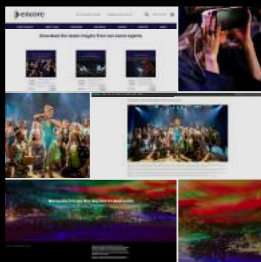


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EASY RIDER

Riedel's Bolero Simplifies Stable, High-Quality Broadcast-Camera Motorcycle Comms for Krickhahn TV

Deploying Riedel's Bolero wireless intercom system on its broadcast-camera motorcycles, Danish RF video specialist Krickhahn TV ensures seamless communications between the camera operator, driver, and production team during live coverage of cycling road races. Deployed on specially adapted motorcycles as a standalone system, the Bolero system allows the Krickhahn TV team to use a variety of headsets, and even helmets with a built-in Bluetooth headset, to maintain clear communications with high audio quality so they can bring viewers the best shots from the road.

"When I was presented the idea of using Bolero for this application, I was immediately hooked," said Christian Krickhahn, Owner at Krickhahn TV. "We had a proof of concept planned in just a few days where we made the configuration file and ran a test to make sure

the whole system was stable over a whole day. We were very happy to verify the setup with success and can now deploy a system in a few minutes by loading the configuration. Having used Bolero on many productions, I know how well it works and appreciate its features and

excellent audio quality. I was very happy to use Bolero for live coverage of a road race here in Denmark, and it's very convenient that we have the flexibility to use the hardware in other ways across different productions as well."

Riedel's Bolero allows Krickhahn TV to use a variety of headsets, and helmets with built-in Bluetooth



For Krickhahn TV, Bolero eliminated the need to invest in a dedicated communication solution for camera operators and motorcycle drivers. For the Tour De Aars held last year, Krickhahn TV equipped the camera motorcycles with a custom sidebox holding the video encoder and a Bolero antenna, both connected to regulated 12V from the motorcycle and camera batteries to ensure a redundant, stable power supply.

The Bolero antenna was used in standalone mode along with three belt packs, one of which was dedicated to enabling the built-in Bluetooth interface and "public" call feature. This approach supported high-quality call-and-forward to the driver and camera operator, allowing them to talk to one another over a duplex connection. The Bolero system's advanced audio settings ensured clear communication on the road, and the great wireless coverage let the driver and operator

walk freely when there was no need to be sitting on the bike.

"Krickhahn TV's use of Bolero demonstrates how its flexibility and ease of use can truly revolutionise workflows for challenging productions like these," said Jakob Refer, Sales Manager at Riedel Communications. "Under very challenging circumstances, Bolero delivers the performance critical to the overall success of the live broadcast production."



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NATIONAL DAY 50 IN THE UAE

THE P.A. PEOPLE DELIVERS WIRELESS COMMS SYSTEMS ON A GRAND SCALE



Image courtesy D&D

While Sydney was experiencing extended lockdowns due to the COVID-19 pandemic in 2021, The P.A. People's Event Communications team sought Australian Government approval for a travel exemption to send a team overseas to prepare and deliver the communications systems for the UAE 50th National Day Celebrations in the Emirate of Dubai.

With that approval secured, The P.A. People dispatched an experienced crew of both senior full-time Australian staff and a number of familiar faces from abroad, along with some 12 tonnes of communications equipment to Dubai by air. The P.A. People were part of a large international team called upon to deliver a spectacular show staged on Hatta Dam in the country's mountainous east.

Specified by Scott Willsallen from Auditoria, the communications system consisted of a large two-way radio system integrated with an extensive matrix intercom and full duplex requirement, CCTV cameras and displays, and associated systems.

Hybrid Solution

First cab off the rank was a large trunked two-way radio system. The brief was originally for a traditional analog system, but the channel requirements of the production team were always under pressure. Rather than simply adding more channels with the obvious constraints of increased cost and limited spectrum, The P.A. People proposed that they deploy a hybrid system based on Motorola MOTOTRBO technology.

Increased Coverage

In order to meet the demand for additional channels, The P.A. People suggested

converting a number of the less critical analog channels to digital slots. This immediately doubles the channel count as digital channels take up only half the RF bandwidth, but also adds the possibility of providing a trunked solution (the use of a number of frequency and time slots to provide shared channels) or even a multisite solution to provide greater coverage. The system ended up delivering some 20 analog channels and 16 time slots of digital trunking, all from the central site. Although the job was ultimately delivered as a single site solution, provision was made to add two additional mini sites with 8 timeslots each. Each channel was interfaced to the Clear-Com matrix intercom system.

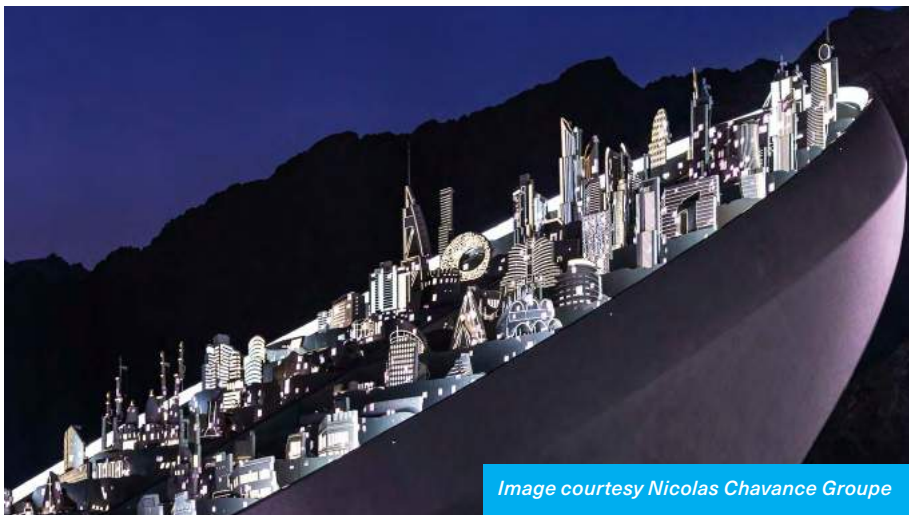


Image courtesy Nicolas Chavance Groupe



Production crew



Image courtesy Nicolas Chavance Groupe

Agile Interface

Handheld portable radios were Motorola DP4601 and DP4801 MOTOTRBO units with a variety of accessories including The P.A. People's unique 4pin XLR Push to Talk interface allowing any of the headsets used for the remainder of the Comms system to be added to a two-way radio.

The intercom components included Clear-Com Eclipse Matrix frames and panels, HelixNet digital party line and a large Free Speak II full duplex comms system. The main wired intercom system comprised an Eclipse HX Omega frame fitted with 4 x IPA cards each loaded with 64 channels, a MAD1 card, a Dante card, and numerous IVC and analog cards to fill out the frame. The team also carried a

spare Median frame with additional cards as a backup system. The production team were predominantly provided with Clear-Com lever Key Stations along with Clear-Com CC300 and CC400 headsets. Key Stations were augmented with HelixNet Partyline beltpacks in stage management positions under the stage.



Two Way Radios

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The specification also called for some 60 Full Duplex beltpacks. "During the project build phase, we were asked to see if we could increase the scale of the full duplex component past what had previously been the upper limit on pack numbers," commented Chris Dodds, Managing Director of The P.A. People. "We opened up a dialog with the Clear-Com engineering team, who were able to reveal that the previous hard limit had been overcome but that the solution needed further testing. We were able to emulate the scale of the required system in our workshop in Sydney with excellent results and decided that it was ready to deploy."

Signal Management

"The FreeSpeak system performed brilliantly on site," reported Dom Jones, Project Manager for the ND50 job. "We were able to accommodate 120 wireless beltpacks across 40 IPT transceivers deployed over the extremely large site without any reported drop-outs or issues. This is a game changer; we are now able to deploy FreeSpeak II systems of significant scale ranging into the hundreds of belt packs, confirming Clear-Com as the vendor of choice for fully integrated matrix, Partyline, and full duplex wireless systems."

Malestrom, The P.A. People's new cloud-based asset management software kept track of all the 'user assigned' radios and beltpacks over the project including the daily sign in and outs.

Network is Key

All of this was supported by a very significant 10Gb ethernet IP network over a fibre backbone, designed by The P.A. People to not only manage the AES67 requirements of the FreeSpeak system and Dante audio, but also distributing timecode to IP timecode displays along with 28 CCTV cameras and some 40 CCTV displays, 24 of which were 43" and 4K capable. Extensive use of CWDM technology was used to minimise the number of fibre cores required and to create a virtual star topology for the network. The P.A. People also created a dedicated network backbone for the considerable 'water' component of the show consisting of programmable fountains across the stage and set.

"Everything we deliver for these shows relies on the network," notes Dom. "We have invested heavily in new network hardware over the past few years, but we also took advantage of the down-time during the early stages of the pandemic to train all our guys in network theory, particularly as it is applied in our industry. All our guys are comfortable with using networks, whether it be designing a layout or configuring a switch."

The P.A. People would like to offer their congratulations to LarMac Projects, the Official Producer of the 50th UAE National Day Celebration, for a great result, and to thank the entire team involved in the project.



Image courtesy D&D

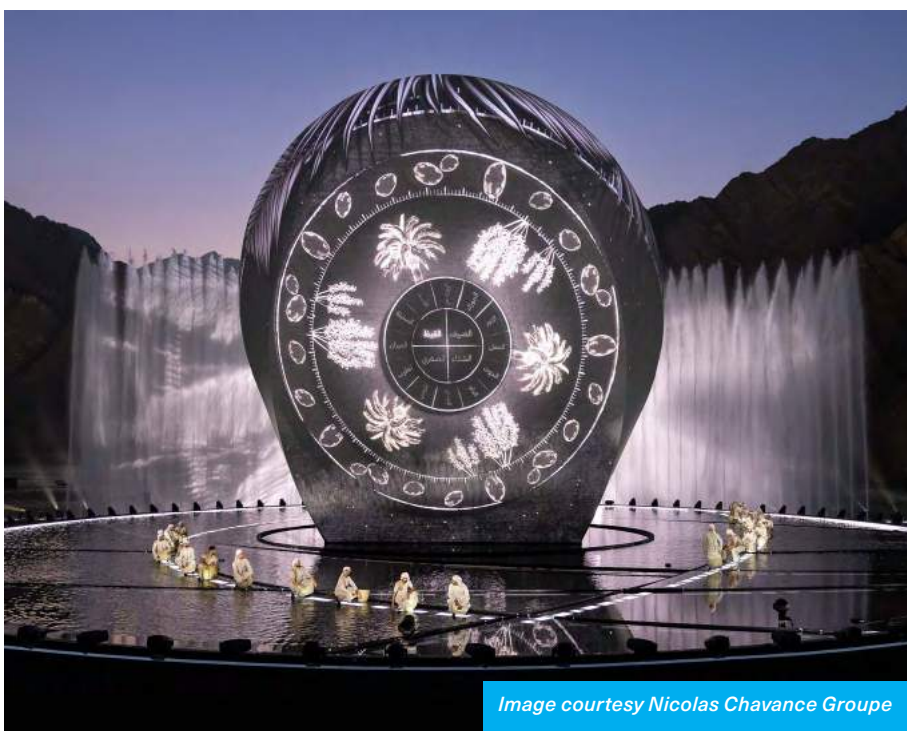


Image courtesy Nicolas Chavance Groupe



Production desk

WIRELESS TECHNOLOGY IN EVENTS

ARE TWO-WAY RADIOS OLD HAT?

Many casual readers might say that the answer to that question is an emphatic yes. Given all the advantage that full duplex systems such as Clear-Com's FreeSpeak II system bring to stage management and production personnel, one might be tempted to think that the role of two-way radios might be long gone.

Whilst there are clearly advantages to the use of full duplex systems, they are not the only wireless solution to be found at a modern event. Rather, many events benefit from the use of both full duplex and a modern two-way radio system.

In general (and somewhat simplistic) terms, two-way radios are used for managing the production build, while full duplex finds its home in the management of the show itself.

There are a number of strategic differences between two-ways and full duplex:

- Two-ways are quick to deploy in large quantities and are able to use centralised infrastructure to cover large spaces. By contrast full duplex requires decentralised

infrastructure which needs to be scaled to the number of users.

- Two-way radio is able to cover relatively large distances from a single site, and it is possible to link sites over kilometres, relatively easily. By contrast full duplex coverage is counted in 100s of meters.
- Full duplex wins the audio quality argument hands down. If you need to wear a headset and pack all day, then full duplex would be your system of choice. Two-way radios don't offer that sort of audio quality, but then the cost per user is significantly lower.
- Full duplex is just that. Hands-free operation is possible, whilst two way is predominantly press-to-talk.
- And lastly, full duplex is generally license free, while two-way radios generally require a license for every channel occupied.

Not only do two-way radios find a home alongside full duplex systems in major

events such as the UAE National Day celebration; they are the backbone of the communications and management systems for other large scale public events in their own right.

The P.A People's systems can be found at the Australian F1 Grand Prix, the Moto GP and Superbike Championships in Victoria. In conjunction with the Orion Network, Australia's only national commercial two-way radio network, The P.A. People also provide two-way radios in support of many large-scale events such as city-wide coverage for the iconic Sydney New Year's Eve celebrations and the Vivid Festival for Destination NSW.

With digital two-way radio technology dominating the event marketplace two-way radios are certainly not old hat. Their flexibility in deployment makes two-way radio a solution of choice for many local, national and international events.

papeople.com.au



CUTTING THE CORD FOR RIGGING

Wireless technology is common in most areas of entertainment, but the rigging world is one that has often lagged behind. Understandably we haven't achieved wireless 3-phase to power the hoists yet, but there are wireless solutions for control and load measuring that are available to riggers now.

SRS Group Wireless Chain Hoist Controllers

SRS Group began as a rental company in 1992 and later moved into manufacturing with a range of lighting and hoist control products aimed at the entertainment market and built on their production experience.

The AHD range of digital hoist controllers are designed to be flexible, dependable and expandable to cater for any event from the smallest two hoist job up to the largest arena show. With intelligent features like configuration-free linking of multiple controllers to expand your channel count, or Configurable Phase Align to ensure that the controllers automatically adjust the phase

rotation of the incoming power to match your hoist standard, the AHD hoist controllers are designed to make your job as a rigger as efficient and safe as possible.

The nature of large rigging events means that having the hoist controllers in a place where the operator can see the hoists that they are moving is not always possible. In the past that meant having spotters on radios watching the hoists, while the operator was often in a position with limited or no view of the lifting operation waiting on verbal cues to stop if there was an issue. To solve this problem, SRS Group produced their range of wireless remote systems, either as an add-on to an existing controller, or as an integrated unit combining hoist control and wireless remote all in one unit.

Utilising the wireless remote allows the operator to move away from the fixed controller location and to be in a position where they can see all the hoists while they are operating. This reduces the need for spotters and allows for much faster reactions to errors or issues while raising or lowering loads.

The WMC-G3-DIGI-AHD wireless remote unit provides for up to 12 channels (24 if linking two wireless remotes) of wireless control that can be linked to your existing SRS hoist controller while the AHD-WLV range of hoist controllers incorporate that remote and charging station into the controller allowing for cost savings on an initial purchase.

The remote can be linked to a second remote to expand up to a total of 24 channels of



wireless control. The system uses standard Motorola batteries which makes field replacement easy, and the integrated charging station ensures that the remote is charged up and ready to go when you need it.

Protos Wireless Load Cells and Wind Speed Monitoring

As rigging projects become more complicated, keeping track of the loads that are on your hoists or rigging points becomes harder and harder to do. Complex truss structures don't react in predictable ways and it's very easy to overload your rigging equipment with very small movements. Utilising load cells as part of your rigging system allows the rigger to monitor all the loads remotely and to get fast

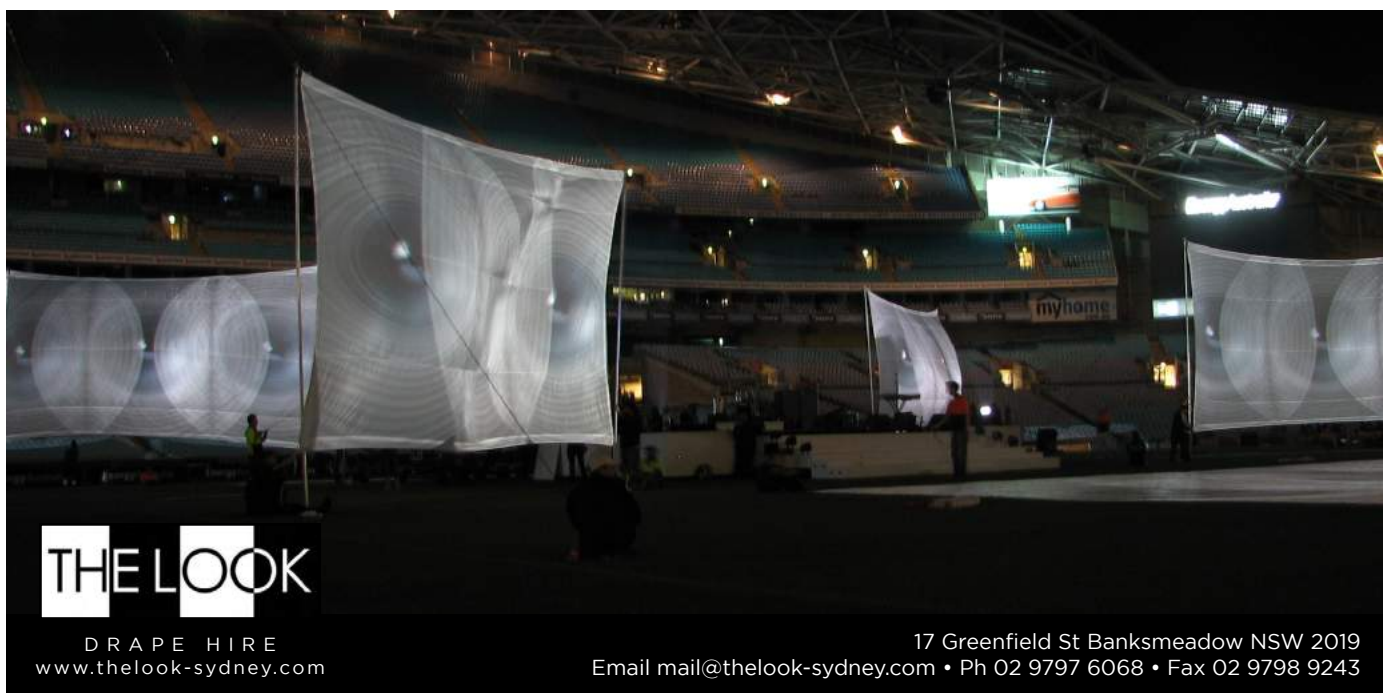
and accurate warnings if any part of the system is about to be overloaded.

The Protos Aegis Force Measuring System is a range of wireless load cell, wind measurement and monitoring equipment designed to make installing large and complex systems a breeze. The load cells are available in 3.25T and 4.75T bow shackle designs which makes them easy to incorporate into existing rigging equipment and the monitoring software uses simple USB receivers operating in the 2.4GHz which provide up to 800m range. Repeater stations are also available which increase the range of the system allowing for centralised monitoring of large events.

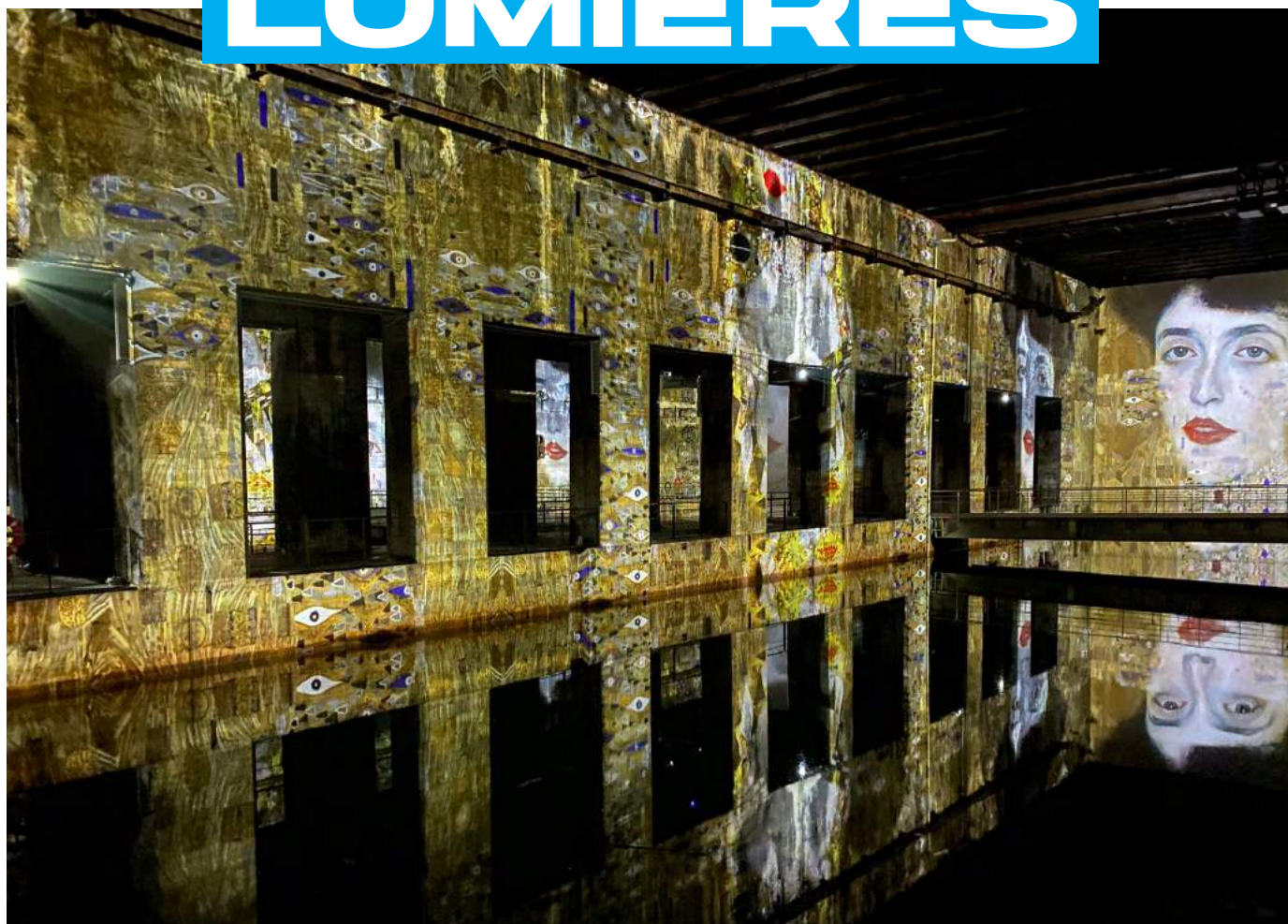
With temporary structures it is important to have wind speed monitoring to provide early

warning of weather conditions that may be a risk to the safety of the event. The Protos range includes a remote anemometer which allows the wind to be measured at height and this incorporates into the same monitoring software as the load cells.

For more information contact Design Quintessence or visit the website at www.dq.com.au



BASSINS DES LUMIÈRES



THE WORLD'S LARGEST DIGITAL ART CENTRE

Housed inside a former World War II submarine base in Bordeaux, France, Bassins des Lumières (“Pools of Light”) claims to be the world’s largest digital art centre, with more than 13,000 square meters of projection surface to back up the claim. But the immersive exhibitions of classical and contemporary art are not only a visual experience, as each program is accompanied by a complementary and equally enthralling musical score. For precisely controlled and full-fidelity reproduction throughout the highly reverberant spaces, Bassins des Lumières relies on zoned distributed systems of more than 80 Meyer Sound loudspeakers, including — for the most problematic acoustics — 36 CAL 32 column array loudspeakers with advanced digital beam steering.

All video, audio, and lighting systems for Bassins des Lumières were designed and installed by the French integration firm CADMOS. Project manager and sound designer was Philippe Wojtowicz, aka Wojto, who worked in collaboration with Best Audio, Meyer Sound’s French distributor, on the audio side of the endeavour.

A Meyer Sound system was advanced as the preferred solution for several reasons, according to Wojto. First because all loudspeakers are self-powered, this would avoid long speaker cable runs and eliminate amplifier heat build-up in the control room, where ventilation is difficult due to the thick, bomb-resistant concrete walls. Another factor

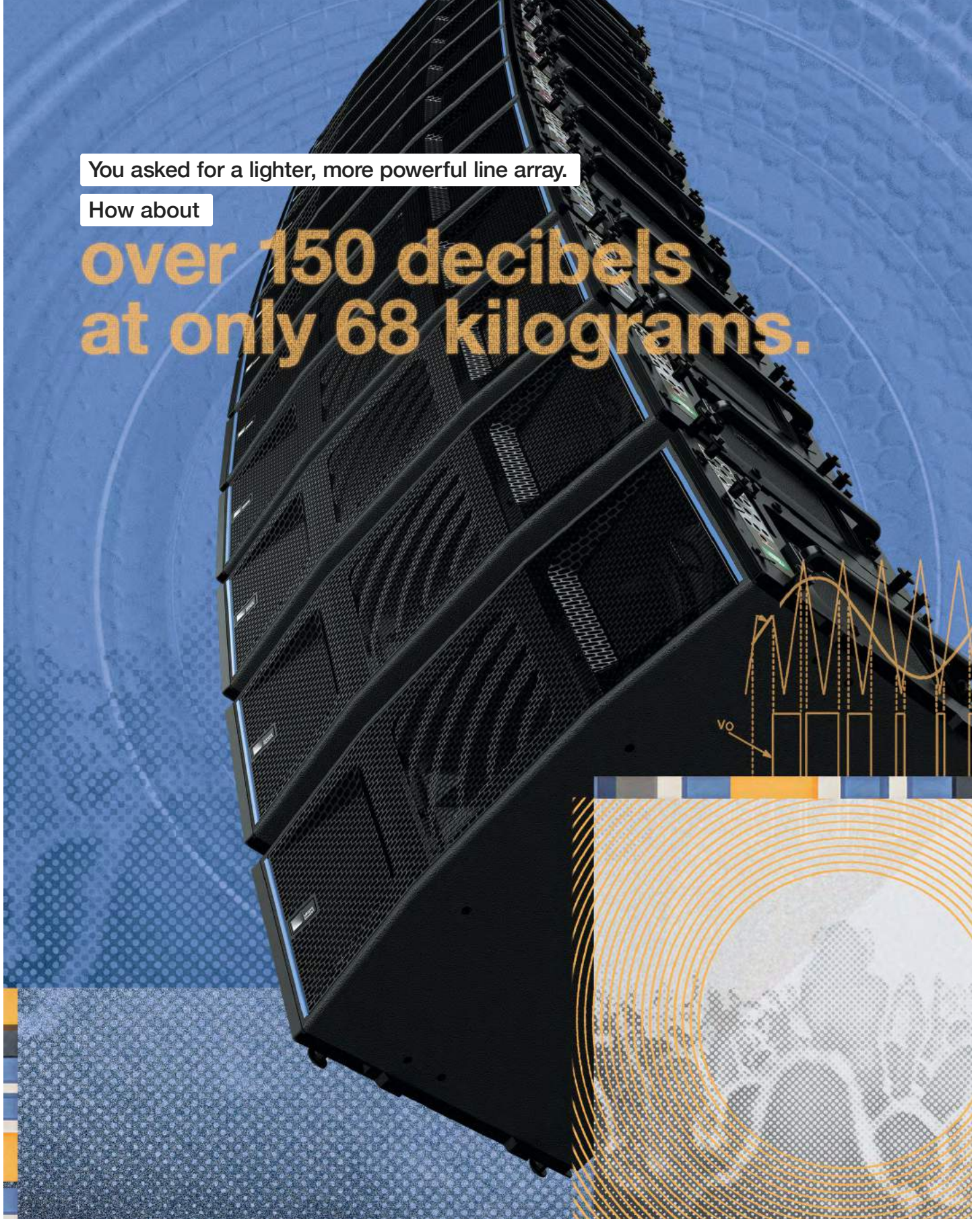
was the precision variable coverage provided by the CAL 32 column array loudspeakers.

“With the water and the flat concrete walls, this is an extremely reverberant environment,” notes Wojto, “yet we had to cover all the places where people would be standing with uniform sound levels. This would be almost impossible

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with conventional loudspeakers, but with CAL 32 we could focus the sound only where it was wanted. Depending on the placement, we would adjust the beam to between 10 and 15 degrees with a tilt between 7 and 20 degrees, giving us a defined range of about 15 metres."

Several other locations requiring broader coverage patterns with very high-quality sound are served by Meyer Sound's ULTRA-X40 loudspeakers, with a total of 12 deployed. "We are using these for spaces in the quay and we are very satisfied with the performance," says Wojto. "They are powerful, precise, yet discrete."

The audio systems also include 10 slender UPM-1P loudspeakers and, for low-frequency extension, 33 USW-210P subwoofers.

"The management of Bassins des Lumières has been very satisfied with the rendering of the sound, particularly given the extremely difficult acoustical spaces," says Wojto.

On the visual side, the artworks are displayed with brilliant intensity and exacting detail by 95 Barco projectors, with content sourced from more than 30 Modulo Kinetic media servers.

Bassins des Lumières was created by Paris-

based Culturespaces, operating under a lease agreement with the owner of the property, the City of Bordeaux. Conversion of the bomb-damaged structure into a stellar showplace of art required an investment of more than 10 million euros by Culturespaces. Construction began in 2018, with the first pandemic-limited exhibition, featuring the works of Paul Klee and Gustav Klimt, debuting in June of 2020. Current on the program are Venice, the Serenissima; Sorolla: Walks by the Sea; Recoding Entropia; and Cell Immersion.



MIXING TIPS

FROM CLUBS
TO STADIUMS

One of the most difficult parts of working as a touring front of house engineer is maintaining a consistent sound from show to show. This can be especially difficult when working with different performers or traveling to new venues each night. That's why it's crucial to make sure you're prepared for any situation. This article details a variety of useful tips for dialling in a clear, balanced mix in any setting, from rehearsals and local club shows to worldwide arena tours.

Pre-Show Setup

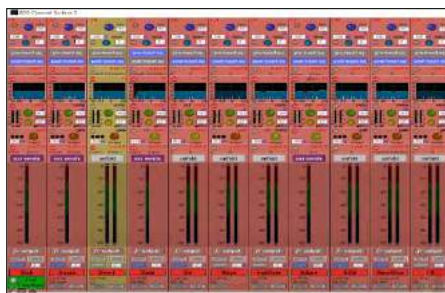
Capture a Multi-Track Recording of the Performance

Most front of house consoles offer some form of multi-track recording or DAW playback, which can be a powerful tool for streamlining your workflow. With a multi-track recording of a previous performance or rehearsal, you can create a show file template for future performances, which makes it easier to:

- Save time setting up on the day of the show
- Perform a basic sound check without the band being present
- Maintain consistent sound quality from venue to venue
- Identify technical issues before they become problems
- Create sub-mixes like mix-minus, broadcast, or mix-plus-click

After capturing your recording, it's time to create your show file and start building your mix.

Route Each Input To a Sub-Group



A well-organized routing scheme is essential for any great mix. Whether you're attending rehearsals, mixing a band at a local club, or following a touring act on a 50-date arena run, using the same approach to routing and bussing every time is key. Not only does this make it easier to mix multiple performers each night, but it also helps speed up your workflow as you develop muscle memory for common tasks.

For maximum control, route each input into a sub-group, then route each sub-group to the main mix bus. While the individual inputs will

vary from performance to performance, the routing and bussing structure should remain as follows:

- Route kick and snare inputs to their own individual busses, then to an "All Drums" bus
- Route all bass, guitar and keyboard inputs to separate stereo busses, then to an "All Instruments" bus
- Route the lead and background vocals to their own busses, then to an "All Vocals" bus

Not only does this approach help you navigate the console more quickly, but it also makes it easier to rely on your console meters. By familiarizing yourself with this setup before the show, you can easily identify technical problems by pinpointing where the signal flow is wrong. For instance, if you can see an input signal on the kick drum input, but not on the drum bus, you can safely assume that there is an issue with the patching or routing of the kick drum channel.

Additionally, using sub-groups enables you to quickly create sub-mixes for a wide range of applications, including broadcast and monitor



X Games



feeds. This makes it easy to accommodate requests from different teams during setup and to capture recordings. If you're working on a console that doesn't feature grouping functionality, use auxiliary sends to create sub-mixes. Simply set an aux send to post-fader and turn the gain up to unity on each channel you want to hear in the sub-mix.

Create a Rough Mix Before Soundcheck

It's always a good idea to create a rough mix of your show before soundcheck. You can do this during a live rehearsal, or using a multi-track recording of a previous performance.

A good rough mix makes it easy to dial in the right balance in festival settings, where you're often not able to perform a soundcheck. Although you may not be able to preview your mix through the PA, you can use your meters, headphones, and even near field studio monitors to make sure the main elements of the mix are present. For instance, if you know that your mixes are set up to see kick and snare touching +3 on your master meter, then you can use this as a great benchmark to position everything else around them since they are a dynamically constant reference point.

While the sound in the room may change from venue to venue, as long as your mix remains the same, you can quickly identify environmental problems with acoustics and reverberation. Instead of trying to tweak your mix to suit the sound of the room, focus on using EQ to correct any problems that the room or PA system is causing.

Use Serial Compression



One reason why mastered studio recordings sound so good is because the tracks are all compressed in a uniform way. While dynamic mixes may sound great in some settings, they

tend to lack energy and excitement, especially at low levels or in reverberant venues. Low frequencies, in particular, tend to become exacerbated when uncompressed, causing unflattering bass build-ups.

By using serial compression on each instrument individually and again at the bus level, you can tame the dynamics of the mix and prevent too much low-frequency energy from overwhelming the venue. For a controlled mix that hits hard in any setting, use fast release times to help transients pop through the mix and grab people's attention without eating up too much headroom.

If the performers are using a click track, time the release of the compressor to the BPM of the song for a tight, punchy sound. For most songs, it's best to time the release to the beat of the quarter note or eighth note. Well-timed release settings also help prevent unwanted echo and reverberation in large venues.

Use Effects While Mixing

Taking the time to program a detailed show file will allow you to make effects choices that amplify the emotion of a mix – essentially, no one is ever mixing totally dry. Remember to get



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Birchmere Music Hall



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correct BPMs and keys for each song. And, always have your effects routing ready in case your artist wants to hear something quickly.

However, it can be tricky to deal with different-timed reflections bouncing around, especially in an arena setting. One powerful trick for controlling reflections is to adjust the pre-delay of your reverb so that the reflections are in time with the BPM of the song, similar to the approach for setting compressor release times outlined above.

Monitor at Low Levels While Building Your Rough Mix



Control Room Freq Response Problems

Getting your mix to sound good in a studio or rehearsal room can be tricky, but making sure it translates to every venue on the tour is a completely different challenge. Generally speaking, there are two ways to build your mix before the first performance.

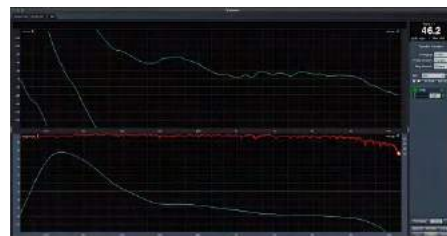
In most cases, you'll be using near field monitors in your studio or practice space to dial in the mix during rehearsals. This can be tricky, as your room has a large impact on your sound, making it difficult to identify the source of a problem. For instance, it can be difficult to know if your kick drum sounds muddy, or if there is a low-frequency build-up in your room. However, it's important to note that the venues you'll be mixing in will also have their own acoustical imperfections.

Thankfully, there are ways to prevent these issues.

- To ensure your mix sounds good in any setting, check that you can clearly hear all of the main elements while monitoring at low volumes. When played at low volumes, near field monitors aren't loud enough to excite the room, providing relatively flat frequency response and making it easier to trust the accuracy of what you're hearing.
- It's also a good idea to record your mix and listen back on your phone, laptop speakers and headphones to ensure it translates well to other systems as well. Remember, a well-mixed recording should sound good in any setting.

- On arena tours, performers often carry their own PA system to each venue. In this case, you can create a rough mix on the actual system you'll be using on the tour. This is by far the best way to ensure your mix will translate, as the only variable will be the venue. Just remember that the room will still have a big impact on the frequency response on the PA.

Create a Target Trace



Freq Response "Ideal" Curve

In order to ensure your mixes are accurately translating to a live environment, you have to know what you want them to sound like in the first place. That's why it's crucial to use analysis software like SMAART to create a target trace, which maps out the ideal frequency response for your PA when playing back your mix.

This can be a powerful tool when trying to eliminate variables in a new venue—especially if you can create this trace using the same PA you're bringing on tour. However, you can still use the SMAART software to create a target trace without a PA and refine the curve over time as you visit more venues.

At the Venue

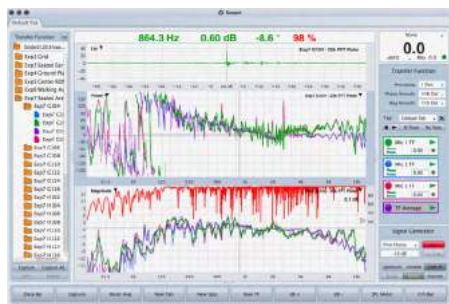
Check Out the Venue Before the Show

If you're lucky enough to be in town the night before your show to see who's playing and get on their guest list, meet the engineer and hear their mix in the room. We do that all the time. And it's more collaborative that way.

For instance, if you're able to identify that the room has an abundance of low-end, tweaking your EQ during soundcheck will be easier because you know what you're fighting against. When in doubt, remember to trust your instincts and your show file.

It's also a good idea to walk on stage and get a feel for what the performers are hearing. This makes it easier to understand what they need when requesting changes to their monitor mixes. Even though the mix may sound crystal-clear to you, there may be a midrange build-up on stage, making it difficult to hear.

Tune the System



Tuning the room is an integral part of a front of house engineer's job and using a multi-track recording makes it significantly easier to identify exactly how the room will react

to your mix. While at the venue, you can use three microphones to calculate the average frequency response of the room. Placing one mic near the PA system, one at your mix position and one behind you, will deliver a fairly accurate reading of how your mix sounds throughout the room.

- Check to make sure that the mix is routed properly on your console, and then listen in your headphones to confirm that everything sounds correct. Play the mix back through the system and use EQ to sculpt the PA so that the frequency response in the room matches the target trace you created earlier.
- Use analysis software such as SMAART to measure the frequency response of the PA. The transfer function makes it easy to see the difference between what's coming out of the console and what's coming out of the PA. Use these measurements to determine what effect the room is having on your mix. For instance, if the graph shows a boost in the low-mids, the room is disproportionately amplifying those frequencies.
- There is no ideal frequency response for a PA system, so everyone's curve will look a little different. For a rich sound with powerful low-end, tune your PA so the SMAART reading shows the low end peaking around 15 to 18 dB, sloping gently into the midrange. For a brighter, sparkly sound, use a flat frequency response.

Ring Out the Room

After dialling in the mix, try to quickly spend time listening to some music to identify which (if any issues) are caused by the room, or are inherent to the system. This is easy to do by listening at different volumes to see how the room changes, making sure to briefly go to show volume. And quickly muting a system will give you a rough idea of any hanging reverberations too.

If you do experience feedback during your show, stay calm and scan the stage for any

visual signs of the problem, like a mic pointed at a stage monitor or flashing console meters. Put your headphones on and start soloing your busses to identify where the issues are coming from. By using the bus structure detailed above, you can save a significant amount of time in these situations since you won't have to solo each individual input.

Record The Show and Critique Your Mix

The best way to improve your mixes is to critically examine your own work. Capturing a recording of every show you do, even if it's just a two-track mixdown, allows you to compare your mixes over time and identify areas you can improve.

Plus, by recording every show, you can compare your progress over the run of a tour. Since the performance is the same every night, the only variable is the venue. By comparing these recordings to one another, you can easily see what you contributed to the sound. This gives you a better idea of what it is that you bring to the table and helps build your confidence when adapting to changing environments.

Remember, critically listening to your own work is the only way to get any better.

About the Authors:

Vincent Casamatta has spent the past 18 years mixing front of house for artists including Maroon 5, Halsey, and Prince. He got his start mixing at small clubs in Chicago, where he owned and operated a recording studio in the early 2000s before moving to Los Angeles a decade ago.

Jay Rigby has spent the past 15 years mixing in a variety of settings. After getting his start with a small sound company, he went on to become Head of Audio at Terminal 5 in New York before mixing front of house for major acts like Queens Of The Stone Age, My Chemical Romance, and The 1975.





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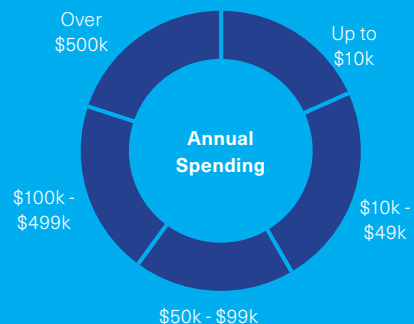
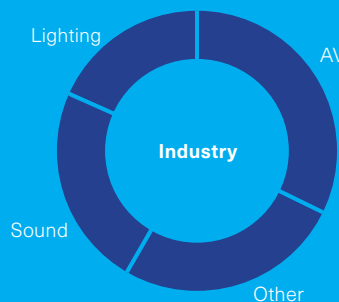
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ELATION PROFESSIONAL'S SPECTRACOLOUR EXPLAINED

For as long as humans have extracted pigments from the earth to change the colour of things, we have mixed them. From the basic brown, red, and yellowish hues of clay, soil, ochre, sienna, and other earth pigments, it took only a few millennia to figure out how to use sheets of glass with colour gradations to produce nearly any hue we desire.

The basic subtractive colour mix system in almost all of today's moving lights has remained largely unchanged for decades, and to understand what makes Elation's SpectraColour System different, a basic (or even thorough) understanding of the fundamentals of a traditional colour mix system is required. Perhaps the most apt metaphor for understanding subtractive colour mixing is colour printing, as the two use similar colour models.

As in printing, a subtractive colour mixing system starts with a white source (paper reflecting white light in the case of printing, a source of white light in the case of a moving light) and then removes, or subtracts wavelengths to produce different colours, typically with cyan, magenta, and yellow filters.

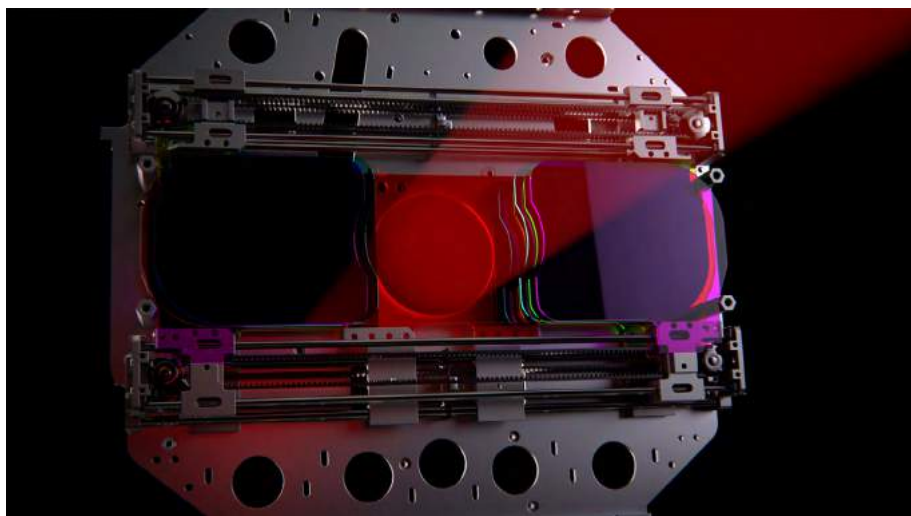
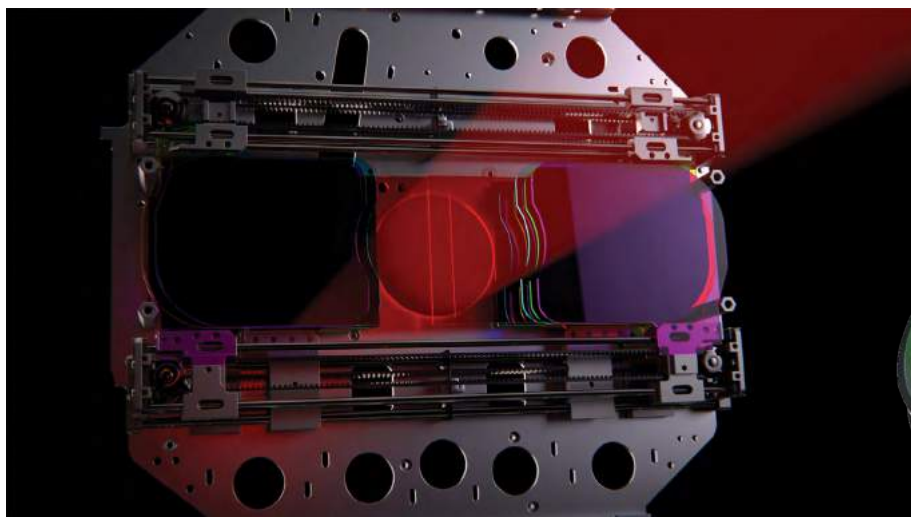
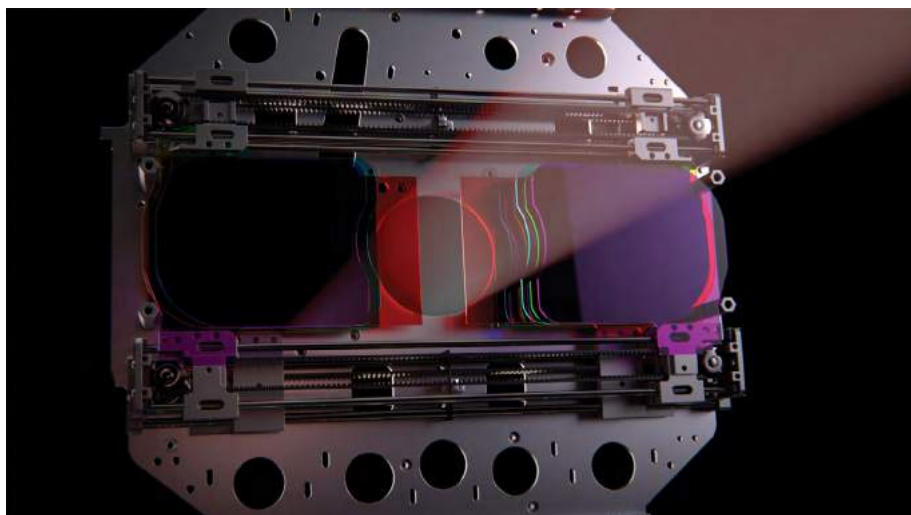
For example, starting with a spectrum of white light, if you pass the light through a cyan filter

followed by a magenta filter, what's left is mostly deep blue wavelengths. Similarly, with a yellow filter followed by a magenta filter, what's left is mostly red wavelengths. The chromacity (colour) of the projected light is dependent on the chromacity of the filters used; the CMY colour model does not define what is meant by cyan, yellow, and magenta. Different manufacturers use different processes that can give very different end results, depending on the light source and the pigments used for the filters.

In the case of moving light manufacturers making a colour-mix system, the manufacturing process produces glass that starts clear at one area and gradually becomes more saturated, so that many tones can be mixed by varying the saturation of the three filters. Usually, these filters come in the form of two flags that move across the light beam

like a pair of curtains. Less frequently used are wheels that start out clear and move toward fully saturated at a point along the glass, which then rotate perpendicular to the beam to change its colour.

There are lots of exceptions and caveats here; in particular, most CMY fixtures include a variable colour temperature control in the form of a fourth light amber-coloured flag, but this basic system holds true in the vast majority of cases. These sorts of three-colour systems are not without their drawbacks, however. For one, mixing secondary colours (red, green, and blue) requires two pieces of glass to be between the source and the output, which decreases output. For another, users are limited to the three or four hues available in the mix system, which necessarily restricts the size of the colour gamut.



Artiste Rembrandt



Artiste Monet

Elation's SpectraColour system aims to address both of these issues. Starting with a white light LED engine, SpectraColour uses not three or four flags, but seven: cyan, magenta, yellow, red, green, blue, and a variable CTO filter.

The most immediate advantage this sort of system confers is that it allows red, green, and blue primary colours to be vastly brighter, by eliminating the need to use two pieces of glass between the source and the output.

In my testing, I found that the three additional primary colour flags were especially useful when mixing pastels and in-between colours – pinks, aquas, and various shades of green,

without dropping light output too much or the colours getting muddy. A range of subtle greens opens up with a partially-inserted green flag and can be adjusted with varying levels of cyan or yellow. The difficult-to-mix peach and amber range colours are far more attainable with the red and CTO flags partially inserted. The hues of each of the additional RGB flags very closely match what you get when you mix with the "traditional" CMY flags of this light. Where this system really shines, in my opinion, is in the subtle shades and fine transitions. While the pure RGB colours are quite useful, they're only ever useful by themselves, one at a time, never overlaid.

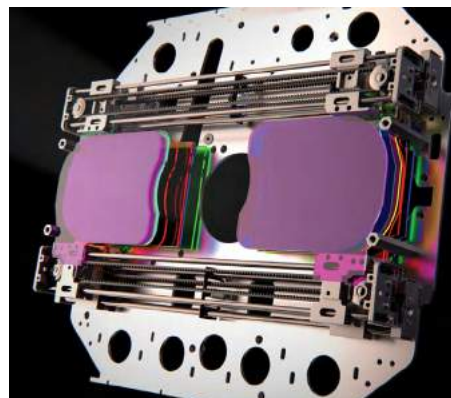
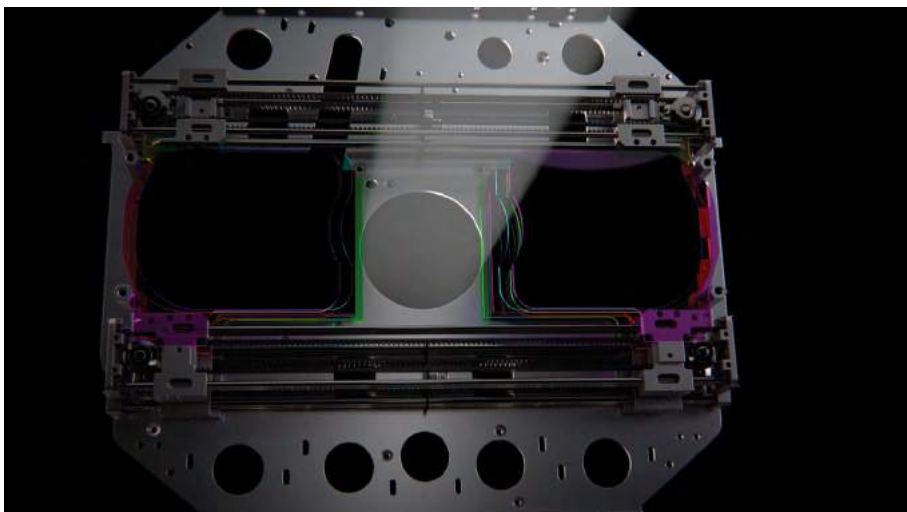
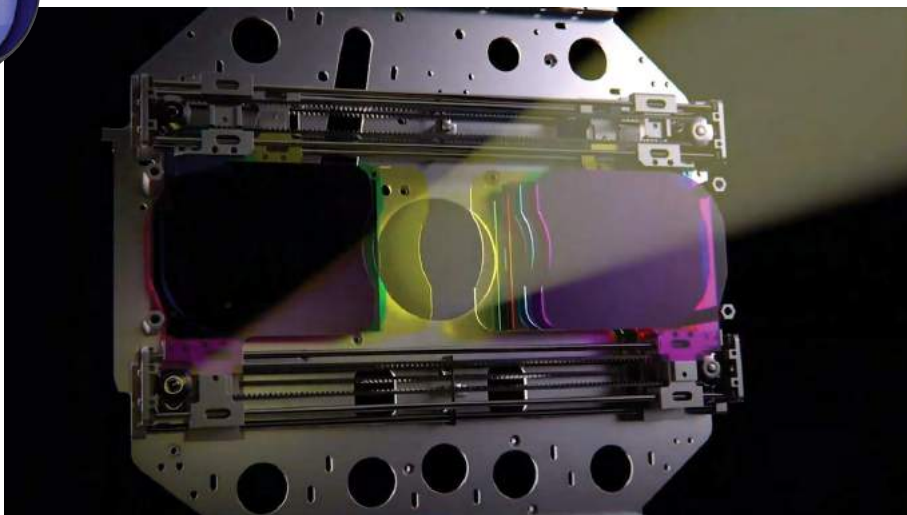
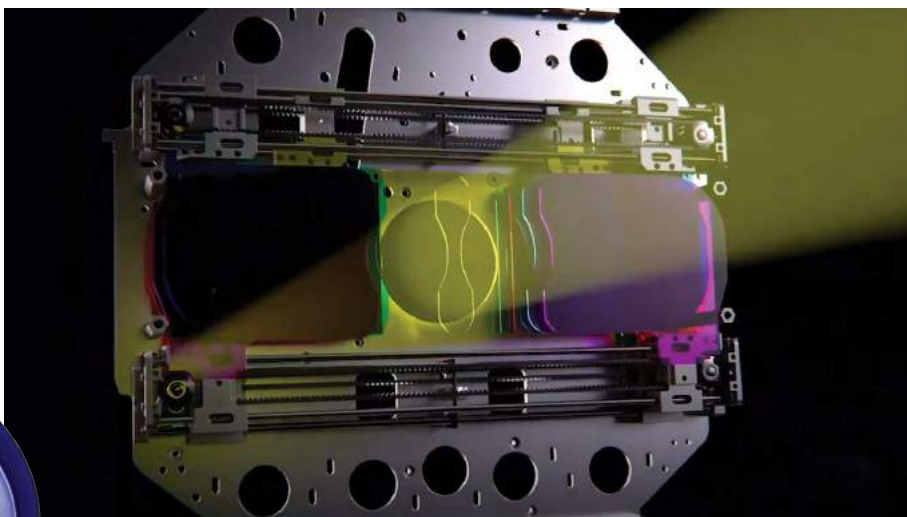
The second-biggest advantage of this system comes when creating colour effects. Having three additional flags not only makes programming certain chases easier (and the output brighter), but unlocks effects that might have been very difficult or impossible without doing them as a chase. "Pop" effects, such as the common red / white or blue / white can have less brightness variation between the white and saturated part of the chase, making for a far more eye-catching effect.

One shortcoming that this system cannot address is the lack of red energy in a white LED-based subtractive mix system. Every

“Elation Professional’s SpectraColour system serves up one of the most interesting advancements in subtractive colour mixing in many years.”



Artiste Mondrian



white LED you’ve ever seen (1) started life as a blue LED with a phosphor coating on top of it, calibrated to interact with and mix with the blue pump LED to create an (approximate) spectrum of white light. These systems almost invariably have very little red energy in the resulting spectrum, so there often isn’t a lot of red light for the mix system to work with. Having a single set of red flags can allow more light through, but it can’t increase the amount of red energy in the source. Indeed, in my experience, reds were the weakest part of the spectrum. However, this isn’t a problem that’s confined to this light; it affects white LED-based luminaires as an entire class of fixture.

Finally, a note about control: Elation’s SpectraColour requires a little more time spent at the outset familiarising yourself with how it works, and some care should be taken when creating your presets in order to get the most out of the system.

Elation Professional’s SpectraColour System serves up one of the most interesting advancements in subtractive colour mixing in many years. While certainly adding cost, weight, and size to a fixture, the added advantages that come with increased colour gamut and ability for creative effects should be of immense value to designers of every stripe.

(Footnote 1) There are rare exceptions to this blanket statement, including some interesting designs featuring violet-range pump LEDs that then excite RGB phosphors. These are not in widespread production, however.

About the Author:

Craig Rutherford is a Minneapolis-based lighting designer with over a decade of experience in the industry. His production credits include Lighting Designer for Charli XCX, and Lighting Director for Halsey. He is the owner and president of Blueshift Design.



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HOW DO YOU CREATE ENGAGEMENT AT HYBRID EVENTS?

Any event organiser knows that engagement is one of the most important parts of the job. You can spend a fortune hiring a venue and speakers but, if you fail to get the audience to interact with the content, your return on that investment is probably going to be profoundly unimpressive.

The COVID-19 pandemic changed things up as events were forced to go fully digital. That certainly saved some money on venue hire, but it presented its own challenges. Now that COVID is starting to become a little less of a threat and events are starting to shift back towards being in-person affairs, event

organisers are increasingly planning hybrid events. While combining the greater audiences of digital events with the greater audience interaction of physical conferences arguably gives you the best of both worlds, they inevitably also bring the worst of each, too.

Engaging Virtual Audiences

Pigeonhole Live has been in the engagement game for over 10 years. Starting out providing tools to support in-person events, they were easily able to pivot to supporting virtual ones when COVID-19 struck thanks to experience working on region-wide and global events. As such, they can provide a suite of solutions for event organisers to ensure that they optimise their engagement in any environment. CEO and co-founder Lyon Lim explained some of the challenges that each type of event presents.



leaving out the majority of the audience. For attendees, being able to engage with whatever is going on and hearing what other people in the audience think adds a lot of value. From there, they can build connections with people during the break," he said.

Again, Pigeonhole aims to meet these challenges head-on. Among the other modules available on the platform are a Q&A function, surveys and several different types of poll, allowing more of the audience to make their voices heard.

For hybrid events, Lyon explained, the key is creating a bridge between the in-person and digital audiences rather than treating them as separate. Pigeonhole's solution is to provide the same interface for both. He added that some events using their platform in the US have projected the chat onto the stage so that everyone can see just how large the audience is and what the virtual audience is saying, bringing the whole community together.

Interaction Vs Distraction

The sorts of events Pigeonhole Live have helped with are, by the CEO's own admission, "not entertainment types of event". While the information being shared is certainly interesting, they're rarely like rock concerts that's going to hold your attention with an iron fist.

"We've seen customers share some concerns that engagement tools could be a distraction from the content," said Lyon. "What I tell them is that the chat on stage is something that they control. If you're running a Q&A or poll, you can put that up on stage and people will engage with that or you can share content from slides to the mobile phones of attendees. It's all content to do with your topic and you control how it is deployed. I'd rather the audience be engaging with your content than engaging with their email or social media or idle browsing or just dozing off."

"For virtual audiences, the event is just a screen. You can't tell that there might be another 10,000 people attending that event. Having that sort of online presence, it's important for organisers to project out and show that their event is not just the content, but also the presence of a digital audience. Particularly our chat and live reactions modules help to bring out that virtual presence," he said.

The two listed modules of the Pigeonhole platform are among its most popular. Integrating with other event services, including AV tools and ticketing, they allow virtual event attendees to talk to each other, the speakers and the organisers and express their emotions in a non-disruptive way. Not only does this help the attendees ask questions and feel heard, but it gives the speaker feedback so they know what topics are resonating and which are boring.

"Video is traditionally very one-way," continued Lyon. "When you're joining an event virtually, it's very easy to just leave it playing and go off and grab a cup of coffee and then move the window to a second monitor and start doing some work. You might be there but you're not actually there; we've seen that happen a lot. Having some kind of engagement element helps people to focus more on what's being presented."

The Challenges of In-Person and Hybrid Events

The problems faced during in-person events come down to scale, according to Lyon. "You have 1,000 people in a venue. How do you know what they are thinking about? You might have a few microphones for Q&A, but you'll maybe have five to 10 people able to ask questions per session. You're basically

Are you concerned about your mate's mental health?

FACT: Most Australian tech crew and roadies have attempted or considered suicide¹!

Support those around you and register for free mental health training



¹Passion, Pride, Pitfalls Dec 2014

www.entertainmentassist.org.au

Supporting the mental health of Australian entertainment industry workers

Lyon added that engagement tools should always be used in moderation. Too much and attendees will be too distracted, too little and they will get bored. He stressed that solutions like those Pigeonhole Live provides should be used to encourage and enhance person-to-person interactions, not replace them.

Engaging with Sponsors

Keeping the audience engaged is, of course, important. However, one major challenge that event organisers have faced while running virtual events is allowing the digital audience to engage with sponsors and exhibitors. In an interview with the Professional Convention Management Association (PCMA), Mary Beth Micucci, the Engagement Director at Beedance, talked about how event producers can facilitate that.

“Sponsors and exhibitors are typically most engaged with events that have an element of conversation that goes beyond sales pitches,” she said. “These vendor-neutral conversations act as networking opportunities and allow sponsors to demonstrate themselves as thought leaders.”

She added that sponsors and vendors will usually bring industry experts to events, adding significant value for attendees. Choosing a virtual/hybrid event platform that emphasises interaction with sponsors can help to unlock that value.

“With a little understanding, you’re better able to boost their success, as well as your own,” Micucci said. “When you do this, your sponsors not only engage more enthusiastically, they want to come back year after year because

they know they’re right where they need to be. This is especially true when you take on each event as its own, ensuring it’s tailored to the sponsors and interests presenting each year, rather than relying on what worked in the past.”

Boaty McBoatface

As the UK’s Natural Environment Research Council discovered to its embarrassment in 2016, public interaction can be a minefield of memes and internet humour. Their good-natured offer to allow the public to name their new research vessel resulted in the overwhelming popularity of the name “Boaty McBoatface”. The name was eventually used, though only for one of the autonomous submarines carried by the newly launched RRS Sir David Attenborough.

While this scenario is considerably less likely in the setting of a professional conference, the so-called “disinhibition effect” of participating from behind a computer’s keyboard can create a situation where audience participation gets out of hand. For this reason, Lyon explained, all of Pigeonhole’s tools include moderator functions to give the organisers complete control of what gets seen by speakers and attendees.

Rather than just being a censor, the role of a moderator can be one of the most valuable in the event team. They can act as a facilitator for the connection between in-person and digital audiences, as well as on-site tech support. Most importantly, they can help to keep the discussion focused, ensuring that the limited time of the expert speakers is optimally exploited.

The Technical Side

Engagement tools are pretty much essential for a successful hybrid event, but they are far from the only essential service. Difficulty inevitably arises when services clash and especially when they provide too many options for the user. Offering even just two or three different ways of asking the speaker a question will inevitably lead to popular and important questions being missed and the same question being asked multiple times. The ideal solution, therefore, is one that plays well with others.

“We are very clear on our focus; it’s just audience interaction tech,” said Lyon, addressing this point. “When customers run an event, they need live-streaming, video, registration and they might want to automate certain things as well, so that’s why we integrate with other platforms to make sure that there are no overlaps. Some other event systems might have some basic versions of our tools built in, but we can help to provide added value to customers with more advanced solutions. Because of how focused we are, we are very collaborative in nature, but it also means that very few companies can match our products when it comes to audience interactivity.”

The key to this integration is the use of APIs to scrape databases for necessary information. For example, access to the chat could be limited by integrating with the ticketing system, meaning that only those who have paid to attend the event can participate.



SHURE

SLX-D



MyEvent has purchased two SLXD4D dual channel receivers, two SLXD4 single channel receivers, six SLXD1 bodypack transmitters with lapel mics, six SLXD2/B58 handheld transmitters, and a couple of the SBC203 dual docking recharging stations. Live streaming is MyEvent's core business, and while audio is very important to us, we couldn't justify going to the very top end of the wireless range represented by Shure Axient. SLX-D is the perfect blend of features and price-point for our business, and I was pretty impressed with SLX-D's performance straight away.

Our business requires a radio mic system that is solid and stable, and familiar to our clients. Our handheld transmitters are fitted with Shure Beta58 capsules, which are an industry standard. Our lapel mics are Shure WL185s, which are cardioid and also well-known to our end-users.

Out Of The Box

I was really impressed with the out-of-the-box experience. Without reading the manual, I was up and running in seconds. That doesn't happen all the time. Working completely off

of the front panel of the receivers, I scanned for clean frequencies and interference. Once that was done, I networked the two dual channel units and ran a group scan. It was all so fast, it blew me away. Once I'd found our clean frequencies, I hit OK, and synced the transmitters by holding them in front of the infrared transmitter on the front panel. It was done in seconds.

When you're doing live streaming, you don't want to get bogged down with RF issues and wonder why your scan isn't working or not finding RF issues. SLX-D offers a similar level

of RF management and performance to the top-end of the wireless microphone market. You often need to move pretty quick in a live streaming environment, and SLX-D definitely helps you get up and running.

SLX-D is compatible with both Shure's Wireless Workbench control and monitoring software, and the newer ShurePlus Channels mobile app. I appreciate the options, but we've found that the front panel operation is so simple and the results so reliable we haven't had to get any more in-depth than that. For us, going digital with SLX-D has meant no RF issues, and less time fault-finding and working out frequencies.

Into The Field

We almost always hire out our Shure SLX-D kits without a technician to operate or manage them. The simplicity of the SLX-D interfaces make it easy for the hirer. There's not too many things they can do with the system that would get them into trouble. We've never had to provide tech support over the phone, and never had an issue with any aspect of their operation.



THE SPECS

RF

RF Carrier Frequency Range 470–937.5 MHz (varies by region)

Working Range: 100m

RF Tuning Step Size: JB Band: 125 kHz, all other bands: 25 kHz, varies by region

Image Rejection: >70 dB typical

RF Sensitivity: -97 dBm at 10-5 BER

AUDIO

Latency: 3.2 ms

High-Pass/Low Cut Filter: 150 Hz, -12 dB/octave

Audio Frequency Response: 20 Hz–20 kHz (+1, -2 dB)

Audio Dynamic Range A-weighted, 20 Hz–20 kHz, typical: 118 dB @1% THD

Total Harmonic Distortion: <0.02%

Mic Offset Range: 0 to 21 dB (in 3 dB steps)

FEATURES

32 available channels per frequency band (region dependent)

Up to 10 compatible systems per 6MHz TV band; 12 systems per 8 MHz band

Easy pairing of transmitters and receivers over IR scan and sync

Compatible with Shure Wireless Workbench control software

Remote control via ShurePlus Channels mobile app

Up to 8 hours from 2 AA batteries or optional Shure SB903 rechargeable battery

Audio Quality

Half the time on our gigs, there's a PA in the room, and lapels can be notoriously hard to manage with a live rig. Even comparing our WL185 lapel mics to higher-end product, they're impressive. As such, we've been deploying them as you would any other high-end product. I've been told several times by touring audio engineers how great they sound, which is amazing for the price-point.

The SLXD2/B58 handhelds remind me of the higher end Shure ULX-D. They feel the same in my hand, and sound just as good, like a hardwired Beta58. I can't hear any latency. Overall, I'm very impressed with the build quality. SLX-D has taken the top-end Shure feel and sound and bundled it into an affordable package. I don't know how Shure have managed it, but I'm grateful for it!

Physical

In both the handhelds and bodypack transmitters, the battery compartments are mercifully free of issues; I've found others to be very fiddly. I've stress-tested the bodypacks by putting them in my back pocket and sitting down and am happy to report I can't seem to break them. I like the fact that the transmitters are 'presenter proof' – I always lock them after set-up.

Battery

All the data from the battery gets displayed on the receiver's screen, which is very reassuring. The batteries have a life of approximately eight hours. Our events usually don't run quite that long, but if they do, they have a break built into them so we can re-battery.

Conclusion

About the only other thing I could want in the SLX-D is native Dante, but that's what the ULX-D Series above them provides. SLX-D has ticked all the boxes for MyEvent, and we're looking at getting more to go with the streaming kits we send out.

Product Info: www.shure.com

Distributor Australia: www.jands.com.au

Distributor New Zealand: nsl.co.nz

About the Author:

Duncan Underwood is an audio and IT specialist who has extensive knowledge of both live sound and IT network design and administration. The founder of live streaming and technical services company MyEvent, Duncan uses his wide skill-set to help people live stream their events on the world stage.

TL;DR

Not one iota of discernment left

The wireless has fried my brain. I struggle to maintain long deep thoughts. Snippets of information flash in and out of my head, sometimes sticking, more often not. Images moving and static wash like debris in the floodwaters of the mind. Once, I could file these into easily retrievable brain slots, but no longer.

Our attention spans are withering

It is not just aging, senility or the ravages of overzealous youth (though they may play their part.) It is greater than that. Under a constant barrage of electronic inputs, our ability to consciously concentrate has wilted.

There are studies. It is science. Believe it.

Slogans, soundbites and memes are today's currency of communication, and they all rely on grabbing your focus. Momentarily. Before the next shiny virtual bauble appears to take us chasing down another rabbit hole.

No more careful and studied thumbing through an encyclopedia, cross referencing with reputable sources before hitting up the library.

Google it now. Wiki knows all. No need to remember. Anything.

No more thoughtful deliberation while composing a letter. Before you write it, let alone send it. Tweet your brainfart now. Think later.

Where are your eyes looking?

Our focuses have changed radically in a generation or two. I found a chilling stat the other day: "...the world's 5.3 billion mobile users will spend more than 1 billion years of combined human time using mobile phones in 2022."¹ Imagine what 1 billion years of doing something even halfway productive could achieve? Like, maybe feeding everyone who needs it? There would still be a few hours left over for FB, TikTok or whatever distraction tickles your fancy.

Yeh, I'm guilty of fondling the slab-o-glass too often as well. In my defence, I do successfully restrict wasting time on it. No email, no socials (except Insta for art) and minimal games. And if you put that thing on the table, in lieu of a proper eye to eye conversation, I'll be sorely tempted to pour a drink on it.

But sometimes it's all too easy to just scroll a little bit more. Minutes wasted become hours frustrated and the off button gets mashed in disgust. It takes a degree of discipline to constantly 'say no to e-drugs', for that is what these devices bring. Designer drugs. Designed to capture your attention and monetise your soul. All without wires - except for the invisible ones seeking to infiltrate your amygdala.

Turn off the screens

How many years since you had enough focus to read a physical book? Yeh, a whole tome from end to end. I got through a trashy novel over Xmas, but it was the first in 12 months because, ooh shiny thing distracted me again. E-readers are cool with how many titles you can cram into one object but end up being just another screen. They don't smell the same as paper and leather either.

That said, I am currently reading a novel online. I can pick it up where I left off on any device. Is it as immersive as a book? No, but it is a great story and I'll suffer the inconvenience of the screen. Just this once!

Competition for the subservience your mind & time

One of the great problems of infinite digital content is the collective dumbing down of us all. New York comedian Matt Ruby puts it well: "The best thing about the internet is also the scariest: It's made everything wide and shallow instead of narrow and deep."²

This applies equally to our personal knowledge base and across our information sources. Specialist knowledge is foregone in the race to the bottom as we are all reduced towards the lowest common denominator to compete with newly minted sov-cit Karen from Bunnings.

Social media may have kept you connected with far-flung family and friends, but it has also sent many of them down conspiracy holes

of weirdness and misinformation. This then propagates outwards at a viral rate. I don't know if I'm more scared of COVID or Q-holes. At least the former has a vaccine.

Is wireless connectivity fully to blame? Perhaps not, but it has been the enabler of all those electronic peacocks that are now competing for our eyeballs, designed to simultaneously tug on purse and heart strings alike. Some blame the algorithms for this. Remember, these code loops are entirely written, authorised and implemented by humans. Follow the money trail and salute your techbro overlords.

Multitasking or task-switching?

Ok, three screens, 12 apps, 50 tabs, easy-peasy. Right? Wrong. Constantly swapping attention between tasks leads to shallower interaction with each one, resulting in more mistakes and poorer output overall. I am much practised in this, but not deluded that I am more efficient than when monotasking. I suspect it is the same for all.

Like juggling cats, the more tasks you are flipping between, the more likelihood of dropping one or getting scratched. I'm slowly learning to switch off the unused apps and only load what I need at the time. My mind bleeds less.

Unplugged - the nirvana sessions

Visit a park. Hug a tree. Hug a person. Knit a beanie. Go for a walk. Whatever - you do you. Just put away the devices and their incessant calling. Find some quiet time in your head and soul. With luck, this may help in rebalancing the constant competition for your neurons and allow them to be more effective when you do switch on and engage them. Ideally, with depth.

I just went outside and started the winter firewood collection. An activity like chainsawing demands being in the moment. Getting distracted could mean losing a limb or worse. Noise and fumes aside, it is an excellent way to find mindfulness. If only my back enjoyed it as much. I will not juggle these nasty weapons...

Wireless is good, no?

Wireless has been a great thing overall. Instant comms with anywhere in the world. News and culture from all those wonderful corners. In-ears and radio mics for unleashed performers to get unhinged. Untethered comms for crew climbing through the rigging.

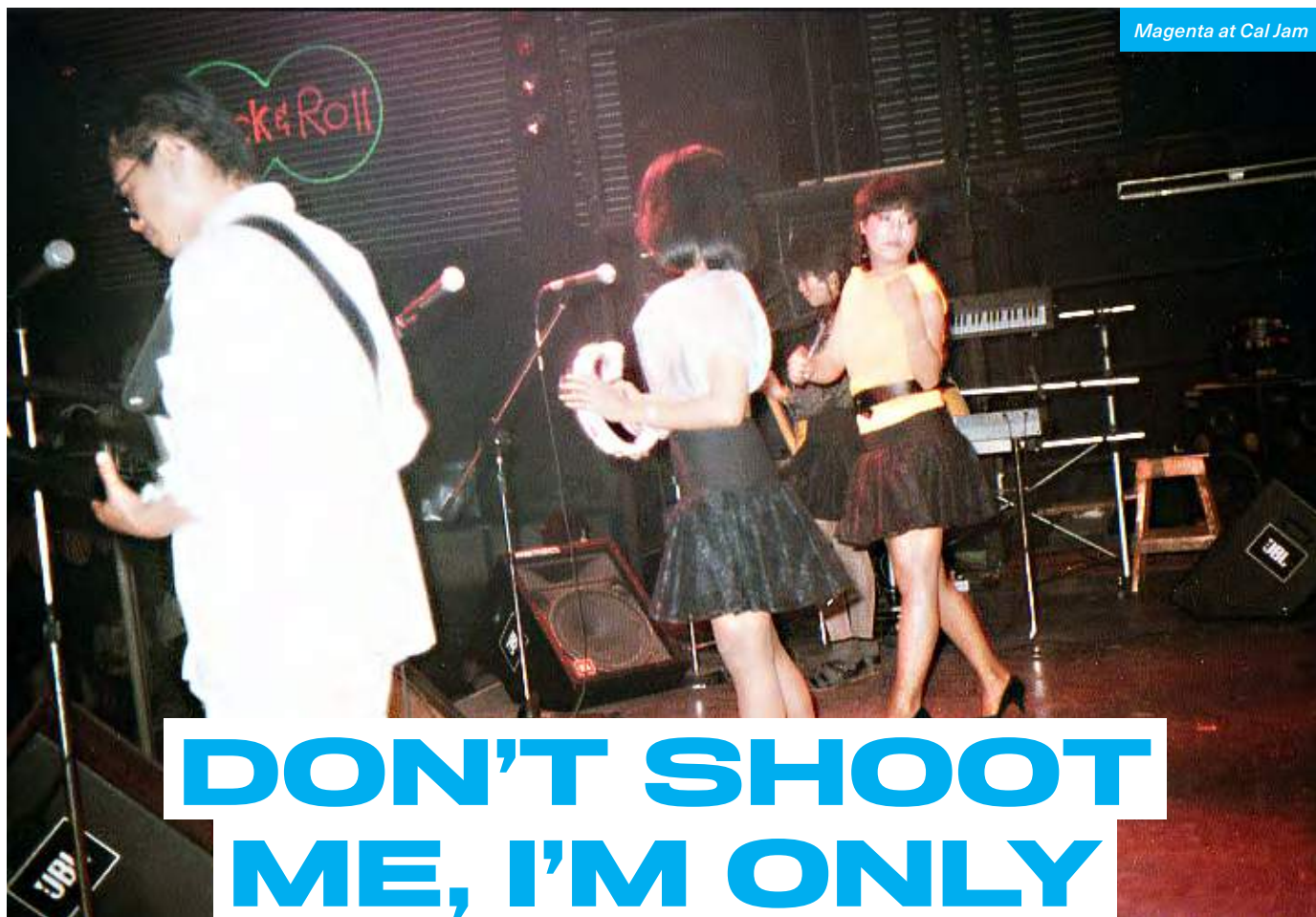
Press 'like' for all these things.

Downvote for what it is doing to our psyches.

And if you made it this far, there is still hope for your ability to focus, wired in or not.

¹ <https://wearesocial.com/au/blog/2022/01/digital-2022-another-year-of-bumper-growth/>

² <https://mattruby.substack.com/>



DON'T SHOOT ME, I'M ONLY THE SOUND ENGINEER!

Snippets from the archives of a bygone era

Witnessing a waitress fleeing in tears after two off-duty Manila cops dumped bullets as payment on her serving tray was a stark reminder that I was working in a country with a gun control problem.

Scouting for talent around the Philippines in the 80s was often fraught with danger, but you could wander into any one of Manila's five-star hotel lounges and be entertained by a sax player who emulated the sounds of Charlie Parker or hear singers and musicians that could rival the best in the business. That's why Filipino artists went on to make up one quarter of the cast of Miss Saigon.

Amidst this wealth of talent, I found a standout band playing in a Manila Shakey's Pizza Parlor. At the time, I was two years into installing and operating sound and lighting equipment and managing Filipino bands in clubs catering to GIs just off the US Air Base in central Luzon. I signed the band to a contract and put them in residency at Rosie O'Grady's, the leading club in the town. However, the American owner, who was in the process of drinking himself into oblivion, couldn't realise their potential, nor would he sign them to a contract. I was his

Entertainment Manager, and when I objected, he fired me for dissent. I changed the band's name from Sweet Dreams to Magenta (named after Lee's 113 colour gel) and signed them to a new US owned club, The Third Eye. This earned the ire of Rosie O'Grady's owner.

The Third Eye was generously outfitted with JBL equipment powered by Crown amplifiers; thus began my professional relationship with the local JBL dealer Lin Gomez, who had a showroom and workshop called the Music Box. Lin imported JBL speakers direct from the US. He was also the distributor for Crown, Shure, Soundcraft, and dbx. He built the enclosures locally to JBL specifications, which for the subs were 4520 J-Bins and also 4550A bins, not folded horn W bins that I had been using and were mostly used in Australia. I began to love the 4520 with its front load bass punch and sub-bass pumping out of the J curve.

It wasn't all plain sailing at The Third Eye as we were summoned to make several court appearances wherein Rosie O'Grady's alleged they held title to Magenta's contract, presenting a bogus contract as evidence. Previously, in an attempt to settle out of court, they had sent a drunken off-duty cop over with a .38 revolver tucked under his T-shirt to have a chat with me.

It was on the drive home from The Third Eye some weeks later that my new employer, who was the major partner, narrowly survived an attempted assassination. He failed to notice a vehicle from a nearby gasoline station emerge without headlights and follow him. Then, on a lonely stretch of road a few kilometres out of town the vehicle overtook his and a would-be assassin fired off a volley of shots. Badly wounded, he detoured from the main road and sped off, however, he was soon rendered unconscious and crashed into a power pole. He



Lin Gomez' brother Chito at Cal Jam 1986

spent some time in hospital and eventually sold his shares in the club and returned to the US.

The shooting may well have been coincidental to any nightclub rivalry. Nevertheless, we were all on edge and the remaining partner, who purchased the shares, also purchased a handgun, which was a .22-calibre Saturday Night Special. I declined a similar offer as gunplay wasn't my preferred choice of Saturday night entertainment.

After only one week of gun ownership the new owner was confronted with the theatre of his neurotic wife locking herself in their bedroom with the loaded weapon and threatening suicide. He then decided to part company with



Magenta's single

the firearm, and ultimately his wife.

Magenta began to pull huge crowds at The Third Eye nightclub and we also had a contract with the Air Base doing USO shows for the military. Magenta's allure also attracted some unwanted attention from the political sphere.

In December 1985, some two years after the assassination of Benigno Aquino Jr, Ferdinand Marcos was gearing up for the 1986 snap election to be contested by Aquino's wife Corazon (Cory).

Marcos' lawyer and Justice Minister Estelito Mendoza was officiating the Pampanga Day festivities and the organisers wanted to book Magenta. I didn't want any part of it. "You

cannot refuse these people," I was told by Lin Gomez, who was acting as an emissary. So I quoted a ridiculous fee. A few days later Lin paid me a visit. "They've agreed to pay the fee," said Lin.

"But will they pay?"

"I will guarantee the payment," he said.

The Pampanga province north of Manila was home to just under two million people, and an estimated ten thousand attended the 1985 Pampanga Day outdoor concert. The promotion was used as part of the campaign to win back dwindling support for the Marcos Government, and Mendoza was also campaigning to be Marcos' running mate

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Magenta at Cal Jam 1986

We eventually won the court case over the contract, and I retained management of Magenta, but then came another challenge. The biggest rock 'n' roll club venture of all time in the Philippines was about to open in Olongopo City, home to the US Seventh Fleet. Cal Jam (California Jam), named after the famous 1974 rock music festival was an 800 seat venue, and they wanted Magenta.

Once again Lin Gomez, who did the massive PA installation at Cal Jam, acted as an emissary. I agreed to meet with the owners who arrived at my club complete with their minder who had a poorly concealed 'piece' inside his jacket. But on this occasion, there was no intimidation; it was just business, and I saw this as an opportunity to keep Magenta under contract plus sign a new band I was negotiating with for The Third Eye.

I managed Magenta during their Cal Jam residency and also wrote and produced their single (which flopped), before releasing them from their contract so they could pursue other ventures including overseas engagements.

I consider that I got off rather lightly during my four-year stint in entertainment in the Philippines. I was only threatened with weapons a couple of times, arrested once on a trumped-up charge, and spent a year in court. Lin Gomez paid us for the Pampanga Day gig but, unfortunately, he never got paid.

Disambiguation: Magenta (Philippines band) formed 1985 is distinct from Magenta (Norwegian band) formed 1995 and Magenta (Welsh band) formed 1999.

in the forthcoming election. Lin Gomez set up a massive JBL system and mixed the first few acts before handing the mix over to me for Magenta's performance.

After the band finished their agreed sets, I was taken backstage to meet the Justice Minister. Mendoza offered a cold, lifeless handshake and his aide quickly ushered me aside to tell me the band was required to play more sets.

My initial protest was abruptly shut down as he ominously told me, "You don't understand; this is political." I then scanned the perimeter of the stage, which was dotted with infantry armed with M16 assault rifles. I had few misconceptions about just how 'political' things could be in the Philippines, so I agreed. On the drive home my two lead female singers, who were now hoarse, let me know of their displeasure.



Lin Gomez 2018

"You don't understand; this is *political*."

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